Medico Research Chronicles

ISSN No. 2394-3971

Original Research Article

PREPONDERANCES OF DOG OWNERS TO NEUTERING OF COMPANION ANIMALS: A SURVEY OF DOG OWNERS IN MAIDUGURI METROPOLIS, BORNO STATE, NIGERIA

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Submitted on: August 2016
Accepted on: August 2016
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Abstract

Neutering of companion animals has always been a subject of debate between the owner and the veterinarian, who perform the art. The decision to neuter any pet animal is partly influenced by the owner's preponderance to neutering. In a bead to assess the preponderances of dog owners in Maiduguri towards neutering their dogs, an investigative survey was carried out on 220 dog owners having unneutered dogs, using a closed–ended questionnaire structured by the investigators. The questionnaire sought the demographic characteristics of the dog owners, their general attitudes towards neutering of companion animals, as well as, their preponderances to management and neutering of their own dogs. The questionnaire was administered to respondent dog owners via the assistances of State Veterinary Hospital and University of Maiduguri Veterinary Teaching Hospital staffs, both in Maiduguri. Data generated from the information collected were analyzed. The results showed that majority of the respondents (70%) indicated single dog ownership, and 67.7% of the dogs were local breeds, while majority were male dogs (79.4%). Management practices such as vaccination, deworming, medical checkup, grooming, dog exercise, and training were observed routinely by only few of the respondent dog owners. Neutering of female dogs rather than male dogs, was generally supported by most dog owners in this study (M = 3.56). Majority of respondents believed that neutering of male companion animal de-males it (M = 4.33). It was deduced from the study that dog owners highly regarded their dogs in human terms, and might not want to neuter them. Our finding also revealed that dog owners had high preponderance that neutering of their dogs frustrates their sexual needs and that their dogs should have their rights to breed. Dog owners therefore, need to be educated on the cons and dons of neutering, so as to have a perfect management of dog population.

Key words: preponderance, companion animals, dog, dog owners, management, neutering, pets, survey, Maiduguri, Nigeria, sterilization.

Introduction

Dog ancestry has been traced to small civet-like mammals, called miacis, which has short legs, a long body, and lived approximately forty million years ago (Bodner, 2007). Dogs are animals with strong social tendencies, and which typically crave close contact with their owners (Bogel, 1990), tending towards forming loving bonds. This companionship often helps to ease the pain of isolation of the elderly people, or those persons whose physical or mental health requires long term convalescence or institutionalization (Coopinger and Coopinger, 2006; Bodner, 2007).

Dogs communicate with vocalization; they usually bark, whimper, growl and howl. They also use body positions, head movements and scents from scent glands to mark hunting territories, display authority and advertise their receptivity to mating (Mayers, 2007). The presence of the scent glands probably enables a dog trace its way back home from even a far distance. Dogs have been used to hunt for food, herd animals and guard livestock and property (Berck and Katcher, 1996; Vila, 2006), destroy rodents and other vermins, pull carts and slads, perform rescues and apprehend law-breakers (Coopinger and Coopinger, 2006). They have also been used during war times as sentinels and as message carriers. Dogs possessing a keen sense of smell (e.g. German shepherds, golden retriever, beagle and Newfoundland dogs) have been trained to become detectors of hidden objects, drugs, explosives, termites, and decomposed bodies immersed in deep waters (Brower, 2002; Bodner, 2007). In wide parts of the world dog meat, commonly known as 404 in Nigeria, has been used as a special delicacy (Arthurs, 2006; Kum, 2003; Saletum 2002; Young, 1999).

Neutering is a surgical intervention aimed at permanently removing the gonads (testicles or ovaries) of an individual. According to Roxana and Rusu (2010), it is a routine medical event in companion animals that starts and ends with a visit to the veterinarian. The objective of neutering is generally to prevent dog overpopulation, unwanted and costly litters, reduce undesirable pet behaviors such as fighting, urinal or fecal littering of the environment and roaming for mating. According to Mamming and Rowan (1992), neutering of companion animals is in most cases an expression of the owner's will. However, little is known about the preponderance of dog owners to dog neutering in general. Dog owners' preponderances to neutering can influence their decision to sterilize their own pets (Roxana and Rusu, 2010). Neutering can affect the animal in many ways: it can alter the direct fitness of an animal (the ability of an animal to pass on its genes to the next generations) through direct reproduction and other behavioral and physiological consequences such as, decrease in territorial marking behavior, decrease in several behavioral displays related to reproduction, decrease in roaming, and an increase in separation anxiety symptoms (Fielding *et al*., 2002). According to Jacoby and Mattel (1971), preponderances to neutering and the decision to neuter do not always overlap at the motivational level, and that preponderances do not always predict decision to neutering or sterilization.

