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# Assessment of Knowledge, Attitude, and Practice of the Community towards Rabies in the Legehida woreda, Bale Zone, Oromia, Ethiopia

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## Abstract

The study was conducted in Legehida woreda, Bale zone, from March 2019 to November 2019, to assess the knowledge, attitude, and practice of the community toward rabies using a community-based cross-sectional study supported by a semi-structured questionnaire survey. Legehida woreda was selected purposely and kebeles were selected using the lottery method, while the households were selected using a systematic random sampling technique. Of the 400 people interviewed, 70% were males and 30% of them were females. The age groups between 18-30 years were accounted for the highest proportion (50%) of all age categories, where the majority of respondents were illiterate (37.5%) and Muslims were accounted for the highest number (62.5%) among their religion. The majority of participants (88%) had been heard of rabies previously and 52.5% of them knew dogs as the reservoir of rabies. The highest percentages (48%) of them were informed about rabies from several sources and 73.8% knew that rabies is a fatal disease, 39.8% of them were not aware of rabies prevention through vaccination. Statistically, significant difference was revealed between some key questions related to KAP and explanatory variables like sex (P<0.001), age (P<0.001) levels of education (P<0.001), and religion (P<0.001) of respondents. Generally, the people in this area were a little bit known about rabies; however, they had a negative attitude and practice about rabies. Therefore, an outreach health education should be conveyed to ensure accurate knowledge, to improve an attitude and practice about rabies in this area.

**Keywords**: Attitude; Knowledge; Legehida; Practice; Rabies

## Introduction

Rabies is one of the oldest recognized diseases affecting all warm-blooded animals and remains to be the most important zoonotic disease mainly affecting developing countries. It is caused by bullet-shaped viral particles of the genus *Lyssavirus* and family *Rhabdoviridae,* whose nucleus is RNA [1]. It is widely distributed throughout the world except Australia, New Zealand, Japan, several European countries, and some Caribbean Islands. 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 [2].

Rabies virus causes inflammation of the brain in humans and other mammals pronounced by early symptoms of fever, tingling at the site of exposure, anorexia, and change in behavior [3]. It is transmitted to humans or other animals by the bite of an infected animal whose saliva contains the virus, aerosols of the virus that can be spread in caves where bats roost, or by contamination of scratches, abrasions, open wounds, and mucous membranes with saliva from an infected animal [4]. Worldwide, an estimated 29 million people receive post-exposure prophylaxis (PEP) for rabies each year and more than 59 000 people die of rabies [5], primarily due to poor rabies control measures. Human rabies can be prevented through immediate administration of PEP following exposure to rabid animals [6]. However, people in low-income countries, especially the poor portion of the society, may not receive these life-saving treatments because either the PEP treatment is expensive and not readily available or people may not visit the hospital to receive treatment due to a lack of knowledge about rabies [7,8]. Rabies is endemic in developing countries of Africa and Asia and most human deaths from the disease occur in these endemic countries. Human mortality from endemic canine rabies was estimated to be 55, 000 deaths per year and was responsible for 1.74 million disability-adjusted life years (DALYs) losses each year. The annual cost of rabies in Africa and Asia was estimated at US$ 583.5 million most of which is due to the cost of post exposure-prophylaxis (PEP). Africa, next to Asia, is the second continent most affected by rabies with an estimated 24,000 (44 %) of the 55,000 annual rabies deaths [8]. The burden of rabies falls mostly on poor rural communities and children in particular [9]. In Ethiopia, rabies is an endemic disease with a high incidence rate that has been diagnosed from various species of domestic and wild animals [10]. However, available pieces of evidence suggest that domestic dogs are the main reservoir and responsible species for human cases in the country [11]. Despite it is a fatal disease, rabies could be prevented by the timely application of appropriate prophylaxis [9].




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For increasing awareness appropriately, the knowledge gap among the community should be assessed and targeted. Public awareness and an increase of knowledge about rabies disease, first aid measures after dog bites, increased knowledge about dog behavior, and how to avoid getting bitten by dogs are suggested methods to prevent rabies in humans [12]. Although rabies is primarily a disease of dogs in Ethiopia, particularly in the Bale zone of Legehida woreda, no adequate research has been done to address the knowledge gap on the disease through assessing the knowledge, attitude, and practice of the community toward the disease. Therefore, the main aim behind the present study was to address the current information available on rabies in the study area by assessing the gap in knowledge, attitude, and practice of the community toward rabies by conducting a questionnaire survey.

