

Research Article

Assessments of Knowledge Attitudes and Practices (Kap) on Rabies Exposure in Jimma Town, South- Western Ethiopia

Moges Eriso*, Ramato Habtamu, Mekuriya and Israel Darcho

School of Veterinary Medicine, Wolaita Sodo University, Ethiopia.

Corresponding Author: Moges Eriso, School of Veterinary Medicine, Wolaita Sodo University, Ethiopia.

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Abstract

This cross-sectional study, conducted in Jimma town between November 2017 and April 2018, aimed to evaluate the knowledge, attitudes, and practices (KAP) regarding rabies and identify associated factors among the community of Jimma town. The kebeles for the study were selected, and then further sampled using a systematic random sampling method. Face-to-face interviews were conducted with 402 households using pretested and structured questionnaires. Data analysis was performed using SPSS version 20, employing descriptive statistics techniques and Pearson's chi-square analysis to assess the associations between the outcome variables (KAP) and explanatory factors. Among the 384 respondents interviewed, 227 (59.1%) were males and 157 (40.9%) were females, with the majority (57.8%) falling between the ages of 15-35 years. Nearly all participants reported previous awareness of rabies. Regarding the KAP scores, 47.6% of the study participants demonstrated a good level of knowledge. Significant associations were found between KAP scores and gender ($\chi^2 = 52.12, p < 0.05$), educational level ($\chi^2 = 14.4, p < 0.05$), and occupation ($\chi^2 = 10.673, p < 0.05$). Overall, these findings indicate that the community in Jimma town possesses a good level of knowledge about rabies. However, there are gaps in accurate understanding of the mode of transmission, symptoms, and appropriate prevention and treatment measures.

Keywords: Attitude; Community; Knowledge; Practice; Rabies.

1. Introduction

Rabies is a viral infectious disease of mammals including human being characterized by the development of severe nervous symptoms that lead to paralysis and death. It is also one of the zoonotic diseases throughout much of the world and is widely known in Ethiopia. This disease is caused by rabies virus genus *Lyssavirus* in the family of *Rhabdoviridae*. Infected species invariably die from the disease once clinical signs are manifested [1]. About 98 % of the human rabies cases occur in developing countries that possess large number of dogs, many of which are stray [2].

Dogs are the main vectors of the disease causing 94% of human rabies through bites [3]. A vaccine-preventable disease, most deaths from rabies arise due to lack of awareness and poor access to proper health service. It is estimated that most of the global human population lives in canine rabies-endemic countries and is at risk of exposure [4]. Because cases often go unreported, it is agreed that official records vastly under-estimate the true burden of rabies [5].

It causes a severe societal and economic burden and the implications are especially apparent in poverty-stricken developing countries. Shortage of resources and a limited public

health infrastructure in many rabies-endemic countries precludes data collection and analysis. In both dog and terrestrial wildlife populations, rabies has been successfully eliminated from Western Europe. Thus, rabies can be controlled with sufficient resources [6].

The demographic characteristics of dogs biting humans and livestock have not been fully elucidated. Besides, the rabies status of dogs biting humans has not been known. It has been a common practice to provide post-exposure vaccines to humans bitten by dogs irrespective of their rabies status. In Ethiopia, rabies is an endemic disease with the incidence rate of 73% [7].

Unfortunately, individuals who are exposed to rabies virus often see traditional healers for the diagnosis and treatment of the disease. These widespread traditional practices of handling rabies cases are believed to interfere with timely seeking of post exposure prophylaxis (PEP). Rabies victims specially, from rural areas seek PEP treatment after exhausting the traditional medicinal intervention and usually after a loss of life from family members [8]. Community awareness about rabies is very crucial in rabies prevention and control. For efficiently increasing awareness, the knowledge

gap among the community should be identified and targeted. Community awareness of all aspects of rabies is generally limited, such as first aid or management of animal bites, pre- and post-exposure prophylaxis, responsible pet dog ownership, dog population management. Regarding the immediate measures to be carried out after a bite exposure, there is inadequate knowledge of the crucial need to wash wounds with soap and water and apply antiseptics and where vaccine is available [9].

