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Dog breeds acquisition and owners' awareness of associated surgical conditions in Nigeria

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The study evaluated dog owners' awareness of breed-associated surgical conditions in Nigeria as indices for breed choice with structured pre-tested questionnaires administered to dog owners in 17 states of Nigeria. Alsatians (36.8%) and Rottweiler (13%) breeds were mostly possessed by owners. The majority of the respondents were females (60.4%) owners. Lagos (53.4%) and Oyo (52.1%) states had the highest number of respondents while Kaduna (1.25%), Enugu (1.25%), Ekiti (1.25%), and Plateau (1.25%) states had the lowest. Most of the respondents (84.8%) are within the age bracket of 16 to 30 years, while 46.6% were University graduates and 90.8% had kept dogs previously. Factors that influenced dogs' breed choices included: Body size (66.6%), coat colour (78.6%), natural intelligence (96.4%), information on the internet about the breed (54.6%), breed type possession by a close relative (53.4%), information regarding animal care from the Veterinarian (39. 2%), and recommendation by friends (42.6%). Respondents routinely visited the veterinary health centre for a general check-up and disease prevention (79.6%), vaccination and routine worming (79.2%), and treatment of diseases (79.8%). Respondents had varying knowledge of common surgical diseases: Cruciate ligament rupture (13.6%), gastric dilation/volvulus (13.6%), portosystemic shunt (15.0%), entropion (17.7%), ectropion (17.7%), osteochondrosis dessicans (17.7%), tracheal collapse (17.7%) etc. Only 10.9% of the respondents were aware of persistent health challenges in their dogs, while 84.4% of the respondents were uninformed of their dog breed predisposition to certain health challenges, and 82.3% of respondents were not aware of their dogs' predisposition to any surgical disease. These findings imply a need for veterinarians' input in dog choices, for recommendation of legislation mandating potential owners to seek out information about health care conditions of prospective dog breeds from authorized sources before possession to forestall frustrations, and avoidance of ultimate pet abandonment associated with management cost and social adjustment following surgical diseases.

Key words: Breed, clients, predisposition, surgical diseases.

INTRODUCTION

Surgical diseases are challenging animal health conditions that require surgical therapy for their amelioration. They affect different body systems and are predominant in certain dog breeds. They include eye,

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conditions such as: cataract, central progressive retinal atrophy, corneal dystrophy, distichiasis, ectropion entropion and retinal dysplasia that are common in Labrador retrievers, Boxers, German shepherd and Golden retriever (Gough and Thomas, 2004). Ear conditions such as chronic otitis externa, otitis media, and internal auricular hematoma, are common in Cocker Spaniel, Boerboel, Caucasian, and other breeds with pendulous ears, and those with excessive oil and sweat glands that predispose them to blocked or infected ear canal (Tidholm and Johnson, 1997).

Cardiac conditions such as: mitral dysplasia, ventricular ectopy and tricuspid dysplasia are common in Bull terrier, German shepherd dog, Golden retriever, Great Dane, Labrador retriever and Old English sheepdog (Gough and Thomas, 2004). Gastrointestinal conditions, such as: oropharyngeal dysplasia, gastric dilatation/volvulus, perianal fistula are common in Great Dane, Doberman, Irish setter, Labrador retriever and Irish wolfhound (Gough and Thomas, 2004; Zeltzman, 2015). Musculoskeletal conditions, such as: elbow dysplasia, hip dysplasia, and bone cyst are common in Bullmastiff, English setter, and Labrador retriever, to mention a few.

Most of these surgical diseases are preventable if pet owners are adequately informed and necessary precautionary measures are taken for prevention. Dog possession in different climes is influenced by many dog breeds' attractive qualities such as; coat colors, coat type, facial, body and tail conformations, size, behaviour, temperament, cuteness and resilience (Waller et al., 2013; Brown et al., 2013; Pederson et al., 2016; Teng et al., 2016). Puppies are typically readily acquired compared to adult dogs (Brown et al., 2013).