### The Objective of the Study

To assess the Knowledge, Attitude, and Practice (KAP) of the community toward rabies in the study area.

## Materials and Methods

### Study Area Description

The study was conducted from March to October 2019 in Legehida woreda, situated in Bale Zone, in the southeastern part of Oromia Region, Southeast Ethiopia. The area borders Seweyna Woreda on the south and Gololcha on the southwest and all other sides by the Shebelle River which separates this woreda from Western Hararghe Zone on the North West, East Hararghe Zone North East and Somali Region on the East. The administrative center of the Woreda is Beltu. Legehida woreda has a total human population of 77,479 of which 39509 were males and 37,970 were females, and; about 3.23% of the populations were urban dwellers. The majority of the inhabitants were Muslims with 99.22% of them observe this belief. Similarly, the woreda has livestock populations of 175,100 cattle, 252,000 goats, 14,500 sheep, 15,671 donkeys, 5330 mules, 18,870 camels, 7 horses, and 23,314 poultry [13]. The Woreda has two main agro-ecological zones: middle land or woinadega ranging from 1,500 - 2,000 m.a.s. and lowland or kola ranging from 500-1,500 m.a.s. The major and most important rain falls between mid-March to July and the second short rain comes between the ends of September to November. They lived in scattered villages, especially in low land or Kolla areas. Today the low land is mainly characterized by mixed farming, animal rearing, as well as small-scale crop cultivation, like sorghum, maize, and teff, while in the middle land or woinadega sorghum, wheat, teff, and maize are the major crops besides livestock keeping. Camels, cattle, goats, sheep, and donkeys are the major animals reared in the woreda. Of all these, as in other semi-arid areas, camels and goats have great values [14].

### Study Population

The people of Legehida Woreda living in randomly selected kebele were considered as the study population. The people with the age group of greater than or equal to 18 years and could freely express their ideas were enrolled in an interview.

### Study Design

Community-based cross-sectional study design supported by semi-structured questionnaire survey was applied.

### Sampling and Sample Size Determination

The required sample size for this study was estimated by considering 50% of the population knowing about rabies since there was no awareness study conducted on rabies in the area before the present study. Thus, the sample size was calculated according to Thursfield, [15] using 95% confidence interval and 5% absolute precision. This was calculated as:

$$N = \frac{1.96^2 \times Pexp\ (1 - Pexp)}{d^2}$$

Where,

n= required sample size,

$P_{exp}$ = Expected proportion of population knowing about (50%),

$d^2$= Desired absolute precision (5%).

When calculated, 384 study populations were selected, but by adding 10% non-response rates, 422 study samples were subjected. In this study, the district was selected purposively based on eligible information about the presence of rabies in the area and ease of transportation cost. However, the probability sampling (simple random sampling) technique was conducted to select kebeles for this study. From the entire primary sampling unit, i.e., 27 kebele, five were randomly selected using the lottery method. Then, a systematic random sampling method was employed to select households from each kebeles for interviewing. In this study, no significant variation was assumed on the number of households to be enrolled so that an equal number of households per kebele were taken. If the selected household was found locked, the next household was substituted and interviewed.

### Questionnaire Survey

A pretested structured questionnaire consisting of closed-ended questions was used for this study. The questionnaire consisted of resident profile (age, sex, education, religion) and question about knowledge (10questions), attitude, and practice (10 questions). The questions were read out to the respondents in their local language (Afan Oromo) by the interviewer and their answers were recorded in English.

### Data Management and Analysis

After a complete check-up, the data was coded and entered to Microsoft Excel and transport into Statistical Packages for Social Science (SPSS) version 23.0 statistical packages for windows and analysis was made. Descriptive statics was employed on variables of interest. Association between socio-demographic characteristics (explanatory variables) and KAP of community on rabies was calculated using Pearson's Chi-square test. All P value of less than 5% was considered as statistical significance.

