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COLLEGE OF AGRICULTURE AND VETERINARY SCIENCES,
FACULTY OF VETERINARY MEDICINE

Report submitted in partial fulfilment of the requirements for an award of Bachelor's degree in
veterinary medicine

RABIES PREVENTION AND CONTROL IN DOGS IN KISUMU COUNTY

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DECLARATION

I hereby declare that the project work entitled “Rabies Control and Prevention in Kisumu County” submitted to The University of Nairobi, is a record of an original work done by me, Oundo Benjamin Omondi, J30/2022/2010, Faculty of Veterinary Medicine.

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DEDICATION

I dedicate this project to my father, mother, brothers and Maureen who have always showed me that nothing is impossible when you believe in yourself and trust in God. They showed me encouragement and have seen me through it. May God bless you all.

ABSTRACT

Rabies Prevention and Control in dogs in Kisumu County

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Abstract

Rabies is an endemic disease in Kenya and specifically in Kisumu County. It's caused by a Lyssavirus and causes more than 55000 deaths worldwide predominantly in Africa and Asia. Human rabies is preventable through vaccinations and post exposure prophylaxis after bites, but no effective large scale control is done in these Sub Saharan countries. For an effective control programme to be instilled in Kenya, it requires the full cooperation of Veterinary officers, medical officers, and the public in general to employ the One Health concept. The most effective way to control rabies in animals is through mass vaccinations of dogs and this should be employed to effectively control the disease. This project examines the control, prevention and knowledge of the community towards rabies in Kisumu County in Kenya. A questionnaire was developed which was used to gather information from homesteads in Kisumu East sub county and Seme sub county. Majority of the respondents interviewed had scanty knowledge about the disease rabies and all persons interviewed didn't house their dog. They were left to roam around and come home when they feel like. Obtaining information about rabies was also lacking as most got it from either friends or relatives while only a small proportion from the media. Some of the respondents who had dogs didn't vaccinate them and didn't know how to control rabies in animals. In conclusion, the people interviewed showed lack of knowledge, poor understanding of the disease, its transmission, control and effects on people.

TABLE OF CONTENTS

DECLARATION	ii
ACKNOWLEDGMENT.....	iii
DEDICATION	iv
ABSTRACT.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
CHAPTER 1	1
1.0 INTRODUCTION.....	1
1.1 Background Information	1
1.2 Objectives.....	2
1.2.1 General Objective	2
1.2.2 Specific Objectives	2
1.3 Justification	2
CHAPTER 2	3
2.0 LITERATURE REVIEW	3
2.1 Rabies pathology and transmission	3
2.2 Economic impact and significance of rabies	3
2.3 Control and Prevention of rabies in dogs and man	4
2.4 Rabies in Kenya	5
CHAPTER 3	6
3.0 MATERIALS AND METHODS	6
3.1 Study area	6
3.2 Survey questions and methodology	7
3.3 Statistical analysis	7
CHAPTER 4	9
4.0 RESULTS.....	9
4.1 The study population	9
4.2 Knowledge of rabies.....	12
4.3 Rabies prevention in humans and control in animal populations	15
4.4 Source of information of rabies	15
4.5 Health seeking behaviours among people in Kisumu County	16
4.6 Practices on suspect rabid animals and control of rabies.....	17

CHAPTER 5	20
5.0 DISCUSSION.....	20
CHAPTER 6	23
6.0 CONCLUSIONS AND RECOMMENDATIONS.....	23
7.0 REFERENCES.....	24
7.1 Appendix I Questionnaire	28

LIST OF TABLES

Table 1 Prior rabies exposure among dog owners	11
Table 2 Proportion of people who knew about rabies in Kisumu County.....	12
Table 3 Rabies cure response in Kisumu County	14

LIST OF FIGURES

Figure 1 Map of Kisumu County showing the several sub-counties and the population density...	6
Figure 2 A graph showing the gender of respondents in Kisumu East and Seme Sub County	9
Figure 3 A graph showing the proportion of respondents in the different geographical locations in Kisumu County	10
Figure 4 A graph showing the occupation status of respondents in Kisumu County	10
Figure 5 A graph showing the education level among the respondents in Kisumu County	11
Figure 6 A pie-chart showing rabies description responses in Kisumu County	12
Figure 7 A pie-chart showing the different species that can transmit rabies	13
Figure 8 A pie-chart showing the transmission route of rabies	13
Figure 9 A graph depicting the reasons for fearing rabies	14
Figure 10 A graph showing the methods of rabies control in animals	15
Figure 11: A pie-chart showing the different sources of information about rabies	16
Figure 12: A graph showing the response time to hospital after being bitten by a suspect rabid animal	16
Figure 13: A pie-chart representing the type of treatment instituted at medical centres to persons bitten by a suspect rabid animal	17
Figure 14: A pie-chart showing the actions taken to deal with a suspect rabid animal	18
Figure 15: A pie-chart showing the actions taken against the body of a suspect rabid animal after killing it	18
Figure 16: A graph showing the number of people with pets and those vaccinated against rabies in Kisumu County	19
Figure 17: A graph showing the number of respondents with proof of dog vaccination certification in Kisumu County	19

CHAPTER 1

1.0 INTRODUCTION

1.1 Background Information

Rabies is a preventable viral disease of mammals most often transmitted through the bite of a rabid animal (CDC, 2013).

In developing countries in Asia, Africa and South America, over 4 million people receive post-exposure treatment and over 30000 people die after being bitten by a rabid dog (Kitala *et.al*, 2002). 90% of people who receive post-exposure treatment live in endemic areas for canine rabies.

The first case of rabies to be reported in Kenya was in South Nyanza in 1902 (Hudson, 1944), with majority of the cases being reported in dogs (Binopal *et.al*, 1992). Rabies primarily affects carnivores and insectivorous bats, although it can affect any mammal. It produces multi focal, non suppurative polio-encephalitis in all domestic mammals. A few countries have eradicated rabies due to their island status, enforcement of rigorous quarantine measures or successful eradication programs. Pets are recommended to be vaccinated against rabies at 3 months of age and then given an annual booster every year, while humans are given three injections that are 7 days apart and then a booster after every 5 years (Quimbao *et al.*, 2005).

1.2 Objectives

1.2.1 General Objective

The study was designed with an objective of determining dog ecology towards preventing and control human rabies by managing free roaming dogs.

1.2.2 Specific Objectives

In order to achieve the overall objective, the following specific objectives were developed;

- To determine the dog population density in Kisumu County.
- To assess the level of community knowledge, social attitude in dog keeping, and steps in rabies control after human exposure.

1.3 Justification

Rabies is a problem both in the rural and urban areas, and it's now more widespread and prevalent than at any time in the country's history especially in Kisumu County. Although all mammalian species can get rabies, the dog is the most important in Kenya. It also serves as a major vector in man. Approximately 55 – 65% of diagnosed rabies cases in animals has occurred in dogs. In late January, the Kenyan authorities were alerted to the suspicious deaths of two cows in Kisumu which were confirmed to be rabies positive. In February, several people were bitten in Rachuonyo by dogs. Several animals have died due to rabies which in turn affects the livelihoods of the people in the area (FAO, 2015).

The main factor limiting the efficacy of dog rabies control is our inability to vaccinate an adequate proportion of the dog population during any one year (Karugah, 1994).