The level of attachment to dogs and attitudes towards neutering of dogs can provide an interaction interface between the dog and its owner, and this interaction may vary according to the gender of dog owner (Serpell, 2003). The attitudes of dog owners towards neutering, housing and care of pet animals is generally, an important factor to consider when for instance assessing the level of preparedness of a society towards implementation of pet management programmes.

Owner's preponderances to neutering are associated with different sterilization rates of dog (Fielding *et al*., 2002). In developed

countries for example, about 40% of dog owners have one or more dogs neutered, despite the presence of a humane society and other animal welfare groups which provide lower cost or free sterilization (Fielding and Mather, 2001). The present study was motivated to determine the preponderances of dog owners in Maiduguri metropolis to neutering of their dogs. It is important to understand the preponderances of dog owners towards neutering so that those concerned with education and/or planning sterilization initiatives or programmes should be better informed on the merits and de-merits thereof. The decision to neuter dogs or any companion animals is partly influenced by the owner's preponderance to neutering, and can result in psychological and physiological consequences such as, guilt, sadness, frustration, depression, increased stress etc., in either the owners or their animals.

Materials and Methods

In a bead to assess the preponderances of dog owners to neutering of their dogs, an investigative survey was carried out in Maiduguri Metropolis, capital city of Borno state in Nigeria. The study was carried out between March, 2009 and November, 2010, using a research instrument titled "Questionnaire on attitudes towards neutering of companion animals". The questionnaire contained demographic characteristics of dog owners such as, age, gender, and type and sex of dog owned, amongst other things, and sought information pertaining housing and care (management) of dogs, and owners' preponderances to neutering in general, as well as preponderances to neutering their own dogs.

The instrument was validated and made reliable by an expert in the area of Measurement and Evaluation before administering to the respondents. Validation according to Odo (1992) is the process of making sure that the instrument really tests the variables or categories the researcher acclaimed to test. In the present study therefore, the researchers, having constructed the instrument to use, provided the respondents with clear guidelines on what is expected of them. The guidelines included among other things, the purpose of the study and research questions. This idea was to help respondents determine which item actually elicits the information they intended to elicit. Reliability of instrument according to Odo (I992), involves the use of same measuring object to measure, test or evaluate the same object at different period in time and at each time receiving the same or similar result. In determining the reliability of the research instrument used in this study therefore, the researchers employed the test-re-test technique.

Dog owners were selected based on the criteria that they own a non sterilized dog and on being an adult above 20 years of age. A total of 220 copies of the questionnaire were distributed through the assistance of clinical staff of small animal clinics of the Veterinary Teaching Hospital, University of Maiduguri and State Veterinary Hospital Maiduguri, respectively, to respective respondents (dog owners), who patronize these veterinary health care centers. Records of addresses of some dog owners were obtained from these clinics, on which the questionnaire was also administered through oral interviews. In the questionnaire, the owners were asked to refer to only one non-neutered dog when filling in the questionnaire. A five (5) point likert scale (Jacoby and Mattel, 1971) was used to measure the owners' attitudes towards neutering of dogs in Maiduguri. The likert-scale according to Osuala (1993) is less frustrating to the respondent who wants to be truthful. The responses were rated as follows: Strongly Agree (SA) = 5 points, Agree (A) = 4 points, Undecided (U) = 3 points, Disagree (D) = 2 points and Strongly Disagree (SD) = 1 point.

Data analysis

Data generated were analyzed using descriptive and inferential statistics. Demographic characteristics of the respondents were analyzed using percentage proportion. The preponderances of Dog owner's to neutering their dogs were analyzed using the 5–points likert-scale responses. Weighted means of responses were taken as criteria and the means ranked. Responses with means of 3.0 to 5.0 were considered positive and within the criterion level; and responses with means below 3.0 were considered negative and so below the accepted criterion level. Responses with weighted means (3.0 to 5.0) accepted as positive criteria were considered as significant and in the affirmative, whereas responses with means below the criteria mean (3.0), and considered negative criteria were regarded as not significant.

