

Assessment of the Knowledge, Attitude and Practices of Rabies in Arada Sub City Addis Ababa, Ethiopia

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Abstract: This study was conducted from November, 2015 to April, 2016 in Arada sub-city which is one of the ten sub-cities of Addis Ababa, Ethiopia. The sub-city covers area of 949.85 ha and has a population size of about 225,999 which makes it one of the densely populated sub-cities in Addis Ababa. The study is done in a cross-sectional study design and multistage sampling procedures were employed to select households for this study. Arada sub city were randomly selected from Addis Ababa. Three Administrative woreda were selected using lottery method from the list of Arada sub city, followed by selection of households from each woreda using systematic random sampling method. The data were collected from 384 households through face to face interview using pretested and structured questionnaires. SPSS Windows version 20.0 was used for data analysis. Descriptive statics techniques and Pearson's chi squares analysis were used to manage the data and the association between outcome (KAP) and explanatory variables. Of the 384 respondents interviewed, 197 (51.3%) of them were males and 187 (48.7%) females and 154 (40.1%) were between 15-24 years old. The majority of the respondents 177 (46.1%) were Orthodox. Almost all of the respondents indicated that they had previously heard about rabies. The majority of the study participants 258 (67.2%) had good level of KAP. There was strong association between KAP scores and age ($\chi^2=12.860$, $p < 0.05$); and occupation ($\chi^2=16.232$, $p < 0.05$). Generally, these findings indicate that a good level of awareness was shown with regard to rabies among the residents of Arada sub city Addis Ababa. Additionally, inaccessibility to appropriate services was also considered as a major reason for the poor level of community participation in rabies but it need for educational outreach to raise accurate knowledge on mode of transmission, symptoms and appropriate prevention and treatment measures.

Key words: Attitude • Community • Knowledge and Practice • Rabies

INTRODUCTION

Rabies is one of the oldest known and most feared human diseases recognized since the early period of civilization. The Greeks called rabies *lyssa* or *lytta*, which means frenzy or madness. It is one of the main fatal viral zoonosis and a serious public health problem. The death toll confirms rabies as one of the most lethal zoonotic, or animal-transmitted diseases, causing more human deaths annually than H5N1 and Dengue fever [1].

The causative agent is rabies virus of the genus *lyssa* virus in the family Rhabdoviridae and the clinical signs include sudden behavioral change, hyper salivation, paralysis, hydro and phobia, restlessness, aggressiveness and biting inanimate objects. The disease

affects the central nervous system of the infected host and its transmission is mainly through bites of infected animals [2]. Rabies is a neglected and severely under-reported zoonotic disease in developing countries. It has the highest case fatality rate of any infectious disease, primarily in developing countries within Africa and Asia. The number of human deaths due to rabies is currently underestimated to be 55,000 deaths per year and 56% of the estimated deaths occur in Asia and 44% in Africa [1]. Globally, two persons die every hour due to rabies and 40% of people who are bitten by suspect rabid animals are children under the age of 15 years. About 98 % of the human rabies cases occur in Developing countries that possess large number of dogs, many of which are stray [3].

In Ethiopia, rabies is an important disease that has been recognized for many centuries [4]. Nationwide data on rabies are not available to reveal the actual magnitude of the problem. 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 [5, 6]. 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 [7]. Poor public awareness towards rabies is considered as one of the bottle necks for the prevention and control of the disease in Ethiopia. Understanding communities' perceptions of 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 planned activities in the future. Therefore, this study was designed to assess the level of knowledge, attitude and practices of selected communities in Addis Ababa Arada sub city on prevention and control of rabies.

Hence the Objectives of this Study Are:

- To assess the level of knowledge, attitude and practices of selected communities in Addis Ababa, Arada sub city
- To identify factors associated with community knowledge, attitude and practice about rabies in Study area.

MATERIALS AND METHODS

Study Area and Design: Addis Ababa, the capital city and political and economic center of Ethiopia, covers an area of 540 km² and have 10 Sub Cities as an administrative region. The city lies at an altitude between 2300-2500 meters above sea level with an average temperature ranging between 8.9-24.42°C [8]. In 2008, Addis Ababa had a population 3,147,000. From this 1,511,000 are men and the rest 1,635,000 are women. This cross sectional study was performed in Addis Ababa, Arada sub-city which is one of the rabies endemic area. Arada sub-city is one of the ten sub-cities of Addis Ababa, Ethiopia. Arada sub-city is located at the center of Addis Ababa. Arada sub-city covers a surface area of 949.85 ha and has a population size of about 225,999, from these 48% are male and the rest female [9].

