Journal of Biology and Medicine: Open Access

Research Article| Vol 4 Iss 1

Assessment of Knowledge, Attitude and Practices of Community Towards Rabies in Meta Robi District, Oromia Region, Central Ethiopia

Iyasu Ejeta[1] and Mahendra Pal[2*]

[1]Ambo University, Abebech Gobena Agricultural Research Centre, Ethiopia

[2]Narayan Consultancy on Veterinary Public Health and Microbiology, Bharuch Gujarat, India

***Corresponding author:** Pal M, Narayan Consultancy on Veterinary Public Health and Microbiology, Bharuch Gujarat, India; E-mail: palmahendra2[AT]gmail.com

Received: January 27, 2024; **Accepted:** March 30, 2024; **Published:** May 10, 2024

Abstract

A cross-sectional questionnaire-based survey was conducted on randomly selected individuals to assess the knowledge, attitude, and practices of rabies among communities in Meta Robi district Oromia, Central Ethiopia. A semi- structured questionnaire was administered to 100 respondents comprised of 51 from rural, 31 urbans, and 18 from town areas. Interestingly, all (100%) of the study participants had heard about rabies from different sources. About 64% of respondents knew the causative agent of rabies while 11% of the participants responded that they do not know the causative agent, and 25% were found to have misperception about causative agent, which was spiritual, starvation, and thirst. This study revealed the respondents have good action towards bitten humans with 36% of them go hospital/clinics, and 30% follow post exposure vaccination while 32% responded follow traditional medicine and 2% replied wash with soup and water. Ninety three percent of the respondents were not experienced for vaccinating their dog while only 7% vaccinated. However, knowledge deficiency was observed regarding cause and mode of transmission of rabies. The degree of rabies awareness and openness to rabies prevention techniques varies generally. Increasing awareness of the community about the disease should be considered for controlling the disease using social medias and formal training by governmental and non-governmental stake holders.

Keywords: ***Attitude; Dog; Knowledge; Meta Robi district; Practice; Public health; Rabies.***

1. Introduction

1.1 Backgrounds

Rabies is an important viral zoonosis, and human infection usually occurs following a transdermal bite or scratch by an infected animal [1], [2]. It is considered as the most dreadful fatal disease worldwide, which causes acute fatal encephalitis, with almost 100% case fatality rate. Disease is prevalent in around 150 nations of the world except

Antarctica, Australia, Japan, Singapore and Maldives [3]. The etiologic agent of this disease is the rabies virus belonging to the genus *Lyssavirus* and family *Rhabdoviridae* [4].

The virus can be found in the saliva of the rabid mammal that bit the humans. The dog is the main transmitter of disease as it is responsible for over 95 % of human cases of rabies [3]. Animal bites are usually often the source of transmission since they inject the virus into wounds. A virus that has been introduced into a wound travels to the brain and produces encephalitis by being picked up at a neuronal synapse rather than entering the bloodstream. The virus may enter the nervous system relatively quickly or it may stay at the bite site for a long time before doing so. The likelihood of developing encephalitis more quickly may be boosted by the approximate density of nerve endings in the bite area. Rarely, the agent may enter into open wounds or mucosal membranes by exposures other than bites [5].

It shows symptoms including motor irritability, clinical mania, an attack complex, salivation, difficulty swallowing, a progressive ascending paralysis starting in the pelvic limbs, and progressing to the trunk and thoracic limbs, and death [6]. Rabies can be diagnosed using the history of the bite, clinical symptoms, and laboratory tests [7]. Various methods of laboratory research of the rabies virus include isolation and identification of the agent, immune-chemical tests, serological tests, and molecular procedures [8], [5], [1]. Immunization is considered as the most effective tool to control the rabies [3].

The majority of rabies-related deaths in humans happen in the impoverished nations of Africa and Asia where the disease is widespread. In addition to causing 1.74 million less disability adjusted life years (DALYs) per year, human mortality from endemic canine rabies was predicted to be 55,000 deaths per year. As a poor nation, Ethiopia has significant rabies endemicity [9].

1.2 Statement of the Problem

In Ethiopia, the disease is recorded by the scientific communities in 1903, and it remains as an important zoonotic disease both in humans and animals to date [2]. The highest recorded human deaths (43%) due to rabies for the year 1998 was reported from Ethiopia, and the magnitude was associated mainly with the presence of a large population of stray dogs and other associated factors. Approximately, 10, 000 people were estimated to die of rabies annually in Ethiopia, which makes it to be one of the worst affected countries in the world [9].