## Results

### Socio-Demographic Characteristics

In this study, 422 heads of households were subjected to be interviewed, however, after a complete check-up only the response of 400 households were enrolled to be analyzed. From 20 kebele, 5

**Table 1:** Description of Socio-demographic variables.

| Socio-demographic characteristics | Frequency | Percent |
|---|---|---|
| Kebele | | 100% |
| Beltu | 80 | 20% |
| Mahadina | 80 | 20% |
| Mumicha | 80 | 20% |
| Elelu | 80 | 20% |
| Bahima | 80 | 20% |
| Sex | | |
| Male | 280 | 70% |
| Female | 120 | 30% |
| Age | | |
| < 18 year | 50 | 12.50% |
| 18-30 year | 200 | 50% |
| >30 year | 150 | 37.50% |
| Educational level | | |
| Illiterate | 150 | 37.50% |
| Primary | 60 | 15% |
| High school | 94 | 23.50% |
| College/university | 96 | 24% |
| Religion | | |
| Muslim | 250 | 62.50% |
| Christians | 50 | 12.50% |
| Traditional | 80 | 20% |
| No religion | 20 | 5% |

kebele were selected randomly by assuming an equal proportion of households per kebele. Therefore, 80 households were selected from each kebele for interview face to face (Table 1).

Of the 400 respondents, 70% were male and 30% of them were females. The age groups between 18-30 years accounted for the highest proportion (50%) of all age categories. Concerning the level of education, the majority of respondents were illiterate (37.5%) and Muslims were accounted for the highest number (62.5%) among their religion (Table 1).

## Knowledge of Respondents Toward Rabies

The majority of participants (88%) had been heard of rabies previously and the highest proportion (52.5%) of them knew dogs as the reservoir of rabies whilst the lowest number of them (10%), knew cats were the reservoir of rabies. Similarly, the majority of participants (73.8) knew that rabies is a fatal disease, 14.8% of them answered as they were not sure as rabies is fatal whereas the smallest number (11.5%) of them didn't know as rabies is fatal. The largest percentage (39.8%) of respondents didn't know as vaccine prevents rabies, whereas 37.8% of them knew as rabies can be prevented by vaccine and 22.5% were not sure whether the vaccine prevents or not.

Most respondents obtained about rabies from different sources. The highest percentages (48%) of them were informed about rabies from several sources, 32.8% were informed by health professionals, whereas 19.2% were heard from radio/Television. About seventy-three percent of respondents understood the mode of transmission of rabies through biting whereas 15% and 11.5% of them knew the means of rabies transmission through fluid contacting and scratching respectively. Sixty-eight percent of respondents were in favor of describing the symptoms of rabies in dogs while 32.8% of them could not able to describe the symptoms of rabies in dogs. Since most of the people living in the villages of Ethiopia were close to each other,

**Table 2:** Response of participants on their knowledge toward rabies.

| Questions concerning knowledge of respondents (N= 400) | Frequency | Percentage |
|---|---|---|
| Have you ever heard of rabies? | | |
| Yes | 352 | 88% |
| No | 48 | 12% |
| Main reservoir of rabies | | |
| Dog | 210 | 52.50% |
| Cat | 40 | 10% |
| Fox | 90 | 22.50% |
| Other | 60 | 15% |
| Rabies is fatal | | |
| Yes | 295 | 73.80% |
| No | 46 | 11.50% |
| I am not sure | 59 | 14.80% |
| Rabies can be prevented by vaccination | | |
| Yes | 151 | 37.80% |
| No | 159 | 39.80% |
| I am not sure | 90 | 22.50% |
| Source information about rabies | | |
| Health professional | 131 | 32.80% |
| Radio/TV | 77 | 19.20% |
| Other | 192 | 48% |
| Mode of transmission of rabies | | |
| Bite | 294 | 73.50% |
| Fluid contact | 60 | 15% |
| Scratch | 46 | 11.50% |
| Could you describe symptoms of rabies in dogs | | |
| Yes | 273 | 68.20% |
| No | 127 | 31.80% |
| Have you ever seen a person bitten by a rabid dog | | |
| Yes | 299 | 74.80% |
| No | 101 | 25.20% |
| Describe a site of bite of a person you ever seen | | |
| Leg | 221 | 55.30% |
| Hand | 70 | 17.50% |
| Head | 8 | 2% |
| I haven't seen | 101 | 25.20% |
| Age of bitten person | | |
| Children | 195 | 48.80% |
| Young | 67 | 16.80% |
| Old | 37 | 9.30% |
| Haven't seen | 101 | 25.20% |

they know about events happening in their nearby households. In this study, about seventy-four percent of respondents had seen a person bitten by a rabid dog, and 55.3% reported bitten on the leg among parts of the body. From the people bitten they had ever seen children were accounted for the highest proportion (48.8%) where people with old age shared 9.3% from the bitten people, they had seen (Table 2).

