

Epidemiology of Domestic Cat Behavioral and Welfare Issues: a survey of Brazilian referral animal hospitals in 2009

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ABSTRACT

Few feline behavioral categories, especially concerning their social behavior, have been studied so far. These include: the domestic cat social structure, relationships among individuals and communication among social groups. However, cats have become popular companion animals in many countries and multi-cat households are common. Not only behavioral disorders, but also normal behaviors are important causes of euthanasia and abandonment of healthy cats. This study aimed to conduct a national survey on behavioral problems of cats and how they affect cat welfare, in university animal hospitals in Brazil. The methods used were questionnaires sent to veterinarians at all referral hospitals in the country. Forty-six vet school hospitals from a total of 108 returned the questionnaire (33.6%). The majority of veterinarians affirmed that they had been

consulted on behavior disorders (91.1%), mostly regarding dogs (90.2%). Most of the participants refer behavior cases to veterinary behaviorists (57.6%) or animal trainers (21.7%). In Brazil, euthanasia does not seem to be an option to solve behavior issues, as reported in other countries. Inappropriate elimination (34.8%) and scratching (28.3%) were the most common owners' complaints, and cats and other animals were the most frequent targets of aggressive behavior. The most chosen treatment for inappropriate elimination and aggressiveness was behavior management (behavior modification and environmental enrichment), followed by gonadectomy. Aggressiveness (40.2%), scratching (35.8%), and inappropriate elimination (28.3%) were the most frequent reasons for abandonment of cats. These results call attention to the deficit of knowledge on domestic cat behavior, and inadequate expectations from cat owners. Both issues result in damage to the human-animal bond and probably to the abandonment of cats on the streets in Brazil, which is not only an

ethical problem regarding animal welfare but also an animal and human public health problem.

INTRODUCTION

The growth of domestic cat population and cats' popularity as a companion animal is a worldwide phenomenon. After 9,500 years of domestication¹, cats have a recognized role in the maintenance of human health and mental balance. Besides relief from solitude, improvement of self-esteem and constant cognitive stimuli, the presence of cats in the household also promotes physiological benefits to its human companions, e.g., controlling high blood pressure².

There are already more cats than dogs in the United States of America and some countries in Europe³. However, the augmentation of the owned population parallels the number of cats relinquished to shelters or abandoned on the streets, situations in which severe welfare issues are present^{4,5}. To date, there are no data in Brazil or in any other country in South America about domestic cat populations. Additionally, there is a dearth of support for sterilization, adoption and education programs⁶. Nevertheless, it is fundamental to have realistic data about a local situation in order for veterinarians to prevent and treat behavior problems and cope with welfare issues.

Behavior issues have been reported to directly affect animal welfare⁷. In the USA,

only one third of owned cats live out their lives in one home⁸. Problems related to behavior are the most common cause of euthanasia and relinquishment of cats to shelters³. Similar figures have been published in Europe⁷. The most frequent owner complaints include spraying, scratching, inappropriate elimination, behaviors related to phobias and anxiety, aggressiveness, self-mutilation, fighting, and excessive vocalization². Normal feline behaviors that are simply unacceptable to owners are among the most common reasons for abandonment⁹. Additionally, many issues arise from improper socialization or are a result of trauma and aversive stimuli, especially at an early age³. Along with the lack of information on cat population density, there is also a lack of information about behavior and welfare issues of domestic cats in South America.

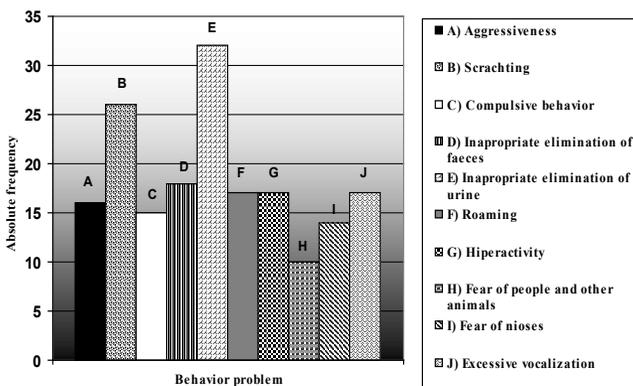
Prevention and early diagnosis of behavior disorders are much more efficient than trying to correct an established problem in an adult cat. Therefore, the goal of this study was to conduct an epidemiological survey of veterinarians working at referral hospitals on domestic cat behavioral issues and their impact on animal welfare. Assuming the reality in Brazil and South America might differ from that reported in developed countries, we aimed to release useful information to help practitioners gain awareness of their major challenges and to be better equipped to prevent and diagnose behavior issues in

cats, and improve their welfare.