Results

A total of 220 copies of the questionnaire were administered (190 self-administered and 30 administered by oral interview). Out of the 220 forms, 190 (86.4%) were retrieved completely filled, 9 (4.1%) incompletely filled, 10 (4.5%) mutilated, while 21 (9.5%) were not returned. At the end of the day 180 (81.8%) of the forms were analyzed relating to 180 respondents/dogs.

Demographics

The results presented in tables 1 – 3 described the demographics of the respondent dog owners in the present study. Majority 74 (41.1%) of the respondents were above 35 years old, 62 (34.4%) fall between ages 26 – 30, while 22 (12.2%) are below 26 years old. Gender distribution of dog owners indicated 111 (61.7%) male and 69 (38.3%) females. about 63% (113) of the dog owners were married, 35 (19.4%) were widowed, 5 (2.8%) were divorced, while 27 (15.0%) were unmarried/single (table 1).

Table 1 Demographic Characteristics of Respondent dog owners (n = 180)

Demography	Number (%) of Responses
Age of Respondent	
20 – 25	22 (12.2)
26 – 30	18 (10.0)
31 – 35	62 (34.4)
Above 35	78 (43.3)
Gender of Respondent	
Male	111 (61.7)
Female	69 (38.3)
Marital status	
Single/Unmarried	27 (15.0)
Married	113 (62.8)
Divorced	5 (2.8)
Widowed	35 (19.4)

Educational status of respondents indicated 110 (61.1%) have had tertiary education, 25 (13.9%) had secondary school education, while 30 (16.7%) had no formal education. Over 71% of the respondent dog owners were public servants, 48 (26.7%) self-employed and only 3 (1.7%) of the respondents were unemployed. About 83% of the respondent dog owners earned more than two hundred thousand naira (₦200, 000. 00) per annum, 21 (11.7%) earned between one hundred and fifty thousand and

two hundred thousand Naira per annum, 7 (3.9%) earned hundred to one hundred and fifty thousand Naira, whereas, 3 (1.7%) earned less than one hundred thousand Naira (table 2).

Table 2 Socioeconomic Characteristics of Respondents (n = 180)

Demography	Number (%) of Responses
Respondent's Educational background	
Non-formal education	30 (16.7)
Primary education	15 (8.3)
Secondary education	25 (13.9)
Tertiary education	110 (61.1)
Occupation of respondent	
Public Servant	129 (71.7)
Self employed	48 (26.7)
Unemployed/not working	3 (1.7)
Income per annum	
< ₦100, 000	3 (1.7)
₦100, 000 – 150, 000	7 (3.9)
₦150, 000 – 200, 000	21 (11.7)
> ₦200, 000	149 (82.8)

Dog Ownership characteristics results are presented in table 3. Results indicate that 126 (70%) of the respondents were sole ownership while 54 (30.0%) joint ownership. About 72% owned at least one dog, whilst only 5% owned more than three dogs at a time. Also 122 (67.8%) of the dog owners had local breeds of dogs, and only 10% kept exotic breeds. Age characteristics of the dogs under study indicated that 55 (23.1%) were less than 1 year, 73 (30.7%) were 1–2 years of age and 42 (19.3%) were above 3 years. Majority of respondents 63(35%) reside around Bama road and University of Maiduguri area, 37 (20.6%) reside around Bolori/Baga road area, 36 (20.0%) around Old GRA area, 17 (9.4%) Custom/Ruwan Zafi area, 12 (6.7%) Bulumkutu/Gomari airport area, 11 (6.1%) Damboa road area, while 4 (2.2%) reside around Gwange area of Maiduguri. It was found out that 45.6% of the dog owners have had current breed of dog before, and 27.4% still indicated interest to choose current breed in future. The primary purpose for dog keeping as indicated by respondents was for Security purpose (83.3%), Hunting (5.6%), Companionship (8.3%), Breeding (1.1%) and others not specified (1.7%).

