

**ORIGINAL ARTICLE**

# Perceptions and opinions of pet owners in the United States about surgery, pain management, and anesthesia in dogs and cats

Bradley T. Simon DVM, MSc, DACVAA<sup>1</sup> |

Elizabeth M. Scallan DVM, MBA, MS, CVA, CCRP<sup>1</sup> |

Dirsko J. F. Von Pfeil DVM, DACVS, DECVS, DACVSMR<sup>2,3</sup> |

Daniel T. Boruta DVM, DACVAA<sup>4</sup> | Rick Wall DVM, DACVSMR, CCRP<sup>5</sup> |

Belle M. Niblett DVM, MVSc, DACVIM<sup>6</sup> | Odette O DVM, DACVAA<sup>7</sup> |

Guy Beauchamp PhD<sup>8</sup> | Paulo V. Steagall DVM, MSc, PhD, DACVAA<sup>9</sup> 

<sup>1</sup>Department of Small Animal Clinical Sciences, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station, Texas

<sup>2</sup>Department of Small Animal Clinical Sciences, College of Veterinary Medicine, Michigan State University, East Lansing, Michigan

<sup>3</sup>Friendship Surgical Specialists of the Friendship Hospital for Animals, Washington, DC

<sup>4</sup>Palm Beach Veterinary Specialists, West Palm Beach, Florida

<sup>5</sup>Center for Veterinary Pain Management and Rehabilitation, The Woodlands, Texas

<sup>6</sup>Oregon Veterinary Referral Associates, Springfield, Oregon

<sup>7</sup>Anesthesia and Pain Management Services, Massachusetts Veterinary Referral Hospital, Woburn, Massachusetts

<sup>8</sup>Faculty of Veterinary Medicine, Université de Montréal, St-Hyacinthe, Quebec, Canada

<sup>9</sup>Department of Clinical Sciences, Faculty of Veterinary Medicine, Université de Montréal, St-Hyacinthe, Quebec, Canada

## Correspondence

Bradley Simon, 4474 TAMU,  
Department of Small Animal Clinical  
Sciences, College of Veterinary Medicine  
and Biomedical Sciences, Texas A&M  
University, College Station,  
TX 77843-4474.  
Email: bsimondacvaa@gmail.com

## Funding information

Texas A&M University College of  
Veterinary Medicine and Biomedical  
Sciences.

## Abstract

**Objective:** To evaluate pet owners' perceptions and understanding of surgical pain, perioperative pain management, and anesthesia.

**Study Design:** Prospective owner survey.

**Sample Population:** Eight veterinary hospitals each provided 200 surveys for distribution to pet owners.

**Methods:** A survey evaluated owners' perceptions and opinions related to surgical pain, perioperative pain management, anesthesia in dogs and cats, and owner demographics (sex, age, education, employment, previous surgical experience, and pet ownership) in 8 regions of the United States (Alaska, Florida, Hawaii, Massachusetts, Oregon, Ohio, Texas, Washington, DC). Effects of demographics on survey questions were analyzed by using a Cochran–Mantel–Haenszel test. Descriptive statistics and frequency distributions were calculated when applicable.

**Results:** 948/1600 (59.25%) of distributed questionnaires were completed. Owners reported that analgesics were “always needed” more often for surgical procedures than medical conditions. Knowing what to expect during recovery (99%), being informed of procedures and risks (98%), adequate pain management (98%), and having a board-certified anesthesiologist perform anesthesia (94%) were considered “important” or “very important” by owners. The majority of owners agreed that pain

affects quality of life (81%), interactions with family and pets (73%), and that declawing is a painful procedure (59%). Older respondents (>46 years), women, owners who have had previous surgery or who have pets that have had previous surgery, and those in health care professions have a better understanding of pain but also expect effective client communication.

**Conclusion:** Improving our understanding of pet owners' perceptions and knowledge related to anesthesia, surgery, and pain may lead to improved client education, satisfaction, and compliance with administration of analgesics.