Study Population: Community of Arada sub city lives in 10 Administrative woreda. A total of 384 people was selected from those communities live in Arada sub city community of all age groups and both sexes were asked.

Sample Size, Sampling Method and Procedures

Sample Size: The required sample size for this study will be 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 as 95% confidence interval and 0.05 absolute precision [10].

Sampling Method and Procedures: A multi-stage sampling technique was employed for the selection of the sampling units. From the entire Primary sampling unit, i.e. Arada sub city were randomly selected from Addis Ababa. Three Administrative woreda were selected using lottery method from the list of Arada sub city, followed by selection of households from each woreda using systematic random sampling method.

Method of Data Collection: Information about the knowledge, attitude and practices of the residents is collected using a well-structured questioner consisting of 28 close-ended questions. The participants of the study are asked to properly fill the answers for each question on the questioner. The questioner has two sections. The first is about the socio-demographic situations like sex, age and educational status etc. The other part is rabies related questions, consisted of knowledge on the existence of rabies, knowledge on animals affected by rabies, knowledge on identification of rabies subjects, knowledge on how rabies is transmitted and few other rabies related questions. The data were collected via face to face interview. The questionnaire was first developed in English and then translated in to Amharic language (Native language) for appropriateness and easiness in approaching the study participants.

Data Management and Analysis: After collecting, the data were cleaned and checked for its completeness. Those incomplete and inconsistent were corrected when possible and removed otherwise. After complete check-up the data were coded and entered to Microsoft Excel and transport to SPSS version 20.0 statistical packages for windows and analysis made. The frequency distribution of both dependent and independent variables were worked out by using descriptive statics techniques

(Frequencies and percentage). Association between independent variables and KAP scores on rabies was calculated using Pearson's Chi square.

RESULTS

Socio-Demographic Characteristics: A total of 384 respondents were responded to the questioner, in which half of 197 (51.3%) of the interviewed were males. Regarding age group, 155 (40.4%) of the study participants were between 14-25 years old. The majority of the respondents 179 (46.6%) of the study participant were from family size of four to six person. Concerning educational status, 186 (48.4%) of the participants had completed college. From the total respondents about 119 (31.0%) were private worker. Regarding to religion the respondents 177(46.1%) were Orthodox followed by Muslim 113 (29.4%). Three hundred eleven (81.0%) of respondents heard information about rabies. From study participants 150 (39.1%) heard from Neighbors, friends and relatives (From social) and 195 (50.8%) of respondents had a dog and 193(50.3%) of study participants were experience on previous animal bite.

Table 1: Socio-demographic information of the study participants in Addis Ababa Arada sub city (N= 384), 2016.

Socio-Demographic characteristics	Frequency	Percent
Sex		
Male	197	51.3
Female	187	48.7
Age		
15-24	154	40.1
25-40	148	38.5
41-60	77	20.1
>60	5	1.3
Family		
1-3	123	32.0
4-6	180	46.9
>6	81	21.1
Educational status		
Literate	11	2.9
Elementary	1	0.3
High school	32	8.3
Collage	186	48.4
1st degree and above	154	40.1
Occupation		
Civil service	78	20.3
Private	120	31.3
Merchant	95	24.7
No work	58	15.1
Student	33	8.6
Religion		
Orthodox	177	46.1
Muslim	112	29.2
Protestant	95	24.7

Community KAP about Rabies in Addis Ababa AradaSub City: Twenty eight questions were asked for each respondent regarding cause, sources and mode of transmissions, clinical signs 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 average score was computed to determine the overall KAP of respondents, Respondents who score greater than or equal to the average value grouped to good KAP and less than the average value poor KAP level. The data show that about two hundred fifty- eight (67.2%) of the study participants were found to have good KAP about rabies and one hundred twenty-six (32.8%) were found to have poor KAP level.

