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Current Attitudes Toward, and Incidence of, Sterilization of Cats and Dogs by Caregivers (Owners) in Auckland, New Zealand

Stacey A. McKay, Mark J. Farnworth, and Natalie K. Waran

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This study distributed a questionnaire to cat or dog caregivers (owners) throughout Auckland, New Zealand, to investigate the attitudes of human companions toward the sterilization of their cats and dogs and the degree to which this occurs relative to demographic information gathered. A total of 276 recipients returned questionnaires with data pertinent to 477 cats and dogs. Female owners were more likely than were males to sterilize cats or dogs: 90.2% sterilization rate compared with 80%. Statistical trends also suggested that owners with a postschool education had a higher percentage of sterilized nonhuman animals than owners with no postschool or only school-age education. Cats were more likely than dogs to be neutered: 91.7% versus 78.5%. Companion animals not annually vaccinated were more likely to be sterilized than animals who were vaccinated annually: 93.6% and 85.4%. The study also showed gender bias and age differences in owner attitudes toward a number of the statements regarding sterilization, with male owners more likely to be concerned about the effect of neutering or spaying on the sexuality or masculinity of the animal.

Currently, cat and dog overpopulation in New Zealand is a problem. The impact of stray, feral, and owned nonhuman animals on the environment and native fauna is increasing as are the ethical issues surrounding the euthanasia of healthy...
animals caused by uncontrolled breeding. In 2004, the Royal New Zealand Society for the Prevention of Cruelty to Animals (RNZSPCA) alone received 11,424 dogs and 39,093 cats across their national branches, which cater to the New Zealand human population of just over 4 million: actual number 4,027,947 (Statistics New Zealand, 2006b).

Overpopulation in the wild is often prevented by natural selection in which the old, injured, sick, or weak are removed from the population, limiting numbers. However, the process of domestication has removed these population controls by increasing both longevity and survival. Public sympathy and food provision for stray animals may also increase survival rates, which could prove problematic if the animals concerned are still reproductively viable.

A survey in the United States showed that only 8% of households that admitted to feeding stray cats attempted to get the cats neutered (Levy, Woods, Turick, & Etheridge, 2003). Without breeding controls, an unspayed cat is capable of producing two to three litters a year of three to four kittens on average (p. 1997); an unspayed dog can produce two litters a year, consisting of six to eight puppies (Carlson & Giffin, 1992). Because of high reproductive rates and human interference, there is an inequality between number of births and deaths, leading to companion animal (pet) overpopulation (Frank, 2004). This is not only problematic within free-living stray or feral populations; pets who are not sterilized also represent a significant problem. If new homes cannot be found for the offspring of such animals, they may become abandoned and enter the stray or feral populations. Alternatively, they can be relinquished at shelters for rehoming where they may, ultimately, be euthanized (Moulton, Wright, & Rindy, 1991).

There are various shelters in New Zealand where stray or unwanted animals may be taken, with the minority being government funded, such as shelters run by the local governing body. However, the majority are maintained through public donations, such as branches of the RNZSPCA and Cats’ Protection League. These societies aim to rehome most animals brought to them. However, due to limited time, money, and homes available, a proportion of these animals will be euthanized.

These shelters also function to educate the public regarding the necessity and benefits of sterilization of pet cats and dogs. The Society for the Prevention of Cruelty to Animals (SPCA) runs educational campaigns such as a recent “Desex and the City.” Advertisements and brochures describing the benefits of sterilization (or “desexing”) and why it is important are distributed throughout New Zealand. The campaign also includes incentives for people living with intact cats or dogs by providing discounted sterilization at participating veterinary clinics throughout Auckland. Councils also provide discounted registration rates for sterilized dogs (Auckland SPCA, n.d.). Similarly, education occurs in local schools; the “SPCA humane education program” encourages children to participate in talks about the sterilization of pet cats or dogs.
In other parts of the country, a mobile veterinary clinic travels around offering cut-rate sterilization of intact cats and dogs (RNZSPCA, n.d.).

It is important to understand that within New Zealand’s island environment even low numbers of stray and feral domestic pets can constitute overpopulation. The native fauna of New Zealand have developed in isolation and, prior to human settlement, were almost exclusively birds and insects. In fact only two species of mammal are indigenous to New Zealand, and both are bats. As a result, many bird species in New Zealand are ground dwelling and have reduced capacity for flight. This makes them highly susceptible to predation by introduced carnivora such as cats and dogs, animals who have no natural predators to manage the populations once out of human control. Stray, feral, and uncontrolled animals have an impact on New Zealand’s native fauna, particularly birds and reptiles. Just one cat or dog can have a major impact on native wildlife.

