



ASSESSMENT OF COMMUNITY'S KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS PREVENTION AND CONTROL OF RABIES IN AND AROUND DEMBI DOLO TOWN, OROMIA REGIONAL STATE, WESTERN ETHIOPIA

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ABSTRACT: A Cross sectional study was conducted from November 2020 to may 2021 in Adigrat town, Tigray region, northern Ethiopia. multistage sampling technique was employed for selection of sampling units and data were collected from 384 household by face-to-face interview using a semi structured and validated questionnaire. Chi square was used for assessing the association of independent variable with KAP score. Out of 384 participants interviewed, 50.3% were urban and 70.6% were male respondents. About 67.7% of participants were aware about rabies. However, there were misperceptions about the causes, transmission and prevention of rabies. Overall KAP score revealed that 61.5% of the respondents had a good KAP, whereas 39.5% was found to have poor KAP score. During analysis of KAP with independent variables, chi square analysis revealed that KAP score was significantly ($p=0.014$) associated with gender being higher in males (65.3%) than females (51.8%), the association of education level with overall KAP about rabies revealed statically significant difference ($P=0.047$), The respondent who were at secondary school education level were found to be better (57.5%) than illiterate (42.9%) in KAP score. KAP score was significantly ($p=0.000$), associated with occupation being higher in unemployed (77.7%) followed by government employed (76.6%). On the other hand poor KAP score were seen in house wives and the association of religion with overall KAP about rabies also revealed statistically significant difference ($p=0.000$) being higher in Christians (64.4) than Muslims (22.2). Generally there is a difference on the level of awareness of rabies and receptiveness to rabies control measures among different group of respondents. Increasing awareness by of the community training about the disease should be considered for controlling the disease.

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INTRODUCTION

Rabies is a fatal disease that affects both animal and human beings. Rabies is a viral disease which is transmitted by the bite or scratch from a rabid animal (WHO, 2011). Rabies virus infects the central nervous system, causing encephalopathy and ultimately death. The virus is a single stranded RNA virus grouped under genus *Lyssavirus* of the family Rhabdoviridae (Sherikar *et al.*, 2011). Wild animals serve as a large and mainly uncontrollable reservoir of sylvatic rabies, which is an increasing threat to the human population and domestic animals in many countries (Rupprecht *et al.*, 2002).

Worldwide, the dog is the principal vector in transmitting rabies to human, irrespective of whether the reservoir hosts are wild animals or dogs themselves

(Williams and Barker, 2001; Abbas *et al.*, 2011). The virus is present in the saliva of the biting rabid mammal. Transmission almost always occurs by an animal bite that inoculates virus into wounds. Virus inoculated into a wound does not enter the bloodstream but is taken up at a nerve synapse to travel to the brain, where it causes encephalitis. The virus may enter the nervous system fairly rapidly or may remain at the bite site for an extended period before gaining access to the nervous system. The approximate density of nerve endings in the region of the bite may increase the risk of developing encephalitis more rapidly. Rarely, the virus can be transmitted by exposures other than bites that introduce the agent into open wounds or mucous membranes (Sherikar *et al.*, 2011).

Rabies is incurable once the clinical signs of the disease appear (Deressa *et al.*, 2010). However, it is possible to prevent a person exposed to the virus from getting ill to rabies by neutralizing virus with antibodies before the virus invades the nervous tissue. This is done through vaccination and/or use of immunoglobulins, so called post-exposure prophylaxis (PEP) (Permpalung *et al.*, 2013; Nilsson, 2014). Controlling rabies in dogs, and especially free-roaming (stray) dogs, is also the first priority for prevention of human rabies (Nilsson, 2014). Moreover, successes of rabies control through mass vaccination of dogs have been reported in South America and Asia (Abbas *et al.*, 2011). Vaccinating 70% of the dog population will eliminate dog rabies and hence human rabies (Cleaveland *et al.*, 2014).