Table 3 Dog Ownership Characteristics (n = 180)

Characteristic	Number (%) of Responses
Area of residence (location of dogs)	
Bulumkutu/Gomari airport area	
Bama road/University area	63 (35.0)
Bolori/Baga road area	37 (20.6)
Custom/Ruwan Zafi area	17 (9.4)

Gwange area	4 (2.2)
Damboa road area	11 (6.1)
Polo/Old GRA area	36 (20.0)
Dog Ownership status	
Joint ownership	54 (30.0)
Sole (Single) ownership	126 (70.0)
Number of dogs owned	
One (1)	129 (71.7)
Two (2)	42 (23.3)
Three (3) or more	9 (5.0)
Breed of dog owned	
Mongrel	122 (67.8)
Cross	40 (22.2)
Exotic	18 (10.0)
Has had dog during childhood	112 (62.2)
Has had current breed before	82 (45.6)
Will choose current breed again in future	49 (27.2)
Sex of dog owned*	
Male	189 (79.4)
Female	49 (20.6)
Age of dog owned*	
< 1 year old	55 (23.1)
1½ – 2 years old	73 (30.7)
2½ – 3 years old	64 (26.9)
> 3 years old	46 (19.3)
Primary reason for keeping dogs	
Security	150 (83.3)
Hunting	10 (5.6)
Companion	15 (8.3)
Breeding	2 (1.1)
Others	3 (1.7)

* Some respondents owned more than one (1) dog (n = 238)

Preponderances of dog owners towards management of their dogs

Dog owners exert various degrees of preponderances towards management of dogs. Preponderance to dog management was studied in the present study and the results are shown in table 4. Health management results indicate that 53 (29.4%) maintained routine vaccination of their dogs, 44 (24.4%) never vaccinated their dogs, whilst the majority 83(46%) of dog owners seldom vaccinate their dogs against commonly endemic diseases of dogs in the region. Owners who deworm their dogs routinely were 57(31.7%), and 55.6% seldom deworm their dogs against common dog parasites. Medical checkup, grooming, exercise and training of dogs were observed routinely by 53(29.4%), 98(54.4%), 42(22.8), and 33(18.3%) respectively, of respondent dog owners in Maiduguri. However, 99(55%) of dog owners do take their animals for medical checkup only when such animals become sick or were ill (table 4). About 44% of dog owners kept their dogs in confinement, either indoors or in dog kernels, whilst majority 56% kept their dogs unconfined.

Table 4 Attitudes of dog owners towards Health management of dogs (n = 180)

Management practice	Number (%) of responses
Vaccination	
Routine	53 (29.4)
Seldom	83 (46.1)
Never	44 (24.4)
Deworming	
Routine	57 (31.7)
Seldom	100 (55.6)
Never	23 (12.8)
Medical checkup	
Routine	53 (29.4)
Seldom	28 (15.6)
Never	99 (55.0)
Grooming	
Routine	98 (54.4)
Seldom	30 (16.7)
Never	52 (28.9)
Method of Housing	
Indoor (Confined)[a]	79 (43.9)
Outdoor (Unconfined)[b]	101 (56.1)
Dog Exercising	
Routine	41 (22.8)
Seldom	29 (16.1)
Never	110 (61.1)
Dog training	
Routine	33 (18.3)
Seldom	22 (12.2)
Never	125 (69.4)

[a] Kennels, Cages, wire mesh etc, [b] free to roam

Dog owners' general attitudes towards neutering companion animals

Table 5 shows the general preponderances of dog owners towards neutering companion animals. Majority of respondents supported that neutering a male dog de-males it, with higher response rate of a criterion mean (M = 4.33) and ranked first. Respondents who supported that females rather than male pets should be neutered, and that neutering female companion animals changes their personality were ranked second with same criterion mean (M = 3.56) respectively, indicating no significant difference in degree of acceptance or positivity.

Also respondents who opined that dogs should be neutered to make them grow big and fat had were ranked 4th with a response rate of criterion mean (M = 3.55), and those that totally did not support neutering companion animals were ranked 5th with a criterion mean (M = 3.11). Respondents that opined to the fact that companion animals should be left unneutered to enjoy sexual

acts just like humans were ranked 6th in their responses with a criterion mean (M = 3.09), and those who support that 'neutering dogs makes them generally inactive' was ranked 7th, with a criterion mean (M = 3.08). These responses having met the criterion mean (M = 3.0) were therefore rated of high preponderances (positive responses opposing neutering).

Further results indicate that respondents who supported that dogs should be neutered to control their population scored a criterion mean (M = 2.97) and was ranked 8th, and responses in favour of 'male dogs should be neutered rather than female dogs' scored a mean of 2.62, and was ranked 9th and responses supporting that neutering of a male companion animal changes its personality scored 1.98 and was ranked10th. Since these responses did not meet the accepted criterion mean (M = 3.0), they were considered negative responses, and therefore rated low preponderance to neutering.