## Attitude and Practice of Respondents Toward Rabies

In the same manner, 400 respondents were enrolled to assess the attitude and practice of the people toward rabies. A higher proportion of participants (85%) had negative practice on reporting to the authorities if they were bitten by dogs while a smaller proportion had positive practice (15%). Similarly, seventy-five percent of interviewed people had a negative response on reporting to the authorities if they had seen a rabid dog. The majority of them (85.8%) agreed with the idea that killing rabies suspected stray dogs as the solution to control rabies and a smaller number (14.2%) had negative practice. About

fifty-two percents of respondents answered as they would not eat a milk or meat from rabid cow or bull whereas 47.5% eat as usual without boiling or cooking. The highest proportion of respondents (63.5%) had negative attitude on the idea that suggests the stray dog plays a role in abundance of rabies (Table 3).

The study also showed that 47.8% of the respondents had a negative attitude on vaccination to prevent rabies in dogs, about 27% had a positive attitude and 25% didn't know whether it prevent or not. About 45% of respondents believed control of rabies should involve all social structures, government, and none government bodies while the smallest proportion (5.8%) had an attitude as NGOs should have to control rabies independently.

Among pets owned by the respondents, dogs were accounted for higher proportions (55.3%) while cats were owned by 6.5% and 10.2% of respondents owned both dogs and cats. In this study, the majority of the people (66.8%) had no practice of vaccinating their pets and a smaller proportion (5.2%) vaccinated their pets within the last 12 months (Table 3).

**Table 3:** Descriptions of attitude and practice of respondents toward rabies.

| Questions related to Attitude and practice of respondents | Frequency | Percent |
|---|---|---|
| Would you inform the authorities if you were bitten by a dog? | | |
| Yes | 60 | 15% |
| No | 340 | 85% |
| Would you report to authorities if you see the rabid dog? | | |
| Yes | 100 | 25% |
| No | 300 | 75% |
| Would you kill rabies suspected stray dogs? | | |
| Yes | 343 | 85.80% |
| No | 57 | 14.20% |
| Would you eat milk or a meat from rabid cow or bull? | | |
| Yes, as usual | 190 | 47.50% |
| No | 210 | 52.50% |
| Do you think stray dogs play a role in the abundance of rabies? | | |
| Yes | 146 | 36.50% |
| No | 254 | 63.50% |
| Do you think vaccination prevents rabies in dogs? | | |
| Yes | 109 | 27.20% |
| No | 191 | 47.80% |
| I don't know | 100 | 25% |
| Who is responsible to control rabies in stray dogs? | | |
| Government | 97 | 24.20% |
| NGO | 23 | 5.80% |
| Community | 100 | 25% |
| All | 180 | 45% |
| Which species of pet do you own? | | |
| Dog | 221 | 55.30% |
| Cat | 26 | 6.50% |
| Both | 41 | 10.20% |
| No pet | 112 | 28% |
| How many pets do you own? | | |
| One | 245 | 61.30% |
| Two and above | 43 | 10.70% |
| No pet | 112 | 28% |
| Did you vaccinate them within the last 12 months? | | |
| Yes | 21 | 5.20% |
| No | 267 | 66.80% |
| No pet | 112 | 28% |

## Association of KAP and Socio-Demographic Characteristics

In the present study, seven questions on knowledge and seven questions regarding attitude and practice were asked to assess the knowledge, attitude, and practice of respondents about rabies. The association between independent variables (sex, age, education level, and religion) and the questionnaire survey was performed using the chi-square test of association.