Africa is the second continent most affected by rabies with an estimated 24,000 (44 %) of the 55,000 annual rabies deaths worldwide after Asia (Knobel *et al.*, 2005)). In Ethiopia, rabies is an endemic disease with a high incidence rate (Jemberu *et al.*, 2013). It has been diagnosed from various species of domestic and wild animals. However, available evidences suggest that domestic dogs are the main reservoir and responsible species for human cases in the country (Deressa *et al.*, 2010). Deaths from rabies could be prevented by the timely application of appropriate prophylaxis (WHO, 2014). Community awareness about rabies is very crucial in rabies prevention and control (WHO, 2005). For efficiently increasing awareness, the knowledge gap among the community should be identified and targeted. The objectives of this thesis are:-

- To assess the community awareness of rabies
- To assess the societies feelings and practice towards rabies'

1. MATERIALS AND METHODS

1.1. Study Area

The study was conducted from November 2018 to April 2019 in Dembi dolo town and its surrounding area, Ethiopia. Dembi dolo town is placed 898 kilometers north of Addis Ababa which it lies in cold semi-arid zone at altitude of 2,457 meter above sea level. According to central statistical agency (CSA) (2007) Adigrat town has a total populations of 57,000 of whom 26,010 are men and 31,578 women. The average maximum and minimum temperature of the area vary between 24.1°C-24.2°C and 4.9°C-7.8°C respectively. The annual rainfall ranges between 400 and 600 mm, with most of the rain falling in the rainy season which is from June up to September. This city is surrounded by a range of mountains (the peak of which is Alaqwa), Adigrat held a strategic position at the junction of the crossroads between Adwain the west, Asmara and Massawa in the north and Mekelle in the south. Towards the east, it is delimited by the spectacular edge of the north-eastern Ethiopian escarpment dropping into the lowlands.

1.2. Study Design

Cross-sectional study was conducted using structured questionnaire by face to face interview to 384 randomly selected respondents to assess the public awareness and practices about the disease. The questionnaire was designed to collect information about the respondents' knowledge of the disease, treatment and prevention practices as well as household information.

1.3. Sample Population

The study participants were chosen from in and around Adigrat town. A total of about 384 respondents were surveyed.

1.4. Sampling Technique and Sample Size Determination

A multi-stage sampling technique was employed for the selection of the sampling units. From the entire study, population in the study area thirteen kebeles (the smallest administrative unit) were selected by simple random sampling methods. Then, the household in the selected kebeles was further selected using a systematic random sampling technique. Finally, from all the eligible respondents in a household, only one was selected randomly for the interview. The questionnaires included items regarding their level of KAP with respect to rabies management and control, household information, and pet care. Sample size was determined using Cochran's sample size formula for categorical data (Bartlett, 2001)

$$n = \frac{(t)^2 \times P (q)}{d^2} = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.05)^2} = 384$$

Where t is the value for selected alpha level of 0.025 in each tail = 1.96.

(p), (q)- is the estimate of variance = 0.25,

d- Is the acceptable margin of error = 0.05.

1.5. Data Management and Analysis

After collecting, the data were cleaned and checked for its completeness and entered into Microsoft Excel 2010 spread sheet. The data generated were analyzed using the Statistical Package for Social Science (SPSS) Version 20. The descriptive statistics was used for calculating frequency and percentage of both dependent and independent variable. Chi square was used for calculating the association between independent variables and dependent variable (KAP scores) of community regarding rabies. For assessing the community knowledge, attitude and practices (KAP) about rabies each respondent were asked for seventeen questions regarding cause, sources, mode of transmissions, clinical signs and prevention practices. The questions were multiple choice question with close ended. Respondents who answered the questions correctly had got one mark and zero for incorrect or do not know responses. Then, the responses for which respondents give correct answer was counted and scored. This score was then pooled together and the mean score was computed to determine the overall KAP of respondents. Respondents who score greater than or

equal to the mean value (Mean= 9.95, SD=2.542) were grouped to good KAP and coded as 1 whereas, the respondent who scored less than the mean value were grouped to poor KAP level and coded as 0. A 95% confidence interval of the p values was used to describe statistical significance associations. The association is judged as significant when *p*- value is less than 0.05.

2. RESULTS

2.1. Socio-demographic Characteristics of the Respondent

A total of 384 community members were interviewed during the study period and all respondents responded to the questioner. Majority of the respondents which are about 277(70.6%) were males and 113(29.4%) were females. The ages of respondents were classified as 15-30, 31-45 and above 46 years old, which comprises about 282 (73.4%), 49 (12.8%) and 53 (13.8%),

respectively. Regarding the residence, about, 193 (50.3%) respondents were urban while that of pri-urban was 191 (49.7%). Concerning the religion, the majority of respondents were Christian 357 (93.0%), while Muslims were about 27 (7.0%). Regarding the educational status of respondents, 2.3% were illiterate, 3.7% had elementary education, 13.3% had secondary education, most respondents about 55.2% had secondary school education and the others 25.5% were in higher education. With regards to the occupation, most of the respondents, 135 (35.22%) were merchants and 92 (24.0%) were unemployed, 62 (16.1%) others, 47 (12.2%) government employed, 39 (10.2%) farmers and 9 (2.3%) house wives. From the whole respondents or participants (384) in this study, about three hundred thirteen (81.5%) had dogs while seventy one (18.5%) respondents had no dogs. Socio demographic characters of the respondents are summarized in Table 1.