There is scanty knowledge on the population density of free roaming dogs in Kisumu County and its importance in the transmission and maintenance of rabies. It's important to assess the free roaming dog population in order to organise good and efficient strategies in carrying out vaccination protocols and better methods of their control.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 Rabies pathology and transmission

Rabies virus belongs to the genus *Lyssa virus*, family *Rhabdoviridae* and causes the disease rabies. Rabies virus is enzootic throughout Africa with the domestic dog being the principal vector (Hayman *et al.*, 2011). It affects all mammals and once clinical signs appear it is fatal (Hemachudha *et al.*, 2002). Common mode of transmission is through the bite (Chopra and Lal, 1999, Knobel *et al.*, 2005). Oral may also be possible in animals eating on dead infected animals (Hofmeyr *et al.*, 2004).

The virus is inoculated into the tissues by a bite, and replicates locally in the muscles, then enters nerve axons at neuromuscular junctions and is transported along the nerve axons to the central nervous system. It then spreads rapidly along neurones and induces behavioural abnormalities and progressive lower motor neurone deficits. The incubation period in dogs is usually 3-9 weeks but can be as short as 10 days or as long as 10 months depending on amount of implanted virus, richness of local innervation and distance of wound from the central nervous system. The case fatality rate of rabies is 100% when symptoms present except for one known survivor to date (Willoughby *et al.*, 2005).

2.2 Economic impact and significance of rabies

Human deaths are the most important direct economic impact of canine rabies, followed by livestock losses and the cost of post exposure prophylaxis, while expenses associated with dog vaccination and control are major direct impacts. The elimination of canine rabies would lead to major economic benefits in developing countries that are often the least capable of dealing with the disease. The impacts costs reflects two basic facts: the case fatality rate of rabies is nearly 100% and the disease is completely preventable through timely post exposure

prophylaxis with rabies vaccine (Blanton *et al.*, 2010). Canine rabies also has indirect costs, including vaccination of livestock and companion animals and testing of dogs suspected of rabies. (Anderson *et al.*, 2012; Narrod *et al.*, 2012). Eliminating canine rabies requires an integrated and cooperative approach, in which public and private human and animal health professionals work together (Taylor and Partners for Rabies Prevention, 2013). This ‘One Health’ strategy achieves benefits that could not be attained by either group working alone (Schwabe, 1984). An understanding of the economic benefits that could be achieved through the elimination of canine rabies in a broader context is central to promoting cooperation between health sectors and ensuring that management resources are allocated efficiently.

Deficient surveillance and the lack of reliable data on the number of rabies cases is a major constraint to assessing the economic impact of rabies on the local economies when livestock and working animals die due to rabies or infect humans. In addition, the need to pay for transport and expensive post exposure prophylaxis to families or community members can lead to the unplanned sale of production animals and livelihood assets, further impacting food and economic security. (De Balogh *et al.*, 2013).

2.3 Control and Prevention of rabies in dogs and man

In Kenya, legislation exists to ensure control of rabies but financial constraints render it ineffective leading to shortages of vaccines and insufficient logistics support for rabies control policies (Karugah, 1994). Mass dog vaccinations are the most cost effective way to control rabies (Kaare *et al.*, 2009, Kayali *et al.*, 2006, Cleaveland, 2003). Rabies control has not been prioritized in many places due to the absence of accurate data on the burden of the disease (Lembo *et al.*, 2011).

Human death cases from rabies can be prevented could be prevented given appropriate wound management and prompt delivery of post exposure prophylaxis following exposure to

the disease (Rupprecht, 2006, Quiambao *et al.*, 2005). In sub Saharan countries, access to post exposure prophylaxis poses a challenge as poor families need to travel long distances to obtain the services which acts as a barrier to the recommended schedules put in place by WHO (Cleaveland *et al.*, 2007, Hampson *et al.*, 2008, Sudarshan *et al.*, 2007).

2.4 Rabies in Kenya

Kenya is currently endemic for dog-mediated human rabies. An estimated 2000 people die annually of rabies after being bitten by a rabid dog. Despite this elevated mortality, current efforts to prevent the spread off rabies has mostly been restricted to treating individuals after a dog bite and random vaccinations, with little investment in sustainable prevention plans (WHO 2015.)

In early April, 2014, more than 7500 dogs and cats were vaccinated in and around Lake Victoria's port of Kisumu in response to a spike in rabies cases that have killed people, dogs and livestock. FAO made available a variety of awareness raising materials as well, aimed especially at schools and school children and their parents so that communities learn about rabies, how to address a dog bite case immediately to prevent rabies in humans and how important it is to vaccinate dogs and cats to reduce the risk to humans. Local radio stations was used to broadcast the information about rabies awareness which led to an overwhelming response in terms of people seeking treatment and reporting dog bites (FAO 2015).

CHAPTER 3

3.0 MATERIALS AND METHODS

3.1 Study area

The cross-sectional study was carried out in two sub-counties in Kisumu: Seme and Kisumu sub-counties. Located at the shore of Lake Victoria in western Kenya, Kisumu County is home to 952,645 people. With an area of 2,085.9 km², Kisumu County has a population density of 460 per square kilometre. Health in Kisumu is provided by several private and public institutions. There's one provisional hospital, 3 district hospitals, 53 dispensaries, and six health centres in the county. Kisumu County has 7 sub-counties (Kisumu East, Kisumu West, Kisumu Central, Seme, Nyando, Muhoroni, and Nyakach) and two were randomly selected for the study (Kisumu East and Seme) as shown Figure 1.



Figure 1 Map of Kisumu County showing the several sub-counties and the population density

Seme and Kisumu East were the selected areas of study from a random selection. In each of the selected sub-counties, questionnaires' were used to gather information and households were selected from the ones on major roads taking the third house on each side.

3.2 Survey questions and methodology

We were accompanied by an animal health assistant and a dog restrainer into each of the households. The questions were asked to the household head or any other household member above the age of 18 years in the absence of the household head. A semi structured questionnaire was used for the study, and carried out in Swahili, Luo and English to comprehensively get all the data. The questionnaires were gathered over a period of a week and then assessed every day for accuracy and each questionnaire was assigned a code. Question 1-7 was meant to get the bio-data of the household. Question 8-11 were meant to get the knowledge of rabies from the respondents. Question 12-18 was about the social attitude and steps taken to control rabies after a person has been bitten. Question 19 was about the dog population and whether they have been vaccinated or not. The questionnaire also captured details of individual and household characteristics that were used to assess the socio-economic status and education levels.

Permission was obtained from the chief and assistant chief in order for the project to commence. The animal health assistant helped to familiarize the residents with us to avoid cases of hostility and ease collection of data. The dogs in each homestead were counted and marked using a green pencil marker on the head for easier identification.

3.3 Statistical analysis

The data collected was analysed using Excel Microsoft Office 2013. The data was organised into rows and columns and all of the information on the questionnaires' were transferred into the Excel program. All the data input was then used to generate pivot tables to represent the

data and make it easy for interpretation. The tables generated were copied to Microsoft Word 2013 and then each table was analysed and interpreted. From the pivot table, graphs were also created for easier understanding of the data.

CHAPTER 4

4.0 RESULTS

4.1 The study population

A total of 52 respondents were administered with questionnaires in the two sub-counties selected in Kisumu County; (Figure, 2) 65% female and 34% male and 64% female and 35% male in Kisumu East and Seme sub-counties respectively, above the age of 18 years old.