The study revealed that questions concerning knowledge (aware about rabies, the main reservoir of rabies, rabies fatal, rabies can be prevented by vaccination, source of information about rabies, descriptions of symptoms of rabies in dog) were highly statistically significant ($P < 0.05$) with sex, age, educational level and religion of respondents (Table 4). However, there was no statistically significant variation ($P > 0.05$) between questions related to the mode of transmission of rabies and socio-demographic variables. In the same way, there was a statistically significant association ($P<0.05$) between independent variables (age, educational level, and religion) and attitude and practice of respondents toward rabies (question regarding reporting to authorities if they see a rabid dog, stray dog

**Table 4:** The association between KAP and socio-demographic variables.

| | Sex (%) | | | Age in a year (%) | | | | Education level (%) | | | | | Religion (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Knowledge of respondents** | [illegible] | [illegible] | [illegible] | [illegible] (%) | [illegible] (%) | [illegible] (%) | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Have you ever heard of rabies? | | | | | | | | | | | | | | | | | |
| Yes | 92.9 | 76.7 | 0 | 100 | 100 | 68 | 0 | 68 | 100 | 100 | 100 | 0 | 100 | 100 | 65 | 0 | 0.005 |
| No | 7.1 | 23.3 | | 0 | 0 | 32 | | 32 | 0 | 0 | 0 | | 0 | 0 | 35 | 20 | |
| The main reservoir of rabies | | | | | | | | | | | | | | | | | |
| Dog | 53.2 | 50.8 | 0 | 100 | 80 | 0 | 0 | 0 | 100 | 100 | 58.3 | 0 | 84 | 0 | 0 | 0 | 0 |
| Cat | 11.4 | 6.7 | | 0 | 20 | 0 | | 0 | 0 | 0 | 41.7 | | 16 | 0 | 0 | 0 | |
| Fox | 28.2 | 9.2 | | 0 | 0 | 60 | | 40 | 0 | 0 | 0 | | 0 | 100 | 50 | 0 | |
| Other | 7.1 | 33.3 | | 0 | 0 | 40 | | 60 | 0 | 0 | 0 | | 0 | 0 | 50 | 100 | |
| Rabies is fatal | | | | | | | | | | | | | | | | | |
| Yes | 73.6 | 74.2 | 0.005 | 28 | 93.5 | 62.7 | 0 | 63 | 40 | 86 | 100 | 0 | 80.4 | 48 | 72.5 | 60 | 0 |
| No | 14.3 | 5 | | 36 | 0 | 18.7 | | 19 | 30 | 0 | 0 | | 7.2 | 28 | 7.5 | 40 | |
| I am not sure | 12.1 | 20.8 | | 36 | 6.5 | 18.7 | | 18 | 30 | 14 | 0 | | 12.4 | 24 | 20 | 0 | |
| Rabies can be prevented by vaccination | | | | | | | | | | | | | | | | | |
| Yes | 43.6 | 24.2 | 0.001 | 18 | 64 | 9.3 | 0 | 9 | 32 | 69 | 55 | 0 | 54.8 | 16 | 5 | 10 | 0 |
| No | 36 | 48.3 | | 54 | 10 | 74.7 | | 75 | 45 | 8 | 14 | | 18.8 | 58 | 83.8 | 80 | |
| I am not sure | 20.4 | 27.5 | | 28 | 26 | 16 | | 16 | 23 | 23 | 31 | | 26.4 | 26 | 11.2 | 10 | |
| Source information about rabies | | | | | | | | | | | | | | | | | |
| Health professional | 29.3 | 40.8 | 0 | 12 | 45 | 23.3 | 0 | 23 | 12 | 66 | 28 | 0 | 38.4 | 38 | 15 | 20 | 0 |