Modeling studies estimate the annual human death from rabies to be around 50,000–60,000, with 99% of these fatalities occurring in tropical developing countries, overwhelmingly in Africa and Asia [10]. The length of incubation period varies and depends on several factors, including the amount of virus transmitted and the location of the body where exposure occurred. The proximity of the site of the virus entry to the CNS increases the likelihood of a short incubation period [11].

Following the bite of rabid animal, the incubation period varies from 5 days to 3 months depending on the amount of virus in the inoculum, the density of motor endplates at the wound site and the proximity of virus entry to the central nervous system [12]. The clinical signs include sudden behavioral changes, hyper salivation, paralysis, hydro and photophobia, restlessness, aggressiveness and biting inanimate objects [13].

The administration of immediate post-exposure prophylaxis (PEP) consisting of bite wound cleansing and injection of rabies vaccine and immunoglobulin's after exposure to rabies can prevent the onset of the disease. More than 15 million people require PEP annually [14]. Moreover, administration of PEP alone is insufficient to interrupt the transmission cycle between animals and humans. Only interventions targeted at the host species will eliminate rabies in the dog population and eventually stop transmission to humans. The most cost-effective intervention strategy to eradicate rabies is the combination of parenteral dog mass vaccination campaigns and PEP [15]. There is gap of accurate quantitative information on rabies both in humans and in animals and little is known about the awareness of the people about the disease to apply effective control measures in Ethiopia. Even if there were reports of death of humans and animals in the study area, no prior studies were undertaken about the prevalence and public awareness towards rabies. Therefore, this study was designed to assess the level of knowledge, attitude and practices of selected communities in Jimma town on treatment, prevention and control ways of rabies.

The objectives of this study are:

- To assess the level of knowledge, attitude and practices of selected communities in Jimma town oromia regional state south- western Ethiopia.
- To identify factors associated with community knowledge, attitude and practice (KAP) about rabies in the study area.

2. Materials and Methods

2.1. Study Area

The study was conducted in Jimma town of Oromia Regional State, south-western Ethiopia. The study area, Jimma town is located at 355km south-western of Addis Ababa. The area lies between a latitude of 7°41'N and longitude of 36°50'E and has an elevation of 1704 meters above sea level. The area is characterized by a humid tropical climate of heavy annual rainfall that ranges from 1200-2000 mm per year. About 70% of the total annual rainfall is received during rainy season, which lasts from the end of May to early September. The mean annual maximum and minimum temperature ranges from 25°C-30°C and 7°C-12°C [16]. Based on the 2016 Census conducted by the Central Statistical Agency of Ethiopia (CSA) this Zone has a total population of 195,443, of whom 97,629 are men and 97,814 women. Jimma zone have an area of 50.52 square kilometers.



Figure 1: Geographical Map of Jimma Town

2.2. Study Design and Study Population

A cross-sectional study design employed to assess the knowledge, attitudes and practices (KAP) on rabies and associated risk factors among the community of Jimma town. Before the interview begun, they were briefed about the purpose of the study and asked for their consent. Only voluntary participants were involved in the study and all the information obtained from the study participants were kept confidential. The study population was household heads who had lived in randomly selected six kebeles of Jimma town namely Mantina, Hirmata - mantina, Sexo samaro, Awetu mandara, Bossa keto and Bosa keto addis ketama as permanent residents.