Table 1: Socio-demographic features of respondents

V a r i a b l e	I	t	e	m	s	F r e q u e n c y	P e r c e n t (%)
S e x	M	a	l	e	2	7	1 7 0 . 6
	F	e	m	a	l	1	3 2 9 . 4
A g e	1	5	-	3	0	2	8 2 7 3 . 4
	3	0	-	4	6	4	9 1 2 . 8
E d u c a t i o n l e v e l	>	4			6	5	3 1 3 . 8
	I l l i t e r a t e					9	2 . 3
	I n f o r m a l					1	4 3 . 7
	p r i m a r y s c h o o l					5	1 1 3 . 3
	s e c o n d a r y s c h o o l					2	1 2 5 . 2
	h i g h e r e d u c a t i o n					9	8 2 5 . 5
O c c u p a t i o n	g o v e r n m e n t e m p l o y e d					4	7 1 2 . 2
	U n e m p l o y e d					9	2 2 4 . 0
	F a r m e r					3	9 1 0 . 2
	M e r c h a n t					1	3 5 5 . 2
h o u s e h o l d s i z e	H o u s e w i f e					9	2 . 3
	O t h e r s					6	2 1 6 . 1
	1	-				3	0 2 0 . 8
R e l i g i o n	>	4			6	1	1 4 9 . 7
	4	-				1	3 2 9 . 4
D o g o w n e r s h i p	M u s l i m					2	7 7 . 0
	C h r i s t i a n					3	5 7 9 3 . 0
R e s i d e n c e	W i t h d o g					3	1 3 8 1 . 5
	W i t h o u t d o g					7	1 1 8 . 5
R e s i d e n c e	U r b a n					1	9 3 5 0 . 3
	P e r i - u r b a n					1	9 1 4 9 . 7

2.2. Knowledge of Communities' on Rabies

In the current study, 67.7% of respondent were aware with the disease. Majority (50.6%) of the respondents described virus, spiritual (16.9%), bacteria starvation and trust and protozoa 9.4%, 5.2% and 3.1% respectively as causes of the disease in dogs and the rests about 14.8% of respondents were uncertain on the cause of rabies. 231(60.1%) respondents mentioned bite

and saliva as a means of transmission, while 53(13.8%) of the perceived any type of contact (irrespective of the skin condition) with saliva of rabid individual as source of infection. Among the 384 respondents, 260(67.7%) of them were aware that, human and other different species of domestic animals can be affected by rabies. 276(71.6%) of interviewers said that the sign of rabid animals was both salivation and sudden change in

behavior and 75(19.5%) have claimed salivation. Whereas the rests about 39(8.9%) claimed sudden change in behavior is the sign of the disease. The majority of the respondents about 255 (55.5%) stated that dog only can transmit rabies to human. However, more than 70% of interviewers had never get training on

rabies disease. The result of the study revealed that majority of the respondents (81.2%) considered rabies as a fatal disease. On the other hand 77.3% of the participants believed that vaccination of dogs could prevent the disease (Table 2).