| Radio/TV | 24.6 | 6.7 | | 50 | 10.5 | 20.7 | | 21 | 46 | 6 | 13 | | 18.4 | 44 | 7.5 | 15 | |
| Other | 46.1 | 52.5 | | 38 | 44.5 | 56 | | 56 | 42 | 28 | 59 | | 43.2 | 18 | 77.5 | 65 | |
| Mode of transmission of rabies | | | | | | | | | | | | | | | | | |
| Bite | 74.3 | 71.7 | 0.858 | 70 | 73 | 75.3 | 0.751 | 75 | 70 | 68 | 78 | 0.763 | 72.8 | 74 | 76.3 | 75 | 0.958 |
| Fluid contact | 14.6 | 15.8 | | 20 | 14 | 14.7 | | 15 | 17 | 18 | 12 | | 15.2 | 16 | 15 | 10 | |
| Scratch | 11.1 | 12.5 | | 10 | 13 | 10 | | 10 | 13 | 14 | 10 | | 12.4 | 10 | 8.7 | 15 | |
| Describe symptoms of rabies in dogs | | | | | | | | | | | | | | | | | |
| Yes | 62.1 | 82.5 | 0 | 38 | 72 | 73.3 | 0 | 73 | 40 | 66 | 80 | 0 | 65.2 | 52 | 81.2 | 95 | 0 |
| No | 37.9 | 17.5 | | 62 | 28 | 26.7 | | 27 | 60 | 34 | 20 | | 34.8 | 48 | 18.8 | 5 | |
| **Attitude and practice of respondents** | | | | | | | | | | | | | | | | | |
| Would you inform if bitten by dog? | | | | | | | | | | | | | | | | | |
| Yes | 16 | 13 | 0.541 | 24 | 12.5 | 15.3 | 0.124 | 15 | 22 | 14 | 12 | 0.369 | 15 | 12 | 15 | 25 | 0.587 |
| No | 84 | 87 | | 76 | 87.5 | 84.7 | | 85 | 78 | 86 | 88 | | 85 | 88 | 75 | 75 | |
| Would you report to authorities if you see rabid dog? | | | | | | | | | | | | | | | | | |
| Yes | 25 | 24 | 0.801 | 18 | 28.5 | 22.7 | 0.218 | 23 | 18 | 33 | 25 | 0.168 | 26 | 44 | 14 | 5 | 0 |
| No | 75 | 76 | | 82 | 71.5 | 77.3 | | 77 | 82 | 67 | 75 | | 74 | 56 | 86 | 95 | |
| Would you eat milk or a meat from rabid cow or bull? | | | | | | | | | | | | | | | | | |
| Yes, as usual | 44.3 | 55 | 0.049 | 42 | 53.5 | 41.3 | 0.056 | 41 | 43 | 50 | 57 | 0.085 | 51 | 16 | 56 | 45 | 0 |
| No | 55.7 | 45 | | 58 | 46.5 | 58.7 | | 59 | 57 | 50 | 43 | | 49 | 84 | 44 | 55 | |
| Do you think stray dog play a role in the abundance of rabies? | | | | | | | | | | | | | | | | | |
| Yes | 36.8 | 35.8 | 0.856 | 40 | 45 | 24 | 0 | 24 | 40 | 46 | 45 | 0.001 | 44 | 30 | 21 | 20 | 0.001 |
| No | 63.2 | 64.8 | | 60 | 55 | 76 | | 76 | 60 | 54 | 55 | | 56 | 70 | 79 | 80 | |
| Do you think vaccination prevents rabies in dogs? | | | | | | | | | | | | | | | | | |
| Yes | 27.9 | 25.8 | 0.72 | 30 | 36 | 14.7 | 0 | 15 | 25 | 35 | 40 | 0 | 35 | 16 | 10 | 30 | 0 |
| No | 46.4 | 50.8 | | 36 | 40 | 62 | | 62 | 35 | 45 | 37 | | 39 | 60 | 65 | 55 | |
| I don't know | 25.7 | 23.3 | | 34 | 24 | 23.3 | | 23 | 40 | 20 | 23 | | 26 | 24 | 25 | 15 | |
| Did you vaccinate them within the last 12 months? | | | | | | | | | | | | | | | | | |
| Yes | 6.4 | 5.8 | 0.661 | 0 | 4.5 | 10.7 | 0.017 | 11 | 2 | 1 | 7 | 0.021 | 4 | 12 | 8 | 20 | 0.003 |
| No | 65.4 | 70 | | 80 | 68 | 60.7 | | 60 | 78 | 68 | 68 | | 70 | 48 | 71 | 50 | |
| No pet | 28.2 | 24.2 | | 20 | 27.5 | 28.7 | | 29 | 20 | 31 | 25 | | 26 | 40 | 21 | 30 | |