Table 5 Dog owners' General Attitudes towards Neutering Companion animals (n =180)

Parameter	Responses						
	SA	A	U	D	SD	WM	R
Neutering dogs makes them generally inactive							
	110	156	237	26	27	3.08	7
Females rather than male pets should be neutered							
	340	112	150	8	30	3.56	2
Male pet should be neutered rather than female							
	155	104	90	54	69	2.62	9
Totally do not agree with neutering Companion animals							
	325	72	54	58	50	3.11	5
Dogs should be neutered to control their population							
	190	80	156	38	71	2.97	8
Neutering female companion animals changes their personality							
	365	80	90	100	7	3.56	2
Neutering a male companion animal changes its personality							
	73	40	129	96	18	1.98	10
Neutering a male dog De-males it	320	196	180	60	23	4.33	1
Dogs should be neutered to make them grow big and fat							
	370	76	111	64	18	3.55	4
Companion animals should be left unneutered to enjoy natural sex acts just like humans							
	245	152	42	98	20	3.09	6

Owner's attitudes towards neutering his/her own dog

In order to determine the preponderances of dog owners in Maiduguri towards neutering their own dogs, the statements in table 6 were used, rated according to likeness of the dog owner. The highest mean score of (M = 3.59) was ranked first in support of 'I think of my dog in human terms', and a mean score of (M = 3.48) in favour of 'my dog should have its right to breed' which was ranked second, whilst 'neutering my dog would frustrate its sexual needs' ranked third with mean score of (M = 3.39). More results revealed that responses of dog owners who were of the view that 'It is

against nature to neuter my own dogs' were ranked fourth with a mean score (M = 3.38), and those in favour of 'the thought of getting my dog neutered upsets me' scored a mean (M = 3.30) and was ranked fifth. More so, 'I totally do not agree to neutering my dog' got responses with a rated mean score (M = 3.20) and ranked sixth, and responses in support of 'female rather than my male dog should be neutered' scored a criterion mean (M = 3.17) and ranked seventh, and responses supporting 'neutering my dog would change its personality' was ranked eighth with a criterion mean score (M = 3.14). Preponderances to the above statements about dog neutering, having met the criterion mean were favorably strong. Dog owners responses in support of 'I want my dog neutered to enable it grow fast to scare away invaders' was ranked ninth with a mean score (M = 3.06), and 'my family members are against neutering my dogs' scored a mean (M = 3.03) and ranked tenth, while responses supporting 'not willing to neuter my dog' was ranked eleventh with a mean score (M = 3.01). These also were favorably rated positive preponderances by scoring the criterion mean. However, responses in support of 'willing to neuter my dog' scored a criterion mean (M = 2.99) and ranked twelfth, responses in support of 'my dog should be neutered to prevent it from roaming' scored a criterion mean (M = 2.97) and ranked thirteenth, and 'male rather than my female dog should be neutered' was ranked fourteenth with a mean score (M = 2.79), whereas, 'I can't afford the cost of neutering my dog' scored the lowest response rate with a mean score (M = 2.13) and was ranked fifteenth. The last four rating could not meet the criterion mean score (M = 3.0) and were therefore considered as negative responses with low or weak preponderances. Although, responses to 'not willing to neuter my dog' has met the criterion mean score (M = 3.0) and considered positive preponderance, it did not significantly differ statistically (P > 0.05) from the response score of 'not willing to neuter my dog. So also the scores of 'my dog should be neutered to prevent it roaming' and 'male rather than my female dog should be neutered' were not at variance with the score of 'not willing to neuter my dog'.