Table 2: Knowledge of respondents on rabies

Q u e s t i o n s	Number of respondents	Percentage (%)
A w a r e n e s s o n r a b i e s		
Y e s	25	96.7
N o	1	3.3
C a u s e o f r a b i e s		
V i r u s	1	3.7
S t a r v a t i o n a n d t r u s t	2	7.4
S p i r i t u a l	6	22.2
B a c t e r i a	3	11.1
P r o t o z o a	1	3.7
I d o n ' t k n o w	5	18.5
S p e c i e s a f f e c t e d b y r a b i e s		
D o g o n l y	3	11.1
D o g a n d h u m a n	9	33.3
H u m a n a n d o t h e r d o m e s t i c a n i m a l	2	7.4
M e a n s o f t r a n s m i s s i o n		
B i t e o n l y	8	29.6
C o n t a c t w i t h S a l i v a o n l y	5	18.5
B i t e a n d s a l i v a	2	7.4
I n f e c t e d m e a t a n d o t h e r s	1	3.7
A n i m a l s T r a n s m i t r a b i e s t o h u m a n		
d o g o n l y	2	7.4
d o g a n d c a t	7	25.9
o t h e r d o m e s t i c a n i m a l s	9	33.3
S i g n o f t h e d i s e a s e		
S a l i v a t i o n	7	25.9
S u d d e n c h a n g e i n b e h a v i o r	3	11.1
B o t h	2	7.4
E v e r g e t t r a i n i n g o n r a b i e s		
Y e s	1	3.7
N o	2	7.4
I s r a b i e s f a t a l ?		
Y e s	3	11.1
N o	2	7.4
I d o n ' t k n o w	5	18.5
I s r a b i e s p r e v e n t e d b y d o g v a c c i n a t i o n ?		
Y e s	2	7.4
N o	3	11.1
I d o n ' t k n o w	5	18.5

2.3. Attitudes and Practices of the Respondents Regarding Rabies Disease

As shown in table 3 the study result indicated that about 238 (61.7%) of respondents kill the animal after being rabid. The study showed that only 80.2% of respondents for those peoples exposed to rabies used post exposure vaccination and 85.9% of the respondents visits health

center as immediate action for bitten man. On the other hand few respondents about 21 (5.5%), sought traditional methods of treatment which employs the use of herbs. Out of 384 respondents 139(36.2%) of them claimed that there was dog vaccination in the study area. 168(43.7%) of participants said that the availability of vaccination in different clinics was sometimes. Among

total respondents (384) about 282 (73.4%) have heard dog bite in their community. Among 313 dog owners 197 (71.1%) of the respondents vaccinate their dogs. 278(88.8%) of respondents were managing their dogs by

kept indoor and tied them While about 181 (57.8) respondents have registered their dogs and 274 (77.3%) of respondents house their dogs (**Table 4**).

Table 3: Attitude and Practice of the respondents

	Number of respondents		Percentage (%)	
Action for rabid animal				
Tie	10	22	6	7
Kill	23	86	1	7
Don't hit	44	41	1	5
Immediate action for bitten man				
visit health center	33	08	5	9
apply herbal extract	22	15	.	5
holly water	11	84	.	7
Wash	99	2	.	3
don't hit	66	1	.	7
PEP prevent the disease				
Yes	30	88	0	2
No	33	59	.	1
I don't know	44	11	0	7
Did you know vaccine campaign in your area				
Yes	26	97		0
No	11	53		0
Availability of vaccine in your vicinity				
Yes	13	93	6	2
Sometimes	16	84	3	7
No	77	72	0	1
Have you ever heard dog bite in your community				
Yes	28	27	3	4
No	10	22	6	6

Table 4: Attitude and practice of dog owner respondents

	Number of the respondents		Percentage (%)	
Did you vaccinate your dog				
Yes	19	77	1	1
No	11	62	9	9
Dog management practice				
Let free	33	51	1	2
Keep in door	27	88	8	8
Have you registered your dog				
Yes	18	15	7	8
No	13	24	2	2
Do you house your dog?				
Yes	24	47	7	3
No	77	12	2	7

2.4. Factors Associated with Respondents KAP on Rabies

Association between socio-demographic and KAP scores on rabies was assessed using Pearson's chi square (Table 5). There was significantly association between

KAP score with occupation ($x^2 = 34.027, p < 0.000$) the good score was government employed highest in occupation variable, educational status was significantly associated with KAP scores ($x^2 = 9.635, p < 0.047$) with highest good score in higher education, in sex ($x^2 = 6.048,$

$p=0.014$) being higher in males than females. And there was also significant association of religion with KAP scores ($\chi^2=18.875, p=0,000$) being higher in christians than muslims. There were also insignificant associations

of residence ($\chi^2=1.793, p=0.181$), age ($\chi^2=3.896, p<0.143$), house hold size ($\chi^2=0.325, p=0.850$), Dog ownership ($\chi^2=3.212, p=0.073$) with KAP scores.