Knowledge of Participants Related to Cause, Mode of Transmissions and Host Range of Rabies: Majority of the respondents (81.0%) respondents were familiar with the disease and gave it local names ('Yebed wusha beshita') which mean madness. Of those respondents, 200 (52.1%) were know that virus is the cause of rabies, 170 (44.3%) were know that rabies transmitted from animal to human by biting and the remaining respondent know that transmit by scratching and other rout of transmission. 299 (77.9%) respondents were aware that dog is the most common source of rabies followed by cat 56 (14.6%).

Knowledge of Participants Related to Clinical Signs and Fatal Nature of Rabies: Three hundred eight (80.2%) of study participants answered that rabies is a dangerous and fatal disease.

Practices and Attitudes to Prevent Rabies after Suspected Animal/Dog Bite: One hundred seventy-seven (46.1%) of the respondents washed the wound with water and soap immediately, 266 (69.3%) seek health center, 313 (81.5%) had positive attitude for anti-rabies vaccine and 209 (54.4%) were aware of taking post exposure anti-rabies vaccine immediately after a suspected animal/dog bite.

Factors Associated with Community Kap on Rabies in Addis Ababa Arada Sub City: Association between independent variables and KAP scores on rabies was calculated using Pearson's Chi square (Table 5).

There was significantly association between KAP scores and age ($\chi^2= 12.860$, $p < 0.05$). The good scores were higher in 15-24 age groups (75.3%). Occupation was significantly associated with KAP scores ($\chi^2 =16.232$, $p < 0.05$). All respondents with Occupation had good KAP of rabies.

Table 2: Knowledge of participants related to cause, mode of transmissions and host range of rabies in Addis Ababa Arada sub city (N=384), 2016.

Characteristics	Frequency/number	Percent
Cause of rabies		
Psychology problem	13	3.4
Associated with religion	56	14.6
Virus	200	52.1
Shortage of feed and water	2	0.5
I do not know	113	5.7
Mode of transmission		
Biting	170	44.3
Scratching	58	15.1
Wound Licking	00	0.0
All	156	40.5
Susceptible hosts		
Human	78	20.3
Dog	140	36.5
Cat	8	2.1
Livestock	18	4.7
Sheep and Goat	00	0.0
Equines	00	0.0
Wild animals	21	5.5
All of these	119	31.0
Most common source of rabies		
Dog	299	77.9
Cat	56	14.6
Livestock	22	5.7
Sheep and goat	00	0.0
Equine	00	0.0
Wild animal	7	1.8

Table 3: Knowledge of participants related to clinical signs and fatal nature of rabies in Addis Ababa Arada sub city (N=384), 2016.

Characteristics	Frequency/number	Percent
Clinical signs		
Stops eating and drinking	4	1.0
Biting and change in behavior	77	19.0
Paralysis	63	16.9
Salivation	71	18.5
Hydrophobia	11	2.9
All	160	41.7
Fatal nature of the rabies		
Yes	308	80.2
No	76	19.8
Easily treated after the onset of clinical signs		
Yes	233	60.7
Not treat	70	18.2
I don't know	81	21.1

Table 4: Practices and attitudes to prevent rabies after suspected animal/dog

bite in Addis Ababa Arada sub city (N=384), 2016.		
Characteristics	Frequency/number	Percent
Immediate action after bite of rabid animal at home		
Tie the wound with cloth	114	29.7
Wash with water and soap	177	46.1
I don't know	93	24.2
Seek after bite of rabid animal		
Health center (go clinic)	266	69.3
Traditional healer	77	20.1
Holly water	38	9.9
Nothing	3	0.8
Attitude to anti-rabies vaccine		
Positive	313	81.5
Negative	71	18.5
At which stage of anti-rabies vaccine is effective after a suspected animal bite		
Immediately (post exposure)	209	54.4
Later	00	0.0
At any time	97	25.3
I don't know	78	20.3
Actions taken for rabid animals		
Let free	3	0.8
Tie	115	29.9
Killing	229	59.6
Nothing	37	9.6
Measures to control stray dogs		
Killing	103	26.8
Animal birth control	119	31.0
Teach Society	100	26.0
Ting	6	1.6

Table 5: Relationships between KAP scores about rabies and some key independent variables among study respondents of Arada sub city Addis Ababa (N=384), 2016.