Dogs are the principal source of infection for humans and livestock [9]. Although rabies is primarily a disease of dogs in Ethiopia, other domestic and wild animals have also been affected. It is also a common problem among human population because of high rate of human to dog contact. There is however, lack of information to determine the magnitude of rabies in man and other domestic animals in the country [10].

Even if means of control and preventions are available through mass dog vaccination and provision of post-exposure prophylaxis to people exposed to bites by suspected rabid animals; rabies remains as a major public health problem particularly in resource-poor communities. However, poor surveillance and unreliable statistics on rabies incidence make it very difficult to attract policy-makers, to invest in the control and prevention of rabies disease [11].

Poor public awareness towards rabies is considered as one of the bottle necks for the prevention and control of the disease in Ethiopia especially in canine rabies endemic rural communities like Meta Robi district. Understanding communities' perceptions of cause, mode of transmission, symptoms, treatment and possible intervention measures of rabies is an important step towards developing strategies aimed at controlling the disease and determining the level of implementation of planned activities in the future.

Therefore, the objectives of the present study were:

1.3 Objectives

1.3.1 General objectives

- This study was designed to assess the level of knowledge, attitude and practices of selected kebeles of communities in Meta Robi district West Shoa zone Oromia region central Ethiopia.

1.3.2 Specific objectives:

- To evaluate the percentage level of the community's knowledge, attitude and practices toward rabies in the study area.
- To compare the perception level of the community's knowledge, attitude and practices toward rabies in the study area.

2. Literature Review

2.1 Etiology

The *Rhabdoviridae* family member *Lyssavirus* genus is the cause of rabies. It is a single-stranded RNA virus with a bullet-like form [12]. By being exposed to air, sunlight, and dried blood with secretions, it is quickly rendered inactive [13].

2.2 Epidemiology

According to estimates, rabies causes approximately 59,000 human deaths annually around the globe, with 45% of those deaths occurring in SAARC nations (South Asian Association for Regional Cooperation), with the remainder mostly taking place in Africa, the Middle East, and Central Asia. An estimated 35,000 people die from rabies-related causes each year in Asia, largely in rural and underdeveloped areas [14]. Nearly, 35% of rabies deaths worldwide and 60% in Asia are attributabled to India alone [15]. Similarly, rabies spread by dogs is responsible for about 20,000 deaths annually in Africa [16].

2.3 Mode of Transmission

All warm-blooded species can contract the *Lyassavirus* infection, however, the *Lyssavirus* can also develop in the cells of cold-blooded animals [17]. Due to biting, wounds, or unwrapped cuts in the fur or mucous membranes, the virus must enter the body through the saliva of an infected animal in order to spread this disease. It is mentioned that the afflicted animal dies from a severe infection. According to an assessment of infected dogs in the USA, all rabid dogs passed away just 8 days after contracting the disease. The majority of transmissions use bites. Since the virus is secreted in saliva, the disease can only sporadically develop through a scrape that has been exposed to saliva; the disease rate is

50 times lower [18]. Although the virus seldom spreads from one person to another, a small number of cases have been reported as a result of organ transplant operations [19].

2.4 Pathogenesis

Rabies virus creates an illness that is rather slow to develop but is lethal once it starts to manifest clinically. The virus at the injection site remains hidden (eclipsed) for a variable amount of time (a threshold must be crossed before sickness can manifest). The incubation or eclipse period is extremely varied, ranging from 2 weeks to 6 years on average, and it largely relies on the viral dose, the place of the injection, and the density of the innervations [20]. Bite wounds, particularly those with bleeding, on the hands, neck, face, and head shorten the incubation period because of the reduced length and increased number of neurons. In general, rabies virus can stay in the muscle for a long time, which may allow for post-exposure treatment and host immune system clearance of rabies virus [21].

Depending on the viral concentration, inoculation site, and innervation density, the incubation period or eclipse phase varies greatly from 2 weeks to 6 years (on average: 2 to 3 months). The riskiest bites are those on the head, face, neck, and hands with bleeding, and these bites typically have a shorter incubation period because of the shorter length and higher density of neurons. The virus attaches to the target cells (myocytes, local sensory and motor neurons) through G-protein coupled receptors, multiplies in the muscle cells, and macrophages, and then ascends centripetally along the nerves to reach the central nervous system [22].