MATERIALS AND METHODS

A questionnaire was developed based on the study published by Fajtó et al. (2006). It contained the following questions: 1) Are you consulted on behavioral issues or behavior disorders by clients?; 2) How do you deal with behavior cases?; 3) Do you recommend or do owners request

Figure 1: Most common behavior problems reported by domestic cat owners according to surveyed Brazilian veterinarians – Epidemiological survey, Universidade Federal Fluminense, Brazil, 2009



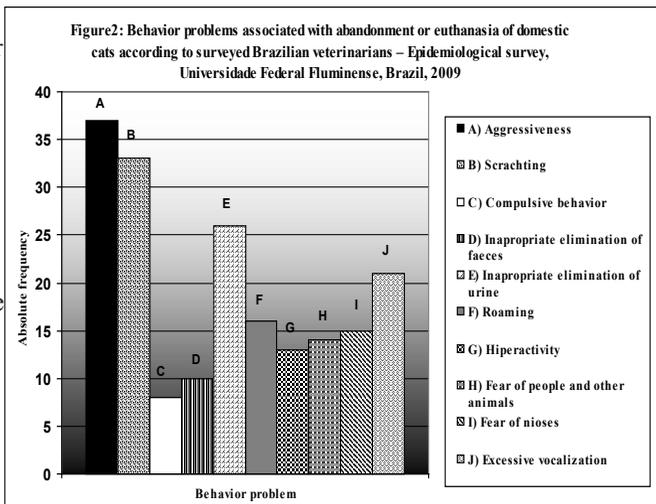
ethanasia as a solution for feline behavioral problems in your practice?; 4) Which behavioral problems are the most common owner complaints in your practice?; 5) Regarding aggressive behavior, what are the most common targets of feline aggression in your experience?; 6) Which treatments do you choose to address aggressiveness in cats?; 7) Which treatments do you choose to address inappropriate elimination in cats?; 8) Which behavioral problems in cats are more frequently associated with the abandonment or euthanasia request by owners?

Questionnaires were mailed to all 108 veterinary teaching or referral hospitals in Brazil. After 6 months, a new release by mail and also an electronic mail version of the questionnaire were sent to the institutions that had not responded. The respondents were practitioners and professors who worked in companion animal services. The project was previously approved by the Institutional Human Ethics Committee and all veterinarians received a consent agreement to sign explaining the content and importance of this research prior to responding.

The data were collected and processed using Microsoft Office Access 2003 and Sigstat® 3.0.1 for Windows (SPSS Inc.). Answers obtained from questions 1 to 3 were analyzed descriptively; answers from questions 4 to 8 were analyzed using the Kruskal-Wallis test and the Student-Newman-Keuls test.

RESULTS

Among the 108 teaching hospitals with a companion animal service in Brazil, 46 (33.6%) responded to the questionnaire (101 responses). Regions of the country were represented differently, as follows: South: 12 returned questionnaires (11.9% - corresponding to 7 veterinary colleges out of 25 in the region), Southeast: 64 questionnaires (63.4% - corresponding to 27 veterinary col-



leges among 58 in the region); Middle West: four questionnaires (4.0% - corresponding to 4 institutions out of 12 in the region); Northeast: 14 questionnaires (16.8% - corresponding to 6 veterinary colleges out of 10 in the region) and North: 4 questionnaires (4.0% - corresponding to 2 out of 3 veterinary colleges in the region).

Among the 101 responses, 91.1% of participating veterinarians confirmed that they are consulted about behavior issues, while 8.9% said they had not been consulted on this issue. Most stated that dogs have more behavior problems (90.2%) than cats (5.4%).

Regarding the veterinarians' attitude to behavior cases, 57.6% said they try to solve some issues by themselves, but do refer some patients to veterinary behaviorists. Some (21.7%) try to solve part of the behavior cases by themselves, and partially refer to trainers; while 17.4% try to solve all cases by themselves. Only 3.3% affirmed that they referred all patients with behavior issues to veterinary behaviorists and one veterinarian said that ethology was not part of veterinary medicine. No one reported referring all patients to trainers.

Regarding the relationship between euthanasia and behavior problems, the majority of veterinarians (98 out of 101 respondents) did not recommend or perform euthanasia in cats due to behavioral disorders.