**A p-value of 0.000 was round off 0.001 and p< 0.05 was set for significance.*

play a role in the abundance of rabies, vaccination prevent rabies in dogs, vaccinated their pets within last 12 months). Statistically significant variation (P<0.05) was observed between the eating habits of respondents (milk or meat from rabid cow or bull) and their sex and religion. However, no significant variation was observed among the sex, age, and educational level of respondents regarding their attitude and practice on informing if they were bitten by a dog and reporting to authorities if they see the rabid dog. The detailed description was given in Table 4.

## Discussions

The finding of the present study revealed, majority of the people (88%) heard about rabies previously and dogs were mentioned as the major reservoir host (52.5%) for rabies among other animals. Similarly, the majority of participants (73.8) knew that rabies is a fatal disease and the largest percentage (39.8%) of respondents didn't know as vaccine prevents rabies. this result was in line with the study conducted in Sri Lanka and Jammu, India [16,17].

The highest percentages (48%) of respondents were informed about rabies from multiple sources, 32.8% were informed by health professionals, whereas 19.2% were heard from radio/Television. This result was in line with the study conducted in Sri Lanka [16]. About seventy-three percent of respondents understood the mode of transmission of rabies through biting whereas 15% and 11.5% of them knew the means of rabies transmission through fluid contacting and scratching respectively. This was inconsistent with another study conducted in Sixty-eight percent of respondents were in favor of describing the symptoms of rabies in dogs while 32.8% of them could not able to describe the symptoms of rabies in dogs. This study was in agreement with the finding of the study conducted in Sri Lanka and south Gondar [16,18]. From the people bitten they had ever seen in their area, children were accounted for the highest proportion (48.8%) while a few numbers of people (9.3%) with old age were involved. This was in agreement with the study conducted in Nigeria [19].

A higher proportion of participants (85%) had negative practice on reporting to the authorities if they were bitten by dogs while a smaller proportion had positive practice (15%). This was contrary to the study conducted by Ali *et al.* [20] in and around Addis Ababa and in Sri Lanka [16]. Similarly, seventy-five percent of interviewed people had a negative response on reporting to the authorities if they had seen a rabid dog. The majority of them (85.8%) agreed with the idea that killing rabies suspected stray dogs as a solution to control rabies and a smaller number (14.2%) had negative practice. This finding was inconsistent with the study conducted in Dessie city by Gebeyaw and Teshome, [21] but in contrary with the study conducted in Jammu, India who reported the people of that area were alerted to report to concerned bodies if they saw the stray dogs and bitten [17].

The result of the current study has also revealed that the majority (47.8%) of the respondents had a negative attitude on vaccination to prevent rabies in dogs, about 27% had a positive attitude and 25% didn't know whether it prevent or not. This was disagreeing with the finding of Tolessa *et al.* [22] in and around Nekemte town. The negative attitude of the people in this study might have resulted from a lack of awareness on the importance of vaccinating pets due to inadequate health education and inadequate availability of vaccines in the areas. Among pet owners interviewed in this study, dogs were accounted for higher proportions (55.3%) while cats were owned by 6.5% and 10.2% of respondents owned both dogs and cats. This finding was nearly consistent with the study conducted in Bangladesh by Ghosh *et al.* [23] who reported the highest proportion of dog owners among the community interviewed. In this study, the majority of the people (66.8%) had no practice of vaccinating their pets and a smaller proportion (5.2%) vaccinated their pets within the last 12 months. This result was disagreeing with the study conducted in Sri Lanka, [16] and in and around Nekemte town [22].

The result of the current study showed that independent variables like sex, age, educational status, and religion of respondents were statistically (P<0.05) associated with the knowledge of respondents toward rabies. The study indicated that males shared a higher proportion (92.9%) of hearing about rabies from several sources than females. Similarly, the larger number of male respondents knew as rabies was prevented by vaccination compared to female respondents. In this study, females shared a higher percentage of hearing about rabies from health professionals than males although higher proportions of male respondents heard from different sources. This might have resulted from females had high opportunity to get adequate health education from health extensions than males. The higher proportions of male respondents could able to describe the symptoms of rabies in rabid dogs compared to females. Generally, there was statistically significant variation among the sex of respondents on their knowledge toward rabies. The variation might be resulted from the higher opportunity of males to obtain knowledge about rabies from different sources through exposure to meeting, idea exchange with the community, and at the workplace due to the nature of their work. This finding was consistent with the study conducted elsewhere in Ethiopia, south Gondar, [18] and in Bahir Dar town, [24] but contrary with the study conducted in Nekemte town [22].