Variables	Good	Poor	χ^2	P value
Sex				
Male	133(67.5%)	64(32.5%)	0.019	0.889
Female	125(68.8%)	62(33.2%)		
Age (in years)				
15-24	116(75.3%)	38(24.7%)	12860	0.005
25-40	99(66.9%)	49(33.1%)		
41-60	40(51.9%)	37(48.1%)		
>60	3 (60.0%)	2(40.0%)		
Household size				
1-3	76(61.8%)	47(38.2%)	2.571	0.276
4-6	127(70.6%)	53(29.4%)		
>6	55(67.9%)	26(32.1%)		
Educational status				
Illiterate	7(63.6%)	4(36.4%)	2.090	0.719
Primary school (1-8)	1(100.0%)	0(0.0%)		
Secondary school (9-10)	21(65.6%)	11(34.4%)		
College	120(64.5%)	66(35.5%)		
First degree and above	109 (70.8%)	45(29.2%)		
Occupation				
Government employees	47(60.3%)	31(39.7%)	16.232	0.03
Private employees	89(74.2%)	31(25.8%)		
Merchant	57(60.0%)	38(40.0%)		
Unemployed	35(60.3%)	25(39.7%)		
Student	30(90.9%)	3(9.1%)		
Religion				
Orthodox	125(70.6%)	40(35.7%)	1.756	0.416
Muslim	72(64.3%)	34(35.8%)		
Protestant	61(64.2%)	52(29.4%)		
Catholic				

DISCUSSION

The findings of this study indicated that, about 67.2% of the 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 [11]. This difference probably is explained by the lack of health education programs about rabies in Ethiopia.

Almost all respondents in this study (81.0%) had heard about rabies from different sources from which (41.4%) of respondents receive information about rabies from mass media radio/TV and magazine (Formal source). 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 higher when compared with that proportion (68.7%) in a survey of knowledge, attitudes and practices about animal bite and rabies in general community in India and in Zimbabwe, but KAP level in these countries is higher [12, 13]. This is mainly because of the fact associated with the source of information determining the appropriateness of the knowledge transferred. From those respondents, 52.1% had knew the correct cause of rabies. This result is higher when compared with the result obtained from study conducted in Gondar and Dabat, indicated that most of respondents believe that the disease in dogs is caused by starvation; thirst and prolonged exposure to sun heat [14]. This could be community and study area awareness difference due to source of information.

In the present study, 40.6% respondents knew the correct mode of transmission which is consistent with the finding in Delhi [15] who reported that 49.2% answered correctly concerning transmission. This KAP analysis revealed that 80.2% of respondents recognize rabies as danger and a fatal disease, 36.5% know that dogs are susceptible to rabies and 77.9% aware that dogs are the most common source of rabies. This result is almost 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 73.5% of the respondents identified that dogs are major sources for the spread of rabies in human population [16]. The majority of the respondents (74.4%) indicated their willingness to vaccinate their pets and believe that mass vaccination program and depopulation of stray dogs are effective measures for controlling the disease in Addis Ababa. This finding was consistence with results recorded in Sri Lanka

in which the majority of the participants were in favor of rabies control programs that mainly focused on stray dog population control [11]. In my study the good KAP scores were highest in age group of 15-24 (75.3%). The statistically significant difference ($P < 0.005$) in KAP score among age groups might be due to increased reading capacity and eager to search new thing as being student about rabies. The other factor that compared with age groups and better chance of acquiring identified to be significantly associated with knowledge on rabies was occupation. Statistically significant association ($P < 0.03$) was observed between KAP score and occupation where get information from different people due to high contact at working place.

CONCLUSION

In conclusion, this study has shown that the community level KAP about rabies is good in Addis Ababa Arada sub city. Almost all of the study participants had heard about the disease from different sources and the majority of the study participants knew dog as the main species affected and responsible to the disease in humans mainly through bite. Majority of dog bites occurred by stray dog populations roaming around the sub-city. The study participant knows fatal nature of the rabies. Despite this good KAP level, still there are some KAP gaps in the community regarding rabies, including: 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. Age and occupational status of the respondents were the variables found to be significantly associated with KAP on rabies.