Table 5: community's KAP in relation to socio demographic of characteristics

		Number and parentage of respondent			X ²	P-value
		Good (61.5%)	Poor(38.5%)			
R e s i d e n c e						
U r b a n		1 2 5 (6 4 . 8)	6 8 (3 5 . 2)	1 . 7 9 3	0 . 1 8 1	
p e r i - u r b a n		1 2 0 (5 8 . 1)	8 0 (4 1 . 9)			
Sex						
M a l e		1 7 9 (6 5 . 3)	9 5 (3 4 . 7)	6 . 0 4 8	0 . 0 1 4	
F e m a l e		5 7 (5 1 . 8)	5 3 (4 8 . 2)			
A g e						
1 5 - 3 0		1 6 5 (5 8 . 5)	1 1 7 (4 1 . 5)	3 . 8 9 6	0 . 1 4 3	
3 0 - 4 0		6 3 4 (6 9 . 4)	1 5 (3 0 . 6)			
> 4 0		6 3 7 (6 9 . 8)	1 6 (3 0 . 2)			
h o u s e h o l d s i z e						
1 - 3		5 1 (6 2 . 2)	3 1 (3 7 . 8)	0 . 3 2 5	0 . 8 5 0	
4 - 6		1 1 6 (6 0 . 1)	7 7 (3 9 . 9)			
> 6		6 9 (6 3 . 3)	4 0 (3 6 . 7)			
E d u c a t i o n l e v e l						
I l l i t e r a t e		6 (6 6 . 7)	3 (3 3 . 3)	9 . 6 3 5	0 . 0 4 7	
I n f o r m a l p r i m a r y s c h o o l		6 (4 2 . 9)	8 (5 7 . 1)			
s e c o n d a r y s c h o o l		3 0 (5 8 . 8)	2 1 (4 1 . 2)			
h i g h e r e d u c a t i o n		1 2 2 (5 7 . 5)	9 0 (4 2 . 5)			
		7 2 (7 3 . 5)	2 6 (2 6 . 5)			
O c c u p a t i o n						
g o v e r n m e n t e m p l o y e d		7 1 (7 7 . 2)	1 1 (2 2 . 8)	3 4 . 0 2 7	0 . 0 0 0	
U n e m p l o y e d		3 6 (7 6 . 6)	2 9 (2 3 . 4)			
F a r m e r		2 4 (6 1 . 5)	1 2 (3 8 . 5)			
M e r c h a n t		7 2 (5 3 . 3)	5 3 (4 6 . 7)			
H o u s e w i f e		0 (0 . 0)	6 (1 0 0)			
O t h e r s		3 3 (5 3 . 2)	2 4 (4 6 . 8)			
R e l i g i o n						
M u s l i m		6 (2 2 . 2)	2 1 (7 7 . 8)	1 8 . 8 7 5	0 . 0 0 0	
C h r i s t i a n		2 3 0 (6 4 . 4)	1 2 7 (3 5 . 6)			
D o g o w n e r s h i p						
W i t h d o g		1 9 9 (6 3 . 6)	1 1 4 (3 6 . 4)	3 . 2 1 2	0 . 0 7 3	
W i t h o u t d o g		3 7 (5 2 . 1)	3 4 (4 7 . 9)			

3. DISCUSSION

The result of current study has shown that the importance of rabies in the study area. This study revealed that community in and around Dembi dolo is somewhat familiar with general information on rabies as

majority of the respondent had awareness on rabies. This is in line with study by (Ichhupujani *et al.*, 2006) 68.7% in a survey of knowledge, attitudes and practices about animal bite and rabies in community in India. Moreover, Serebe *et al.* (2016), Serebe *et al.* (2014) and Jemberu *et*

al. (2013) also reported a high level of awareness on rabies from different areas of Ethiopia. The high level of awareness among the respondents may be due to endemicity of rabies combined with an annual rabies control campaign in the area, and from the news media about rabies outbreaks. However, this finding was lower when compared with study by Singh and Choudhary (2005) in rural community of Gujarat, India, Digafe *et al.* (2015) in Gondar Zuria District, Yalembrat *et al.* (2016) in Debark district, North Gondar, Ethiopia and (Nejash *et al.*, 2017) in dedo district, jimma zone who reported 98.6, 99.3, 100% and 100% awareness about rabies, respectively.

