

SURVEY FOR STRAY TENDENCIES IN DOGS AND ITS PUBLIC HEALTH IMPLICATIONS IN UNIVERSITY OF MAIDUGURI, NIGERIA -A PRELIMINARY STUDY

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INTRODUCTION

Rabies is an important zoonosis, worldwide in distribution with the exception of a few countries and areas that have historically been free of the disease¹⁻³. It is still endangering the lives of man and other warm blooded animals in many parts of the world,⁴ including Nigeria.⁵⁻⁸

The domestic dog is the primary source of infection in Nigeria. Human infection is most likely to occur through bites from owned unvaccinated dogs than stray dogs, although because of their tendency to roam far and wide, stray dogs appear to serve as primary source of spread of rabies from one community to the other⁹. The worldwide epidemiology of rabies has been the subject of many excellent reviews¹⁰⁻¹². The fundamental questions on the epidemiology of rabies is how it is maintained in nature. It is generally accepted that there are two interrelated cycles, the urban and sylvatic cycles, in which rabies is maintained¹³. The urban cycle is predominantly dependant on domesticated and stray dogs and cats. Its importance increases as urbanization and industrialization become prominent. Stray dogs remain potential means of transmission of rabies. There appears to be a lot of abandoned dogs that can be considered as stray dogs in the University and its immediate environment and the reasons for this abnormality ought to be investigated.

The objective of this study includes finding stray tendency in dogs and its public health implications on the communities of the University of Maiduguri campus and its immediate environment. Other objectives are to determine reasons associated with stray tendency and to determine the type of care given to dogs especially as it affects prevention of rabies. The work would help in understanding the role of dogs in the epidemiology of rabies.

Materials and methods

The Study Area

Maiduguri is located in the north-eastern part of Nigeria. It is at an elevation of about 354 meters above sea level, situated within the semi-arid zone of West Africa, at about 11° 51' latitude North and

ABSTRACT

Background: Dog population problems are mostly an urban problem. Occurrence of rabies in dog is related to the dog population density hence the need for ecological studies on dogs as it relates to rabies especially in Nigeria. There is paucity of information on dog ecological demography in Borno, northern Nigeria like in the rest of Nigeria. The aim of this study was to determine stray tendency in dogs and its public health implications on the communities of the University of Maiduguri campus and its environs.

Methodology: The study was cross sectional and was conducted between August and October 2005. A random sample of households within the University of Maiduguri community and Mairi Village, its immediate environment were surveyed using questionnaire and personal interviews to determine features of dog ecology relevant to the spread of rabies. The questionnaire was designed following the WHO guidelines.

Results: Out of 60 households interviewed, 48 (80%) confirmed the presence of stray dogs in their surroundings while 12 (20%) did not. Dogs were owned by 34 (56%) households while 26(44%) did not own dogs. The most important reason for owning dog was for security/protection. Factors enhancing straying of dogs were inadequate feeding of dogs, poor restraint of dogs and irresponsible dog ownership. About 36.5% of dog owners did not vaccinate their dogs against rabies. Children were more in contact with dogs than adults. The dog to person ratio was 1:7.8. The total number of dog bite cases were 33 with 54.5% of the cases in Mairi and 45.4% in the university campus.

Conclusion: Stray dogs abound in the University Campus and Mairi Village environment of the University of Maiduguri and pose health hazards including rabies to the communities. The University authority should without delay enforce rabies rules and regulations aimed at limiting the number of stray dogs in the campus and its environs. Workshops and educational campaigns should be organized to renew awareness among the public on the dangers posed by stray dogs and how to minimize them. Proper dog management reduces the risk of transmission of rabies to human and control of free-roaming and stray dogs should be part of the rabies control programme. Dog population studies should be extended to the entire Maiduguri metropolis for effective rabies prevention and control.

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13° 09' longitude East.¹⁴ The rainy season lasts for about 3-4 months (June to September), followed by a cold dry period (Harmattan) and a hot dry period between October to March and April to June, respectively. The temperatures are generally high all year round with a hot season temperature ranging between 39°C and 40°C under the shade. The livestock management is semi-intensive and the population is subdivided into two major religious groups which are Islam and Christianity. The major preoccupations of the people in the state are farming, fishing and commerce.