## 1 | INTRODUCTION

The recognition and treatment of pain are cornerstones of veterinary medicine but are complex and challenging. The American College of Veterinary Anesthesia and Analgesia's position on the treatment of pain in animals underscores the adverse effects of pain and suffering on an animal's quality of life and highlights the call to prevent or alleviate pain as a significant therapeutic goal. Establishing an effective analgesia protocol requires consideration of multiple factors, such as the etiology, severity, and chronicity of the pain, and also the ability of the owner to recognize fluctuations in pain and comply with the treatment plan. In this context, client communication is critical to the success of this goal. In human medicine, good communication between health care providers and patients improves compliance and outcomes of pain management.<sup>1,2</sup>

In the United States, the impact of client communication and pet owners' perceptions and opinions on veterinary services (eg, anesthesia, surgery, and pain management) has not been reported. Finnish<sup>3</sup> and Canadian<sup>4</sup> small animal owners felt that information related to surgery and pain management was lacking among veterinary service providers. Less than 8% of Finnish pet owners felt that they had enough education regarding how to manage and recognize their animal's pain.<sup>3</sup> Furthermore, owners were uncertain about the effectiveness and adverse effects of analgesics in their pets.<sup>3</sup> These studies also uncovered differences in opinions on pain management between Finnish and Canadian pet owners. For example, Finnish pet owners reported that analgesia was required more often for fracture repair, ovariohysterectomy, and cutaneous tumor excision procedures compared with Canadian pet owners.<sup>3,4</sup> The perception and opinions of pet owners in the United States regarding anesthesia, surgery, and pain management are unknown and may differ from those reported in previous studies because of cultural differences. This study evaluates the perceptions of pet owners living in the United States regarding analgesia for surgical procedures and medical conditions and the importance of client communication during the perioperative period. Identifying gaps in owners' knowledge and providing education on perioperative pain management during a client visit may improve compliance,

veterinarian-client relationship, client satisfaction, and patient well being. We hypothesized that pet owners would stress the importance of pain management for surgical procedures and medical conditions, anesthesia, and client communication during the perioperative period but would lack the understanding of pain and analgesic therapy pertinent to veterinary medicine. We also hypothesized that pet owners with previous experience with surgery and those in the health care profession would have a better understanding of pain and analgesia.

## 2 | MATERIALS AND METHODS

### 2.1 | Study design

This study was approved by the Texas A&M University Institutional Review Board (IRB2015-0675M). An anonymous paper survey using a nonprobability convenience sample<sup>5</sup> was developed and distributed to clients attending 1 of 8 privately owned, small animal referral hospitals located in various regions of the United States, Alaska (n = 1), Florida (n = 1), Hawaii (n = 1), Massachusetts (n = 1), Oregon (n = 1), Ohio (n = 1), Texas (n = 1), and Washington, DC (n = 1). Selected hospitals employed at least 1 board-certified specialist (DACVS, DECVS, DACVAA, DACVIM, DACVSMR, DACVD, DACVO, DACVECC, DACVP), had historical evidence of sufficient caseload confirmed by the survey leader of each hospital to support data collection during the allotted time period, and represented various regions of the United States and the cooperating specialists agreed to participate in this survey. A survey leader was appointed at each hospital by the principal investigator (BS). Each survey leader received 2 laminated information sheets outlining the study objectives along with the principal investigator's contact information, informational posters for display in each hospital's reception area, and 200 paper surveys (Supporting Information Appendix A) plus 200 envelopes to ensure anonymity of survey respondents. The survey leaders assisted with participant recruitment, maintained participant anonymity throughout the study from the principal investigator, and ensured that the study timeline was followed.

Surveys were administered and collected between March 14, 2016, and June 14, 2016. The survey questionnaire was completed on a voluntary basis and distributed by either the reception staff or veterinary technicians to any individual entering the veterinary clinic over 18 years of age who presently own dogs and/or cats. Inclusion criteria were verbally confirmed by respondents to the reception staff of participating hospitals. Owners were asked to complete the survey to the best of their ability and return the completed survey, sealed within the envelope, to the reception desk at the hospital. Each respondent was permitted to complete only 1 survey.

Study leaders collected the sealed envelopes containing surveys and mailed them directly to the principal investigator (BS). No surveys were read or opened at any of the 8 referral hospitals after owner completion. Individual data were kept anonymous to the 8 participating hospitals.

## 2.2 | Survey design

The current United States survey was adapted and edited from previously published related surveys<sup>3,4</sup> and investigators' personal experiences. Face and content validity of the survey was performed and described in the Canadian study.<sup>4</sup> In brief, 2 pilot studies were conducted prior to the Finnish and Canadian surveys, enrolling 10 and 20 cat and/or dog owners, respectively, to evaluate question clarity, ease of use, and relevance.<sup>3,4</sup> Pet owner feedback from these pilot studies confirmed that the questionnaire was appropriate and required only a short time for completion (<5 minutes). The survey was divided into 4 categories with 8, 6, 10, and 10 questions, respectively. Category I evaluated pet owners' perceptions about the need for analgesic management for surgical procedures (ie, female and male sterilization) and medical conditions (ie, ear infection). Category II evaluated the importance of anesthesia, an anesthesiologist, and client communication during the perioperative period. Category III evaluated the understanding of pain and analgesic therapy in veterinary medicine. Category IV evaluated the respondent demographics. Respondents were asked to check a box that corresponded with predetermined options (ie, agree, partly agree, partly disagree, disagree) that most closely represented their beliefs.