However many fallacies regarding the cause and means and source transmission were observed. In this study 50.6% of the participants replied that as virus was the cause of rabies. This result is higher as compared to (nejash *et al.*, 2017), 18% and (Gebeyaw *et al.*, 2016), 18%. This may be due to information and notice gained by media and frequent vaccination campaign against rabies in the study area. This finding also revealed that bite as a means of transmission of the disease by large proportion of respondents, however, some of the respondents (13.8%) also believed that, any direct or indirect saliva contact with body of animal or human (irrespective of skin condition) could serve as means of transmission of rabies. Inoculation of infected saliva through the bite of a rabid animal appears to be the predominant mode of rabies transmission (Radostits *et al.*, 2007). Majority of the respondent's claimed that both bite and saliva could transmit the disease. This is supported by (WHO, 2014) who found Contact of infected saliva with broken skin or mucous membrane can transmit the disease and also consumption or preparation of meat from rabid animals is a risk.

In this study, 67.7% respondents knew that rabies could affect human and other domestic animal which is agreed with (Eidson *et al.*, 2004), reported that 71.9% in the city of New York, USA. In contrary, (Guadu *et al.*, 2014) and (Nejash, *et al.*, 2017) reported a lower result (21.4%) from Bahir Dar town and about 57.7% dedo district jimma zone respectively. The possible reason for this could be due to the availability of different host range, level of awareness and educational status of community.

This study showed dogs were mentioned as the cause of infection for most fatal human rabies cases which is about 55.5%. This finding is supported by (Joo *et al.*, 2001) and tang *et al.*, 2005 who reported that domestic dogs have been reservoir of rabies and a source of rabies infection to humans and other animals. However, present result is lower as compared to (Gebeyaw *et al.*, 2016) 83.4% in Dessie town. This may be attributed to different level of people's attention towards the disease. Cat also mentioned as second important source of human infection. In addition, rabies in other domestic animals like cattle, sheep, goats, and equines were also

mentioned as risk for human. These findings were also supported by (Bingham, 2005). In many parts of the world, especially in Africa and Asia, 85-95% of human rabies cases being caused by dog bite (Fitzpatrick *et al.*, 2012; Aseffa *et al.*, 2017).

In the current study, only 2.3% of the respondents reported that they wash the wound using soap and water as a first aid for bitten human(s). This result is very lower when compared with study in Dedodistrict (49.6), study in Debark District (76.4%) (Yalembrat *et al.*, 2016) and study conducted in Gondar zuria district (30.7%) (Digafe *et al.*, 2015) and in a rural community of Gujarat, India (31.1%) (Singh and Choudhary, 2005). This difference could be associated with awareness level of the community and lack of training on the disease. Washing of rabies-infected wounds with soap and water can increase survival by 50% (Radostits *et al.*, 2007).

In the present study, 80.2% participants prefer visiting health center for post exposure vaccination for bitten human(s) and 85.9% of the respondent replied that it (PEP) should be given immediately after exposure. Similarly, the study in Bahir Dar town reported 55.7% response for immediate post exposure vaccination (Guadu *et al.*, 2014). The World Health Organization (WHO) also advises wound washing and vaccination immediately after contact with a suspected rabid animal which can prevent almost 100% of rabies deaths (WHO, 2013).

In this study, the overall knowledge, attitude and practice (KAP) score revealed that 61.5% of the respondents had a good KAP. This finding is similar with the study conducted by Guadu *et al.* (2014) who reported about 64.1% among the community of Bahir Dar town and (Yalembrat *et al.*, 2016) who reported 60.3% in Debark District, North Gondar. However, this finding is higher when compared with research by (Nejash *et al.*, 2017) which is 51.9% in dedo district. This difference could be due to the difference in sample size, training status and level of awareness of community about rabies in the study area.

During analysis of KAP with independent variables, chi square analysis revealed that KAP score was significantly ($\chi^2=6.048$, $p=0.014$) associated with gender being higher in males (65.3%) than females (51.8%). The same proportion of statistical difference on KAP score of male (64.6%) in females (54.5%) was reported in Debark District in males (Yalembrat *et al.*, 2016), in Addis Ababa male, moderate (77.09%) and good (10.55%); female, moderate (73.62%), good (5.08%) (Ali *et al.*, 2013), in dedo district jimma in males (71.4%) and in females (25.8%) and in Bahirdar town that male (53.4%) and female (10.75%) was reported by (Guadu *et al.*, 2014). The statistical significant difference in KAP score between males and females might be due to increased activity of males in their daily life when compared with females and better

chance of acquiring correct information via training or conferences on rabies.