Method of data Collection

A random sample of households within the University community, Mairi village and its immediate environment were surveyed using questionnaire and personal interviews to determine features of dog ecology relevant to the spread of rabies. The questionnaire was designed following World Health Organization Guidelines.¹⁵ The questionnaire was filled during a personal interview with the household head or another adult person in the household to gather information of epidemiological interest such as dog ecology, social and economic factors associated with stray tendency of dogs. The questionnaire included parameters such as the general household demography, number of dogs, sex and age of dogs, dog/ people ratio, dog husbandry practices, information on dog bite and post-bite treatment and information on whether or not they like keeping dogs as well as reasons for keeping dogs. Each household was interviewed for about fifteen to twenty minutes.

Results

Table 1 shows the general household demographic data and variables pertaining to stray and housed dogs in the area. In all, 60 households were interviewed, the total number of dogs counted in all the households was 54. The total number of people in households was 414 and the mean number of persons per household was 6.8. The percentage of households with dogs was 56% while 44% households did not own dogs. In all, 38% households liked keeping dogs as opposed to 62% which disliked

keeping dogs. The overall dog to human ratio (household dogs to persons in household) was 1:7.8 but was 1:8.6 in the University staff quarters and 1:7 in Mairi environs of the University. About 80% households reported seeing stray dogs while only 20% households reported not seeing stray dogs in their surroundings. The major reason for not wanting to own or keep dogs was religious reason (38.09%). This was followed by outright hatred for dogs (37.65%).

Table 2 shows factors that enhance straying of dogs in the study area. Most households (88.50%) fed their dogs on family left over food and no household fed commercial dog food to their dogs. Only 19.57% households had their dogs restrained on leash (chain), majority of the dogs were free in households (69.89%) that were mostly unfenced. With regards to management of dogs, children had the responsibility of caring for dogs in most of the households (61.77%). On use of dogs, 85.30% of the households

Table 1: Demographic and Dog Ecology Observations within the University Campus and Mairi Village, Maiduguri, Nigeria

GENERAL INFORMATION		AREA		
		Campus	Mairi	Total
Number of households interviewed		30	30	60
Total number of people in households		190	224	414
Mean number of people per household		6.33	7.46	6.8
Total number of dogs		22	32	54
Dog/people ratio		1:8.6	1:7	1:7.8
Number of households with dogs		17(56%)	17(56%)	34(56%)
Number of households with no dogs		13(44%)	13(44%)	26(44%)
Households which like keeping dogs.		10(33%)	13(43%)	23(38%)
Households which do not like keeping Dogs.		20(67%)	17(57%)	37(62%)
Households which do not like keeping dogs and Reasons.	Hate dogs	8(40%)	6(35.30%)	14(37.65%)
	Religious reasons	7(35%)	7(41.17%)	14(38.09%)
	Fear of their bite	3(15%)	4(23.53%)	7(19.26%)
	No time	2(10%)	0(0%)	2(5%)
Households reporting stray dogs		26(87%)	22(73%)	48(80%)
Households not reporting stray dogs		4(13%)	8(27%)	12(20%)
Households aware of rabies		27(90%)	24(80%)	51(85%)
Households not aware of rabies		3(10%)	6(20%)	9(15%)
Cases of dog bites		15(45.45%)	18(54.55%)	33(100%)
Post exposure rabies vaccination		13(86.7%)	4(22.22%)	17(54.46%)

Table 2: Stray Tendency Factors in dogs within the University Campus and Mairi Village, Maiduguri, Nigeria

Name of area		Campus	Mairi	Total
Number of dogs		22	32	54
Total Males		14	24	38
Total Females		8	8	16
Male/Female ratio		1.75:1	3:1	2.37:1
Number of Vaccinated dogs		19(86.37%)	13(40.62%)	32(63.50%)
Number of non-vaccinated dogs		3(13.63%)	19(59.38%)	22(36.50%)
Feeding habit	Get family Left over	19(86.37%)	29(90.62%)	48(88.50%)
	Cook special Food	3(13.63%)	2(6.25%)	5(9.94%)
	Commercial dog Food	0(0%)	0(0%)	0(0%)
	Others	0(0%)	1(3.13%)	1(1.56%)
	Free in the House	17(77.28%)	20(62.50%)	37(69.89%)
Keeping habit	Tied with chain	5(22.72%)	5(15.62%)	10(19.57%)
	By another means	0(0%)	7(21.88%)	7(10.94%)
Management of dogs	Father/Owner	7(41.18%)	4(23.53%)	11(32.35%)
	Mother	0(0%)	2(11.77%)	2(5.88%)
	Children	10(58.82%)	11(64.70%)	21(61.77%)
Use of dogs	Security	14(82.35%)	15(88.24%)	29(85.30%)
	Herding	0(0%)	0(0%)	0(0%)
	Hunting	0(0%)	1(5.88%)	1(2.94%)
	Pet	3(17.65%)	1(5.88%)	4(11.76%)