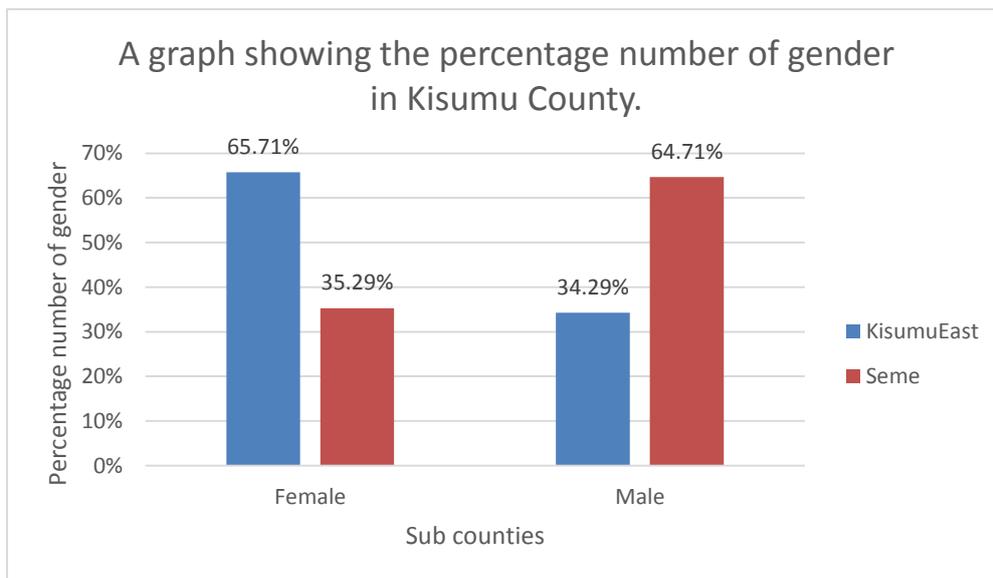


Figure 2 A graph showing the gender of respondents in Kisumu East and Seme Sub County

Majority of the respondents were from the urban area (67%), and minority from the rural (33%) (Figure 3), with the majority of them being self-employed (Figure 1.4) (33% in Kisumu East and 23% in Seme (Figure, 4).

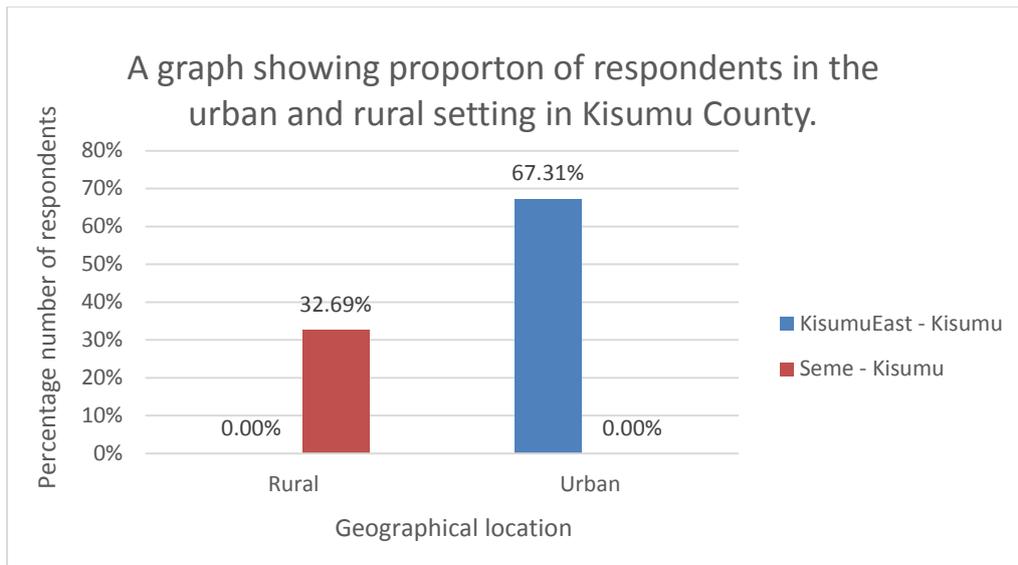


Figure 3 A graph showing the proportion of respondents in the different geographical locations in Kisumu County

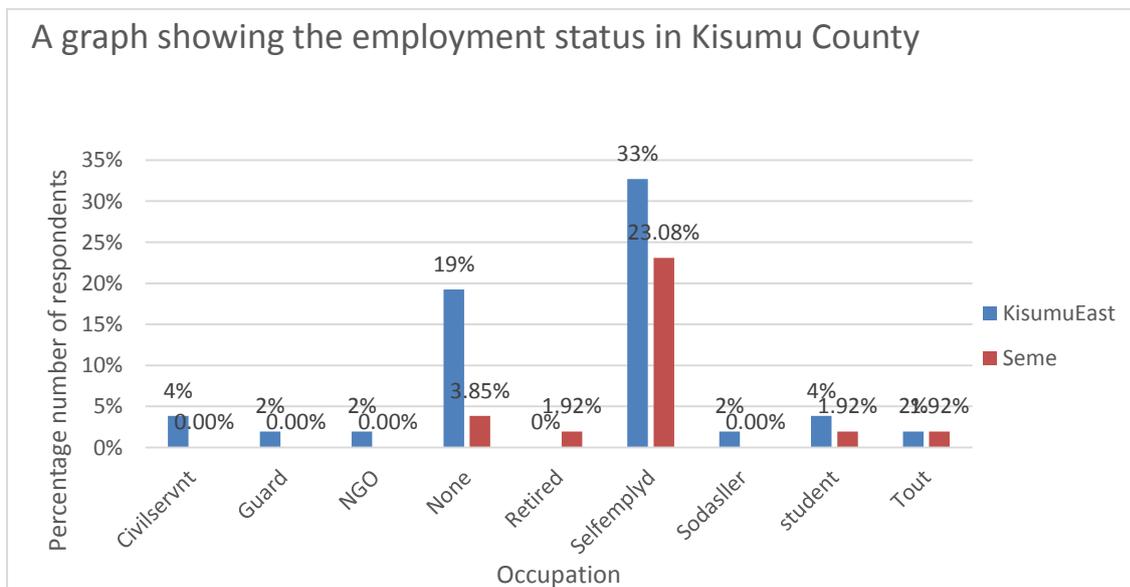


Figure 4 A graph showing the occupation status of respondents in Kisumu County

Majority of the unemployed are in the urban areas (19%). 57% of the selected homesteads had dogs within their compound and from this only 46% had vaccinated their dogs against the disease rabies. It was established that 15% of the sample were previously exposed to a rabid dog and this number is only within the urban area (Table 1).

Table 1 Prior rabies exposure among dog owners

Exposure to rabies	KisumuEast	Seme	Grand Total
No	27	17	44
Yes	8		8
Grand Total	35	17	52

No – not exposed

Yes – Exposed to rabies.

A large proportion (79%) of the population had acquired lower level education and only 21% had reached up to tertiary level (Figure1.5) 13% had no formal education and vast majority were in the urban centres. 10% were from the urban centre and 3% from the rural area with no formal education. Highest proportion of the sample size had reached up to primary level (34%).