2.3. Sample Size Determination and Sampling Techniques

The required sample size for this study was estimated by considering 50% of the population knowing about rabies since earlier there is no awareness study on rabies had been conducted in the study area. Thus, the sample size was calculated according to Thrusfield formula by using 95% confidence interval and 0.05 absolute precision [17] as follow:

$$N = 1.96^2 P \exp (1 - P_{\exp}) / d^2$$

Where N = required sample size; P_{\exp} = Expected proportion of population knowing about rabies are 50%; d^2 = Desired absolute precision (0.05). A total of 402 people were selected from those participants live in Jimma town from them responses of 18 respondents were rejected due to incomplete answer. As a result, 384 respondents were selected as study

population. A simple random sampling procedure was employed to select kebeles for this study. From the entire primary sampling unit that is, seventeen kebeles six were randomly selected using lottery method. Then, 67 households were selected and interviewed from each kebele using systematic random sampling method, as there was no significant difference in number of households. Whenever the selected household was found locked, the next household was substituted automatically for interview. A pretested structured questionnaire consisting of open-ended questions was used for this study. The data were collected via face-to-face interview. The questionnaire was first developed in English and then translated in to Amharic language for appropriateness and easiness in approaching the study participants.

2.4. Inclusion and Exclusion Criteria

Household who lives permanently at resident in the study area were included in this study and respondents in the household who cannot communicate and less than 15 years were excluded from this study. The participants more than 15 years were involved during the time of interview performed.

2.5. Data Management and Analysis

The data collected from questionnaire survey were cleaned and checked for its completeness and entered into Microsoft excel 2007 spread sheet then coded and analyzed using the

Statistical Package for Social Science (SPSS) Version 20. The descriptive statistics was used for calculating frequency and percentage for both dependent and independent variables. Logistic regression was used for calculating the association between independent variables and dependent variables (KAP scores) of community regarding rabies. A 95% confidence interval and p-values were used to describe statistical significance associations. The association is judged as significant when p- value is less than 0.05.

3. Results

3.1. Socio-Demographic Characteristics

A total of 384 respondents were responded to the questioner which yields a response rate of 95.9%. More participants 227(59.1%) of the interviewed were males. Regarding age group, 222(57.8%) of the study participants were between 15-35 years old. The majority of the respondents were Orthodox 212(55.2%) followed by Muslim and Catholics and Protestants, 86 (22.4%). Concerning educational status of the participants where higher education was 113 (29.4%) followed by primary school 103 (26.8%) and the remaining 62(16.1%) and 21(5.5%) were illiterate not write and read and able to read and write (who ceases learning) respectively. Regarding occupation of the respondents were other workers 183 (47.7%) and merchants 95 (24.7%) followed by government employees 63 (16.4%). table1, summarizes the Socio-demographic information of the study participants.

Table 1: Socio Demographic Information of Participants in Jimma Town During 2017 to 2018.

Variables	Category	Frequency	Percent
Sex	Male	227	59.1
	Female	157	40.9
Age in year	15-35	222	57.8
	36-55	110	28.6
	56-75	52	13.5
	>75	0	0
Educational status	Illiterate not write and read	62	16.1
	Able to read and write	21	5.5
	Primary school	103	26.8
	Secondary school	85	22.1
	Higher education	113	29.4
Religion	Christian orthodox	212	55.2
	Muslim	86	22.4
	Others(protestant, Catholics)	86	22.4
Occupation	Governmental employee	63	16.4
	Merchant	95	24.7
	Farmer	3	0.8
	Unemployed	40	10.4
	Others	183	47.7

3.2. Knowledge of Respondents in Relation to Cause, Host Range, Clinical Sign and Transmission of Rabies

In this study all 384(100%) participants had heard about rabies from different sources. It is called 'sare marete' locally which means madness of dog. However, 285(74.2%) of respondent replied that bacteria as the causative agent of rabies. Moreover, most of the respondents 339(88.3%) mentioned as rabies can affect human and other domestic animals regarding common source of rabies, dog was responded by 251(65.4%) of the participants. 339 (88.3%) participants knew the transmission of rabies from animal to human. But only 218 (56.8%) knew rabies transmission by bite, 59(15.4%) saliva contact with open wound and

35(9.1%) of them believe as any type of scratch of rabid animal can transmit the virus to human. Furthermore, rabid animal respiration was replied by 31 (8.1%) of the participants as a means of transmission. The body parts of animal and human beings that affected by rabies replied by participants was 165(43%), brain, 11 (2.9%), bitten area and 199(51.8%) doesn't knew which parts affected by this disease. Regarding susceptibility of the host dog, 285(74.2%), cat, 54(14.1%), human, 29(7.6%), equine, 9(2.3%) and wild animals, 3(0.8%) respectively was responded by participants. Knowledge of respondents in relation to cause, host range, clinical sign and transmission of rabies are summarized in (table 2).