Out of all reported Kiwi deaths in Northland between 1990 and 1995, 70% of these were caused by dogs; 38% were attributed to stray or companion animals. In the late 1800s, just one cat, whose caregiver (owner) was a lighthouse keeper on Stephen Island, caused the extinction of an entire species, the Stephen Island Wren. More recently, an uncontrolled population of cats on Cuvier Island was responsible for the disappearance of the North Island Saddleback, Pied Tit, Tui, and Red Crowned Parakeet (Pierce & Sporle, 1997).

The most efficient way to reduce problems caused by stray or feral animals, and to prevent excessive euthanasia, is to preemptively tackle the situation. In this case, it is easier to prevent an animal from producing offspring than to euthanize or rehome unwanted animals. It is arguably more ethical to prevent conception than to euthanize an animal who has already been born or conceived.

Ultimately, an animal’s reproductive status is dependent on the human owner and the owner’s willingness or ability to take responsibility for that status. Whether owners choose to sterilize the animals will also depend on their attitudes toward sterilization and its perceived benefits for both the animals and themselves. Benefits can include a reduction of aggression problems in dogs (Askew, 1992) and a reduction in the incidence of mammary cancer in both dogs and cats (Schneider, Dorn, & Taylor, 1969; Spain, Scarlett, & Cully, 2002). Spaying can also prevent other health problems in the bitch: pyometra (infection of the uterus), cystic ovaries, mastitis, and ovarian cancer (Hagman, 2004; van Goethem, Schaefers-Okkens, & Kirpensteijn, 2006). Sterilization also removes or minimizes the risk of prostrate cancer, adenomas, prostatic hyperplasia, and prostatitis in male cats or dogs (Cowan, Barsanti, Crowell, & Brown, 1991; Spain et al., 2002). A possible side effect of the neutering procedure is weight gain; Flynn, Hardie, and Armstrong (1996) found that the loss of sex hormones due to castration may have an effect on weight gain by slowing down the animals’ metabolism.
Factors identified as having an effect on human attitude development in general include gender, age, political views, religion, education, and life experience (Brown, 1985; Furnham & Heyes, 1993; Furnham & Pinder, 1990; Serpell, 2005). Various attitudinal studies have been conducted to provide reasons or predisposing factors as to why people develop certain attitudes toward animals, animal welfare, animal ownership, and general attitudes toward pets and common surgical procedures. Studies conducted outside New Zealand regarding sterilization have found that male owners are less likely than female owners to sterilize canines (Blackshaw & Day, 1994; Fielding, Samuels, & Mather, 2002). Likewise, studies of age effects suggest that younger people are more likely than older people to be concerned about welfare issues (Driscoll, 1992). Conversely, they may also be less prone to sterilize their animals; a study of West Indian dog owners finds that younger owners were less likely to neuter or spay their animals (Fielding et al., 2002).

Limited specific studies have been conducted within New Zealand to determine the common factors that may have an effect on owners’ attitudes toward neutering or spaying of cats and dogs.

Therefore, the aim of this study was to gain an understanding of the level of sterilization that occurs in Auckland’s pet population. In conjunction, gathering demographic and attitudinal information about cat or dog owners allows the identification of specific factors that affect the likelihood of sterilization occurring within New Zealand.

MATERIALS AND METHODS

Participants and Procedure

Surveys were answered during a 2-month period in 2006. Respondents were canvassed outside public places such as shopping centers, supermarkets, and workplaces throughout Auckland, covering a wide variety of socioeconomic areas. Responses were actively solicited by approaching every fourth person, regardless of gender, although the person had to be over 18 years of age. Selected people were then asked if they were currently living with a cat or dog and were responsible for making decisions regarding the animal’s welfare. If the answer was affirmative, they were further invited to take part in the survey, which took about 10 min to complete. Interviews were conducted by a group of volunteers with no connection to the funding body who were trained by the researcher in how to conduct the survey. Answers were provided verbally and recorded, by the volunteers, using tick boxes.

The survey was not based specifically on any prior studies. However, it was constructed to consist of questions of interest raised while reviewing prior liter-
ature on the topic and conversing with interested parties. The final questionnaire consisted of three sections.