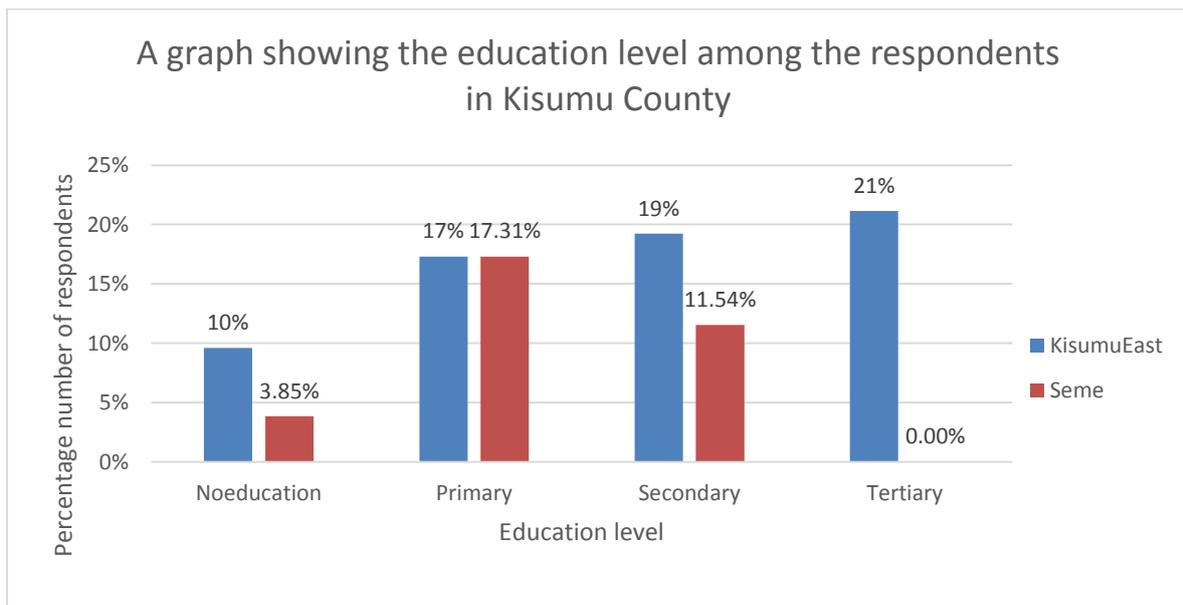


Figure 5 A graph showing the education level among the respondents in Kisumu County

4.2 Knowledge of rabies

90% of the population knew that there was a disease called rabies though only 45% of this could describe it (Table 2).

Table 2 Proportion of people who knew about rabies in Kisumu County

Sub county	No	Yes	Grand Total
KisumuEast	5	30	35
Seme		17	17
Grand Total	5	47	52

No – Didn't know about rabies.

Yes- Knew about rabies.

Twenty five percent of the respondents knew about the furious form of rabies and described it as the animal being aggressive towards people (Figure 6), while 2% knew about the dull form. 4% recognized that dogs drool excessively when exposed to the disease. 35% of the population could not describe rabies and didn't know how it presents.

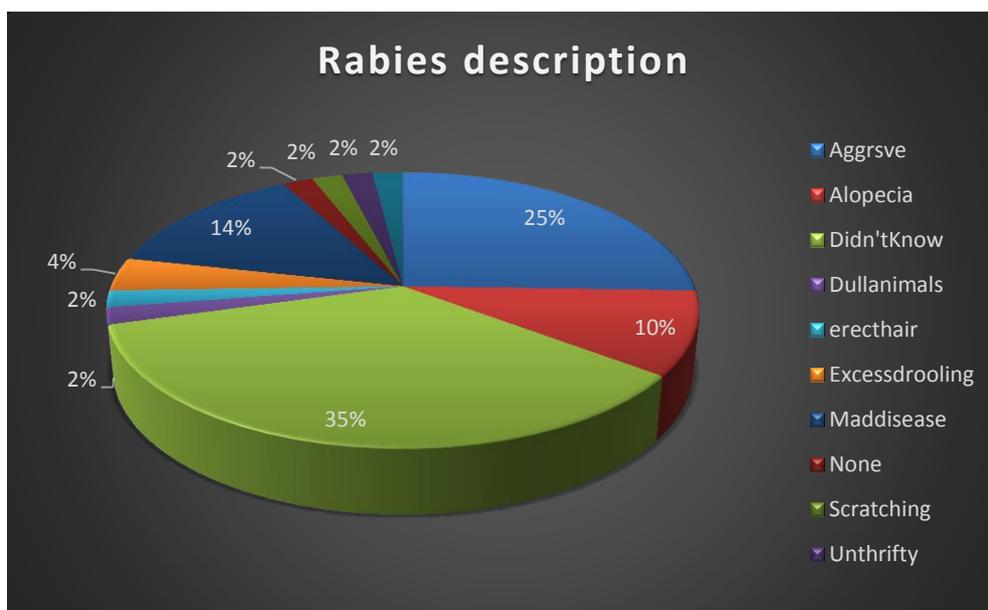


Figure 6A pie-chart showing rabies description responses in Kisumu County

Twenty three percent of the respondents indicated that humans could transmit the virus while a large proportion (49%) agreed that dogs were the major cause of transmission (Figure 7) Some (16%) thought cats can also serve as a reservoir for transmission. 4.2% said that it also occurs from wild animals such as the Cheetah, hyena and wild dogs apart from the dog.

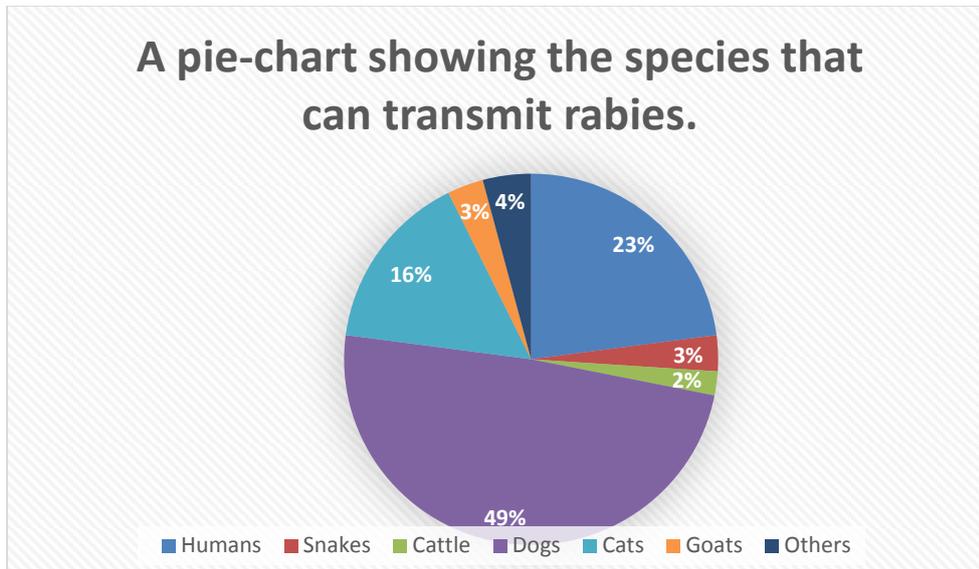


Figure 7 A pie-chart showing the different species that can transmit rabies

Out of the selected sample, 64.7% said that the most common route of transmission is through bites, and 21% didn't know how it's transmitted to humans (Figure 8)