Furthermore, the association of education level with overall KAP about rabies revealed statically significant difference ($\chi^2=9.635$, $P= 0.047$). The respondent who were at secondary school education level were found to be better (57.5%) than illiterate (42.9%) in KAP score. This finding was also supported by a study conducted in Dedo district, Jimma (nejash *et al.*, 2017); in Bahir Dar (Guadu *et al.*, 2014); in Addis Ababa (Ali *et al.*, 2013) and the studies conducted in Flagstaff, Arizona, USA (Andrea and Jesse, 2012). People with higher education tend to know more about rabies (Palamar *et al.*, 2013), while illiterate persons tend to know less about rabies (Herbert *et al.*, 2012). The possible explanation could be that educated person would have better information access and can easily understand the disease.

During analysis of KAP with independent variables, the chi square analysis revealed that KAP score was significantly ($\chi^2=34.027$, $p=0.000$), associated with occupation being higher in government employed (77.7%) followed by unemployed (76.6%). On the other hand poor KAP score were seen in house wives(0.0%). This finding disagreed with research done in Ambo (Dabuma *et al.*, 2017). This may be due to academic knowledge of government employed and unemployed and most of the time this group of people have the chance getting informations from mideas like newspaper, TV, radio and etc. Whereas house wives always stay in home and don't get any information and training on the disease.

Furthermore the association of religion with overall KAP about rabies also revealed statistically significant difference ($\chi^2= 18.75$, $p=0.000$) being higher in Christians (64.4%) than Muslims (22.2%). This result disagreed with research done in Dedo district, Jimma zone (Nejash *et al.*, 2017). It also disagreed with thesis done in Tamale, Ghana which is higher in muslims (68.8%) than Christians (25.6%) (Mark, 1998).. This difference could be due to variation in sample size and most of the dog owners are Christians that helped them to get some information on the disease during vaccination campaigns and some other occasions.

4. CONCLUSION AND RECOMMENDATIONS

Some respondents showed low levels of knowledge about key aspects of rabies and its control and prevention, which should be addressed by key stakeholders. Even though about 61.5% of the respondents have good KAP towards rabies, knowledge deficiency was observed regarding cause, mode of transition and prevention on rabies which could be due to low level of training on the disease. Increased knowledge is especially needed regarding rabies prevention by vaccination of dog, confining and

elimination of stray dogs. Generally there is a difference on the level of awareness of rabies and receptiveness to rabies control measures among different group of respondents.

Therefore in light of the above conclusion the following recommendations are forwarded:

- Increasing awareness of the community by training about the disease should be considered for controlling the disease.
- Regular intervention targeted at controlling of the disease and vaccination of dogs should be employed to control the disease.



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5. ANNEXES

Semi-structured questionnaires

Annex: I. Socio-demography of respondents

- Sex A, Male B, Female
- Age A, 15-30 B, 30-46 C, >46
- Education level A, Illiterate B, Informal C, primary school D, secondary school E, higher education

4. Occupation A, government employed B, Unemployed C, Farmer D, Merchant E, House wife F, Others
5. house hold size A, 1-3 B, 4-6 C, >6
6. Religion A, Muslim B, Christian
7. Dog ownership A, With dog B, Without dog
8. Residence A, Urban B, Peri-urban

Annex: II. Knowledge of respondents

1. Awareness on rabies A, Yes B, No
2. Cause of rabies A, Virus B, Starvation and trust C, Spiritual D, Bacteria E, Protozoa E, I don't know
3. Species affected by rabies A, Dog only B, Dog and human C, Human and other domestic animal
4. Means of transmission A, Bite only B, Contact with Saliva only C, Bite and saliva D, Infected meat and others
5. Animals Transmit rabies to human A, dog only B, dog and cat C, other domestic animals
6. Sign of the disease A, Salivation B, Sudden change in behavior C, Both
7. Ever get training on rabies A, Yes B, No
8. Is rabies fatal? A, Yes B, No C, I don't know
9. Is rabies prevented by dog vaccination? A, Yes B, No C, I don't know

Annex: III. Attitude and practice of respondents

1. Action for rabid animal A, Tie B, Killing C, Do nothing
2. Immediate action for bitten man A, visit health center B, apply herbal extract C, holly water D, Washing E, do nothing
3. PEP prevent the disease A, Yes B, No C, I don't know
4. Did you know vaccine campaign in your area A, Yes B, No
5. Availability of vaccine in your vicinity A, Yes always B, Sometimes C, No
6. Have you ever heard dog bite in your community A, Yes B, No

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