Section one aimed to collect demographic data about the human participants and consisted of five multiple choice questions regarding their gender, age, education, annual household income, and area of residence (central city, suburban, or rural). It also required that they specify how many cats or dogs with whom they currently resided. Ranges were provided for age, education, and annual income.

Section two contained nine common statements (Table 1) often used in relation to the neutering of cats or dogs. Respondents were asked to indicate their agreement or disagreement; in addition, there was a third option to select if they did not know or if they had no strong feelings concerning the statement.

Section three of the questionnaire aimed to collect data on all the animals specified by the respondent. Four multiple choice questions were presented regarding the species, gender, vaccination status, and reproductive status of the

<table>
<thead>
<tr>
<th>Statements (n = 276)</th>
<th>Agree With</th>
<th>Disagree With</th>
<th>Do Not Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 All cats and dogs unless used for breeding should be desexed</td>
<td>222 80.4</td>
<td>32 11.6</td>
<td>22 8.0</td>
</tr>
<tr>
<td>2 Cats and dogs have the right to remain whole and have offspring</td>
<td>37 13.4</td>
<td>205 74.3</td>
<td>34 12.3</td>
</tr>
<tr>
<td>3 Desexing can cause cats and dogs to become sexually frustrated</td>
<td>16 5.8</td>
<td>174 63.0</td>
<td>86 31.2</td>
</tr>
<tr>
<td>4 Desexing removes the sexuality/masculinity of the cat or dog</td>
<td>49 17.8</td>
<td>176 63.7</td>
<td>51 18.5</td>
</tr>
<tr>
<td>5 Cats or dogs having offspring is the best way to see the miracle of birth</td>
<td>60 21.7</td>
<td>185 67.0</td>
<td>31 11.3</td>
</tr>
<tr>
<td>6 Cost is the biggest factor when making the decision to neuter your animal</td>
<td>61 22.1</td>
<td>200 72.5</td>
<td>15 5.4</td>
</tr>
<tr>
<td>7 Female animals should go through one season or litter before being desexed</td>
<td>49 17.7</td>
<td>172 62.3</td>
<td>55 20.0</td>
</tr>
<tr>
<td>8 Sterilization can cause cats and dogs to become obese</td>
<td>37 13.4</td>
<td>168 60.9</td>
<td>71 25.7</td>
</tr>
<tr>
<td>9 Sterilization can cause health problems</td>
<td>19 6.9</td>
<td>186 67.4</td>
<td>71 25.7</td>
</tr>
</tbody>
</table>

Note. Number of owners as a percentage in bold text; percentages rounded to 1 decimal place.
animal. In this section the respondents answered one set of four multiple choice questions for each feline or canine owned.

Statistical Analysis

All data were entered into two databases in Microsoft Excel 2002 (Microsoft Corporation, Redmond, WA). The first database included the owner information and opinions regarding the effects of neutering. The second database included data representing all animals and owners. If an owner had more than one animal, each animal was considered a separate datum point; owner data for that animal were replicated. Data were analyzed using SPSS 14.0 for Windows statistical software (SPSS Inc., Chicago, IL). If respondents had not answered a question, the datum point was classed as missing and not included in the analysis.

Descriptive statistics were formulated for all the variables; nonparametric chi-square tests were then used to determine any possible relationships between variables and owner decisions toward neutering animals. The same statistical technique was also used to determine significant difference in attitude toward the nine statements regarding the sterilization of felines and canines and owner demographics. Due to the low number of respondents in certain groups, it was occasionally necessary for two or more contiguous categories to be combined into a single discrete data set to run the tests with statistical veracity; for example, as there were only 2 respondents in the age category 81 years or above, this category was combined with the 13 respondents between 61 and 80 years of age for further analysis.

RESULTS

Demographics

Completed surveys were returned to the researcher with demographic data collected for 276 owners and any cats or dogs owned. The majority of people who responded were female (64.9%) in comparison with census data in which the Auckland population consists of 52.3% female and 48.7% male (Statistics New Zealand, 2006a).