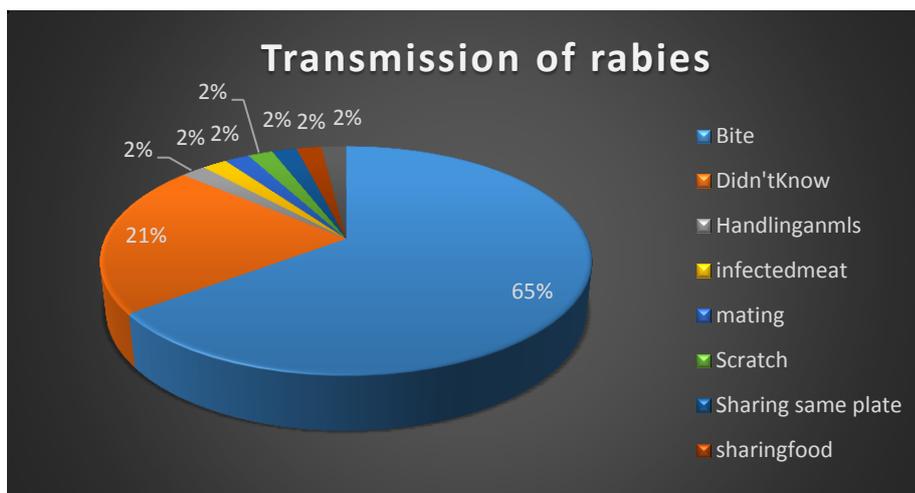


Figure 8 A pie-chart showing the transmission route of rabies

Of the respondents, 35% feared rabies because it causes death while 22% feared it because of the fact that it's expensive to treat someone whose been infected by the virus (Figure 9). Only 2% of the sample size thought that's its zoonotic and that's why they feared it.

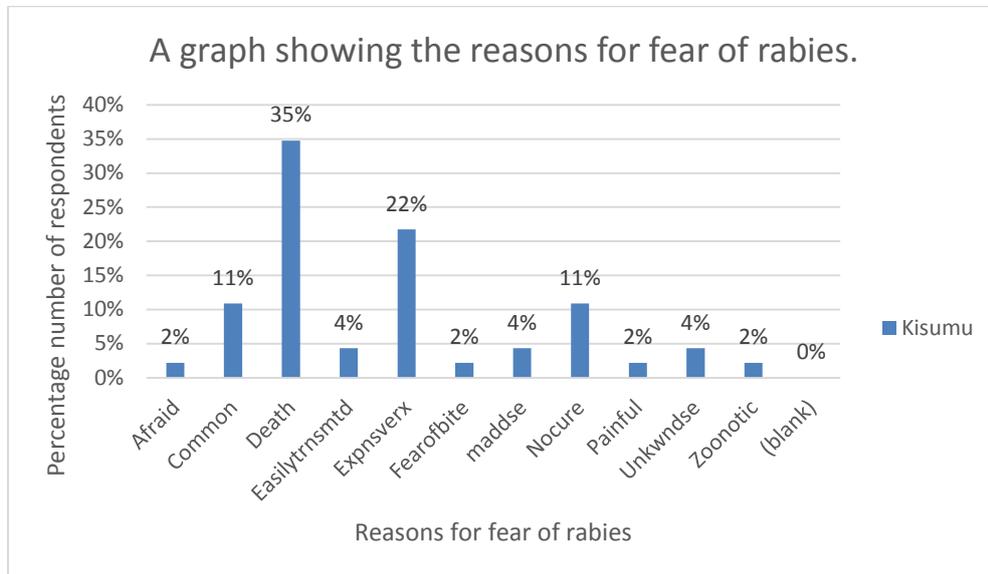


Figure 9 A graph depicting the reasons for fearing rabies

Over fifty percent (53.8%) believed there was no cure for rabies once the symptoms start to show (Table 1.3)

Table 3 Rabies cure response in Kisumu County

Rabies cure	Kisumu subcounties		Grand Total
	KisumuEast	Seme	
Didn't Know	4	3	7
No	16	12	28
Yes	15	2	17
Grand Total	35	17	52

Didn't know – they didn't know anything about a cure.

No – they said there was no cure

Yes – there was a cure

4.3 Rabies prevention in humans and control in animal populations

A vast majority of the population (83%) know that rabies can be controlled in animals and a large proportion of this (52%) think it's through vaccination while 6% think that the best way of control is through treatment by a veterinarian (Figure 10)

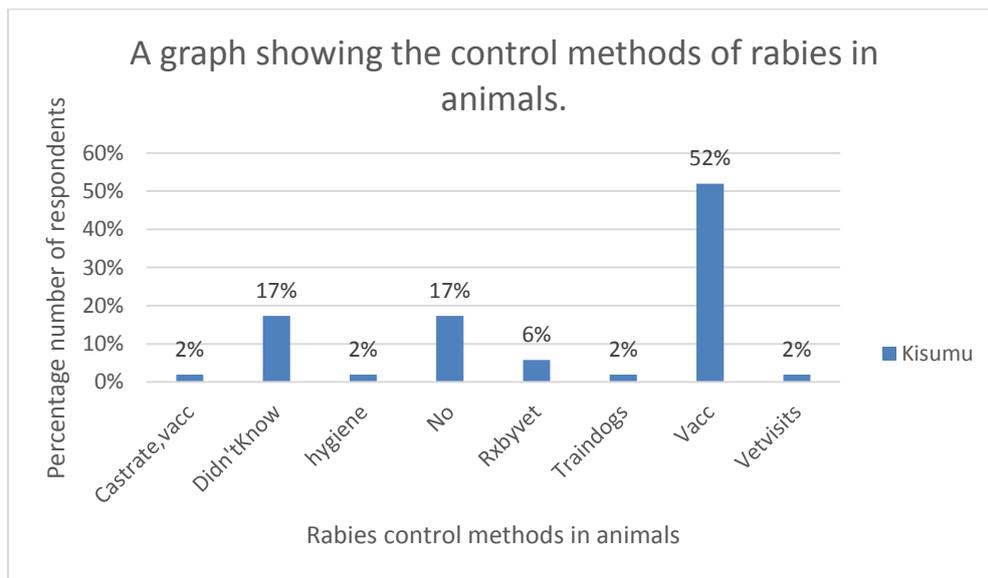


Figure 10 A graph showing the methods of rabies control in animals

4.4 Source of information of rabies

There were numerous sources of information of rabies. Some of the respondents heard about rabies from more than one source. The most common source of information was the local community from friends, neighbours and relatives (49%), and then from schools (38%). Some got it from the radio (5%) while 5% of the population got it from other sources (Vaccination campaigns and from health centres). Brochures and newspapers were insignificant as no one got information from these sources (Figure 11)

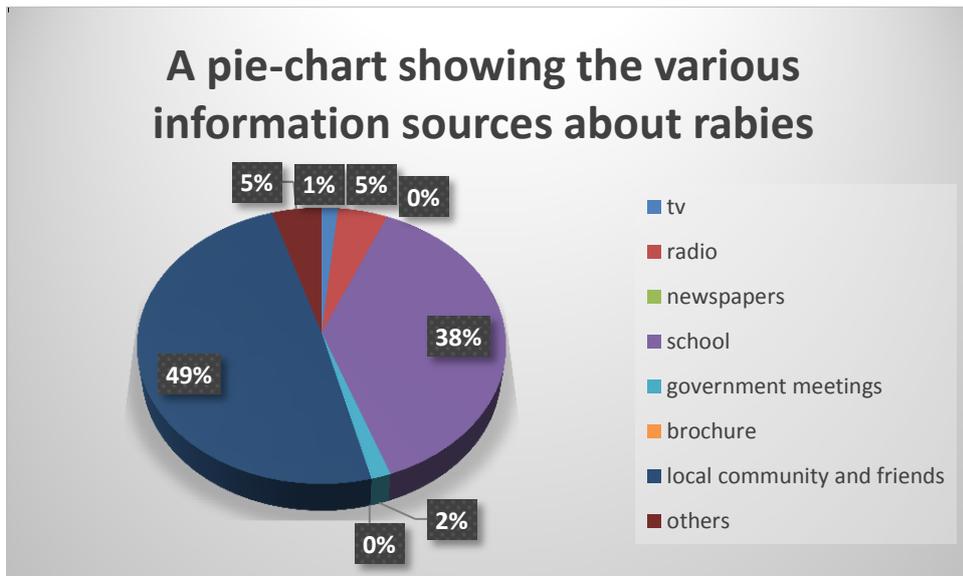


Figure 11: A pie-chart showing the different sources of information about rabies

4.5 Health seeking behaviours among people in Kisumu County

Sixty nine percent of the population said that a person bitten by a suspected dog of rabies should be immediately sent to the hospital (Figure 12), while 23% didn't know what to do.