Inappropriate elimination of urine was the domestic cat behavior that elicited the most frequent owner complaints, followed by scratching, and inappropriate elimination of feces (Figure 1). Roaming, hyperactivity and excessive vocalization were the next most common complaints. Fear of noises, fear of people, and fear of other animals were the least frequent complaints. The Kruskal-Wallis test showed significant differences among items ($p<0.01$). Comparison by pairs showed significant differences between inappropriate elimination of urine and inappropriate elimination of feces ($p=0.04$), and roaming ($p<0.01$) and hyperactivity ($p<0.01$). Scratching had significant differences to roaming ($p<0.01$) and hyperactivity ($p<0.01$). Roaming had significant differences to aggressiveness ($p<0.01$), compulsive behavior ($p<0.01$), inappropriate elimination of feces ($p=0.03$), fear of people ($p=0.03$), fear of noises ($p=0.03$) and excessive vocalization ($p<0.01$).

Regarding aggressiveness, cats and other species of animals were equally reported as the most common targets of cat aggression (21.7%), followed by family members (16.3%) and strangers (10.9%). However, the Kruskal-Wallis test showed no difference among items.

On questions 6 and 7, regarding the treatment of the most reported behavioral issues in cats, behavior modification is the most appropriate choice in treating feline aggressiveness according to the responding veterinarians (43.5%), followed by sterilization surgery (27.2%), and then the use of medication (22.8%). Statistical differences were found between behavior modification and sterilization ($p=0.02$) and behavior modification and medication ($p=0.01$).

Behavior modification was the most frequently selected treatment (39.1%) to resolve inappropriate elimination of urine, followed by sterilization (30.4%) (no significant difference), and the use of medication (26.1%), with a significant difference between behavior modification and medication ($p=0.02$).

The last question, which asked about the link between behavior issues and the request for euthanasia or relinquishment of cats by owners (Figure 2), showed that aggressiveness, scratching and inappropriate elimination of urine were the most common complaints associated with relinquishment or request for euthanasia. The Kruskal-Wallis test showed a significant difference among items ($p<0.01$). The next most common issues were excessive vocalization and roaming, with a significant difference between each other ($p<0.01$). Fear of noises, fear of people and other animals, hyperactivity, inappropriate elimination of feces and compulsive behaviors were the least cited issues. Comparison by pairs showed that aggressiveness, scratching and inappropriate elimination of urine had significant differences to roaming ($p<0.01$), and hyperactivity ($p<0.01$), fear of people ($p<0.01$) and fear of noises ($p<0.01$). Both compulsive behavior and inappropriate elimination of feces had significant differences to roaming ($p<0.01$), fear of people ($p=0.02$ and $p=0.01$) and fear of noises ($p=0.03$ and $p=0.02$). Excessive vocalization had significant differences to roaming ($p<0.01$), hyperactivity ($p=0.02$), fear of people and other animals ($p<0.01$) and fear of noises ($p=0.01$).

DISCUSSION

The returned questionnaires represented 33.6% of the veterinary teaching hospitals surveyed. The preferential selection of veterinary colleges, rather than private practices, might have accounted for this high response rate, if compared to similar work⁷. It could be assumed that colleagues in academia might be more likely to respond to a research project. Also, the addition of electronic mailing to traditional mail might have contributed as well, making up for eventual mail loss and deficient distribution of mail within the universities.

Another reason for selecting veterinarians that work in teaching institutions was to represent the regions of the country in a more equal way. However, the massive differences among regions accounted for the

uneven distribution of universities, resulting in a concentration of results from the Southeast region, where the majority of the Brazilian population is concentrated (42.5%) and the largest and more urbanized cities of the country, like Rio de Janeiro and Sao Paulo, are located¹⁰. The Southeast is also the strongest financial and business region of Brazil. Since more than 70% of the Brazilian population is concentrated in urban areas¹⁰, our survey results may provide a reliable overview of trends already taking place across most of the country. On the other hand, to have an accurate analysis of the other regions, local studies are necessary.

In agreement with international research findings, the majority of veterinarians (91.1%) affirmed that they had been consulted on behavioral problems while seeing patients^{7, 11, 12}. It is possible that a personal interest in ethology or animal behavior by some participants may have biased those results; still, those figures are significant, and it is clear that behavioral issues are part of practitioners' routine in Brazil.