## 2.3 | Statistical analysis

Statistical analysis was performed with commercially available software (SAS v.9.3; SAS, Cary, North Carolina). Category I-III responses were transformed into numerical scores (0, 1, 2, 3, 4) for statistical analysis. Numerical value of 1 corresponded with "not needed," "not at all important," or "disagree"; numerical value of 2 corresponded with "not likely to be needed," "not so important," or "partly disagree";

numerical value of 3 corresponded with "likely to be needed/should be given," "important," or "partly agree"; numerical value of 4 corresponded with "always needed," "very important," or "agree"; and a numerical value of zero corresponded with "do not know when appropriate." The effect of independent variables (sex, age, owner education, previous owner surgery, previous pet surgery, dog or cat owner, and occupation within the health field) were analyzed by using a Cochran–Mantel–Haenszel test. Age was categorized into 2 groups based on the median age of all respondents (46 years), younger ( $\leq 46$  years) and older ( $> 46$  years). Education level was categorized as respondents with either high school level and below or college level and above. A  $\chi^2$  test or unequal variance *t* test was used to determine an association between variables in Category IV (demographic data) when appropriate. Significance was set at  $P < .05$ .

## 3 | RESULTS

### 3.1 | Survey response

From among the 1600 questionnaires that were distributed, 948 (59.25%) were completed. The response rate in this study could not be determined because the number of individuals declining participation was not recorded. Regional responses were as follows: Alaska ( $n = 53$ , 26.5%), Florida ( $n = 200$ , 100%), Hawaii ( $n = 29$ , 14.5%), Massachusetts ( $n = 96$ , 48%), Ohio ( $n = 72$ , 36%), Oregon ( $n = 110$ , 55%), Texas ( $n = 188$ , 94%), Washington, DC ( $n = 200$ , 100%). Some respondents chose to not answer every question.

### 3.2 | Demographics of respondents

Demographics of respondents are described in Table 1. Respondents' median age was 46 years (range, 18-102). Responses from pet owners relating to categories I, II, and III are described in Tables 2, 3, and 4, respectively.

### 3.3 | Effects of covariants

#### 3.3.1 | Age

Knowing what to expect during their pet's recovery from illness, injury, or surgery ( $P < .001$ ) and being assured that necessary techniques and pain medications will be used in their pet ( $P = .012$ ) were considered to be more important in older than in younger respondents. Older respondents were more likely to indicate that "the cost of pain medication is of less concern" ( $P = .002$ ), "the use of pain medications will hasten recovery from surgery and hospital discharge" ( $P = .018$ ), and "pain after surgery can be helpful in limiting their pet's activity" ( $P = .023$ ).

**TABLE 1** Demographics of respondents who completed the survey

Respondent demographics	Survey response	No. of responses	%
Sex	Men	659	73.5
	Women	238	26.5
Age	Younger (<46 years)	411	48.5
	Older (>46 years)	436	51.5
Level of education	High school	93	11.0
	College or greater	770	89.0
Owner had previous surgical experience	Yes	720	79.0
	No	192	21.0
Pet had previous surgical experience	Yes	768	83.5
	No	150	16.5
Health care professional	Yes	232	25.5
	No	685	74.5
Survey comprehension	Understood	826	95.0
	Somewhat understood	42	5.0
	Did not understand	0	0
Type of pet currently owned	Dog	564	61.8
	Cat	125	13.7
	Both	224	24.5

### 3.3.2 | Sex

The following items were considered significantly more important for women than for men: “know what to expect during their pet’s recovery” ( $P < .001$ ), “be informed about all procedures and risks involved in anesthesia and surgery” ( $P = .04$ ), “have a board-certified anesthesiologist perform anesthesia on their pet” ( $P = .01$ ) or “discuss pain management prior to surgery” ( $P = .047$ ), and “be assured that all necessary techniques and pain medications will be used in

their pet to prevent and/or alleviate pain” ( $P < .001$ ). More women than men ( $P = .008$ ) agreed with the statement that “declawing should be banned in the United States.”