Table 6 Owner's attitudes towards neutering his/her own dog (n =180)

Parameter	Responses						
	SA	A	U	D	SD	WM	R
Willing to neuter my dog	265	120	42	56	55	2.99[a]	12
Not willing to neuter my dog	275	112	42	60	53	3.01[a]	11
Female rather than my male dog should be neutered	245	152	30	102	32	3.17	7
Male rather than my female dog should be neutered	135	144	102	76	45	2.79	14
Neutering my dog would change its personality	250	172	12	96	35	3.14	8
Neutering my dog would frustrate its sexual needs	350	104	3	140	13	3.39[b]	3
The thought of getting my dog Neutered upsets me	220	212	0	158	4	3.30	5
I think of my dog in human terms	415	36	87	98	10	3.59	1

My dog should be neutered to prevent it from roaming	225	156	39	62	52	2.97 [a]	13
My dog should have its right to breed	390	44	54	120	19	3.48	2
It is against nature to neuter my dog	445	32	0	96	35	3.38 [b]	4
I can't afford cost of neutering my dog	105	72	69	58	79	2.13	15
Family members are against neutering	200	152	60	104	30	3.03 [a]	10
I want my dog neutered to grow fat and scare away invaders	230	148	90	30	52	3.06 [a]	9
I totally do not agree with neutering my dog	340	60	57	82	37	3.20	6

a No significant difference between numbers with same superscript ($p > 0.05$)

Discussion

Preponderance to neutering is considered as only one part of the mechanism behind the crucial and irreversible decision to sterilize a companion animal, which according to Roxana and Rusu, (2010) can bring both psychological and physiological consequences such as sadness, frustration, guilt, depression and increased stress to both companion animal and its owner. However, attitudes to neutering have also been considered as a most important tool in planning management programme for companion animals. In this study, it was found out that owners willing to neuter their dogs and those not willing to neuter their dogs did not differ significantly ($P > 0.05$). This indifference in response may be due to lack of awareness in any form, on companion animal management programs at the local, as well as, at the national levels in Nigeria. Although statistically not significant, regardless of the type or breed of dog, and the sex of the owner, dog owners in Maiduguri agreed with neutering of their female rather than their male dogs.

In the present study 29.4% of dog owners had their dogs neutered compared to those reported in previous studies elsewhere, 42% (Fielding *et al*., 2002), 66% (Ralston 2000) and 77% (Blackshaw and Day, 1994) in India, America and Australia respectively. The reports by Fielding *et al* (2002), Blackshaw and day (1994), and Ralston (2000) indicated that 10% and 5% of dog owners gave cost as the reason for not neutering their dogs. Our finding indicates that cost was not a barrier for owners to neutering their own dogs. Our study supports the previous report by Fielding *et al*., (2002) that dog owners who thought neutering changes a dog's personality appear to consider the change negatively, as they were less likely to neuter their pets. In our study this assertion scored a mean of 3.13, which met the criterion mean; indicating that an agreement that neutering changes a dog's personality to the disadvantage of either the owner or the dog, and therefore is a negative change or of low preponderance. Our finding also supports the report by Blackshaw and Day (1994) in which Bahamian dog owners strongly regarded their dogs in human terms and thus were unwilling to neuter them. In the present study, Nigerian dog owners agreed to the projection of human values on their own dogs. This attitude probably resulted in a greater reluctance of dog owners in Nigeria to have their own dogs neutered. The statement "I think of my dog in human terms" scored a mean of 3.56 and was ranked first amongst the owners' attitudes towards neutering their own dogs with strong preponderance, and therefore was regarded as positive reason for dog owners not willing to neuter their dogs.

Contrary to the views of male dog owners in Bahamas, of not feeling upset about neutering their dogs (Fielding *et al*., 2002),

Nigerian male dog owners in this study considered neutering their male dogs to change their personality, removes their maleness, and thoughts of neutering their male dogs upsets them. Although, only 1% of dog owners in this study regarded breeding as the primary reason for keeping their dogs; wanting their dogs to breed (Mean, 3.48) was ranked second as the reason for not willing to neuter their dogs. This was considered positive reason (criterion mean 3.0) for not neutering their dogs. This was also reported as the most common reason by Fieldings *et al* (2002), considered by Bahamian dog owners for not neutering their dogs (32%). Ralston (2000), and Blackshaw and Day (1994) separately reported 21% and 27% in America and Australia, respectively, of dog owners' supports of breeding as reason for not neutering their dogs.