Dog breeds of moderate cost are also more readily acquired than the more expensive ones (McMillan et al., 2013; Pirrone et al., 2016). A search for 'ideal dogs' in some climes has advanced some dog choice criteria. In Australia, medium size (10 to 20 kg), neutered, short/ straight haired puppy, that requires 16 to 30 min exercise per day and between 1 and 15 min grooming per week, safe with children, easily house-trained, obedient, friendly and affectionate, do not escape from home facility, and are not destructive when left alone, and with expected lifespan of at least 10 years are preferred (King et al., 2009).

A similar study in Italy found a much lower preference for neutered than intact dogs (Diverio et al., 2016). A surge in influx of exotic dog breeds from South Africa and some western countries for companionship and security purposes has been observed in Nigeria and some West African countries (Eyarefe and Dei, 2014; Eyarefe et al., 2015). The socio-economic cost of morbidity and mortality through surgical diseases, could be avoided or curtailed if adequate information were provided about breed-associated medical conditions for owners' awareness and possible prevention. This study therefore sets to investigate Nigerian dog owners' awareness of breed associated surgical conditions, and possible efforts made at prevention, as there is a paucity of studies on pet owners' knowledge of breed-associated surgical diseases in Nigeria. This could provide the basis for dog owners' education on breed-associated surgical disease for rational decision making on dog possession.

MATERIALS AND METHODS

Survey instruments design

A structured, pre-tested questionnaire with a reliability coefficient of 0.98 was administered to pet owners to evaluate their awareness of breed-associated surgical conditions in Nigeria. The instrument consisted of two parts. Part A (two sections) included pet's and pet owner's demography. Part B (seven sections) included: assessment of dog owner's previous experience with dog keeping; of factors that influenced dog owner's choice of dog breed, of dog owner's purpose on dog possession; of how conversant dog owners are with dog breeds; assessment of dog owner's reasons for seeing the veterinarian; assessment of pet owners rating of pet's health status; and assessment of dog owner's knowledge of breed-associated surgical conditions. The Likert scale was adopted as respondents' indicators for the study.

Instrument administration

Hard copies and online copies of questionnaires were made available to dog owners. Incompletely filled questionnaires were excluded from analysis. Respondents were able to communicate in English language.

Data analysis

Data generated were coded and entered into Microsoft Excel for windows 2010 version and exported into a statistical package for the Social Sciences: (SPSS®) version 17, for further analysis. Data generated within each category were presented in percentages and standard error of means.

RESULTS

Pet demography

Of over 1062 dogs recorded, the Alsatian breed (390.36.7%) was mostly possessed by dog owners surveyed, closely followed by Rottweiler (141.13.0%), Boerboel (78.7.3%), Mongrel (56.5.2%), and Lhasa Apso (56.5.2%), Samoyed (51.5.0%), Bull Dog (41.3.7%), Caucasian (33.3.1%), Doberman (12.1.1%), Chowchow and Pitt Bull each having 6 (0.7%), Beagle, Neopolitan Mastiff, and Bull Mastiff each having 5 (0.5 %), Retriever having 4 (0.4%), other unlisted exotic breeds added up to 173 (16.2%) (Figure 1 and 2).

Pet owners' demography

The majority of the respondents were females 302 (60.4%), and the rest males were 198 (39.6%). Lagos