### 3.3.3 | Education

College-educated respondents felt that the need for pain medications is more often required for neutering ( $P = .038$ ) and tooth extractions ( $P = .009$ ) compared with high school-educated respondents. College-educated respondents also

**TABLE 2** Respondents’ perceptions and opinions on the need for analgesic therapy for specific procedures and conditions in dogs and cats

Procedure or condition (responses)	Not needed, n (%) <sup>a</sup>	Not likely to be needed, n (%) <sup>a</sup>	Likely to be needed, should be given, n (%) <sup>a</sup>	Always needed, n (%) <sup>a</sup>	No response, n (%) <sup>a</sup>
1.1 Surgery, fracture repair (n = 932)	14 (1.5)	3 (0.3)	238 (25.5)	677 (72.6)	14 (1.5)
1.2 Surgery, ovariectomy (n = 912)	16 (1.8)	45 (4.9)	350 (38.4)	501 (54.9)	34 (3.7)
1.3 Surgery, neuter (n = 910)	17 (1.9)	78 (8.6)	350 (38.5)	465 (51.1)	36 (4.0)
1.4 Surgery, mass removal (n = 923)	13 (1.4)	70 (7.6)	387 (41.9)	453 (49.1)	23 (2.5)
1.5 Condition, ear infection (n = 922)	79 (8.6)	358 (38.8)	371 (40.2)	114 (12.4)	23 (2.5)
1.6 Condition, lameness (n = 912)	36 (3.9)	208 (22.8)	514 (56.4)	154 (16.9)	34 (3.7)
1.7 Surgery, tooth removal (n = 926)	14 (1.5)	58 (6.3)	400 (43.2)	454 (49.0)	20 (2.2)
1.8 Surgery, onychectomy, cats (n = 858)	23 (2.7)	47 (5.5)	270 (31.5)	518 (60.4)	88 (10.3)

<sup>a</sup>Percentage values rounded to 1 decimal point.

**TABLE 3** Respondents' perceptions and opinions on the importance of anesthesia and veterinarian–client communication during the perioperative period

Survey question (responses)	Not at all important, n (%) <sup>a</sup>	Not so important, n (%) <sup>a</sup>	Important, n (%) <sup>a</sup>	Very important, n (%) <sup>a</sup>	No response, n (%) <sup>a</sup>
Knowing what to expect during my pet's recovery (n = 939)	0 (0.0)	2 (0.2)	39 (4.2)	898 (95.6)	7 (0.7)
Being informed about all procedures and risks (n = 940)	1 (0.1)	6 (0.6)	88 (9.4)	845 (89.9)	8 (0.9)
Knowing separate costs (n = 938)	16 (1.7)	117 (12.5)	276 (29.4)	529 (56.4)	8 (0.9)
Board-certified anesthesiologist perform anesthesia (n = 938)	4 (0.4)	55 (5.9)	250 (26.7)	629 (67.1)	8 (0.9)
Board-certified anesthesiologist discuss pain management (n = 938)	8 (0.9)	148 (15.8)	322 (34.3)	460 (49.0)	8 (0.9)
Assurance that necessary techniques and pain management will be used (n = 938)	0 (0.0)	16 (1.7)	187 (19.9)	735 (78.4)	8 (0.9)

<sup>a</sup>Percentage values rounded to 1 decimal point.

found that it is more important to be informed about expectations during their pet's recovery than high-school-educated respondents ( $P < .018$ ). College-educated respondents agreed more often that “the cost of pain medication is not of concern” ( $P = .026$ ) and that “side effects of pain medications are rare” ( $P = .037$ ) compared with high school-educated respondents.

### 3.3.4 | Health care professionals

Health care professionals felt that the need for pain medications is more often required for fracture repair ( $P = .002$ ),

lameness ( $P < .001$ ), tooth extractions ( $P = .017$ ), and feline declawing ( $P < .001$ ) compared with non-health care professionals. Health care professionals also indicated that having a board-certified anesthesiologist discuss pain management prior to surgery ( $P = .036$ ) is of less importance. This group more often than non-health care professionals agreed that “the use of pain medications will help speed recovery from surgery and hospital discharge” ( $P = .007$ ), “the effects of pain medication side effects are rare” ( $P < .001$ ), and “declawing cats is painful” ( $P < .001$ ) and “should be banned in the United States” ( $P = .003$ ).