The response that most behavior issues that arise in general practice concern dogs (90.2%) may have been influenced by a few factors. In Brazil, it is still common for cats to be allowed to roam. Therefore, cats do not stay in the households all the time, which may diminish some problems commonly reported by cat owners in other countries^{4, 13}. Moreover, some authors suggest that dogs are more frequently taken to veterinary clinics than cats^{12, 14, 15}, and in Brazil the dog population still exceeds the feline population^{4, 13, 16}. Evidence of the free-roaming characteristic of many owned cats is the fact that one of the main complaints of cat owners in this study was roaming (18.48%). This is not the case in other countries, where inappropriate elimination, scratching and aggressiveness are the main complaints^{7, 12, 17}. Dog owners may be more likely to seek veterinary care compared to cat owners because (i) cats more frequently experience discomfort and nervousness during in car rides, (ii) cats may remain subclinical or display subtle

behavior changes during the onset of most diseases that are not considered significant by owners, (iii) the free-roaming lifestyle of many cats may result in reduced human-animal bond in Brazil⁴.

The majority of veterinarians declared they were inclined to refer behavioral cases, either to veterinary behaviorists (57.6%) or to trainers (21.7%). Only 17.4% never referred patients. Some authors from other countries have reported that a higher number of veterinarians refuse to refer patients to specialists due to poor communication with colleagues, or because of concerns of losing a client. Such factors may also exist in Brazil as well⁷. Nevertheless, it is also possible that some veterinarians neglect behavior problems because they do not recognize or value these disorders. Additionally, as observed elsewhere, the small number of behaviorists can make referral difficult in many localities⁷.

Among the 101 veterinarians who answered question 3, 98 do not recommend or receive requests from owners to perform euthanasia due to behavioral problems. These results contrast with other research^{9, 18}. Euthanasia of healthy companion animals relinquished to shelters due to behavioral issues accounts for the majority of pet deaths in the USA¹⁹. It has been reported that 4 million cats are euthanized in American shelters due to their behavior every year²⁰. Additional data from North America show that 50-70% of pets abandoned in shelters are euthanized due to behavior problems³. Similar data has been reported in Scotland²¹, and 75% of Spanish veterinarians indicated that at least 10% of their patients are euthanized due to behavioral issues⁷. The data from Brazil could be influenced by the following factors: a possible higher cultural tolerance of behavioral issues that are considered serious in developed countries, the free-roaming characteristic of some cat populations in Brazil that diminishes the amount of time cats spend indoors, making the commonly-reported complaint of inappropriate elimination less obvious, and finally, that unsatisfied own-

ers might simply abandon their unwanted cats on the streets instead of requesting euthanasia from a veterinarian. The only other published survey conducted in Brazil, investigating euthanized patient files at the teaching hospital at the Universidade Federal do Piauí, did not find behavioral problems or disorders cited as a justification for euthanasia²².

Inappropriate elimination of urine was the most frequent complaint from cat owners (34.8%), which is in agreement with most of the available references^{7, 12, 17, 18}. In order to simplify data collection and interpretation, urine marking and spraying were grouped together with inappropriate elimination per se. Marking is more frequently an issue of intact cats, and it is a normal behavior, although it can be linked to a stressful environment. On the other hand, inappropriate elimination per se, i.e. failure to use the litter box or other designated site, can be related to many factors, including behavioral disorders linked to stress, feline low urinary tract disease, and renal disorders²³⁻²⁵. A correct definitive diagnosis is fundamental in order to address the issue. Scratching was the second most commonly reported complaint. Just like marking, scratching is a normal behavior for the domestic cat. However, aggressiveness, usually one of the top complaints in most publications^{7, 26}, was only seventh in the current study.

Aggressive behavior and dog attacks are considered a public health issue in many countries. However, the cultural appreciation of the remaining semi-wild temperament of the domestic cat, together with reduced potential to cause serious harm may result in higher tolerance of aggressiveness in Brazilian cats. It has been reported that many owners consider aggressiveness as a normal behavior for cats and it is tolerated accordingly¹⁷. Roaming, the fourth most common complaint, has never been cited in previous research, and reflects the diversity of the cat population lifestyle in Brazil.

Cats and other animals were the most frequent target of feline attacks, followed

by family members and unfamiliar people. Even though there are not much data available on this issue, other work reported similar findings^{7, 17}, which suggests that many cats live under social stress. Domestic cats in particular do not seek confrontation, preferring ritualized body language to solve social and hierarchy conflicts^{27, 28}. The high incidence of inappropriate elimination also suggests that many domestic cats may live under social stress^{18, 28}.