Table 2: Knowledge of Participants Related to Cause Host Range, Mode of Transmission of Rabies in Jimma Town During 2017 to 2018.

Variables	Category	Frequency	Percent
Awareness on rabies	Yes	384	100
	No	0	0
	I don't know rabies	0	0
Part of the body affected	Brian	165	43.0
	Stomach	9	2.3
	Bitten area	11	2.9
	I don't know	199	51.8
Cause of rabies	Bacteria	285	74.2
	Virus	64	16.7
	Protozoa	2	0.5
	I don't know	249	64.8
Most susceptible host	Dog	285	74.2
	Cat	54	14.1
	Equine	9	2.3
	Bovine	4	1.0
	Wild animals	3	0.8
	Human	29	7.6
Transmitted from animal to human	Yes	339	88.3
	No	10	2.6
	I don't know	35	9.1
Mode of transmission from animal to human	Biting	218	56.8
	Saliva contact into open wound	59	15.4
	Inhalation	31	8.1
	Scratch	35	9.1
	I don't know	41	10.7
Most common source of rabies	Dog	251	65.4
	Bovine	2	0.5
	Cat	33	8.6
	Equine	0	0
	Wild animals	71	18.5
	I don't know	27	7.0

3.3. Knowledge of Participants Related to Clinical Signs and Fatal Nature of Rabies

Out of 384 participants 259(67.4%) answered that rabies is a dangerous and fatal disease. About 41(10.7%), 21(5.5%), 17(4.4%) and 4(1%) of respondents were identified that sudden behavioral change, aggressiveness, hyper salivation and water phobia is sign of rabies in an infected animal respectively. But 301(78.4%) respondent's repeats that animals infected by these disease shows all the signs at one time. In the case of human being about 131(34.1%), 111(28.9%) and 76(19.8%), of participants were observed madness, puppy movements and hallucination respectively are signs

in infected human. While 23(6%) of respondents were mentioned that paralysis is one of the symptoms. Concerning to risk groups for rabies 79(20.6%), 24(6.3%), 22(5.7%) and 8(2.1%) were young, female, adult followed by male respectively. 251(65.4%) of respondents considered rabies affects all without restriction of sex and age groups. From total participants 231(60.2%), responded as rabies easily treated after onset of clinical signs and 74(19.3%) not knew it was treated or not. Out of total respondents 79(20.6%) knew as rabies is not easily treatable after onset of clinical signs. Knowledge of participants related to clinical signs and fatal nature of rabies are summarized in (table 3).

Table 3: Knowledge of Participants Related to Clinical Signs and Fatal Nature of Rabies in Jimma Town, During 2017 to 2018.

Variables	Category	Frequency	Percent
Clinical signs in animal	Sudden behavioral change	41	10.7
	Hyper salivation	17	4.4
	Aggression	21	5.5
	Water phobia	4	1.0
	Paralysis	0	0
	All	301	78.4
Clinical sign in human	Madness	131	34.1
	Water and light phobia	43	11.2
	Paralysis	23	6.0
	Puppy movement	111	28.9
	Hallucination	76	19.8
Fate of person bitten by rabid animals	He/she will die	259	67.4
	Remain sick	59	15.4
	Nothing happen	19	4.9
	I don't know	47	12.2
Group of population at risk	Young	79	20.6
	Adult	22	5.7
	Male	8	2.1
	Female	24	6.3
	All	251	65.4
Easily treated after onset of clinical sign	Yes	231	60.2
	No	79	20.6
	I don't know	74	19.3