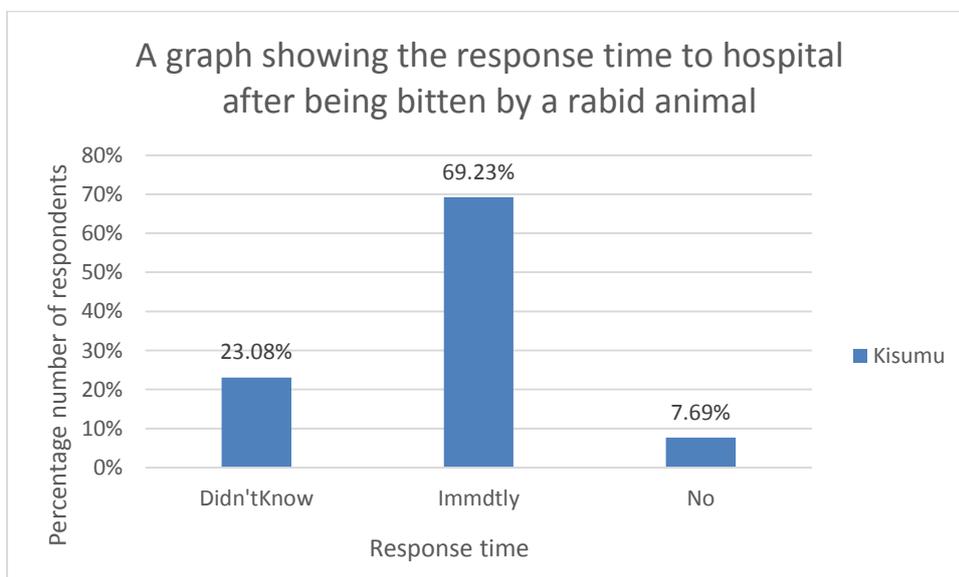


Figure 12: A graph showing the response time to hospital after being bitten by a suspect rabid animal

Of those interviewed, 28% didn't know what kind of treatment is instituted to a person in hospital. Out of the remaining 72%, some said that post exposure prophylaxis with vaccines is administered (67%), while 19% said that antibiotics are given. None of the respondents believed that dressing the wound proved helpful. 14% said that tetanus shots are given once in hospital (Figure 13)

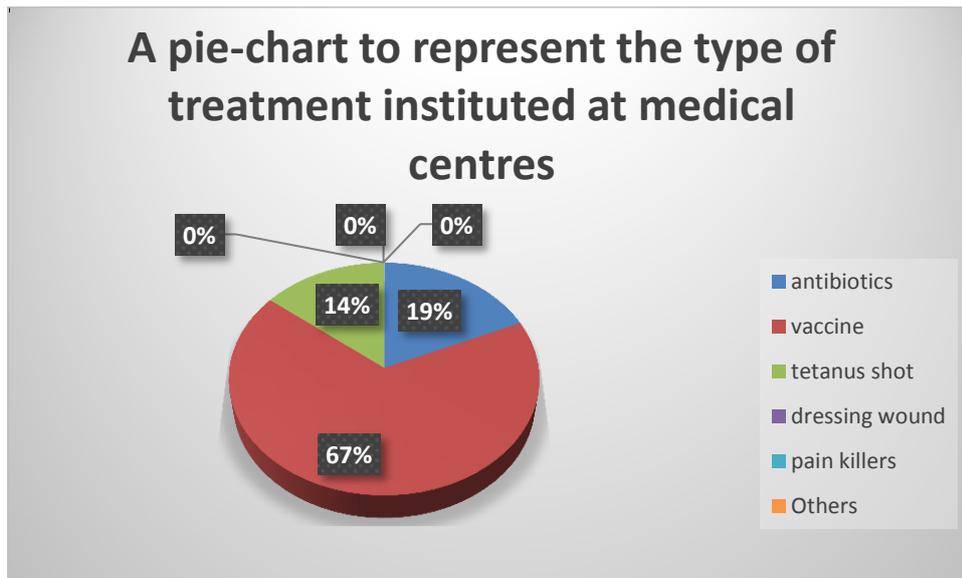


Figure 13: A pie-chart representing the type of treatment instituted at medical centres to persons bitten by a suspect rabid animal

4.6 Practices on suspect rabid animals and control of rabies

When asked about actions to be taken with regards to a suspect rabid animal, most respondents (34%) reported that they would kill the animal, while only 7% said that a veterinary doctor should be notified. A large proportion (33%) said nothing should be done (Figure 14).

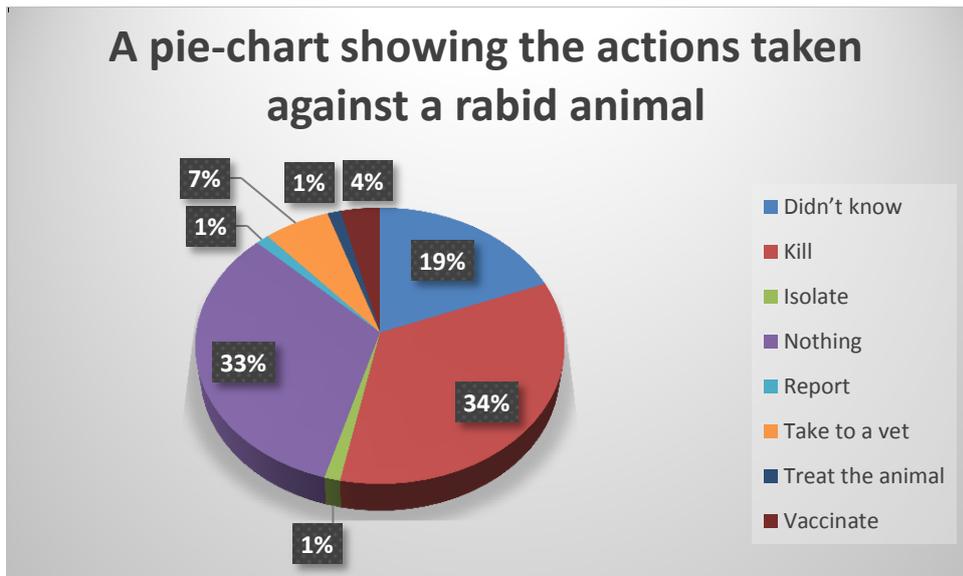


Figure 14: A pie-chart showing the actions taken to deal with a suspect rabid animal

When asked what to do with the body, 48% of the respondents said that it should be buried. Apart from burying, some also thought throwing the body away will suffice (9%), while 35% of the whole population didn't know what to do with the body once killed. The remaining thought either burning the bodies or reporting to the veterinary office was ideal (Figure 15).