2.5 Clinical Findings

2.6 Prodromal stage

The start of clinical signs occurs after a distinct incubation phase. A small amount of behavioural alteration, such as rage in domestic animals, daylight tricks in nocturnal animals, no fear of humans in wild animals, or irregularities in eating, may happen during this first stage, which normally lasts 1-3 days [23].

2.6.1 Excitement (Furious) phase

The agitated form is characterised by wandering, sobbing, polypnea, drooling, and attacks on other animals, people, or inanimate objects. Animals with the infection usually consume foreign objects like firewood and pebbles. The wild creatures frequently lose their fear of people and may harass them or another nearby animal that they would normally avoid (such as porcupines).

On the other hand, nocturnal animals could be visible all day long. Unusual attentiveness in cattle may be a sign of this stage [24].

2.6.2 Paralytic (dumb) phase

The increasing paralysis is typically a sign of the "dumb" form of rabies. The masseter and gullet muscles paralyse during this stage, making it difficult for the animal to swallow and causing excessive salivation. Laryngeal paralysis may cause vocal changes in affected animals, including abnormal bellowing in cattle and barking in dogs. Additionally, a lower jaw drop and facial paralysis are both possible side effects. Ruminant separation from the herd is a possibility [25].

Additionally, this stage is marked by a decrease in foamy salivary output and the paralysis of the rear limbs, which eventually results in full paralysis and death [23].

2.6 Diagnosis

The diagnosis can be made based on past animal exposure [26]. The majority of rabies virus diagnostic procedures in animals require brain tissue for diagnosis, hence they are frequently only possible after death. Any area of the afflicted brain can be used to diagnose rabies in an animal. However, the test must involve tissue from at least two different parts of the brain, including the brain stem and cerebellum, in order to rule out rabies [27].

Rabies is diagnosed on live animals in Ethiopia using immunohistochemistry, cell cultures, serological tests, histological examinations, and genetic techniques [28]. In rabies diagnostic laboratory at the Ethiopian Health and Nutrition Research Institute, we additionally utilise the mouse inoculation test (MIT) for further validation when the FAT test fails owing to collection mistake or human error and when suspected rabid animals exhibit symptoms after the MIT [29]. Then brain samples of animals that are brought to the Ethiopian Health and Nutrition Research Institute, the only laboratory in Ethiopia tasked with diagnosing rabies, are suspected of having the disease, are quarantined, and eventually pass away, or brain samples of animals brought to the clinic by patients who have already been killed or passed away [29], [28]. When possible, all suspected and probable clinical cases of rabies should be confirmed by laboratory techniques as encephalitis can be complex and challenging to diagnose clinically [12].

Epidemiological or clinical data may occasionally point to rabies as the clinical diagnosis. It is advised that dogs and cats be observed and quarantined for 10 days, and that suspect animals be put to death and then examined using the direct fluorescent antibody test (DFA) [30].

2.7 Treatments for Rabies

The treatment is often supportive once rabies warning signs have arisen. To treat their dread and discomfort, the patients are given tranquillizers. Serious care support, including paralysis, sedation, and ventilation, forms the basis of treatment. For these situations, ketamine is typically recommended as a good mediator [31]. Sunlight, soap, and aeration all work to inactivate the lyssavirus. For rabies to be prevented from spreading, wound care is crucial. The general wound care given within the first three hours after the virus was disclosed could have practically completely prevented the spread of rabies among the research animals. Carefully cleanse the wounded area with water and antiseptic soap. The virus should then be further reduced by applying alcohol or povidone-iodine after that [32].

2.8 Prevention and Control

2.8.1 Domestic animal vaccination

The main elements of a rabies control programme for companion animals are vaccination and licencing, stray animal control, reporting, investigating, and isolating animals involved in biting events, as well as public education [27]. There are numerous vaccinations approved for use in domestic animal species. Inactivated or modified live virus vectored vaccines, intramuscular and subcutaneous vaccines, vaccines with immunisation periods of one to four years, and vaccines with various minimum age requirements are all available [12].

2.8.2 Animal Control

Excluding wild animals from places of habitation and activity for people and domestic animals, as well as avoiding contact with potentially rabid wild animals, should be the main tenets of rabies prevention. The extensive use of oral baits that are vaccine-impregnated to immunise wildlife has had varying degrees of success in halting the spread of rabies in raccoons and coyotes in other states. In certain circumstances, the use of oral rabies vaccinations for the mass immunisation of free-ranging wildlife should be taken into consideration [33].