3.4. Practices and Attitudes to Prevent Rabies After Suspected Animal/Dog Bite

From the respondents 85(22.1%) washed the bitten wound with water and soap immediately, 177(46.1%) seek health center, 95(24.7%) had positive attitude for traditional healer, 46(12%) and 30(7.8%) were aware of eating roasted meat of animal died of rabies and burning and inhalation could

be medicine for rabies and 87(22.7%) believed that only animal bite need vaccination. 171(44.5%) of the respondent believed that post exposure prophylaxis can prevent rabies development. 137(35.7%) supports traditional healers as solution for rabies. Practices and attitudes to prevent rabies after suspected animal /dog bite are summarized in (table 4).

Table 4: Practices and Attitudes to Prevent Rabies After Suspected Animal /Dog Bite in Jimma Town, During 2017 to 2018.

Variables	Category	Frequency	Percent
Traditional healers couldn't be solution	I agree	146	38.0
	I disagree	137	35.7
	Not sure	101	26.3
Eating of roasted meat of animals died of rabies	I agree	46	12.0
	I disagree	203	52.9
	Not sure	135	35.2
Immediate action after bitten by rabid animals	Washing with water and soap	85	22.1
	Visit health institution for treatment	177	46.1
	Use traditional healer	95	24.7
	Do nothing	0	0
Burning and inhalation of rabid animals	I don't know	27	7.0
	I. Agree	30	7.8
	I. Disagree	200	52.1
	Not sure	154	40.1
Post exposure prophylaxis prevent disease development	Yes	171	44.5
	No	85	22.1
	I don't know	128	33.3
What kind of exposure need vaccination	Animal bite	87	22.7
	Animal lick	36	9.4
	Animal scratch	18	4.7
	Others (touch ,contact etc)	46	12.0

3.5. Practices and Attitudes to Prevent and Control Rabies Risk Factors

From total participants 246(64.1%) had pet animals among them 99(25.8%) had vaccinated their pet animals and 138(35.6%) not vaccinated their pet animals. The attitude on ant rabies vaccine was positive by 320(83.3%) of the respondents and negative for 64(16.7%). Killing was the first option of 171 (44.5%) of the participants to control stray dog followed by creating awareness on the owner of pet animals. 21(5.5%) vaccinated their pet animals by local vaccine and 6(1.6%) by imported the others 76(19.8%) by unknown

originated ant rabies vaccine. 81(21.1%), 76(19.8%) and 17(4.4%) vaccinated their pet animals against rabies by government, para-veterinarian and private veterinarians respectively. Out of pet owner participants 104(27.1%) always contact with their pet animals during providing feed and 115(29.9%) sometimes. 37(9.6%) of participants castrated their own pet animals and 209(54.4%) not. From participants that have pet animals 29(7.6%) knew castration decrease the incidence of rabies and 214(55.7%) not knew. Practices and attitudes to prevent and control rabies risk factors are summarized in (table 5).

Table 5: Practices and attitudes to prevent and control rabies risk factors in Jimma town, during 2017 to 2018.

	Category	Frequency	Percent
Do you have pets	Yes	246	64.1
	No	138	35.6
Do you vaccinated your pets	Yes	99	25.8
	No	157	40.9
Attitudes towards rabies vaccine	Positive	320	83.3
	Negative	64	16.7
Which product /type vaccinated against rabies	Local vaccine	21	5.5
	Imported vaccine	6	1.6
	I don't know the origin of vaccine	76	19.8
Who vaccinate your pet	Government	81	21.1
	Private veterinarian	17	4.4
	Para-veterinarian	76	19.8
Frequency of contact with your pets	Always	104	27.1
	Sometimes	115	29.9
	Never	24	6.3
Was your pet castrated / spayed	Yes	37	9.6
	No	209	54.4
Does castration decrease incidence	Yes	29	7.6
	No	214	55.7
Measures to control stray dogs	Killing	171	44.5
	Animal birth control	89	23.2
	Aware the owner	124	32.3