**TABLE 4** Respondents' perceptions and opinions on understanding pain and analgesic therapy in veterinary medicine

Survey question (responses)	Don't know, n (%) <sup>a</sup>	Disagree, n (%) <sup>a</sup>	Partly disagree, n (%) <sup>a</sup>	Partly agree, n (%) <sup>a</sup>	Agree, n (%) <sup>a</sup>	No response, n (%) <sup>a</sup>
Cost of pain medication is not a concern (n = 928)	18 (1.9)	149 (16.1)	135 (14.5)	319 (34.4)	307 (33.1)	18 (1.9)
Pain medications will speed recovery (n = 927)	80 (8.6)	38 (4.1)	88 (9.5)	294 (31.7)	427 (46.1)	19 (2.0)
Pain after surgery can be helpful to limit activity (n = 921)	70 (7.6)	202 (21.9)	130 (14.1)	346 (37.6)	173 (18.8)	25 (2.7)
Side effects of pain medications are rare (n = 922)	298 (32.3)	219 (23.8)	207 (22.5)	139 (15.1)	59 (6.4)	24 (2.6)
Pain is easy to recognize (n = 928)	43 (4.6)	378 (40.7)	252 (27.2)	178 (19.2)	77 (8.3)	18 (1.9)
Cats and dogs feel the same level of pain as people (n = 925)	353 (38.2)	190 (20.5)	79 (8.5)	112 (12.1)	191 (20.6)	21 (2.3)
Pain affects quality of life (n = 928)	28 (3.0)	15 (1.6)	19 (2.0)	113 (12.2)	753 (81.1)	18 (1.9)
Pain affects a pet's interaction with family and other pets (n = 926)	41 (4.4)	29 (3.1)	33 (3.6)	147 (15.9)	676 (73.0)	20 (2.2)
Declawing (cats) is painful (n = 903)	266 (29.5)	14 (1.6)	19 (2.1)	70 (7.8)	534 (59.1)	43 (4.8)
Declawing (cats) should be banned in the United States (n = 897)	266 (29.7)	174 (19.4)	63 (7.0)	109 (12.2)	285 (31.8)	48 (5.4)

<sup>a</sup>Percentage values rounded to 1 decimal point.

### 3.3.5 | Owners with previous surgery

Respondents who had been previously treated with surgery felt that the need for pain medications is more often required for ovariohysterectomies ( $P = .001$ ), neutering ( $P = .002$ ), and declawing ( $P = .005$ ) compared with respondents who had not had prior surgery. Those with previous surgery indicated the importance of knowing what to expect during their pet's recovery from illness, injury, or surgery ( $P = .031$ ). Respondents with previous surgery agreed that "the cost of pain medication is not a concern" ( $P = .024$ ) and that "the use of pain medications will help speed recovery from surgery and hospital discharge" ( $P = .047$ ).

### 3.3.6 | Owning a pet

Dog owners reported that analgesics are less likely needed for fracture repair surgery compared with those who own simultaneously both dogs and cats (dog/cat;  $P = .024$ ). Similarly, dog owners reported that analgesics are less likely needed for tooth extractions ( $P < .001$ ) and onychectomy ( $P < .001$ ) compared with cat only and dog/cat owners. Cat owners were less likely to agree that the cost of pain medication is not a concern ( $P = .0026$ ) and that pain after surgery can be helpful for limiting activity ( $P = .014$ ) compared with dog only and dog/cat owners. Dog owners were less likely to agree that "pain medications will speed recovery from surgery" ( $P = .02$ ) and that cat and dogs feel the same level of pain as people ( $P = .012$ ) compared with dog/cat owners. Canine only owners were also less likely to agree that "pain affects their pet's quality of life" ( $P = .0015$ ), "declawing is painful" ( $P < .001$ ), and "declawing should be banned in the United States" ( $P < .001$ ) compared with cat only and dog/cat owners. Pet owners of dogs/cats were more likely to agree that "side effects of pain medications in pets are rare" ( $P < .001$ ) compared with cat or dog only owners.

### 3.3.7 | Owners of pets with prior surgery

Owners of pets that had been previously treated with surgery felt that pain medications are more often required for fracture repair ( $P = .011$ ), ovariohysterectomy ( $P < .001$ ), neutering ( $P < .001$ ), mass removal ( $P = .007$ ), tooth extraction ( $P = .014$ ), and declawing ( $P < .001$ ). Surgery, and the importance of knowing what to expect during their pet's recovery from illness, injury, or surgery ( $P = .017$ ) was also of greater importance to this group compared with owners of pets that had not had prior surgery. More owners of pets with prior surgery agreed that "the cost of pain medication is not a concern" ( $P < .001$ ), "the use of pain medications will help speed recovery from surgery and hospital discharge" ( $P = .016$ ), "pain after surgery can be helpful to limit its activity/movement" ( $P = .016$ ), "pain affects the pet's quality

of life" ( $P = .037$ ), "pain affects their pet's interaction with family members or other pets" ( $P = .001$ ), and "declawing cats should be banned in the United States" ( $P = .029$ ).

