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Assessment of the Knowledge, Attitude and Practices on Rabies in Jinka Town, South Omo Zone, Southern Ethiopia

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Abstract: This study was conducted in Jinka town, Southern Ethiopia, from November, 2017 to May, 2018 to assess the knowledge, attitudes and practices (KAP) of the community on rabies. A cross-sectional study design and multistage sampling procedures were employed to select households for this study. Kebeles were selected using lottery method from the list of Kebeles of the town and then followed by selection of households from each Kebele using the systematic random sampling method. The data were collected from 423 households through face to face interview using a pretested and structured questionnaire. Out of the 423 respondents interviewed, 191 (45.2%) of them were males and 232 (54.8%) females and 188 (44.4%) of them were between 31-50 years old. The majority of the respondents, 248 (58.6%) were Orthodox followed by Muslim, 90 (21.3%). The majority of the respondents indicated that they had previously heard about rabies. Less than half of the study participants, 188 (44.4%) had good level of KAP and there was strong association ($P<0.05$) between KAP scores and educational status of the respondents. Generally, these findings indicate that the community of the town has poor knowledge about rabies. Therefore; appropriate public awareness creation activities should be implemented by the different concerned bodies in the area on rabies to raise the accurate knowledge on the cause, mode of transmission, symptoms and appropriate prevention and treatment measures of the disease.

Key words: Attitude · Community · Knowledge · Practices · Rabies

INTRODUCTION

Rabies is one of the oldest recognized infectious diseases and affects all mammals. The disease is a fatal viral infection that is most commonly spread to animals and humans through the bite of an infected animal. The disease is an acute progressive encephalitis caused by a highly neurotropic virus and human infection usually occurs following a transdermal bite or scratch by an infected animal [1]. The World Health Organization (WHO) considers rabies to be a neglected disease and declare it to be primarily a problem in areas troubled with poverty and with a lack of economic resources. Africa is, together with Asia, the continent that suffers from most human deaths related to rabies [2].

Infectious diseases, particularly zoonosis, are recognized as the sources of serious problems that affect public and animal health around the world. Emerging infectious diseases have been reported at an unprecedented rate since the 1970s and a large proportion of these diseases are considered to be zoonosis [3]. However, reemerging zoonosis are also affecting public health around the world, in particular rabies, a classic zoonosis that is problematic in Africa and Asia, while new outbreaks have occurred in areas that were previously free of this disease, such as the islands of Flores and Bali in Indonesia [4].

Thus, research and technology development have been promoted for controlling emerging and reemerging zoonosis in developed countries. In the case of rabies, the research and technology developed to prevent this disease has been advancing. Rabies is a vaccine preventable disease, so a vaccine has been developed [5]. The type of vaccine produced using animal nervous tissues has been progressively replaced by safer and more immunogenic vaccines, which are purified from cell culture supernatants. In addition, new replicative vaccines have been developed for the oral vaccination of wildlife, which are either attenuated rabies vaccines or recombinant vaccines where different viruses express the rabies glycoprotein [6].

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In Ethiopia, rabies is an important disease that has been recognized for many centuries [7]. Nationwide data on rabies are not available to reveal the actual magnitude of the problem. However, the distribution of vaccine to the various regions and the fragmented reports on human and animal rabies cases are strong indicators of the wide spread nature of the disease in the country [8]. The magnitude of the problem is higher in big cities like Addis Ababa linked with the presence of large population of stray dogs and associated factors [9].

Poor public awareness towards rabies is usually considered as one of the bottle necks for the prevention and control of the disease in Ethiopia, especially in canine rabies endemic towns including Jinka town. Understanding the communities' perceptions about the cause, mode of transmission, symptoms, treatment and possible intervention measures of rabies is an important step towards developing strategies aimed at controlling the disease and determining the level of implementation of the planned activities in the future. Therefore, this study was designed and conducted to assess the level of knowledge, attitude and practices of selected communities in Jinka town on prevention and control of rabies. Hence, the objectives of this study were:

- To assess the level of knowledge, attitude and practices of selected communities on rabies in Jinka town.
- To identify the factors associated with the communities' knowledge, attitude and practice about the disease in the study area.

MATERIALS AND METHODS

Study Area: The study was conducted in Jinka town, South Omo Zone, in Southern Nations and Nationalities and People Regional State, Ethiopia, from November, 2017 to May, 2018.