3.6. Factors Associated with Community KAP on Rabies in Jimma Town

Thirty-two 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 mean score was computed to determine the overall KAP of respondents. Respondents who score greater than or equal to the mean value (Mean=12.67, SD=4.56) grouped to good

KAP and less than the mean value grouped to poor KAP level. The data tells that about 47.6% of the study participants were found to have good KAP about rabies and 52.4% were found to have poor KAP level. Association between independent variables and KAP scores on rabies was calculated using Pearson's Chi square. There was significant association between KAP scores and sex ($\chi^2=52.12$, $p=0.000$). The good KAP scores were recorded higher in males 164 (72.2%) than females 114(66.2%). Educational status had significantly associated with KAP scores ($\chi^2=14.4$, $p=0.002$). All respondents with higher education levels had good knowledge, attitude and practice of rabies (table 6).

Table 6: Factors Associated with Community KAP on Rabies in Jimma town during, 2017 to 2018.

Variable		No. of per- sonnel	No. of personnel with Good KAP	No. of person with Poor KAP	x ²	p- value
Sex	Male	227	164(72.2%)	63(16.7%)	52.12	0.000
	Female	157	114(66.2%)	43(14.6%)		
Age in year	15-35	189	142(64.0%)	47(21.2%)	11.98	0.017
	36-55	110	85(77.3%)	35(11.3%)		
	56-75	65	41(78.8%)	24(7.7%)		
Educational status	Illiterate not write and read	62	46(74.2%)	16(9.7%)	14.4	0.002
	Able to read and write	21	15(71.4%)	6(10.8%)		
	Primary school	103	65(63.1%)	38(16.5%)		
	Secondary school	85	60(76.55%)	25(4.7%)		
	Higher education	113	77(68.1%)	36(15%)		
Occupation	Governmental em- ployee	63	51(81%)	12(4.8%)	10.673	0.0221
	Merchant	95	63(66.3%)	32(13.7%)		
	Farmer	3	2(100%)	1(0.05%)		
	Unemployed	40	23(65%)	17(12.5%)		
	Others	183	125(69.7%)	68(15.3%)		
Religion	Christian orthodox	212	126(66%)	86(16%)	14	0.373
	Muslim	86	56(72.1%)	30(11.6%)		
	Others(protestant, Catholics etc)	86	60(69.8%)	26(14.3%)		

4. Discussion

The result of current study revealed that rabies is an important disease of both human and animals in the study area. All respondents in this study (100%) had heard about rabies from different sources. In line with this finding several scholars from different area of Ethiopia (13; 48) and from the other country reported almost similar findings [18]. Of those respondents, 34.9% had misunderstanding on the cause of rabies. This result is lower 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 [19]. This could be due to study area and community awareness difference. In the current study 339(88.3%) of participants knew the transmission of rabies from animal to human. This finding was agreed with the result of [20]. However, reported a lower result 21.4% from Bahir Dar town and 71.9% was also reported in the city of New York, USA [21, 22]. The possible reason for this could be due to the availability of different host range, level of awareness and educational status of community. Despite good knowledge of rabies transmission from animal to human, only 218(56.8) knew rabies transmission by bite and 59(15.4%) saliva contact with open wound and 35(9.1%) of them believe as any type of scratch can transmit the virus to human. Another important misunderstanding regarding rabies transmission was rabid animal respiration as 31(8.1%) of the participants

responded. This KAP analysis revealed that 259(67.4%) of respondents recognize rabies as danger and a fatal disease, 249(74.2%) know that dogs are most susceptible to rabies and 251(65.4%) aware that dogs are the most common source of rabies. This result is almost consistent with 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 [23]. In this study, majority of the respondents 251(65.4%) know that rabies can affect all group of population. In current study about 301(78.4%) of the respondents were aware of common clinical signs of rabies in animals.