Owners who kept their dogs confined (fenced-in, or in yards), may consider their dogs protected from roaming dogs, or prevented from roaming, and may not appreciate the importance of neutering (fieldings *et al*., 2002). So also, those dog owners who routinely exercised, and trained their dogs. However, in this study, it was observed that majority of dog owners never took their dogs out for exercise and training, except for some few of them that have made this a routine. In the present study, only 44% of dog owners kept their dogs confined (in pens or indoors), and 56% kept their dogs unconfined, as such, owners' responses to neutering as a reason to prevent dogs from roaming was not positively achieved (Mean, 2.96) as this did not meet the criterion mean. However, this was not significantly different from their responses to willingness to neuter, and unwillingness to neuter their own dogs. Neutering assumes increased importance in a community that does not confine its dogs, as it can be used to decrease the number of unwanted dogs (Fieldings *et al*., 2002). The views of dog owners reported in the present study did not support this expression, as attitudes of owners to neuter their dogs just to prevent them from roaming did not score the criterion level accepted as positive. Lack of related study with comparable data from Nigeria has limited the findings in the present study from making generalization, as this is, to the best knowledge of the authors, the first study of this type conducted in Nigeria.

In conclusion, the results of our study indicated that regardless of gender differences, the preponderances of dog owners' influence neutering of dogs and any other companion animals. The sex of the dog was found to influence the attitudes of its owner towards neutering it. Although, this study did not make comparison between attitudes towards confinement and neutering, it is however, necessary to investigate and compare the two indices.

Conflict of interest

None to declare

Acknowledgement

The authors wish to appreciate the contributions of the staff of State Veterinary Hospital Maiduguri and that of Veterinary Teaching Hospital University of Maiduguri, for their assistance in administering the questionnaire for this research. We also thank the respondents for finding their time to respond to the questions appropriately.

References

- Arthurs, C. (2006). Vietnam's dog meat tradition. Http://enwikipedia.org/wiki/dog meat p 10.
- Berck, A.M., and ketcher, A.H. (1996). Between pets and people, the importance of animal's companionship. Purdue university press, lafayett – India p 316.
- Blackshaw, J.K., and Day, C. I(1994). Attitudes of dog owners to neutering pets: demographic data and effects of owner attitudes. *Autralian Veterinary Journal*, **7**: 113 – 116.

- Bordner, G.B. (2004). Dogs http://www.en Encarta.ofg. retrieved 27th, April, 2007.
- Bogel, K. (1990). Guideline for dog population management. Geneva – Switzerland, WHO/World Society for the protection of animals, p 9 – 102.
- Brewer, D.J. (2002). Dogs in antiquity. The origin of the domestic dog. Bulletin British Museum. *Zoology*, **29**: 119 – 199.
- Coopinger, R. and Coopinger L. (2002). A new understanding of canine origin, behavior and evolution, Chicago university press, Chicago, p 22.
- Fielding, W.J., and Mather, J. (2001). Some observations on dog ownership in the West Indies: a case study from the Bahamas. *Anthrozoös*, **14**: 92 – 80.
- Fielding, W.J., Samuels, D. and Mather, J. (2002). Attitudes and actions of West Indian dog owners towards neutering their animals: A gender issue? *Anthrozoös*, **15**: 206 – 226.
- Jacoby, J. and Mattel, M.S. (1971). Three-point likert scales are good enough. *Journal of Marketing Research*, 8: 495 – 501.
- Kum, K. 92003). Dog meat tradition. http://www.enwikipedia.wiki/dog meat.
- Manning, A.M. and Rowan, A.N. (1992). Companion animals demographics and sterilization status: Results from a survey in four Massachussets towns. *Anthrozoös*, **2**: 45 – 52.
- Odo, O.M. (1992). Guide to proposal writing in social and behavioural sciences. Enugu Snaap press ltd.
- Osuala, E.C. (1993). Introduction to research methodology. Onitsha, African FCP Publishers.
- Ralston, P. (2000). The state of the American pet. A study among pet owners. http://www.purina.com
- Roxana, I.C., and Rusu, A.S. (2010). Attitudes of Romanian pet caretakers towards sterilization of their animals: Gender conflict over male, but not female companion animals. *Anthrozoös*, **23**: 185 – 191.
- Serpell, J.A. (2003). Anthropomorphism and anthropomorphic selection: Beyond the "cute response" *Society and Animals*, **11**: 83 – 100.
- Vila, C., Peter, S., Jesuse, M., Isabel, R., Amorm, J.R., Rodney, L., Hong, C., Keith, A.C., Foalcin, I., and Wayne, R. (2006). A multiple and ancient origin of the domestic dog. *Science*, **376**: 1687 – 1689.
- Young-Gem, Ann (1999). Dog meat food in Korea. *Korean Journal of Food and Nutrition*, **12**: 397 – 408.