Study Design and Study Population: A community based cross-sectional study design was used to assess the knowledge, attitudes and practices (KAP) on rabies and associated factors among the communities of two randomly selected Keble's (Tenadam and Mehularada) of Jinka town, in Southern Ethiopia, from November, 2017 to May, 2018. A total of 423 people from both sexes were selected from those communities of the town for this study. Volunteer individuals and respondents who live for more than six months as the resident in the area were included in the study and who below 15 years of age were excluded from the study.

Sample Size and Sampling Technique: 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 Thursfield [10] using 95% confidence interval and 0.05 absolute precision. Ten percent non-responsive rate was added and the final sample size was 423. Out of six Kebeles in the town, two Kebeles were randomly selected by lottery method. Finally, systematic random sampling was used in selecting the houses by choosing every 30th house with an estimated 3,421 households per Kebele. From each selected household, the individuals or respondents were further selected by simple random sampling technique and interviewed.

The respondents were informed about the objective and purpose of the study and verbal consent was obtained from each respondent. Confidentiality of the information was maintained and data collection process was started based on individuals' willingness to take part in the study with their informed consent.

Data Collection: A pretested structured questionnaire consisting of closed ended questions was used for this study. The data were collected via interview. The questionnaire was first developed in English and then translated in to Amharic language (Regional working language) for appropriateness and easiness in approaching the study participants.

Data Analysis: After collection of the data, it was cleaned and checked for its completeness. Those incomplete and inconsistent were corrected when possible and removed otherwise. After complete check-up the data was coded and entered to the Microsoft Excel 2007 and imported to SPSS version 20.0 for analysis. The frequency distributions of both dependent and independent variables were worked out by using descriptive statics techniques [frequencies, mean, standard deviation (SD) and percentage]. Association between independent variables and KAP scores on rabies was assessed using Pearson's Chi square (X^2). For X^2 test, P-value < 0.05 was considered as significant whereas P-value > 0.05 as non-significant.

RESULTS

Socio-Demographic Characteristics: A total of 423 respondents were asked and responded to the questioner, in which more than half, 232 (54.8%) of the interviewed

Table 1: Socio-demographic information of the study participants in Jinka town (N=423), 2018.

Socio-demographic Characteristics	Frequency	Percent
Sex		
Male	191	45.2
Female	232	54.8
Age		
15-30 yrs.	171	40.4
31-50 yrs.	188	44.4
> 50 yrs.	64	15.1
Educational status		
Informal school	21	5.0
Elementary school	53	12.5
High school	98	23.2
College/higher education	189	44.7
Illiterate	62	14.7
Occupation		
Farmer	12	2.8
Merchant	98	23.2
Government worker	146	34.5
Other	167	39.5
Religion		
Orthodox	248	58.6
Protestant	75	17.7
Muslim	90	21.3
Catholic	10	2.4

Table 2: Knowledge of participants related to the cause, mode of transmission and host range of rabies in Jinka town (N=423), 2018

Responses for the Questions	Frequency	Percent
Awareness on rabies		
Yes	413	97.6
No	10	2.4
Cause of rabies		
Virus	184	43.5
Thirst and Starvation	17	4.0
Bad sprit	15	3.5
Do not know	207	48.9
Species of animal affected by rabies		
Dog only	300	70.9
All Animals	123	29.1
Animals transmit rabies to humans		
Dog only	304	71.9
Dog and Cat	59	13.9
All Animals	60	14.2
Mode of transmission from rabid animal to other animal or human		
Biting/scratching only	222	52.5
Saliva contact into open wound only	12	2.8
Bite and contact of saliva with open wound	167	39.5
Do not know	22	5.2

were females. Regarding age group, 188 (44.4%) of the study participants were between 31-50 years old. Concerning educational status, 189 (44.7%) of the participants were college/higher education graduates and followed by high school graduates 98 (23.2%). The majority of the respondents were engaged in different activities (Occupations) including being student 167 (39.5%) followed by government employees 146 (34.5%). Regarding with their religion, the majority of the respondents were Orthodox Christians 248 (58.6.5%) followed by Muslims 90 (21.3%), Protestants 75 (17.7%) and Catholics 10 (2.4%) (Table 1).