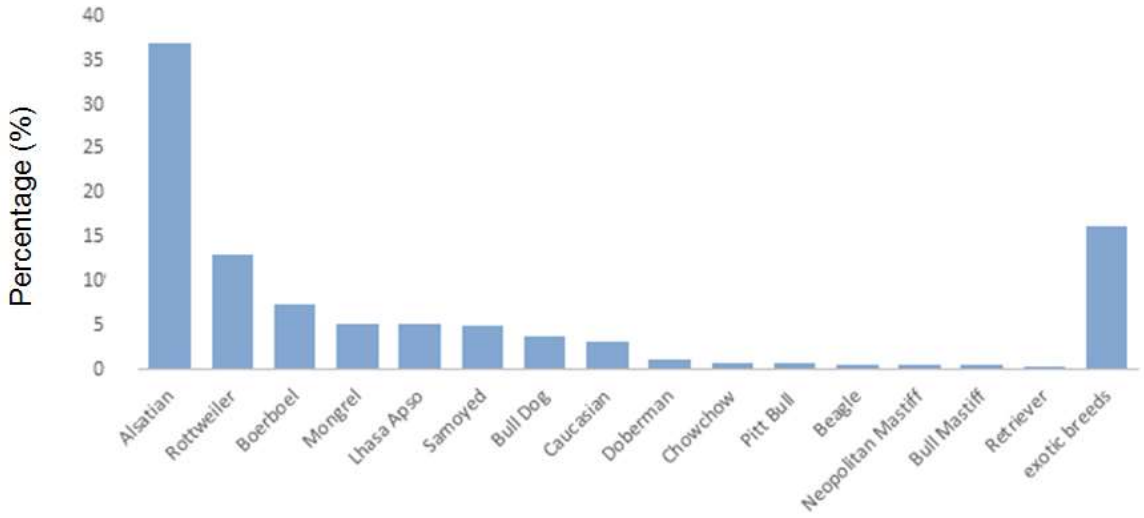

Figure 1. Pet demography: distribution of dog breeds owned by respondents surveyed.

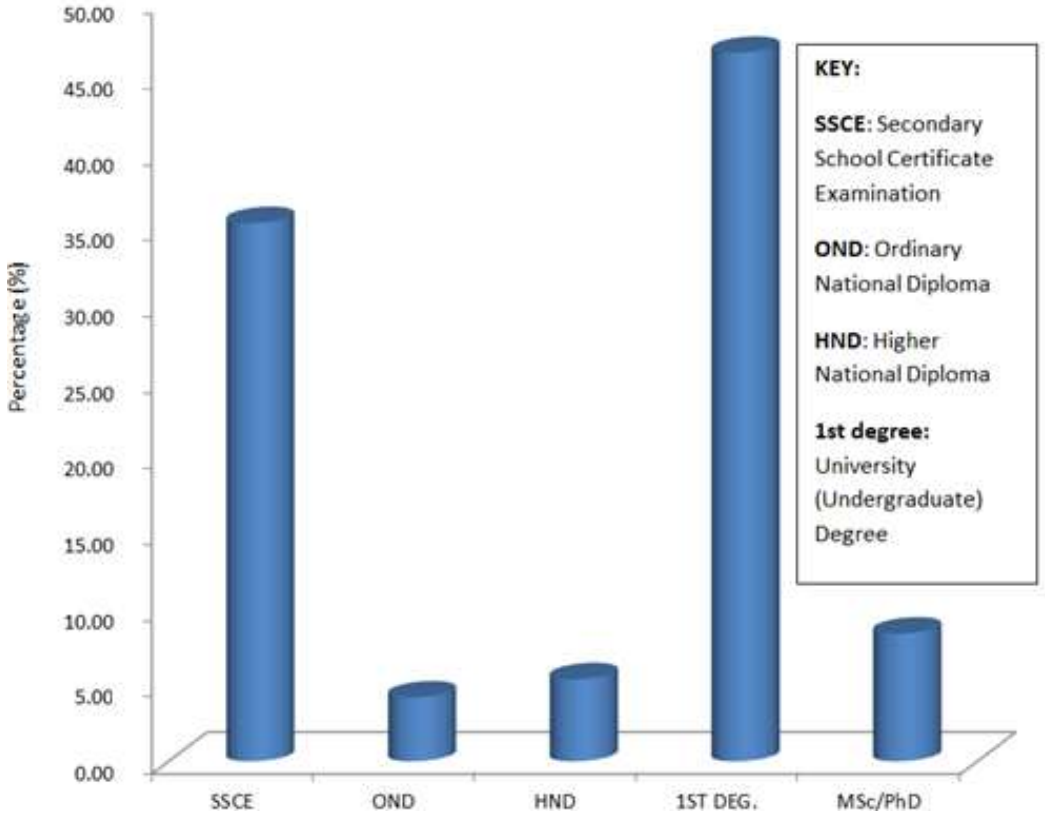

Figure 2. Distribution of educational qualifications dog owners.