The majority of respondents were between 20 and 60 years of age, whereas the median age of Aucklanders is 33 years (Statistics New Zealand, 2006a). Collation of responses revealed that 60% of respondents had obtained a postschool qualification, whereas only 4.35% of respondents had no formal qualifications. In comparison, census data showed that 42.5% of Aucklanders had a postschool qualification, 37.2% a school qualification, and 20.3 no formal qualification.
(Statistics New Zealand, 2006b). The majority of respondents had annual household incomes over NZ$60,000 (54.4%) with the average New Zealand household income being NZ$59,000 in 2006 (Statistics New Zealand, 2006b). Most respondents also lived in an urban area (84.4%), which is similar to statistics from the 2001 census which found that 85.7% of the New Zealand population lived in urban areas (Statistics New Zealand, 2001).

Data regarding the species, gender, vaccination, and reproductive status were collected for 477 individual animals. The majority of animals (65.8%) represented in the survey were felines. The gender of animals was quite evenly distributed with 49.5% male and 50.5% female.

Out of all animals represented in the survey, the majority had been both vaccinated and neutered (76.5% and 87.2%, respectively). There were more female cats than female dogs in the sample with 53.5% of felines being female in comparison with 44.8% of canines.

Information pertaining to the respondents’ attitudes toward the nine statements regarding sterilization of cats or dogs is presented in Table 1. Statement 1 was the only statement with which the majority of respondents agreed (80.4%). In all other cases, the majority of the respondents indicated, to varying degrees, that they disagreed with the statements.

### Owner Variables on Reproductive Status

There were significant relationships between gender of respondent and reproductive status of the animal; male owners were less likely to sterilize their cat or dog ($\chi^2 = 9.197$, $df = 1$, $p \leq .05$). As seen in Table 2, 90.2% of all animals owned by a female had been sterilized compared with 80% for male owners. No significant differences were shown between the reproductive status of the animals and the age of the owner, owner’s annual household income, or the area of residence. Table 3 also shows a relationship between the highest qualification

<table>
<thead>
<tr>
<th>Reproductive Status</th>
<th>Gender of Owner (n = 462)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Neutered</td>
<td>116</td>
</tr>
<tr>
<td>Intact</td>
<td>29</td>
</tr>
</tbody>
</table>

<sup>a</sup>$\chi^2 = 9.197$, $df = 1$, $p \leq .05$. Percentages of respondents in bold text, rounded to 1 decimal place.
TABLE 3
Association Between Highest Qualifications Gained by the Owner and Reproductive Status of Animal

<table>
<thead>
<tr>
<th>Reproductive Status</th>
<th>None</th>
<th>5th Form</th>
<th>6th Form</th>
<th>UE Certificate</th>
<th>Degree</th>
<th>Postgrad</th>
<th>Decline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutered</td>
<td>19</td>
<td>79.2^a</td>
<td>33</td>
<td>94.3</td>
<td>34</td>
<td>79.1^a</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>43</td>
<td>81.1^b</td>
<td>110</td>
<td>88.0^a</td>
<td>122</td>
<td>93.8^b</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>85.4^b</td>
<td>19</td>
<td>79.2^a</td>
<td>33</td>
<td>94.3</td>
<td>34</td>
<td>79.1^a</td>
</tr>
<tr>
<td>Intact</td>
<td>5</td>
<td>20.8</td>
<td>2</td>
<td>5.7</td>
<td>9</td>
<td>20.9</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>18.9</td>
<td>12.0</td>
<td>8</td>
<td>6.2</td>
<td>6</td>
<td>14.6</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>20.8</td>
<td>78.5</td>
<td>288</td>
<td>91.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>8.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. χ² = 15.391, df = 7, p ≤ .05. Percentage of respondents in bold text, rounded to 1 decimal place.

^a,b Superscripts show significance; those holding a postschool qualification (^a) have a higher percentage of neutered animals than owners with no or a school qualification (^b), with the exception of owners with a 5th form qualification.

gained by the owner and the reproductive status of the animal (χ² = 15.391, df = 7, p ≤ .05); overall, those individuals holding tertiary qualifications were more likely to own an animal who had been sterilized.

The Effect of Animal Variables on Reproductive Status

During analysis, significant relationships were established between the species of animal and its reproductive status (χ² = 16.743, df = 1, p ≤ .05). As seen in Table 4, 91.7% of felines surveyed were sterilized compared with only 78.5% of canines.

Overall, no relationship was found between the gender of the animal and the animal’s reproductive status. Cats, irrespective of gender, were more likely than dogs to be desexed. The vaccination status and reproductive status of the animal were also related. (χ² = 5.096, df = 1, p ≤ .05). Table 5 indicates that animals who were not annually vaccinated were more likely to be sterilized than animals who were (93.6% and 85.4%, respectively).