With respect to preferred treatment of inappropriate elimination of urine and aggression, our results deviated from those previously published. Behavior modification was the first choice not only to treat aggressiveness (43.5%) but also for inappropriate elimination (30.43%). Spaying and castration have previously been reported as more common^{6, 29}, but were the second most chosen treatments in our survey. It is reasonable to infer that sterilization surgery is more often conducted by veterinarians and more accepted by owners in other countries, since a cultural resistance to gonadectomy is still observed in Brazil¹⁸. Additionally, the tendency toward free-roaming ownership also suggests a weaker human-animal bond. These types of owners might provide shelter, food and attention, but not necessarily the most appropriate medical care²³. The fact that drugs were the last choice is not surprising: the lack of behavioral medicine and psychopharmacological content in most veterinary schools is common, as well as many owners' resistance to the use of this kind of medication. Both factors might contribute to the limited prescription of drugs by most veterinarians^{3, 30}. Additionally, veterinarians with a particular interest in ethology or behavioral medicine, therefore, familiar with behavior modification techniques, might be over represented in this survey.

Aggressive behavior, scratching and inappropriate elimination of urine were the most cited problems that could result in requests for euthanasia or to the relinquishment of cats. Considering the results of question 3, where the participating veterinarians

ians stated that behavior issues were rarely a reason for euthanasia, it is clear that such cats might be abandoned instead¹⁸.

It is alarming that the 3 most commonly reported problems that might result in relinquishment or euthanasia are, for the most part, normal behaviors for the domestic cat. This result highlights the degree to which owners have misconceptions about the cat as a companion animal^{19,23}.

Even though behavioral problems are probably not the only reason for cat relinquishment in Brazil, the lack of educational programs on responsible guardianship and animal welfare, in addition to the lack of education on behavioral medicine at veterinary schools, may aggravate the situation^{4,23}. Most behavioral issues are discussed with the general practitioner without being referred to behaviorists⁷. Education on ethology, behavioral medicine and animal welfare science should be mandatory in the veterinary curriculum in order to better prepare veterinarians to assist their patients. Last but not least, society in general must be educated on animals' cognitive and emotional abilities, calling attention to the level of humans' responsibility towards animal welfare.

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QUESTIONNAIRE

1. Are you consulted on behavior problems regarding companion animals? (please insert a X next to your choice)

No

Yes

Which companion animal has a higher frequency of behavior problems?

Dogs

Cats

2. How do you deal with behavior cases? (please insert a X next to your choice)

Ethology/animal behavior does not belong to veterinary medicine

I refer all behavior cases to a trainer

I refer all behavior cases to a veterinary behaviorist

I try to solve some cases myself, and refer some to a trainer

I try to solve some cases myself, and refer some to a veterinary behaviorist

I try to solve all cases by myself

3. Regarding the companion animals euthanized in the hospital you work at, how many cats out of 10 are euthanized due to behavior issues? _____ out of 10 cats

How many due to your recommendation?

_____ out of 10 cats

How many due to owners' request?

_____ out of 10 cats

4. Which behavior problems are the most common owner complaints in your practice? (please rank from 1 to 10, in increasing order of importance)

Aggressive behavior

Scratching

Compulsive disorders/steriotipies (e.g.: psychogenic alopecia, excessive grooming, hyperstasia syndrome, etc.)

Inappropriate elimination of feces

Inappropriate elimination of urine

Roaming

Hyperactivity

Fear of people or animals

Fear of noises

Excessive vocalization

5. Regarding aggressive behavior, what are the most common targets of feline aggression in your experience? (please rank from 1 a 4, in increasing order of importance)

Cats

Animals from other species

Familiar people

Strangers

6. Which treatments do you choose to address aggressiveness in cats? (please rank from 1 to 3, in increasing order of importance)

Gonadectomy/sterelization surgery

Medication/drugs

Behavior modification (e.g. environmental modification, training, environmental enrichment, etc.)

7. Which treatments do you choose to address inappropriate elimination in cats? (please rank from 1 to 3, in increasing order of importance)

Gonadectomy/sterelization surgery

Medication/drugs

Behavior modification (e.g. environmental modification, training, environmental enrichment, etc.)

8. Which behavior problems in cats are more frequently associated with the abandonment or euthanasia request by owners? (please rank from 1 to 10, in increasing order of importance)

Aggressive behavior

Scratching

Compulsive disorders/steriotipies (e.g.: psychogenic alopecia, excessive grooming, hyperstasia syndrome, etc.)

Inappropriate elimination of feces

Inappropriate elimination of urine

Roaming

Hyperactivity

Fear of people or animals

Fear of noises

Excessive vocalization