## 4 | DISCUSSION

Owners who participated in this survey considered pain management vital to their pet in a variety of surgical conditions. The majority of pet owners (60%-70%) perceived that canine and feline patients undergoing orthopedic surgery, including onychectomy, require analgesia more often than other commonly performed surgeries. This finding is consistent with a previous study, in which owners and veterinarians considered fracture repair as one of the most painful procedures in small animals.<sup>3,6</sup> Veterinarians in New Zealand,<sup>7</sup> Great Britain,<sup>8</sup> and Brazil<sup>9</sup> administer analgesics for more than 93% of orthopedic procedures, mostly with a multimodal approach to pain management.<sup>7</sup> Despite reports describing the severity of pain associated with orthopedic procedures, pet owners in the United States stated analgesics are "always needed" less often than Finnish pet owners.<sup>3</sup> Based on this information, one may surmise that some owners are either misinformed or lack knowledge of the severity of pain in patients undergoing orthopedic procedures, such as fracture repair. Health care professionals, owners with college-level education, current cat owners, and those who experienced surgery on their pet or on themselves seemed more aware of how these procedures or conditions may inflict pain on their pet and, therefore, believe analgesics are more likely to be needed. Veterinarians should consider demographics and education level during a consultation to help enhance each owner's understanding of pain management with specific procedures or conditions.

Medical conditions may sometimes be overlooked as a cause for pain in the absence of direct insult easily visible to the owner. Owners perceived medical conditions such as aural infections or lameness in their pets as less likely to require analgesics than surgical procedures. Although lameness has been reported as an indicator of pain in musculoskeletal conditions,<sup>10</sup> owners were found to rely more on the pet's behaviors than on the severity of lameness as an indicator of pain.<sup>11</sup> Owners may not perceive lameness as a true indicator of pain and, instead, assess behavioral changes alone; thus, the owner's perception of the need for analgesia and resulting analgesic administration may not reflect the pet's actual existing needs. Approximately 39% of owners indicated that analgesics were not likely needed for ear infections, yet human and veterinary medical professionals consider otitis as a painful condition and attribute pain management of utmost importance.<sup>12,13</sup> Veterinarians in a British study ranked aural pain as the third most common cause of chronic pain in small animal practices.<sup>14</sup> Because veterinarians identify ear infection as painful, it appears that client education on this condition should be improved. This gap between veterinarians and pet owners in appreciation of pain emphasizes the

requirement for better education and communication with pet owners pertaining to pain in various medical conditions. In human medicine, client education has been proven to improve outcomes and patient compliance for pain management.<sup>1,15</sup> Evidence related to this field is more limited in the veterinary literature, especially in the United States.

Training programs have been shown to improve American students' knowledge on pain and ability to identify pain in patients.<sup>16</sup> Similar programs designed for pet owners could be valuable for owners when pain management is indicated at home.

The majority of owners considered that information regarding their pet's care, expectations, and financial considerations was very important. This information is valuable in that owners have indicated a desire to become informed, which can positively impact their decision making process. Educating pet owners can enhance satisfaction for the client and veterinarian.<sup>17</sup> Owners' expectation to be informed of the specific costs of anesthesia, pain management, and surgery places an implicit value on the anesthetic process and the anesthesiologist. Monetary discussions between clients and veterinarians are always challenging and can create an obstacle in building the client–veterinarian relationship.<sup>18</sup> Veterinarians can alleviate these obstacles by improving communication through understanding client expectations, providing medical education, and discussing costs more often.<sup>19</sup> The majority of respondents felt that specialty certification of personnel discussing and delivering anesthesia and pain management was “very important.” Five of the 8 hospitals that participated in the survey employed a board-certified anesthesiologist. Even with the presence of a board-certified anesthesiologist, the feedback remained uniform; 94% (557/591) and 93% (322/348) of respondents surveyed in hospitals with and without a board-certified anesthesiologist, respectively, reported the importance of having a board-certified anesthesiologist perform anesthesia on their pet. In human medicine, poor patient outcomes were associated with noncertified anesthesia providers,<sup>20</sup> and mortality and morbidity decreased with the presence of a board-certified anesthesiologist.<sup>21</sup> Although similar studies have not been published in veterinary medicine, the impact of a veterinary anesthesiologist during the perioperative period may be inferred from evidence in the human literature.