Knowledge of Participants Related to the Cause, Mode of Transmissions and Host Range of Rabies: From the total number of respondents, 413 (97.6%) had awareness on the disease. Of those respondents, 184 (43.5%) respondents did know that virus is the cause of rabies, 60 (14.2%) respondents did know that rabies can be transmitted from animal to human and other animals. Regarding with the mode of transmission the disease, 167 (39.5%) of the respondents responded that bite and contact of saliva with open wound is important for the transmission of the disease from rabid animal to other animal or human. In this study, 304 (71.9%) of the respondents answered that dog is the most common source of rabies followed by all animals 60 (14.2%) (Table 2).

Knowledge of Participants Related to the Clinical Signs and Fatal Nature or Outcome of Rabies: About 94.8 and 93.4% of the respondents answered that animal behaves abnormally and animal shows lack of fear, be aggressive and seems disoriented, respectively, if it is affected by the disease. In addition, 39.5, 66.4, 44.4 and 93.4% of the respondents mentioned that paralysis, hydrophobia, photophobia and hypersalivation are the symptoms of rabid animals, respectively. While 53.7, 74.5, 37.6 and 93.4% of the respondents mentioned that fever, altered mental status, paralysis and hypersalivation are the symptoms of rabies in humans, respectively. Regarding with the outcome of untreated rabies exposure in humans, 363 (85.8%) of the respondents indicated that a person will die, if he/she is exposed to rabies and if the case is not handled or treated appropriately (Table 3).

Practices and Attitudes to Prevent Rabies after a Suspected Animal/dog Bite: In the study concerning with the best option if humans are bitten by rabid animals, 74.2% of the respondents recommended medical treatment by health professionals whereas 18.9% had positive attitude for traditional healers and 15.6% of the respondents recommended washing the wound with water and soap immediately after the bite of a rabid animal. From the respondents, 375 (88.7%) of them believed that post exposure prophylaxis can prevent rabies development in

Table 3: Knowledge of participants related to the clinical signs and fatal nature/outcome of rabies in Jinka town (N=423), 2018

Responses for the Questions	Frequency	Percent
Clinical sign in animal/dog		
Animal behave abnormally	401	94.8
Animal shows lack of fear, be aggressive and	395	93.4
seems disoriented		
Paralysis	167	39.5
Pawing at the ground	86	20.3
Hydrophobia	281	66.4
Photophobia	188	44.4
Hypersalivation	395	93.4
Clinical sign in humans		
Fever	227	53.7
Headache	174	41.1
Muscle pain	106	25.1
Altered mental status	315	74.5
Paralysis	159	37.6
Hydrophobia	312	73.8
Hypersalivation	395	93.4
Photophobia	196	46.3
Rabies is treatable or curable		
Yes	292	69.0
No	29	6.9
Do not know	102	24.1
Outcome of untreated rabies exposure in humans		
The person survives	18	4.3
The person dies	363	85.8
The person heals but will not be the same as before	11	2.6
Do not know	26	6.1
Other	5	1.2

humans and 168 (39.7%) of the respondents mentioned that vaccination is best option to prevent rabies in animals/dogs (Table 4).

Community KAP about Rabies in Jinka Town: Twenty seven questions were asked for each respondent regarding the cause, sources and mode of transmissions, clinical sings and prevention practices and treatment measures of rabies which was resulted in a response of either, choose the correct answer (Had got one mark) or wrong answer (Had got zero mark) for each question. The number of questions for which the respondent gave correct responses was counted and scored. This score was then pooled together and the mean score was computed to determine the overall KAP of the respondents. Respondents who score greater than or equal to the mean value (Mean=14.36, SD=4.86) grouped to good KAP and less than the mean value grouped to poor KAP level. The data showed that about 188 (44.4%) of the study participants were found to have good KAP about rabies and 235 (55.6%) were found to have poor KAP level.