Based on the above conclusion, the following recommendations are forwarded:

- ▶ The awareness of the community should be conducted popularly about the exposure, careful handling and vaccination of their animals and animal species other than dogs.
- ▶ Post exposure prophylaxis services should be inaugurated to the adequate level so that treatments after exposure can be done and save the lives of many people dying of this neglected but fatal disease.
- ▶ Human rabies cases should be hospitalized and

receive supportive as well as exhaustive lifesaving treatments.

- ▶ Well-designed strategy for stray dog population control should be developed and implemented.

REFERENCES

1. Brooks, R., 1990. Survey of the dog population of Zimbabwe and its level of rabies vaccination. *Veterinary Record*, 127: 592-596.
2. Central Statistical Authority (CSA), 2007. [Available at from <http://www.csa.gov.et>]. [Accessed on 15/1/2016].
3. Dale, S., 2013. A Comparison of Canine Rabies Control Programs in Thailand and the Guangdong Province in China: A Case Study Approach. MSc thesis, submitted to the Tufts University, Cummings School of Veterinary Medicine, Boston, America.
4. Deressa, A., B. Newaye Selassie, A. Ali, M. Beyene and E. Yimer, 2010. The status of rabies in Ethiopia: A retrospective record review. *Ethiopian Journal of Health Development*, 24: 127-132.
5. Fekadu, M., 1982. Rabies in Ethiopia. *American Journal of Epidemiology*, 115: 266-273.
6. Gino, C., O. Yoshihide, K. Koji, Y. Hiroko, R. Bandula and P. Gamini, 2009. A pilot study on the usefulness of information and education campaign materials in enhancing the knowledge, attitude and practice on rabies in rural Sri Lanka. *Journal Infect Developing Countries*, 3(1): 55-64.
7. Hosmer, D. and S. Lemeshow, 2000. *Applied Logistic Regression* 2nded. New York: Wiley, pp: 92-97.
8. Lai, P., A. Rawat, A. Sagar and K. Tiwari, 2005. Prevalence of Dog bite in Delhi: Knowledge and Practices of residents regarding prevention and control of rabies. *Health and Population perspectives and Issues*, 28(2): 50-57.
9. New, J., 2008. Human Rabies Prevention, United States, ACIP Guidelines. [Available at <http://www.cdc.gov/mmwr/preview>]. [Accessed on 22/4/2016].
10. Prakash, M., V. Bhatti and G. Venkatesh, 2012. Rabies menace and control: An insight into knowledge, attitude and practices. *Elsevier*, 63(07): 57-60. [Available online at www.sciencedirect.com]. [Accessed on 23/04/2016].
11. Sudarshan, M.K., 2007. Assessing the burden of human rabies in India. Results of a national multi-center epidemiological survey. *International Journal of Infectious Diseases*, 11: 29-35.
12. Tadesse, G., S. Anmaw, C. Mersha, B. Basazinew and F. Tewodros, 2014. Assessment of Knowledge, Attitude and Practice about Rabies and Associated Factors: In the Case of Bahir Dar Town. *Global Veterinarian*, 13(3): 348-354.
13. Thrusfield, M., 2005. *Survey in veterinary epidemiology*. 2nd ed. Cambridge: Blackwell science. Ltd, pp: 184-187.
14. Wudu, T., M. Wassie, A. Gizat and A. Sefinew, 2013. Incidence of Rabies in Humans and Domestic Animals and People's Awareness in North Gondar Zone, Ethiopia. *Plos Neglected Tropical Diseases*, 7: 5-10.
15. Yimer, E., A. Mesfin, M. Beyene, A. Bekele, G. Taye, B. Zewdie and T. Alemayehu, 2003. Study on knowledge, attitude and dog ownership patterns related to rabies prevention and control in Addis Ababa, Ethiopia. *Ethiopian Veterinary Journal*, 2012, 16(2): 27-39.
16. Yimer, E., B. Newayeselassie, G. Teferra, Y. Mekonnen, Y. Bogale, B. Zewde, M. Beyene and Bekele, 2002. A Situation of Rabies in Ethiopia: A retrospective study 1990 – 2000. *Ethiopian Health and Nutrition Research Institute*, Addis Ababa, Ethiopia.