Withholding analgesic therapy can have negative physiological effects<sup>22</sup> on the patient, increasing postoperative morbidity and mortality. Approximately 46% and 30% of pet owners “agree” and “partly agree,” respectively, that pain medications help accelerate recovery from surgery and hospital discharge. This result was in sharp contrast to the respondents' understanding of the function of pain, given that 37.6% of owners partially agreed that postoperative pain could help limit their pet's activity, whereas only 21.9% of respondents disagreed. Approximately half of respondents believed that pain medications can lead to negative side effects, and 37.6% of respondents considered pain beneficial during the postoperative process. On the basis of these

results, one may question their full compliance with postoperative pain management. The American College of Veterinary Anesthesia and Analgesia,<sup>23</sup> the American Animal Hospital Association,<sup>24</sup> and the Global Pain Council<sup>25</sup> agree that pain management should be used in all surgical cases. In the authors' experiences, the consequences from pain far exceed the rarity of adverse effects associated with analgesics. Furthermore, acute perioperative pain, when inadequately managed, can lead to central sensitization, chronic pain, or “windup” pain.<sup>26–28</sup> Preoperative education should focus on postoperative pain processes, negative sequela to acute and/or chronic pain, and addressing pet owners' concerns about pain medications, including potential side effects.

The results of this study provide a foundation to facilitate educational conversations centered on pain. Indeed, pet owners appreciated the negative impact that pain could have on their pet's quality of life (81% of respondents agreed), behavior (73% agreed) and health, but the majority did not fully understand the causes of pain or how to identify their pet's pain. These educational opportunities should be used to empower owners to recognize features of pain and create a dialogue around pain management opportunities within both hospital and home settings. Among educational opportunities, this survey also attempted to determine owners' perceptions toward onychectomy. Dog owners were less likely to consider this procedure as painful and to recommend that it be banned in the United States. Dog owners may not have had experience with the painful recovery following onychectomy and may, therefore, be more likely to disagree than cat owners. In the present survey, 32% of the respondents agreed that declawing cats should be banned in the United States. This result prompts the authors to suggest additional education of the general public on this controversial topic.

The results of this study should be considered in light of the limitation of our study, which is that our sampling method lacked true randomization. Surveys were distributed to clients that voluntarily participated. This method of sampling does not allow for true randomization of the intended population. Most survey studies that have been conducted to evaluate perioperative analgesics lack a standard randomization protocol.<sup>29,30</sup> We cannot assess the influence that pet owners who opted out of the survey may have had on the results.

Understanding a pet owner's comprehension of pain and the perioperative period may help to identify gaps and/or redundancies in owner education. Veterinarian-provided information about the surgical procedure, intended costs, recovery process, and use of a board-certified anesthesiologist are considered important to most pet owners. Pet owners agree that onychectomy is significantly painful, and it continues to be a controversial topic in the United States.

## ACKNOWLEDGMENT

The authors thank Drs Martin Kennedy, Erin McNally, and Mike Edwards for their support in data collection.

## CONFLICT OF INTEREST

The authors declare no conflicts of interest related to this report.