(53.4%) and Oyo (52.1%) states had the highest number of respondents, while Kaduna, Enugu, Ekiti, and Plateau states had the lowest number of respondents all with 1.25% each. 3.0% of respondents are within the age bracket of 10 to 15 years, while 84.8, 7.0, 5.2% respectively are within the age brackets of 16 to 30, 31 to 45, and ≥45 years respectively. A large percentage (46.6%) of respondents were university graduates, 35.4% had secondary school leaving certificate, 4.2% had Ordinary National Diploma, 5.4% had Higher National Diploma, and 8.4% had M.Sc /Ph.D certificates (Figure 2).

Table 1. How conversant dog owners are with dog breeds.

S/N	Knowledge of various dog breeds	Yes (%)	No (%)	Std. Err.
1	Alsatian	78.6	21.4	0±0.066
2	Bull Dog	70.8	29.2	0±0.082
3	Chihuahua	33.6	66.4	0±0.068
4	Doberman	27.6	72.4	0±0.074
5	Lhasa Apso	25.2	74.8	0±0.078
6	Beagle	16.0	84.0	0±0.074
7	Dachshund	16.2	83.8	0±0.062
8	Poodle	30.2	69.8	0±0.064
9	Caucasian	59.8	40.2	0±0.076
10	Rottweiler	73.4	26.6	0±0.090
11	Retriever	22.4	77.6	0±0.080
12	Neapolitan Mastiff	23.8	76.2	0±0.070
13	Samoyed	27.4	72.6	0±0.072
14	Boerboel	42.6	57.4	0±0.076
15	Dalmatian	28.4	71.6	0±0.074
16	Chowchow	25.8	74.2	0±0.084
17	Pug	24.8	75.2	0±0.074

Table 2. Distribution (in %) of owners' purpose of dog possession.

Purpose of dog ownership	Strongly agree	Agree	Disagree	Strongly disagree	No. of respondents	Std. Err.
For Companionship	36.1	49.7	8.8	3.4	2.0	0±0.013
For security	51.0	45.6	1.4	1.4	0.7	0±0.011
Just seeing dogs	18.4	58.5	18.4	2.0	2.7	0±0.013
For commercial breeding	9.5	24.5	49.7	14.3	2.0	0±0.140
For both security and companionship	50.3	44.9	2.0	1.4	1.4	0±0.122

Assessment of dog owners' previous dog keeping experience and reasons for seeing the veterinarian

The majority of respondents (90.8%) had previous experience with dogs keeping, while 9.2% were first-time owners. Some of the respondents (74.4%) had one dog, while others, 21.6% had two, 16.6% had three, 8.8% had four, and 5.6% had more than four dogs. Most of the respondents (74.4%) visited the veterinarian for their pets' healthcare while 25.6% had never visited any veterinarian for their pet's health care.

Assessment of how conversant dog owners are with dog breeds

The Alsatian breed was identified by 78.6% of respondents, Bull dog by 73.4%, Rottweiler by 70.8%, Caucasian by 59.8%, Neapolitan mastiff (23.8%), Retriever (22.4%), Dachshund (16.2%) and Beagle (16.0%) (Table 1).

Assessment of purpose of dog possession

The majority of respondents (96.4%) possessed their dogs for security purpose. Others, 94.8% had their dogs for companionship and security, commercial breeding purpose (34.0%) and for the love of just seeing a dog around (20.4%) (Table 2).

Assessment of factors that influenced dog owners' choice of breed

Different factors influenced dog possession, including the size of the breed (66.6%), coat colour (78.6%), natural intelligence (96.4%), information on the internet about the breed (54.6%), possession of the same dog breed by a close relative (53.4%), information from their veterinarian

Table 3. Factors (in %) that influenced dog owners' choice of dog breed.