TABLE 4
Association Between Species and the Animal’s Reproductive Status

<table>
<thead>
<tr>
<th>Reproductive Status</th>
<th>Canine^a</th>
<th>Feline^a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutered</td>
<td>128</td>
<td>288</td>
</tr>
<tr>
<td></td>
<td>78.5</td>
<td>91.7</td>
</tr>
<tr>
<td>Intact</td>
<td>35</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>21.5</td>
<td>8.3</td>
</tr>
</tbody>
</table>

^a χ² = 16.743, df = 1, p ≤ .05. Percentages of respondents in bold text, rounded to 1 decimal place.
TABLE 5
Association Between Vaccination Status and the Animal's Reproductive Status

<table>
<thead>
<tr>
<th>Reproductive Status</th>
<th>Vaccinated(^a)</th>
<th>Nonvaccinated(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutered</td>
<td>312</td>
<td>85.4</td>
</tr>
<tr>
<td>Intact</td>
<td>53</td>
<td>14.6</td>
</tr>
</tbody>
</table>

\(^a\) \(\chi^2 = 9.197, \ df = 1, \ p \leq .05\). Percentages of respondents in bold text, rounded to 1 decimal place.

Owner Responses to Nine “Common Statements” Regarding Neutering Cats or Dogs

There were statistically significant differences found between male and female owners in five of the statements. The five statements that were significantly different are shown in Table 6.

These statements show males are more likely than females to agree with statements that directly relate to the effects of sterilization on the sex or sexuality of the animal. Males were also more likely to be concerned about sterilization causing health problems.

TABLE 6
Statements Identified as Having Significant Differences Between the Responses of Males and Females

<table>
<thead>
<tr>
<th>Statements (n = 265)</th>
<th>Agree With</th>
<th>Disagree With</th>
<th>Do Not Know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>1 All cats and dogs unless used for breeding should be desexed</td>
<td>66.3(^a)</td>
<td>86.5</td>
<td>19.8</td>
</tr>
<tr>
<td>2 Cats and dogs have the right to remain whole and have offspring</td>
<td>24.4(^a)</td>
<td>8.9</td>
<td>68.8</td>
</tr>
<tr>
<td>3 Sterilization can cause cats and dogs to become sexually frustrated</td>
<td>12.8(^a)</td>
<td>2.8</td>
<td>16.3</td>
</tr>
<tr>
<td>4 Sterilization removes the sexuality/masculinity of the cat or dog</td>
<td>29.1(^a)</td>
<td>13.4</td>
<td>50.0</td>
</tr>
<tr>
<td>9 Sterilization can cause health problems</td>
<td>13.9(^a)</td>
<td>3.4</td>
<td>60.5</td>
</tr>
</tbody>
</table>

\(^a\) Number of owners as a percentage; percentages rounded to 1 decimal place. 
\(p \leq .05\).
There were statistically significant differences found between ages of the owners in three of the statements. The three statements that were significantly different are shown in Table 7. Table 7 identifies that respondents over the age of 41 were more likely to agree that all cats and dogs, unless used for breeding, should be neutered and were less concerned about the effects of neutering on the animals’ health when compared with those under the age of 40.

**DISCUSSION**

**Association Between Human Variables and Reproductive Status of Animal**

In this study, differences were found between the gender of the human companion and the likelihood of cats or dogs being sterilized. Females were found to be more likely than males to sterilize cats and dogs; these results were similar to results from a study by Blackshaw and Day (1994), although this study focused solely on the sterilization of dogs. This difference in rates between genders could potentially be caused by differences between male and female attitudes. More females than males agreed with the statement, “All cats and dogs unless used for breeding should be desexed” (86% vs. 66%). Males were more likely than females (24% vs. 9%) to agree with the statement, “Cats and dogs have the right to remain whole and have offspring.”

Evidence from the current study suggests that males are more likely to be concerned about an animal’s sexual integrity; it is possible that this arises through equating the animals’ sexuality or masculinity with their own. Ultimately, this could affect their attitudes or decisions regarding neutering and their likelihood...
of doing so. The disparity between the numbers of females who neuter their animals compared with the number of males seems to support this.