2.8.3 Public Health Education

In order to develop strategies for controlling the disease and determine the extent to which future plans will be implemented, it is crucial to understand how communities view the causes, modes of transmission, symptoms, treatments, and potential intervention measures of rabies [30]. This will help to promote responsible pet ownership, routine veterinary care and vaccination, and continuing professional education. By spreading knowledge about rabies transmission channels and avoiding interaction with wildlife, it is possible to limit animal and human exposures to the disease. In order to effectively prevent disease, there must be public awareness of the risks of rabies transmission from wild animals [34], [26].

3. Materials and Methods

3.1 Study Area

The study was conducted in Meta Robi district, West Showa Zone, Oromia Regional State, Central Ethiopia. According to data of [35] the total human population of the district is 166,472 (male= 82,482 and female= 83,990). The district is located at 101 km west of the capital city of the country. The altitude of the district ranges from 1,376–2,904 meter above sea levels (masl). The total land area of the district is about 93,769 ha (crop land = 51,762.9 ha, grazing land = 11,775.94 ha, forest land = 6,792.75 ha and land used for other purposes= 23,437.4) (Meta Robi district Agricultural Office annual report, 2013/14). The district has 21 rural kebeles and 3 peri-urban towns [35].

On the other hand, the data taken from Meta Robi district livestock and fishery resource development office the livestock population includes 137,262 cattle, 51650 sheep, 42,150 goats, 11,745 horses, 12,100 donkeys, 350 mules and 56,748 poultry [36].

3.2 Study Population

The study population was the communities of Meta Robi district, those simple randomly selected individuals from three rural kebeles and one capital town of the district with the age of above fifteen years.

3.3 Study Design

A cross-sectional questionnaire-based survey study was conducted from July 2021 to August 2021. A standard questionnaire was designed and employing face to face interview on assessing knowledge, attitude, and practices among communities living in Meta Robi district regarding rabies disease.

3.4 Sample Size

The community of Meta Robi district who were above 18 years and lived in the district for at least six months were included in this study. The required number of populations to be sampled was calculated using the formula given by [37]. N = 0.25 / SE2, Where N = sample size, S = standard error, 5%. Accordingly, the required sample size was 100.

3.5 Method of Data Collection

Each randomly chosen person was given a questionnaire. To measure the community's knowledge, attitude, and practise in the research areas' urban and peri-urban areas, a structured questionnaire was created. Additionally, each respondent's sociodemographic background was documented. The study's target populations were individuals who were chosen at random from among those who reside in the various study areas' localities. The purpose of the questionnaire was to explore community knowledge, attitudes, and practises about rabies' causes, prevention, training, sources, and perceptions.

Data were gathered using a standardised interviewer-administered questionnaire that had been pre-tested. The questionnaire was created using data gleaned from academic publications and community practises. After being initially written in English, the questionnaire was eventually translated into Afaan Oromoo. Face-to-face interviews were used by the interviewer to administer the questionnaires. Additionally, before the interview began, they were informed of the survey's goal and asked for their permission. It was conducted through interviews with people.

3.6 Data Management and Statistical Analysis

For descriptive statistical analysis and tests of associations between various risk factors and outcome variables, all collected data were input into a Microsoft Excel 2016 spread sheet and imported into STATA version 14 statistical software. To find whether there was a relationship between the variables, the Pearson's Chi-square test was utilised. Additionally, a p-value of 0.05 or less with a 95% confidence interval was regarded as statistically significant.

4 Results

4.1 Results of Socio-Demographic Characteristics of Participants

Out of the total 100 respondents, the majority 77% were males and the remaining 23% (68) were females. The majority of the respondents' age group lied in the range between the age of (36-55 years old) which accounts for 66%, followed by a range of age the groups (18-35 years) and with 27.8% and (56-85 years old) with 27.6%, respectively. Participants were mostly with no formal education (67%) and followed by those with primary education (17%), tertiary 10% high school education (6%). Concerning occupation, the majority of the respondents were farmers (72%), and 12%, 10%, 6% were engaged in students, government employees and self-employment, respectively. About 91% of the respondents were Christians while the left 9% were Wakefata. The majority of participants (58%) owned dogs, and more than 75% of the respondents were claiming to possess domestic animals other than dogs (Table 1).

Table 1: Results of the Questionnaire Regarding Socio-Demographic Characteristics in the Study Area.