Factors that influence choice of breed	Strongly agree	Agree	Disagree	Strongly disagree	No. of respondents	Std. Err.
Size	17.7	48.3	28.6	2.7	2.7	0±0.133
Coat colour	24.5	53.1	19.0	1.4	2.0	0±0.127
Natural intelligence	60.5	34.7	1.4	1.4	2.0	0±0.104
Information on the internet	16.3	37.4	38.1	5.4	2.7	0±0.150
Possession by close relation	17.7	32.7	40.1	7.5	2.0	0±0.146
Information from vet	15.0	24.5	45.6	12.2	2.7	0±0.145
Friend's comment	12.2	29.9	44.2	10.9	2.7	0±0.148

Table 4. Dog owners' reasons (in %) to visit the vet clinic / hospital.

Purpose of visit to the vet	Strongly agree	Agree	Disagree	Strongly disagree	No Resp.	Std. Err.
For general check- up and disease prevention	40.1	35.4	17.0	3.4	4.1	0±0.014
For vaccination and routine deworming	38.4	40.8	14.3	2.7	4.1	0±0.014
For treatment of diseases when dog is sick	44.9	34.0	15.0	2.7	3.4	0±0.013

(39.2%), and recommendation by friends (42.6%) (Table 3).

Assessment of dog owners' reasons to visit the vet clinic

Respondents visited the vet for different reasons, ranging from general check-up and disease prevention (79.6%), vaccination and routine deworming (79.2%), and treatment of diseases (79.8 %) (Table 4).

Assessment of dog owners' awareness of breed-associated surgical diseases

Respondents were aware of some common surgical diseases. Cruciate ligament rupture (13.6%), gastric dilatation/volvulus (13.6%), portosystemic shunt (15.0%), entropion (17.7%), ectropion(17.7%), osteochondrosis dessicans(17.7%), tracheal collapse (17.7%), patella luxation (17.7%), aortic stenosis (18.4%), chronic otitis externa (19.0%), lens luxation (19.0%), inguinal hernia (20.4%), retinal detachment (20.4%), elbow dysplasia (20.4%), traumatic proptosis (22.4%), hip dysplasia (22.4%), cherry eye (32.0%), epilepsy (36.1%), glaucoma (40.8%), arteritis (53.7%), and cataract (57.1%) (Table 5).

Assessment of dog owners' knowledge about their pet's health status

Only 10.9% of the respondents were aware of persistent/ recurrent health challenges in their dogs. Only 13.6% of respondents were informed of the predisposition of their dog's breed to certain health challenges while majority (84.4%) were un-informed. Only a small percentage (34.7%) were aware of diseases that can make their dog go through surgery, among which only 19.0% know such diseases could be associated with their dog's breed, yet, 82.3% of these respondents were not aware of their dog having any of such disease (Tables 1 and 6).

DISCUSSION

The result of this study shows that majority of dog owners in Nigeria made their dogs' choice based on factors, other than their predispositions to certain surgical diseases. The majority of respondents are within the age bracket of 16 to 30 years. This age range consists of individuals capable of surfing the internet or interacting with professionals at animal health centers to obtain vital information about dog breeds and associated health challenges (Maczewski, 2002; Subrahmanyam et al., 2008; Pascoe, 2009; Lenhart et al., 2010).

Previous studies have shown that dogs' owners' choice of breed is often influenced by factors such as body sizes, body coats and colours, natural intelligence, as well as social and security qualities which are attractive to owners and may mean more income to breeders (Hare and Tomasello, 2005; Kubinyi et al., 2009). The German shepherd and Rottweiler breeds are prized for their mental acuity, strength, sizes, coat colour, and protective companionship. These qualities may have influenced their influx into many African countries, including Nigeria (Eyarefe and Dei, 2014).

Security concerns in African countries influence the breed of dogs acquired especially in cities (Fielding and

Table 5. Assessment of dog owners' awareness of breed associated surgical diseases.