Table 4: Practices and attitudes to prevent rabies after a suspected animal/dog bite in Jinka town (N=423), 2018

Responses for the Questions	Frequency	Percent
Best option to prevent rabies in animals/dogs		
Eliminating stray dogs	169	40.0
Vaccination	168	39.7
Application of herbal remedies	28	6.6
Do not know	58	13.7
Action that should be taken on a suspected rabid dog		
Let Free	62	14.7
Tie	122	28.8
Killing	239	56.5
The time when your pet/dog be vaccinated		
After It is sick	12	2.8
Regularly	99	23.4
I never take to vaccinate	276	65.2
Vaccinate at 3 months of age	21	5.0
Every 3 years	7	1.7
Other	8	1.9
The best option if humans are bitten by rabid animals		
Consulting health professional	314	74.2
Traditional healer	80	18.9
Using Holy water	29	6.9
Immediate action on a wound by the bite of a rabid animal		
Doing Nothing	33	7.8
Washing the wound	66	15.6
Consulting traditional healer	70	16.5
Seeking medical treatment	104	24.6
Confined the dog for observation	44	10.4
Submitting the dog for disease testing	42	9.9
Wound suture	6	1.4
Other	58	13.7
Post exposure prophylaxis prevent disease development in humans		
Yes	375	88.7
No	48	11.3

Table 5: Relationships between KAP scores about rabies and some key independent variables among study respondents of Jinka town (N=423), 2018

Variables	Good	Poor	X^2	P-value
Sex				
Male	82 (43.62%)	109 (46.38%)	0.323	0.570
Female	106 (56.38%)	126 (53.62%)		
Age				
15-30 yrs.	72 (38.29%)	99 (42.12%)	1.183	0.553
31-50 yrs.	84 (44.68%)	104 (44.25%)		
> 50 yrs.	32 (17.02%)	32 (13.62%)		
Educational status				
Informal school	9 (4.78%)	12 (5.10%)	10.342	0.035*
Elementary school	17 (9.04%)	36 (15.31%)		
High school	35 (18.61%)	63 (26.80%)		
College/higher education	97 (51.59%)	92 (39.15%)		
Illiterate	30 (15.96%)	32 (13.62%)		
Occupation				
Farmer	5 (2.66%)	7 (2.98%)	6.229	0.101
Merchant	39 (20.74%)	59 (25.11%)		
Government worker	77 (40.95%)	69 (29.36%)		
Other	67 (35.64%)	100 (42.55%)		
Religion				
Orthodox	116 (61.70%)	132 (56.17%)	1.684	0.640
Protestant	29 (15.43%)	46 (19.57%)		
Muslim	39 (20.74%)	51 (21.70%)		
Catholic	4 (2.13%)	6 (2.55%)		

* Significant (P<0.05)

Factors Associated with Community KAP on Rabies in Jinka Town: Association between independent variables and KAP scores on rabies was assessed using Pearson's Chi-square (Table 5). There was a significant association (X^2=10.542, P<0.05) between KAP scores and educational status of the respondents. From the 189 respondents with college/higher education levels, 97 (51.59%) of them had good KAP on rabies.

DISCUSSION

Rabies virus is generalist pathogen in nature as it has the ability to infect wide range of species and cause major host mortality or reduce fertility. Rabies in dogs poses a threat to more than 3.3 billion people. It is estimated that 55,000 people die from dog-mediated rabies annually in Africa and Asia [11]. Rabies in Ethiopia is a neglected zoonotic disease but major public health problem especially in regions where stray dogs are ineffectively controlled. In reality, people in developing countries may not receive life saving treatments either because of people may not visit the hospital for treatment owing to lack individual's depth of rabies knowledge or, there is a lack of understanding in the response to dog bites, people may contact with local traditional healers for treatment or apply herbal medication on the dog bite wound, or perform folk remedies at home rather than treatment from health facilities [12, 13].

In this study, 97.6% of the respondents had heard about rabies from different sources (Table 2). However; such information tended to be superficial and it did not adequately enable public to acquire appropriate level of knowledge on rabies. This finding is lower than the finding of Awoke *et al*. [14] with a record of 100%. However; it is higher when it is compared with that of the proportions, 81, 81.1 and 68.7% in the surveys of the knowledge, attitudes and practices about rabies in the general community of Arada Sub City, Addis Ababa by Eyob *et al*. [15] and in India and in Zimbabwe by Sudarshan [16] and Brooks [17] respectively, but the KAP levels in those studies were higher. This might be because of the fact associated with the source of information determining the appropriateness of the knowledge that was transferred.

Of those the respondents, 56.4% had misunderstanding on the cause of rabies. This result is higher when compared with the result obtained as 34.9% by Awoke *et al*. [14] from study conducted in and around Debretabor, South Gondar, Ethiopia. This could be due to the study area and community awareness differences. In the present study, 39.5% of the respondents knew the correct mode of transmission of rabies, which is consistent with the finding in Addis Ababa by Eyob *et al*. [15] but lower than the findings in Debretabor as 57.8% by Awoke *et al*. [14] and with the finding in Delhi by Lai *et al*. [18] who reported that 49.2% of the respondents answered correctly concerning the transmission of the disease, this could be due to the differences in the accesses of better information about the disease among the communities.