Also, age and educational level of respondents were statistically associated (P<0.05) with the knowledge of respondents**.** This was supported by the study conducted among residents in Addis Ababa, [20]; in south Gondar, [18] and Bahir Dar town [24]. The difference in age groups on knowledge toward rabies might be because the age groups below 18 years were unable to obtain sufficient information about rabies since they were teenagers while other age groups had a high opportunity to know about rabies through formal and informal education. Religion was also significantly associated with the knowledge of respondents as indicated in table 4. In this study respondents with no religion were a little bit knowledgeable than others. This was due to give low attention to rabies because of believing rabies has no power to intentionally harm if pray. This was contrary to the study conducted in Nekemte town [22]. On attitude and practice, statistically, sex-wise variation was observed among respondents on the eating habits of milk or meat from rabid cow or bull. About 55% of female respondents answered that eating milk or meat without boiling or cooking, as usual, does not affect rabies transmission. However, some literature suggested that, unless milk is well boiled, there is a risk of rabies exposure, particularly in children. According to a paper submitted at the last Indian Virology Conference, tests Conducted on the brains of slaughtered cattle and sheep showed that an alarming two percent of them contained rabies virus [4].

Similarly, age, educational levels, and religion of respondents were significantly associated ($p<0.05$) with the attitude and practice of respondents. The age groups 18- 30 years were accounted for 45% in responding that, the stray dog play a role in the abundance of rabies. Although a low percentage of response was obtained on the question vaccine can prevent rabies across all age groups, a little difference was seen in age 18-30 years (36%). The significant variation in these age groups might have resulted from the age groups 18- 30 years had high likelihoods to obtain sufficient information about rabies from formal learning at school in addition to what they shared from events happening in their community compared to other age groups. This finding was nearly similar to the same study conducted in Nekemte town, [22] and in Bahir Dar town [24].

The attitude and practice of the respondents were also significantly associated with their educational level. There was a statistically significant variation on the answers of respondents regarding the questions whether the stray dog plays a role in the abundance of rabies, vaccination prevents rabies, and vaccinated their dogs within last 12 months ($P< 0.05$) which was illustrated in table 4. A higher proportion of the questions regarding, the stray dogs play a role in the abundance of rabies and vaccination prevents rabies was observed in respondents who had high school and college/university education levels. The clear explanation of positive attitude and practice regarding rabies in respondents with greater than high school education level was that educated person could have better information and understanding and give due attention bout rabies. This finding was supported by the study conducted in Sri Lanka and Jammu, India [16,17]; in Bangladesh, [23] and Bahir Dar town [24].

About 44% of Christian respondents had positive practice to report if they were encountered to rabid dog whereas only a few nonreligious respondents (5%) had willing to report and statistically significant difference was seen across religion ($P<0.05$). The reason behind this difference might be due to those Christian respondents would have a high probability to tell to the leader of their church if they encountered a rabid dog and he would convey the message to other audiences during breaching. This made all of the audience in the temple heard and shared a positive attitude and practice. The eating habits of milk or meat from a rabid animal were reported in respondents with traditional believers in higher proportion (56%) and statistically, significant difference was seen on their eating habits of infected animal products. The possible explanation would be due to those respondents believing in tradition didn't care about the transmission of rabies through feed due to cultural beliefs.

Although the highest percentages were found in negative attitude and practice regarding the questions dog play a role in the abundance of rabies and vaccine can prevent rabies, nearly a little positive attitude and practice, 44% and 35% respectively were observed in Muslim respondents and statistically significant association among religions($p<0.05$). This finding was contrary to the result conducted in Bahir Dar town [24] and Nekemt [22].

## Conclusions and Recommendations

The present study revealed that the people in this area were aware of rabies before and they had a little bit knowledge on the main reservoir of rabies, rabies is a fatal disease, a mode of transmission, and could able to describe the symptoms of rabies in a dog. However, there was enormous gap in attitude and practice on rabies in general regarding notifying the authorities if they were bitten by a rabid dog, encountered a rabid dog, and rabies would be prevented by vaccination and vaccinating their dog against the vaccine. Based on the above conclusion, the following recommendations were forwarded.

- The outreach education was needed to confirm accurate knowledge and to improve the attitude and practice of the community in this area.

- Public health sectors, veterinary sectors, and other stakeholders should work jointly to prevent and control the public health and economic impact of rabies.

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