Questions regarding Socio-demographic characteristics	No. of respondents	Percentage (%)
Sex		
Males	77	77%
Females	23	23%
Age (years)		
18-35	24	24%
36-55	66	66%
56-85	10	10%
Marital status		
Married	82	82%
Unmarried	18	18%
Education level		
Illiterate	67	67%
Elementary	17	17%
High school	6	6%
Tertiary	10	10%
Occupation		
Peasant	72	72%
Government employee	10	10%
Student	12	12%
Self	6	6%
Religion		%
Christian	91	91%
Wakefata	9	9%
Respondents address		
Rural	51	51%
Urban	31	31%
Town	18	18%
Dog ownership		
Yes	58	58%
No	42	42%
Other domestic ownership		
Yes	75	75%
No	25	25%

4.2 Knowledge of Respondents Regarding Cause, Host Range, Clinical Sign and Transmission of Rabies in the Study Area

All respondents (100%) had heard about rabies in the current study. About 64% of respondents knew the causative agent of rabies while 11% of the participants responded that they do not know the causative agent and 25% were found to have misperception about causative agent which was spiritual, starvation, and thirst (Table 2).

Table 2: Knowledge of Respondents in Relation to Cause, Host Range, Clinical Signs and Transmission of Rabies in the Study Area.

Categories regarding knowledge of respondents	No. of respondents	Percentage (%)
Did you know about Rabies		

Yes	100	100%
No	0	0%
Causes Rabies		
Germs	64	64%
Starvation	23	23%
Spiritual	2	2%
I don't know	11	11%
Common source of Rabies		
Dog	79	79%
Wild bird	18	18%
Cattle	3	3%
Clinical sign of rabid animal		
Salivation	42	42%
Paralysis	39	39%
Behavioral change	15	15%
Vomiting	2	2%
I don't know	2	2%
Mode of transmission of rabies		
Bite	86	86%
I don't know	12	12%
Through wound scratch	2	2%
Curable after showing clinical signs in man		
Yes	47	47%
No	53	53%
Curable after showing clinical signs in animal		
Yes	41	41%
No	59	59%
Group at risk		
Children	77	77%
Veterinarian	23	23%

4.3 Result of Attitudes and Practices of Respondents

This study revealed the respondents have good action toward bitten man with 36% of them go Hospital/clinics and 30% follow post exposure vaccination while 32% responded follow traditional medicine and 2% replied wash with soup and water. Ninety-three percent of the respondents were not experienced for vaccinating their dog while only 7% vaccinated (Table 3).

Table 3: Attitudes and Practices of Respondents Regarding Rabies in the Study Area.

Categories regarding attitudes and practices of respondents	No. of respondents	Percentage (%)
Action for bitten man		
Go hospital/clinics	36	36%
Traditional treatment	32	32%
Post exposure vaccine	30	30%
Washing with soup and water	2	2%
Action for bitten animal		
Killing	80	80%
Isolate	12	12%
Tie	6	6%
Go veterinary clinic	2	2%

Action for rabid dog		
Killing	87	87%
Tie	13	13%
Seek for health professions immediately after bite		
Yes	58	58%
No	42	42%
Vaccinate your dog?		
Yes	7	7%
No	93	93%
Did you get training regarding rabies		
Yes	20	20%
No	80	80%
Control method		
Vaccination	83	83%
Antibiotic treatment	13	13%
I don't know	4	4%

5. Discussion

The present study indicated that all (100%) of respondents had previously heard about rabies disease. The finding of this study was in line with a study conducted in different parts of Gondar and its surroundings with the report of 98% [38], report from Bahir Dar [39], indicated that about 99% of respondents had previous information related to rabies, 96.4% [40] in which respondents were aware of rabies and heard about the disease and 98% [41] in which respondents were aware of rabies and heard about rabies. However, current finding is slightly comparable with reports from Addis Ababa [30] in which about 83% of study respondents heard about rabies through similar communication channels as indicated by the current study participants.

In the present study, among the 100 respondents, about 64% had understanding on the cause of rabies and they believed that the disease is caused by germs that agree with the finding of Fesseha and Kidanemariam [41] in Mekele town with (51.6%). But the current result is lower when compared to reports from Gondar by Jemberu and co-workers [38]. The differences among the results obtained from the different studies could be differences among community awareness.

Dogs were mentioned as the cause of infection for most fatal human rabies cases and wild birds also mention as second important source of human infection. In addition, rabies in other domestic animals like cattle was also mentioned as risk for humans. These findings were also reported by Bingham [42]. Domestic dogs have been reservoir of rabies and a source of rabies infection to humans and other animals [43].