This finding is supported by study which is done in Bahir Dar. In my current study 85(22.1%) of the respondents know that wound washing is immediate action after dog bite [24]. This result is lower than studies done in Bhutan with majority of respondents were aware that animal bite wounds should be washed with soap and water [25]. This difference might be due to respondents believed that the infection could be treated with herbs and traditional healer. The preference for traditional treatment recorded in this study was low 95(24.7%) when compared to study conducted in Gondar zuria district, Ethiopia, which reported 62.2% preference for traditional medicine and study in Debarik district which reported 54.8 preference for traditional medicine [26,

27]. Furthermore, a higher (84%) reliance of respondents on traditional treatment was also reported from Dabat and Gondar [28]. The preference for traditional practices might be arise from many factors including easy access to traditional medicine, lack of awareness, lack of capital for treatment and long duration of treatment. Reliance on traditional medicines with unproven efficacy is very risky and nothing can be done to save one's life after the first symptoms of the disease occur. The World Health Organization (WHO) also recommends wound washing and vaccination immediately after contact with a suspected rabid animal which can prevent almost 100% of rabies deaths [29]. In the current study the overall knowledge, attitude and practice (KAP) study revealed that 47.6% of participants had a good KAP, whereas 52.4% was found to have poor KAP score. This finding is lower when compared with Study by who reported about 64.1% among the community of Bahir Dar town and who reported 60.3% in Debarq District, North Gondar [30, 31]. This difference could be due to his difference in sample size and level of awareness of community. Logistic regression analysis revealed higher good KAP score to be significantly associated with sex in which higher good score was found in male 164(72.2%) than female 114(66.2%). Males were about (6%) times more likely to have higher good KAP score than females. This difference might be due to increased activity of males in their daily life compared with females and better chance of acquiring correct information about rabies. In this study the good KAP scores were highest in age group of 15-35, 142(64%) among other age groups of 36 – 55, 85(77.3%) and, 56-75, 41 (78.8%). The statistically significant difference ($P=0.017$) 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 educational status. Statistically significant association ($P=0.02$) was observed between KAP score and educational levels where by higher levels of educations were associated with higher knowledge scores. All respondents in higher education levels had good KAP of rabies. The possible explanation could be educated person would have better information access and can easily understand the disease. This result is also supported by the result of the studies conducted in Bahir Dar [32].

5. Conclusion and Recommendations

This study indicated that rabies was a well-known disease in the study area. The KAP level towards to rabies of the community of Jimma town found good. But still there are some gaps in the community concerning with cause and mode of transmission, host range of the disease, clinical signs of rabies, prevention methods after suspected animal bite and attitude to anti-rabies vaccine.

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

- Strict control of free-ranging dogs and mandatory rabies vaccination should be enforced and establishing national animal rabies surveillance network is imperative.
- Veterinarians and health professionals should

prepare and deliver continuous and strategic community awareness programs on prevention and control of rabies in the study area.

- Veterinary and medical practitioners should report all suspected cases of rabies and take appropriate post-exposure measures.
- Local government and public health authorities that may assist in rabies control measures during rabies outbreak should have to be properly briefed.
- The public should be kept informed on the public health aspects of rabies, the requirements related to the control and eradication campaign including the reporting of animal bite cases.
- Governmental organizations like Federal Ministry of Health, Federal Ministry of Agriculture and livestock resource and Jimma University should work in cooperation with information sources to give information which will enhance the awareness level of the community.
- The Oromia agriculture and livestock resource Bureau should register the dog population of the region and prepare a legislation that will enforce the owners to vaccinate their animals.

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6. Annexis

Questionnaire For Assessments of Knowledge, Attitudes and Practices (Kap) On Rabies Exposure in Jimma Town, South Western Ethiopia.

Instruction: Please encircle the right information about you. Questions include in Knowledge, Attitudes and Practices (KAP) in Jimma town to assess (1) knowledge of rabies, its transmission and outcome, species affected, and means of prevention and control; and (2) attitudes and practices towards rabies prevention, and suspect rabid animals and carcasses.