Knowledge of surgical diseases	Yes (%)	No (%)	Std. Err.
Entropion	17.7	82.3	0±0.068
Ectropion	17.7	82.3	0±0.070
Cataract	57.1	42.9	0±0.080
Glaucoma	40.8	59.2	0±0.084
Lens luxation	19.0	81.0	0±0.066
Traumatic proptosis	22.4	77.6	0±0.072
Cherry eye	32.0	68.0	0±0.076
Chronic otitis externa	19.0	81.0	0±0.070
Hip dysplasia	22.4	77.6	0±0.066
Osteochondrosis dessicans	17.7	82.3	0±0.062
Arthritis	53.7	46.3	0±0.088
Inguinal hernia	20.4	79.6	0±0.072
Tracheal collapse	18.4	81.6	0±0.062
Patella luxation	17.7	82.3	0±0.060
Retina detachment	20.4	79.6	0±0.062
Cruciate ligament rupture	13.6	86.4	0±0.056
Elbow dysplasia	20.4	79.6	0±0.068
Portosystemic shunt	15.0	85.0	0±0.064
Epilepsy	36.1	63.9	0±0.072
Aortic stenosis	18.4	81.6	0±0.060
Gastric dilatation/volvulus	13.6	86.4	0±0.056

Table 6. Assessment of dog owners' knowledge about their pet's health status.

Knowledge of pet's health status	Yes (%)	No (%)	No. of respondents (%)	Std. Err.
Knowledge of persistence/recurrent health challenges	10.9	87.7	1.4	0±0.115
Vet information about breed's responsibility for health challenges	13.6	84.4	2.0	0±0.071
Knowledge of breed's influence on dog's health	47.6	51.0	1.4	0±0.086
Knowledge of diseases that can make a dog go through surgery	34.7	63.3	2.0	0±0.091
Knowledge of any such disease that is as a result of dog's breed	19.0	78.2	2.7	0±0.081
Knowledge of pet having such disease	12.9	82.3	4.8	0±0.079

Plumridge, 2004; Eyarefe and Dei, 2014; Eyarefe et al., 2015), consistent with our observation that the majority of dog owners in Nigeria (96.4%) obtained their dogs for security purpose. The increased human population in cities also necessitate dogs for security purposes. The southern part of Nigeria with high commercial potentials and relative peaceful neighbourhood, compared with the northern part has attracted more people resulting in increased need for dogs to protect homes from burglars. This may explain the higher numbers of respondents observed in Lagos and Oyo states, as also previously asserted (Eyarefe et al., 2011; Hambolu et al., 2014).

Dog owners visit the veterinarians for various reasons, including general check-up and disease prevention, vaccination, deworming and treatment of diseases. Seeking for information from veterinarians about breed-associated surgical diseases had a low percentage. Most dog owners do not consult veterinarians before acquiring their preferred dog breed.

Clients are more influenced by the attractive features of the dog breed, recommendations from their friends and relatives than information from veterinarians. Therefore, they were un-informed of surgical diseases such dog breed predisposed to. It is known that veterinarians are excellent sources of information that guide in logical decision making on dog breed choices (Heuer, 2005).

Most dog owners were conversant with the Alsatian, Caucasian, Rottweiler, and Bull dog breeds due to their high population in the communities for security purposes. Yet these owners are less informed of condition such as gastric dilatation/volvulus that is common among these deep-chested breeds (Gough and Thomas, 2004). Some owners are even less informed of the nutritional requirement of these large dog breeds, and their

predisposed nutritional osteopenia, pathologic fractures, and other musculoskeletal diseases associated with poor nutrition (Chouinard et al., 2012).

It is therefore recommended that a legislation mandating potential dog owners to seek out information about medical and surgical conditions of prospective dog breed from authorized sources. This could forestall frustrations and ultimate pet abandonment associated with cost management and social adjustment following surgical disease.

In conclusion, it is advised that dog owners and prospective dog owners should seek advice, especially from certified veterinarians, about the breed of dog to acquire, as well as all that is needed to be put in place to prevent or minimise occurrence of breed-associated surgical conditions, as this will ultimately affect the owners, both psychologically and financially in case of pet disease or loss.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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