In this study, the bite was mentioned as a mode of transmission for rabies to humans by the majority of the respondents 86% that in line with the finding research of Fesseha and Kidanemariam [41] with (85%). However, lower responses than the current finding also reported in a study on the assessment of community KAP from Gondar [40], Bahir Dar [39], and New Delhi [44] reported that 46.8%, 45%, 52.2%, 49.2% of respondents, respectively knew the mode of rabies transmission in both humans and animals.

There was also a considerable percentage of participants (14%) mentioned that they had no idea about the mode of transmission of rabies in both humans and animals. It is, therefore, advisable that contacts with any form of infected saliva should be avoided.

According to the response from majority of the respondents (77%), group of populations riskier to the disease were children and the left 23% respondents replied veterinarians. This could be due to the fact that children are closely playing with dog at home and even in streets and veterinarians has high probability to encounter with those infected animal at clinics. In addition, elders are well aware of the danger of rabies and look for medical care than children [45]. This study showed good treatment-seeking behaviours as more of the respondents 36% and 30% would report to the hospital/clinic and follow post exposure vaccine for human bite respectively. This indicated that community attitude and practices on understanding for post-exposure treatment seeking behaviours would be important for rabies prevention in humans. In a similar study by conducted by Digafe and others [46], equivalent responses 38.8% were reported from Gondar town as most of the study participants prefer to go traditional medicine and other practices than for post-exposure prophylaxis.

The present finding, about 32% 39% of respondents prefer traditional medicine as a primary choice of treatment than visiting the hospital for post-exposure treatment. Similar KAP study from Addis Ababa (Ali *et al.,* 2013) and in Mekele [41] reported 58.3% and 39%, respectively that the study participants had strong beliefs in traditional medicine. Even a higher number of responses (84%), that prefer traditional medicine was reported by [38], indicated that strong preferences on using traditional treatments against rabies.

In current finding, surprisingly, only 2% of respondents agreed that wound washing with soap is immediate action after the rabid dog or animal bite. The result was highly lower when compared to the study conducted by Guadu and co-workers [39] from Bahir Dar and Fesseha and Kidanemariam [41] from Mekele, in which 70.8%, and 19% of the respondents, practiced washing of animal bite wound with soap, respectively. The differences could be the differences in providing awareness creation programs on prevention remedies and treatments of rabid animal bites in the study sites.

The current finding showed that almost all respondent owners 93% did not vaccinate their dogs that agree the observation of Gebeyaw and Teshome [47] with (95.3%).

The reason for low dog vaccination practice in the study area could be due to large dependency on the traditional treatment using herbs, limitation of on availability, of vaccine. This is in agreement with Eshetu and co-investigators [48] who noted that, dog vaccination practice was generally very low and totally non-existent in rural district of the current study area.

On the other hand, the current study illustrated that training on rabies related aspect has been given for only 20% respondents. Therefore, public extensive education about rabies should be given to community to increase their awareness. Raising community awareness level has been mentioned as important tool to control rabies by many

scholars [48], [42]. Raising awareness about dog vaccination and improving access and affordability of the vaccine should be considered in control of the disease as dogs are the main reservoir of the disease [47].

6. Conclusion and Recommendations

Our findings indicated that rabies was considered as the disease of both a veterinary and public health importance in the study area. All (100%) respondents had heard about rabies previously, and 86% of respondents knew that rabies can be transmitted from animal to human that is good knowledge. However, knowledge deficiency was observed regarding cause and mode of transmission of rabies. The presence of low vaccination coverage of dog, minimum formal training about rabies and high dependency on traditional medicine in the study area, were also well indicated. Generally, there is a difference on the level of awareness of rabies and receptiveness to rabies control measures.

Based on the above conclusions, the following recommendations are forwarded.

- Increasing awareness of the community about the disease should be considered for controlling the disease using social medias and formal training by governmental and non-governmental stake holders.
- Regular intervention should be targeted by stake holders, such as veterinary and health offices in the study area at controlling stray dogs, and vaccination of dogs should be employed to control the disease.
- Veterinary and health professionals should give due attention to increasing rabies awareness and prevention measures in the communities.

7. Acknowledgements

The authors are grateful to the people for their cooperation during the questioner's survey in the community. The computer help of Yashvardhan is also appreciated. This paper is dedicated to the scientists who did pioneer work in rabies.

8. Contribution of Authors

Both authors contributed equally in the preparation of the manuscript.

9. Conflict of Interest

No conflict of interest was observed.

10. Financial Grant

We did not receive any financial support from any organization.