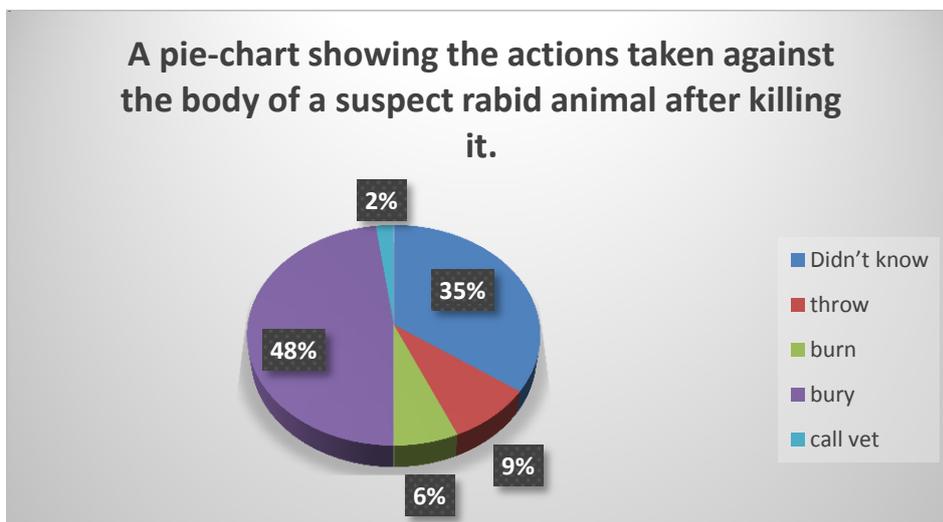


Figure 15: A pie-chart showing the actions taken against the body of a suspect rabid animal after killing it

Among the whole sample size, (Figure 16) only 27% had vaccinated their dogs against rabies while 31% had not vaccinated their dogs, and 41% didn't have dogs.

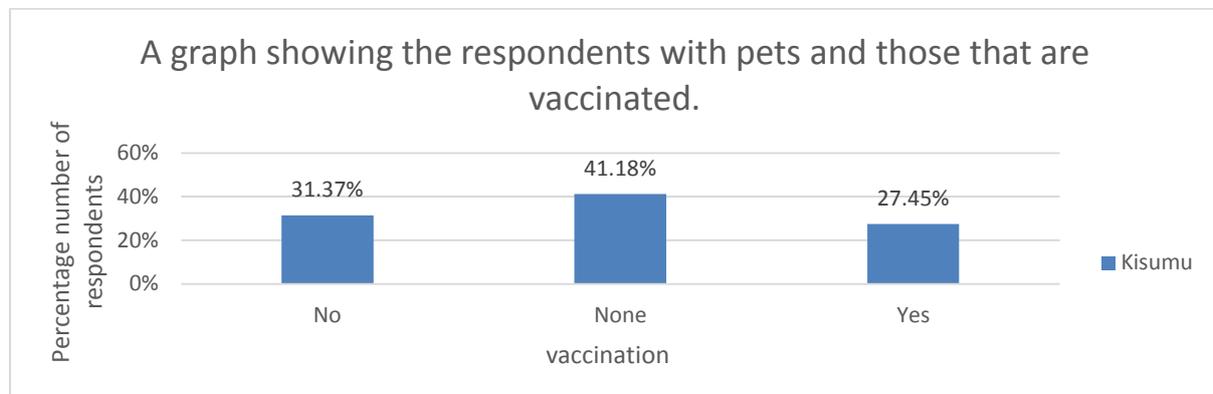


Figure 16: A graph showing the number of people with pets and those vaccinated against rabies in Kisumu County

Key:

No – they have not vaccinated their pets.

None - they have no pets

Yes – they have vaccinated their pets.

Among the households who had vaccinated their dogs, 26% had vaccination certificates as proof (Figure 17) while a large sample size (73%) didn't have proof of vaccination.

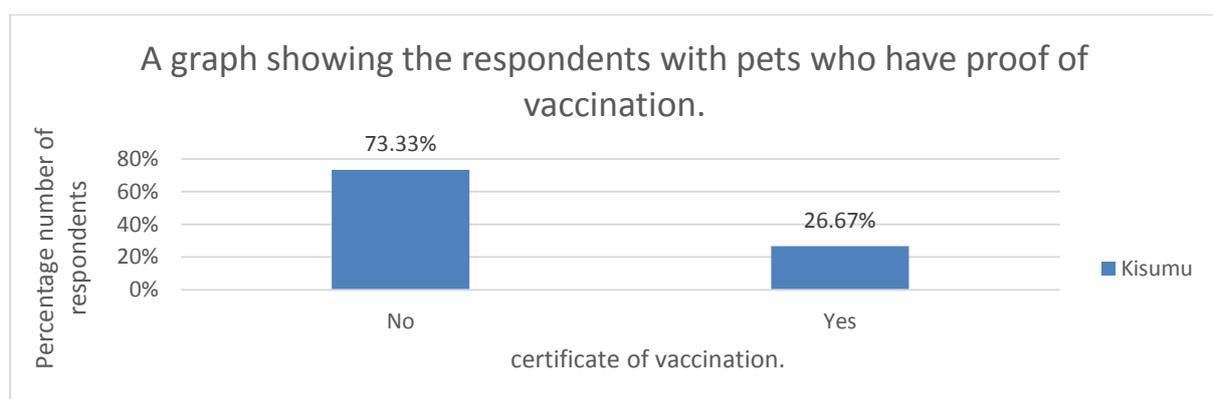


Figure 17: A graph showing the number of respondents with proof of dog vaccination certification in Kisumu County

CHAPTER 5

5.0 DISCUSSION

Rabies remains a significant public health problem in Kisumu County, where canine rabies is not controlled as should, and the bite of an infected dog is the most common means of transmission. Proper awareness of this disease poses a major challenge in this area with regards to aetiology, transmission, prevention and control which may be because of the lack of baseline on knowledge, attitude and practices regarding rabies in Kisumu County. The study confirmed that a large proportion of the community knew about the disease rabies and that the main method of transmission is through bites from an infected animal. The major limitation is that they lack a thorough understanding of the disease. This demonstrates the lack of the government to address to such issues such as organising campaigns to educate the community on a disease which has become an endemic problem in the region and responsible for the deaths of many. There's low level of knowledge and poor practice in control of the disease among the members of the community.

In Kenya, legislation exists to ensure adequate control of rabies. If fully implemented, such a legislation would be perfect for the control of rabies. However we suffer constraints such as lack of funding which lead to shortages of vaccines, and insufficient logistical support for rabies control policies (Karugah, 1994). Due to this constraint, most of the respondents get information from schools, friends, relatives and the local community. It therefore proves that rabies is a vital disease that should be taught in school for easier outreach to people and also children as they are the most affected when it comes to people who are bitten by rabid dogs. Media doesn't seem to be playing a major role in extension services and relaying information about rabies to the community in Kisumu County. The education provided in schools should include on the modes of transmission, species affected and post exposure prophylaxis from a bite wound from a suspected rabid case.