kept dogs for security reasons and only 11.76% kept dogs as pets. Table 2 also shows that 63.50% of the households vaccinated their dogs against rabies while 36.50% households kept unvaccinated dogs at the time of the study. The male:female dog ratio was 2.37:1 and more dogs were kept in Mairi than in the households in the university campus.

Discussion

Analysis of available diagnostic records indicate that the dog is the major reservoir of rabies in Nigeria.^{6,16} Occurrence of rabies in dogs is related

to dog population density hence the need for ecological studies in dogs as it relates to rabies¹⁵ especially in the developing third world countries where the disease is endemic and poses potential threats to a considerable proportion of the more than 2.5 billion people living in these areas. In Nigeria, some workers⁹ demonstrated that the incidence of rabies is closely associated with dog population and that areas with few dogs because of religious beliefs seem to have negligible rabies problems. In our study only 38.09% of the households did not keep dogs for

religious reasons, but the numbers of households keeping dogs were the same (56%) for the campus and its environs, Mairi village. It would appear stray dogs were a cause for concern in the community during the study as 87% of the households in the campus and 73% of households in the University environs made this observation (Table 1).

Our findings contrast with those carried out in Kaduna¹⁷ and in Plateau States,¹⁶ indicating different ecological reasons in different areas of the country. In order to design a suitable mass vaccination programme for rabies control, knowledge of the ecology of the dog in each part of the country is important. It is important to know why dogs stray and devise measures against the tendencies. A combination of a high proportion of owned unvaccinated dogs and stray dogs as observed in our study gives a large proportion of susceptible dogs that maintain rabies in the dog population. A situation where most dogs are fed only scraps from the masters table and the care of dogs left to children; and dogs not chained but free in the mostly unfenced households leaves plenty of room for dogs to stray and this could cause social and health problems in the community.

Some societies do not allow people to keep dogs and so dogs are not a problem there. In Nigeria however, most tribes keep dogs, even though few do not keep dogs for cultural reasons. Where dogs are kept as pets, they are essentially exotic dogs owned by rich people. At the moment, there is no nominal license fee to keep a dog. If there were such a fee and it was raised higher the keeping of dogs might be discouraged and there would be less stray dogs in the streets. This should be one of the strategies on the problem of urban dog control that government officials should consider.

In our study most dog-owners possessed dogs for protection/security. This observation agreed with similar studies in Nigeria.^{16, 17} Changes in economy which produce unemployment and high crime rates are likely to lead to an increase in the number of stray dogs.

In our study, it was also observed that

36.50% of dog owners interviewed did not vaccinate their dogs against rabies because of lack of awareness on the part of the owners and lack of enforcement on the part of the authority concerned. If the figure is considered in relation to the high proportion of stray dogs, there is a high population of unvaccinated dogs.

Proper dog management reduces the risk of transmission of diseases to man. In the case of rabies, control of free roaming and stray dogs should be a part of the disease control programme. However, people have negative response towards the destruction of stray dogs. Based on

this, WHO is encouraging oral vaccination programme of this dog population which have no access to parenteral vaccination.¹⁸ Nigeria should be part of the programme, without further delay. Members of the public should be educated on the dangers of zoonotic diseases especially rabies, their modes of transmission, how to prevent exposure and responsible dog ownership.

Based on our preliminary study, it is recommended that the University authorities rigidly enforce rabies rules and regulations to limit the number of stray dogs in the campus and its

environs especially that not less than 4 cases of dog bites per year were reported to the Veterinary Teaching Hospital, University of Maiduguri. Workshops, conferences and educational campaigns should be organized to renew awareness among the public on the dangers posed by stray dogs and how to minimize them. There should be vigorous efforts to reduce stray dogs and dog bites by enforcing effective and strict legislation on impounding and destruction of ownerless and unclaimed stray dogs. There should also be control of rabies by vaccination of owned dogs.

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