REFERENCES

1. Pal M, Hailu A, Agarwal RK, et al. Recent developments in the diagnosis of rabies in humans and animals. J Vet Pub Health. 2013;11:77-82.
2. Gebrehiwot TT, Sime AG, Deresa B, et al. Community health seeking behavior for suspected human and animal rabies cases, Gomma District, Southwest Ethiopia. PloS One. 2016;11:e0149363.

3. Pal M. Can immunization be an effective tool in rabies control? EC Micro. 2017;10(1):01-02.
4. WHO. Expert Consultation on Rabies. WHO Technical Report series. 2005; 931p.
5. Pal M. Zoonoses.2nd Ed. Satyam Publishers, Jaipur, India. 2007.
6. Bhoop S. Teaching Material for the Course of Large Animal Medicine. Mekelle University, Mekelle, Ethiopia. 2007; 201-208p.
7. Warner CK, Whitfield SG, Fekadu M, et al. Procedures for reproducible detection of rabies virus antigen mRNA and genome in situ in formalin-fixed tissues. J Virol Methods. 1997;67:5-12.
8. Kang B, Oh J, Lee C, et al. Evaluation of a rapid immunodiagnostic test kit for rabies virus. J Virol Methods. 2007; 145: 30-36.
9. Deressa, A, Ali A, Beyene M, et. The status of rabies in Ethiopia: A retrospective record review. Ethiopian J Health Dev. 2010;24:127-132.
10. Paulos A, Eshetu Y, Bethelhem N, et al. A study on the prevalence of animal rabies in Addis Ababa during 1999-2002. Eth Vet J. 2003;7:69-77.
11. Knobel DL, Cleaveland S, Coleman PG, et al. Re-evaluating the burden of rabies in Africa and Asia. Bull World Health Organ. 2005; 83:360-368.
12. Moges N. Epidemiology, prevention and control methods of rabies in domestic animals. Eur J Biol Sci. 2015;7(2): 85-90.
13. Tojinbara K, Sugiura K, Yamada A, et al. Estimating the probability distribution of the incubation period for rabies using data from the 1948–1954 rabies epidemic in Tokyo. Prev Vet Med. 2016;123:102-105.
14. WHO. World Health Organization. Epidemiology and burden of disease. 2017. [Online]. Available: http://www.who.int/rabies/epidemiology/en/
15. Reddy GBM, Singh R, Singh KP, et al. Molecular epidemiological analysis of wild animal rabies isolates from India. Vet World. 2019;12(3):352–357.
16. Ahmad T, Musa TH, and Jin H. Rabies in Asian countries: Where we are stand? Biomed Res Ther. 2018; 5(10):2719–2720.
17. Mustafa M, Ellzam EM, Sharifa AM, et al. Rabies a zoonotic disease, transmission, prevention and treatment. J Dent Med Sci. 2015;14(10):82–87.
18. Fishbein DB, Yenne KM, Dreesen DW, et al. Risk factors for systemic hypersensitivity reactions after booster vaccinations with human diploid cell rabies vaccine: A nationwide prospective study. Vaccine. 1993;11(14):1390-1394.
19. Srinivasan A, Burton EC, Kuehnert MJ, et al. Transmission of rabies virus from an organ donor to four transplant recipients. New England J Med. 2005;352(11):1103-1111.
20. Greene CE and Rupprecht CE. Rabies and other lyssavirus infections. In: Greene CE, editor. Infectious diseases of the dog and cat. St Louis: Elsevier Saunders. 2006; 167–183p.
21. Hemachudha T, Laothamatas J, and Rupprecht CE. Human rabies: A disease of complex neuropathogenic mechanism and diagnostic challenges. Lancet Neurol. 2002;1:101–109.
22. Singh R, Pal Singh K, Cherian S, et al. Rabies –epidemiology, pathogenesis, public health concerns and advances in diagnosis and control: a comprehensive review. Vet Quart. 2017;37(1):212-251.
23. WHO. World Health Organization Expert consultation on rabies. 2013; 2nd Report (No. 982).