Under the guidelines of the WHO, (2005), immediate wound washing should be done using water and soap and disinfection before taken to the hospital. The study showed that this knowledge about disease prevention lacked among the respondents. They were also unaware of the need to wash and disinfect the wound while some even said that the wound should be bandaged and then the patient taken to hospital. In other studies done in India, Pakistan and Uganda also showed that a low proportion of the people practice wound washing with soap and water (Ichhpujani *et al.*, 2008, Fevere *et al.*, 2005, Chhabra *et al.*, 2004, Parviz *et al.*, 1998).

From previous studies, it has been shown that health professionals are a major contributor to the appropriate treatment and prevention of human deaths from rabies (Dube *et al.*, 2010). They could therefore contribute in raising awareness to the community about the risks associated with keeping unvaccinated pets or not understanding about the disease rabies. Exposed individuals are in immediate need of post exposure prophylaxis in order to save their lives. From this study it was evident that 89% would seek medical attention for post exposure prophylaxis. The rest 10% would not seek medical attention because of the lack of knowledge about the adverse effects of rabies. This could be corrected by carrying out proper awareness campaigns to the community about the dangers of rabies which may help prevent unnecessary human deaths from rabies. The main source of information was from the local community, neighbours and friends. This may lead to erroneous information being spread round by word of mouth.

It was unexpected that a higher proportion of the unemployed (19%) and not educated people (10%) were in the urban centres, though still a high sample of 21% had reached up to tertiary level. The knowledge that majority of the population had about rabies is that the dog was the principal vector in its transmission and it was mainly through bites. After being bitten, the person should be taken to the hospital immediately, and the community knew this. More than

half agreed that there was no cure for rabies once the clinical signs started to show, but the other half thought that it would resolve once post exposure vaccination is administered.

Mass dog vaccinations have proved the effective way to control rabies. More than half of the respondents had dogs (58%), but 27% of this proportion had their dogs vaccinated and it was from these mass vaccination programmes. They were also issued with certificates but some lost them along the way, with one of the respondents quoting that they used it to light up a 'jiko'. While in Seme Sub-County we were able to organise a mass vaccination for dogs but the turn-out was poor possibly because of poor awareness of the programme. From the study, it could be shown that there's a lack of communication with livestock officers when there's a suspect rabid bite case. 7% of the population agreed to call a veterinary officer in case a suspect rabid animal is seen or has bitten someone while a large sample of 33% said that they would do nothing. With such figures, it makes it difficult for veterinary officers to appreciate the scale of the problem and take the necessary steps in curbing this endemic problem. Reporting of rabies cases should be an ongoing part in a surveillance program by the veterinary services and should involve the community fully. In dealing with the body or a suspected rabid animal, 9% of the population suggested that the body of a rabid animal to be thrown away. This would pose a big threat to scavengers who would feed on dead infected animals without knowledge. Educational information suggests that all mammals suffer from rabies and that carcasses should be burned or buried to stop the transmission of rabies to scavengers.

CHAPTER 6

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

From the results of the study, the following conclusions can be drawn;

- A majority of the people in Kisumu knew about rabies and recognised the role of the dog in its spread
- Most owners had limited knowledge of rabies control and prevention
- Majority of the respondents heard about rabies from the local community, friends and from school.
- Some of the population sample size thought that a rabid body should be thrown away after it has been killed.

6.2 Recommendations

From the conclusions above, the following recommendations are suggested;

- There's need to educate the community on rabies especially prevention, control and how to handle such cases because the knowledge they have is low and insufficient.
- Extension services to be provided to the community by medical health personnel, teachers, researchers, veterinary practitioners, and the elders to promote awareness about rabies to the community. This will help to teach the community on what to do in the event of an occurrence of a rabid animal bite case and what is expected of them.
- Great care should be taken in all bite cases from mammals and addressed carefully and reported to the nearest veterinary office and medical office as soon as possible.
- The community members should be encouraged to vaccinate their dogs so as to reduce risk of rabies spread.

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7.1 Appendix I Questionnaire

UNIVERSITY OF NAIROBI
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DEPARTMENT OF CLINICAL STUDIES

**QUESTIONNAIRE ON SURVEY OF THE COMMUNITY KNOWLEDGE,
ATTITUDES, AND PRACTICE OF RABIES IN KISUMU COUNTY, KENYA, 2015.**

Questionnaire Number:

Date:

**SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS IN THE
SAMPLE POPULATION**

1. Name: _____

2. Physical address: _____

3. Sex: 1=Female 2=Male (circle correct one)

4. Geographical location: Rural / urban (circle correct one)

5. Highest level of education attained:

- i. No formal education
- ii. Primary education
- iii. Secondary education
- iv. Tertiary education and above

6. Occupation:

- i. Health related
- ii. Self employed
- iii. Student
- iv. Civil servant
- v. Other:

7. Religion:

- i. Protestant
- ii. Muslim
- iii. Catholic
- iv. Other

KNOWLEDGE ON RABIES

8. Have you ever heard of rabies? 1=YES 2=NO

9. a) If YES, where did you get the knowledge of rabies for the first time?

- i. From TV
- ii. From radio
- iii. From newspaper
- iv. From school

- v. From government/community meetings
- vi. From posters/leaflets/brochure
- vii. From local community (parent, neighbour, etc.)
- viii. Other, specify.....

b) If YES, how would you describe rabies?

.....

.....

.....

.....

10. Which species of animal can transmit rabies (circle to indicate the number mentioned)

- i. Humans
- ii. Snakes
- iii. Chickens
- iv. Dogs
- v. Cats
- vi. Cattle
- vii. Hyenas
- viii. Goats
- ix. Mongoose
- x. Another way? Specify.....

11. How can a person be infected by rabies?

- i. Through a bite
- ii. Through a scratch
- iii. Don't know
- iv. Other

12. Have you or any member of your family been exposed to a suspect rabid animal?

1=YES 2=NO

13. a) What is the first thing that you should do if you or any family member is exposed to any suspect animal bites (do not prompt for answers, but code if answer given – if respondent says go to hospital, ask if there is anything else that they should also do)?

- i. Wash wound with soap and water
- ii. Report to police
- iii. Wash with kerosene
- iv. Go to see healer
- v. Go to hospital
- vi. Other specify.....

(b) If respondent says go to hospital, How quickly should you do this?

.....
.....

14. If you were to go to hospital, what treatment would you expect at the hospital (do not prompt respondent for answers, but code if answer given)?

- i. Antibiotics
- ii. Painkillers
- iii. Vaccine
- iv. Tetanus
- v. Dress wound
- vi. Other specify.....

15. a) What would you do to the suspect rabid animal? That attempt to bite you/your family member/neighbour)?

- i. Immediately kill the animal
- ii. Report to livestock office
- iii. Do nothing
- iv. Other specify.....

b) If the answer is 1 (to kill the animal) what action would you take with the killed animal?

- 1. Throw away
- 2. Burn
- 3. Bury
- 4. Cut head and send to livestock office

16. Which would you fear most, (1) having malaria or (2) being bitten by a rabid animal? Why.....

.....

17. Is there any cure/treatment for a person who started developing rabies symptoms?

1=YES 2=NO

If YES, mention it.....
.....

18. Do you know ways to control rabies in animals?

1=YES 2=NO

If YES, mention them

- I.
- II.
- III.
- IV.

For respondents with dog/cat(s)

19. a) Has your pet dog/cat been vaccinated against rabies in the previous year?

YES NO UNCERTAIN (circle the correct one)

b) If YES can you show me the vaccination certificate?

YES (tick if seen)

YES (but uncertain where it is stored)

NO