Unlike previous studies, which have suggested that younger people are less likely to neuter dogs (Fielding et al., 2002), there was no correlation found between the age of respondents and the reproductive status of their animals. An association was found between the highest qualification a person had achieved and the reproductive status of that person’s animal. Overall, the trend indicated that those holding tertiary qualifications were more likely to neuter cats or dogs when compared with those holding high school qualifications or lower. The data does not explicitly indicate why this is the case; however, it is possible to surmise that individuals with higher qualifications may be more knowledgeable regarding the benefits of desexing. It may also be the case that people with higher qualifications are exposed, or more receptive, to literature pertaining to the neutering process. Therefore, they may be more likely to neuter cats or dogs. Other possibilities include the effect of education on income, free time, and area of residence.

No association was found between owner income and neutered animal; this is in line with the results from the attitudes questions where the majority of respondents (69.9%) disagreed with the statement, “Cost is the biggest factor when making a decision to desex your animal.” Both results are encouraging as they indicate that the cost of the procedure is not the major factor that affects whether an owner chooses to neuter an animal.

No association was found between the reproductive status of the animal and the environment, rural or urban, in which the owner lives; 88% of respondents in this study lived in an urban environment with only 12% of respondents living in a rural area. However, given the fact that most surveys were completed within Auckland itself, data relating to rural attitudes may be less reliable.

**Association Between Animal Variables and Reproductive Status of Animal**

The species of animal had an effect on reproductive status with cats being more likely than dogs to be neutered. These results could be explained partially by the difference in the cost of the procedure between species, even though 69.9% of owners disagreed with the statement that cost is the major factor involved in the decision to neuter the animal. Depending on gender, the cost of sterilizing a cat ranges between $75 and $100 in comparison with dogs, where costs range from $135 to $270 (prices are in New Zealand dollars and are representative and obtained from a single clinic, Animalz Takapuna).

The cost of the procedure varies greatly between gender and species, but sterilization is cheaper for cats than dogs. This is due to the difference in animal size and the location of the testes, increasing the complexity of the operation and time needed to perform it.
The human’s level of control over the animal’s social environment is another key factor in explaining why the rates are different. Owners have less control over the movement of cats; unless completely housebound, cats are free to wander and socialize with other cats. However, due to the current dog control act, dogs in New Zealand are required by law to be confined or controlled at all times (New Zealand Government, 1996). As a result, individuals can have direct control over how and when the dog socializes with other animals. This means as long as the owner is observant, unsterilized animals are less likely to lead to unplanned pregnancies.

Despite the inherent differences in the care of unsterilized males and females, in this study, the gender of the animal was not a significant factor in the decision. This study found that although male owners were more likely than female owners to be concerned with the effect of neutering on the sexuality and masculinity of the animals and less likely to neuter their cats or dogs, males were not less likely to neuter a male animal than a female animal. This is different from the results reported by Blackshaw and Day (1994), who found male owners, due to males being more likely to equate the dog’s sexuality with their own, less likely than female owners to neuter male animals.

One finding, which is surprising and may be considered counterintuitive, is that animals not annually vaccinated are more likely than animals who are to be neutered. It suggests that owners who regularly take their animals to the veterinarian and receive medical advice about health issues are less likely to get their animal neutered. It is possible that this result could stem from a financial motivation. The neutering process can be seen as a single expenditure as opposed to an annual one. Owners of limited funds may, therefore, place a priority on neutering rather than annual vaccination. An unvaccinated animal in a population of vaccinated individuals may be considered less likely to contract a disease. It is also important to remember that animals who are obtained from shelters are already neutered and this need not be an expense at all. Conversely, it could be that unneutered animals are more likely to be kept for breeding or as pedigree-show animals (who are required to be kept intact). Such animals could be considered to have greater financial worth and are, therefore, more likely to receive financial investment associated with annual vaccination. This study is not able to ascertain the precise reason for this result; however, future research, which includes pedigree data and place of acquisition, may provide further valuable insights.

CONCLUSION

In conclusion, the results of this study suggest that the educational programs in place in New Zealand to encourage the neutering of cats and dogs have
had a positive effect on owner attitudes. This is shown by the high percentage of animals neutered in the survey and the fact that the majority of respondents agreed that all animals, unless used specifically for breeding, should be neutered. Females were found to be more likely to sterilize cats or dogs, and there was a trend that owners with higher qualifications are also more likely to neuter cats or dogs. Cats were the species most likely to be sterilized as were animals not annually vaccinated or owned by males. The latter findings may suggest that future public campaigns and veterinary advice may become increasingly effective if targeted toward dog owners and male perceptions of neutering and sexuality.

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