24. Banyard AC, Horton DL, Freuling C, et al. Control and prevention of canine rabies: the need for building laboratory-based surveillance capacity. Antivir Res. 2013;98(3):357-364.
25. Yang DK, Shin EK, Oh YI, et al. Comparison of four diagnostic methods for detecting rabies viruses circulating in Korea. J Vet Sci. 2012;13(1):43-48.
26. Shite A, Guadu T, and Admassu B. Challenge of Rabies. Int J Basic and Applied Viro. 2015;l 4(2):41-52.
27. Chernet B and Nejash A. Review of rabies control and prevention. J Med Physiol Biophy. 2016;23:45-53.
28. Reta T, Teshale S, Deressa A, et al. Evaluation of rapid immunodiagnostic test for rabies diagnosis using clinical brain samples in Ethiopia. J Vet Sci Med Diagnosis. 2013;2(3):1-3.
29. Deressa A. Current rabies diagnosis and future prospect in Ethiopia. In: Proceeding of National Workshop on Rabies Prevention and Control. Infectious and Non – Infectious Disease Research Directorate, Ethiopia Health and Nutrition Research Institute, FMoH, 18 – 19 October 2012 Adama, Ethiopia. 2012; 113p.
30. Ali A, Ahmed EY, Sifer D. A study on knowledge, attitude and practice of rabies among residents in Addis Ababa, Ethiopia. Eth Vet J. 2013;17:19-35.
31. Jackson AC, Warrell MJ, and Rupprecht CE. Management of rabies in humans. Clin Infect Dis. 2003;36:60–63.
32. Gautret P, Blanton J, Dacheux L, et al. Rabies in nonhuman primates and potential for transmission to humans: A literature review and examination of selected French national data. PLoS Negl Trop Dis. 2014;8(5):e2863.
33. Hurisa B, Tegbaru B, Nolke D, et al. Safety and immunogenicity of ethiorab rabies vaccine. J Vaccin. 2013;4(6):1-5.
34. Aga MA, Hurisa B, and Urga K. Current situation of rabies prevention and control In developing countries: Ethiopia perspective. Vaccination and diagnostic production. J Anc Dis Prev Rem. 2015;4(1):1- 6.
35. CSA. Central Statistical Agency of Ethiopia. Annual Human Demographic Population Report. 2013.
36. Meta Robi District Livestock and Fishery Resource Development Office. Annual Livestock Population Report data. 2021.
37. Arsham H. Questionnaire design and surveys sampling. 2005; 9th ed. [Online]. Available: http://home. ubalt.edu/ntsbarsh/stat-data/Surveys.htm
38. Jemberu WT, Molla W, Almaw G, et al. Incidence of rabies in humans and domestic animals and people's awareness in North Gondar Zone, Ethiopia. PLoS Negl Tro Dis. 2013;7(5):e2216.
39. Guadu T, Shite A, Chanie M, et al. Assessment of knowledge, attitude and practices about rabies and associated factors: in the case of Bahir Dar town. Glob Vet. 2014;13:348-54.
40. Serebe SG, Tadesse KA, Yizengaw HA, et al. Study on community knowledge, attitude and practice of rabies in and nearby Gondar town, North West Ethiopia. J Pub Epide. 2014;6:429-435.
41. Fesseha H and Kidanemariam F. Assessment of knowledge, attitude and practices on rabies among communities of Atsbi Wonberta District, Tigray, Northern Ethiopia. Curr Rese Agri Far. 2020;(1):21-31.
42. Bingham J. Canine rabies ecology in southern Africa. Emerg Infect Dis. 2005;11:1337-1342.
43. Joo YS, Lee JH, Lee KK, et al. Retrospective study of extensive vaccination programs for canine rabies control and public health in Korea. Jpn J Infect Dis. 2011;64:513-515.
44. Lai P, Rawat A, Sagar A, et al. Prevalence of dog-bites in Delhi: Knowledge and practices of residents regarding prevention and control of rabies. Health and Population perspectives and Issues. 2005;28:50-57.
45. Aworth M, Nwoshu C, Ajumobi O, et al. A retrospective study of Rabies cases reported at Vom Chrisrian Hospital, Plateu State Nigeria, 2006-2010. J Vet. 2011;32:366-370.

46. Digafe RT, Kifelew LG, and Mechesso AF. Knowledge, attitudes and practices towards rabies: questionnaire survey in rural household heads of Gondar Zuria District, Ethiopia. BMC Res Notes. 2015;8:400.
47. Gebeyaw S and Teshome D. Study on community knowledge, attitude and practice of rabies in and around Dessie City. Austin J Vet Sci Anim Husb. 2016;3(1):1020.
48. Eshetu Y, Bethelehem N, Girma T, et al. Situation of rabies in Ethiopia: A retrospective study 1990- 2000. J Health Dev. 2002;16:105-112.

Citation Ejeta I and Pal M. Assessment of knowledge, attitude and practices of community towards rabies in meta robi district, oromia region, central Ethiopia. J Bio Med Open Access. 2024;4(1):133.