## ORCID

Paulo V. Steagall DVM, MSc, PhD, DACVAA  <http://orcid.org/0000-0003-4150-6043>

## REFERENCES

- [1] Butow P, Sharpe L. The impact of communication on adherence in pain management. *Pain*. 2013;154(Suppl 1):S101-S107.
- [2] Mistiaen P, van Osch M, van Vliet L, et al. The effect of patient-practitioner communication on pain: a systematic review. *Eur J Pain*. 2016;20:675-688.
- [3] Vaisanen MA, Tuomikoski-Alin SK, Brodbelt DC, Vainio OM. Opinions of Finnish small animal owners about surgery and pain management in small animals. *J Small Anim Pract*. 2008;49:626-632.
- [4] Steagall PB, Monteiro BP, Ruel HLM, et al. Perceptions and opinions of Canadian pet owners about anaesthesia, pain and surgery in small animals. *J Small Anim Pract*. 2017;58:380-388.
- [5] Fowler FJ. Nonresponse: implementing a sample design. In Fowler FJ, ed. *Survey Research Methods*. 5th ed. Thousand Oaks, CA: SAGE Publications; 2014:42-60.
- [6] Hugonnard M, Leblond A, Keroack S, Cadore JL, Troncy E. Attitudes and concerns of French veterinarians towards pain and analgesia in dogs and cats. *Vet Anaesth Analg*. 2004;31:154-163.
- [7] Williams VM, Lascelles BD, Robson MC. Current attitudes to, and use of, peri-operative analgesia in dogs and cats by veterinarians in New Zealand. *N Z Vet J*. 2005;53:193-202.
- [8] Capner CA, Lascelles BD, Waterman-Pearson AE. Current British veterinary attitudes to perioperative analgesia for dogs. *Vet Rec*. 1999;145:95-99.
- [9] Lorena SE, Luna SP, Lascelles BD, Corrente JE. Current attitudes regarding the use of perioperative analgesics in dogs and cats by Brazilian veterinarians. *Vet Anaesth Analg*. 2014;41:82-89.
- [10] Johnston SA. Overview of pain in the lame patient. *Vet Clin North Am Small Anim Pract*. 2001;31:39-53.
- [11] Brown DC, Boston RC, Farrar JT. Comparison of force plate gait analysis and owner assessment of pain using the Canine Brief Pain Inventory in dogs with osteoarthritis. *J Vet Intern Med*. 2013;27:22-30.
- [12] Rettig E, Tunkel DE. Contemporary concepts in management of acute otitis media in children. *Otolaryngol Clin North Am*. 2014;47:651-672.
- [13] Nuttall T, Bensignor E. A pilot study to develop an objective clinical score for canine otitis externa. *Vet Dermatol*. 2014;25: 530-537, e91-e92.
- [14] Bell A, Helm J, Reid J. Veterinarians' attitudes to chronic pain in dogs. *Vet Rec*. 2014;175:428.
- [15] Majid N, Lee S, Plummer V. The effectiveness of orthopedic patient education in improving patient outcomes: a systematic review protocol. *JBI Database System Rev Implement Rep*. 2015;13:122-133.
- [16] Mich PM, Hellyer PW, Kogan L, Schoenfeld-Tacher R. Effects of a pilot training program on veterinary students' pain knowledge, attitude, and assessment skills. *J Vet Med Educ*. 2010;37:358-368.
- [17] Shaw JR, Barley GE, Broadfoot K, Hill AE, Roter DL. Outcomes assessment of on-site communication skills education in a companion animal practice. *J Am Vet Med Assoc*. 2016;249:419-432.
- [18] Coe JB, Adams CL, Bonnett BN. A focus group study of veterinarians' and pet owners' perceptions of veterinarian-client communication in companion animal practice. *J Am Vet Med Assoc*. 2008;233:1072-1080.
- [19] Coe JB, Adams CL, Bonnett BN. A focus group study of veterinarians' and pet owners' perceptions of the monetary aspects of veterinary care. *J Am Vet Med Assoc*. 2007;231:1510-1518.
- [20] Silber JH, Kennedy SK, Even-Shoshan O, et al. Anesthesiologist board certification and patient outcomes. *Anesthesiology*. 2002; 96:1044-1052.
- [21] Abenstein JP, Warner MA. Anesthesia providers, patient outcomes, and costs. *Anesth Analg*. 1996;82:1273-1283.
- [22] Wright BD. Clinical pain management techniques for cats. *Clin Tech Small Anim Pract*. 2002;17:151-157.
- [23] American College of Veterinary Anesthesiologists' position paper on the treatment of pain in animals. *J Am Vet Med Assoc*. 1998;213:628-630.
- [24] Epstein ME, Rodanm I, Griffenhagen G, et al. 2015 AAHA/AAFP pain management guidelines for dogs and cats. *J Feline Med Surg*. 2015;17:251-272.
- [25] Mathews K, Kronen PW, Lascelles D, et al. Guidelines for recognition, assessment, and treatment of pain: WSAVA Global Pain Council members and coauthors of this document. *J Small Anim Pract*. 2014;55:E10-E68.
- [26] Katz J, Jackson M, Kavanagh BP, Sandler AN. Acute pain after thoracic surgery predicts long-term post-thoracotomy pain. *Clin J Pain*. 1996;12:50-55.
- [27] Johansen A, Romundstad L, Nielsen CS, Schirmer H, Stubhaug A. Persistent postsurgical pain in a general population: prevalence and predictors in the Tromso study. *Pain*. 2012;153:1390-1396.
- [28] Torebjork HE, Lundberg LE, LaMotte RH. Central changes in processing of mechanoreceptive input in capsaicin-induced secondary hyperalgesia in humans. *J Physiol*. 1992;448:765-780.
- [29] Hunt JR, Knowles TG, Lascelles BD, Murrell JC. Prescription of perioperative analgesics by UK small animal veterinary surgeons in 2013. *Vet Rec*. 2015;176:493.
- [30] Hewson CJ, Dohoo IR, Lemke KA. Perioperative use of analgesics in dogs and cats by Canadian veterinarians in 2001. *Can Vet J*. 2006;47:352-359.

## SUPPORTING INFORMATION

Additional Supporting Information may be found online in the supporting information tab for this article.

**How to cite this article:** Simon BT, Scallan EM, Von Pfeil DJF, et al. Perceptions and opinions of pet owners in the United States about surgery, pain management, and anesthesia in dogs and cats. *Veterinary Surgery*. 2018;47:277-284. <https://doi.org/10.1111/vsu.12753>