Part One: Demography of Respondent

- Q1. Respondent’s residential address (Kebele):
- Q2. Sex of respondent 1) Male 2) Female
- Q3. Age group of participants 1) 15-35years 2) 36-55years 3) 56-75years 4) greater than 75years
- Q4. Educational status 1) Illiterate not write and read 2) able to read and write 3) Primary school 4) Secondary school 5) Higher education
- Q5. Religion 1) Christian Orthodox 2) Muslim 3) Others (Protestants, Catholics)
- Q6. What occupation do you have? 1) Government employee 2) merchant 3) farmer 4) unemployed 5) Others

Part Two: Knowledge on Rabies Cause, Host Range and Mode of Transmsсион.

- Q7. Do you have awareness on rabies? 1) Yes 2) no 3) I do not know rabies
- Q8. Which part of the body affected with rabies? 1) Brian 2) Stomach 3) bitten area 4) I don’t know
- Q9. Do you know the cause of rabies? 1) Bacteria 2) virus 3) Protozoa 4) I don’t know
- Q10. Which was most susceptible host for rabies? 1) Dog 2) Cat 3) Human 4) Equine 5) Bovine 6) Wild animal
- Q11. Is rabies transmitted from animal to human? 1) Yes 2) no 3) I do not know

Q12. What is the mode of transmission from rabid animal to another animal or human?

1) By biting 2) By saliva contact into open wound 3) By inhalation 4) By scratch 3) I do not know

Q13. What is the most common source of rabies? 1) Dog 2) Bovine 3) Cat 4) Equine 5) Wild animals 6) I do not know

Part Three: Knowledge Related to Clinical Signs and Fatal Nature of Rabies and Prevention After Bite of Suspected Animals.

Q14. What is the clinical sign in animals? 1) Sudden behavioral change 2) Hyper salivation

3) Aggression 4) Water phobia 5) Paralysis 6) All

Q15. What is the clinical sign in human? 1) Madness 2) Water and light phobia 3) Paralysis

4) Puppy movement in stomach 5) Hallucination

Q16. What is the fate of person bitten by rabid animal? 1) He or She will die 2) He or she remain sick 3) Nothing happen

4) I do not know

Q17. Which group of population is at high risk? 1) Young 2) Adult 3) Male 4) Female 5) All

Q18. Is rabies easily treated after onset of clinical sign? 1) yes 2) no 3) I do not know

Q19. Traditional healer couldn't be a solution of rabies? 1) I agree 2) I disagree 3) Not sure

Q20. Eating roasted meat of animal died of rabies could be medicine for rabies? 1) I agree 2) I disagree 3) Not sure

Q21. What is the immediate action after bitten by rabid animal? 1) Washing with water and soap 2) Visit health institu-

tion for treatment 3) Use traditional healer 4) Do nothing 5) I don't know

Q22. Burning the rabid animal and inhalation of the smoke could be medicine for rabies.

1) I agree 2) I disagree 3) Not sure

Q23. Do you know post exposure prophylaxis can prevent disease development?

1) Yes 2) No 3) I don't know

Q24. Which kind of exposure needs vaccination? 1) Animal bite 2) Animal lick 3) Animal scratch 4) Other (touching and/or keeping dog)

Part Four: Risk Factors, Prevention and Control

Q25. Do you have pets (cat/dog)? 1) Yes 2) No

Q26. If your answer is "yes" for Q25, are your pets vaccinated? 1) Yes 2) No

Q27. What is your attitude to rabies vaccine in animals? 1) Positive 2) Negative

Q27. If your pets are vaccinated against rabies, then which product is used? 1) Local vaccine 2) imported vaccine 3) I do not know the origin of vaccine

Q28. Who vaccinates your pets? 1) Government 2) private veterinarian 3) para-veterinarian

Q29. How frequent is your contact with pets? 1) Always 2) sometimes 3) never

Q30. Was your dog castrated/spayed? 1) Yes 2) No

Q31. Does castration decrease incidence? 1) Yes 2) No

Q32. Measures to control stray dogs 1) Killing 2) Animal birth control 3) Aware the owner