In this study, the KAP analysis revealed that 85.8% of the respondents recognized rabies as a dangerous and fatal disease and 70.9% of them knew that dogs are susceptible to rabies and 71.9% of them knew that dogs are the most common source of rabies (Table 2). This result is almost consistent with a study conducted in Addis Ababa by Eyob *et al*. [15] who reported as 80.2% of the respondents recognized rabies as danger and a fatal disease, 36.5% knew that dogs are susceptible to rabies and 77.9% knew that dogs are the most common source of rabies. This result is also almost consistent with a study conducted in the city of New York, USA, which was reported as that 94.1% of the study participants knew rabies as a killer be able to disease and 73.5% of the respondents identified that dogs are major sources for the spread of rabies in human population [19]. In this study, about from 20 to 94.8% of the respondents were aware of the common clinical signs of rabies in animals (Table 3). This finding is almost supported by the finding of Awoke *et al*. [14] in Debretabor.

In the current study, 15.6% of the respondents knew that wound washing should be immediate action after a suspected dog bite (Table 4). This result is highly lower than the findings of the studies done in Debretabor as 25% by Awoke *et al*. [14] and in Addis Ababa as 46.1% by Eyob *et al*. [15]. These differences might be due to respondents believed that the infection could be treated with herbs and traditional healers. Most respondents (74.2%) in this study preferred to go to medical health centers in case after being bitten by rabid dogs, which is supported by the study done in Sri Lanka where almost all the respondents agreed to consult health professional in case of an animal bite [20]. This little difference might be due to lack of information and unavailability of health centers in immediate vicinities [14].

In this study, eliminating stray dogs and vaccination of animals were mentioned as the best options to control rabies in animals/dogs almost with equal proportion of the respondents as 40 and 39.7%, respectively. This finding is not consistent with results recorded in Debretabor by

Awoke *et al*. [14] where the majority of the respondents indicated that regular vaccination of dogs is effective measure for controlling the disease. This finding was not consistent with the results recorded in Sir Lanka [20] and Bahir Dar [21] in which the majority of the participants were in favor of rabies control programs that mainly focused only on stray dog population control.

The findings of this study indicated that, about 44.4% of the respondents had good level of knowledge, attitude and practices about rabies. This finding is almost consistent with the results recorded in Debretabor as 49.5% [14]. However; higher knowledge, more positive attitudes and higher scores in the practices of rabies was reported from Addis Ababa as 67.2% by Eyob *et al*. [15]. These differences probably might be explained by the lack of health education programs about rabies in Ethiopia. In this study, there was a statistically significant difference ($P<0.05$) in KAP score among the respondents with different educational status and good KAP scores were highest in the respondents with educational status of college/higher education being as 51.59% (Table 5). The possible explanation could be that educated person can have better information from different sources, so that he/she can easily understand about the disease. This result is supported by the findings of the studies conducted in Debretabor [15] and in Bahir Dar [21].

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, this study has shown that the community KAP level about rabies is poor in the study area. This is because there are some KAP gaps in the community regarding with the cause of the disease, species of animals that can be affected by the disease, the mode of transmission, clinical signs in animals/dogs and in humans, prevention methods or practices, first action that should be taken immediately after a bite of a suspected animal with the disease and the attitude to anti-rabies vaccine and traditional healers. Educational status of the respondents was the only variable found to be significantly associated with the KAP scores on rabies. Therefore, based on the above conclusion the following recommendations are forwarded:

- The Jinka town Health Office Administration should provide periodic education to raise the community's knowledge on rabies, especially by targeting the people who have lower educational level.
- The Southern Nations and Nationalities and People Regional Health Bureau should also design accurate and urgent community based rabies education programs by giving emphasis on the cause, mode of transmission, clinical signs and immediate benefits of wound management and need for anti-rabies vaccine following a dog bite.
- The Federal Ministry of Health and the Ministry of Agriculture and Animal Resources should work together in disseminating information related to rabies using the mass media and public gatherings to enhance the level of knowledge on the disease nationwide.

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