



Survey of Ontario veterinarians' knowledge and attitudes on pain in dogs and cats in 2012

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Résumé

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Sondage sur les connaissances et les attitudes des vétérinaires de l'Ontario à propos de la douleur chez les chiens et les chats en 2012. La gestion appropriée de la douleur animale est une composante critique du bien-être animal dans les cliniques vétérinaires pour petits animaux. Un sondage de convenance en ligne a été mené pour examiner les connaissances et les attitudes des vétérinaires praticiens en Ontario à propos de la douleur chez les chiens ($n = 100$) et les chats ($n = 139$). Les participants vétérinaires se sont dits fortement en accord avec le besoin d'analgésie appropriée pour soulager la douleur des animaux et très peu en accord avec l'absence d'utilisation des analgésiques en raison du coût ou des effets secondaires. Toutes les interventions chirurgicales incluses dans le sondage étaient classées comme étant modérément à très douloureuse, mais les femmes vétérinaires présentaient des classements moyens supérieurs. Fait important, 78 % des vétérinaires croyaient que leurs connaissances à propos de la reconnaissance de la douleur étaient suffisantes. Le biais de sélection pourrait s'être traduit par des surestimations des attitudes à propos de la douleur comparativement à la population vétérinaire en général. Cependant, ces résultats suggèrent que les connaissances et les attitudes se rapportant à l'évaluation de la douleur et au traitement des chiens et des chats se sont améliorées depuis le dernier sondage semblable réalisé en 2001.

(Traduit par Isabelle Vallières)

Introduction

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Appropriate assessment and treatment of animal pain are critical for ensuring optimal animal welfare in small animal veterinary clinics. Health outcomes and overall animal welfare may be impaired by pain and stress associated with inadequate analgesia ([1,2](#)). Factors that can influence appropriate pain management include staff knowledge and attitudes about pain assessment and treatment.

Practices surrounding pain relief for companion animals are constantly evolving. Early studies in the 1990's suggested that most practitioners were providing analgesics for orthopedic surgeries, but few practitioners were doing so for ovariohysterectomy or castration ([3–6](#)). However, studies through the 2000's have shown a steady increase in reported use of analgesics ([7–11](#)), with a recent study from the United Kingdom suggesting that more than 99% of veterinarians are providing some form of perioperative analgesia for ovariohysterectomy and castration ([12](#)). However, further research is

necessary to determine whether this increased usage of analgesics after surgery is widespread. A comparison of 2 Canadian studies conducted during the 1990's and 2000's shows a dramatic increase in the use of analgesics by veterinarians, but a significant number of animals were still left untreated at the time of the later study (4,9). For example, in the early 2000's, approximately 9% of veterinarians were classified as not providing any pre- or post-operative analgesics for either ovariohysterectomies or castrations for dogs. No recent studies on this topic have been completed in Canada.

Recent studies suggest that most veterinarians have a high level of awareness about animal pain, and that they are in agreement with the need for appropriate pain relief in companion animals. For example, a study from New Zealand suggested that most veterinarians agreed that animals should be given the same considerations for pain relief as humans, and that pain prevention was better than pain relief (13). Similarly, a French study found that 99.5% of participating veterinarians reported moderate to extreme concern about the pain of their patients (8). However, previous studies demonstrated that individual veterinarians vary in their perceptions of the level of pain associated with various procedures, and their concerns about possible risks and disadvantages associated with analgesic use. For example, postoperative pain in animals was rated as more severe by female veterinarians compared with males, and by more recent graduates compared with older graduates (4,5,9). Veterinarians were more likely to be analgesic users if they were female, a more recent graduate, had higher pain perceptions scores, or were less concerned about adverse reactions (14,15). Thus, it is important to understand current attitudes and their potential effect on analgesic use.

Veterinarian knowledge on topics related to animal pain can also play an important role in informing practical pain management strategies. Pelzer and Leysen (16) assessed general sources of information and found that the most important sources for practicing veterinarians at that time were books, other practitioners, and journal articles. In a more recent study, veterinarians in New Zealand assessed sources of information specifically addressing recognition and treatment of pain, and ranked continuing education lectures and experience gained in practice as being the most valuable sources of information (13). An understanding of sources of knowledge on this topic is important for informing teaching and continuing education practices in the future.

The last study to assess the perspectives of Canadian veterinarians about pain relief in dogs and cats was conducted in 2001. The objective of this study was to examine current knowledge and attitudes of Ontario veterinarians about pain management in dogs and cats following surgery, and to assess the effects of demographics, including gender and year of graduation. The current paper is focused on a subset of data resulting from this survey that relates to veterinarian attitudes about pain relief, perceptions of pain following various surgeries, confidence with pain recognition, and importance of various clinical indicators of pain, and preferred sources of information about pain recognition.

Materials and methods

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The current questionnaire was developed based on previous surveys used to examine veterinarian perspectives on animal pain and analgesic use (4,9,13,17). In order to assess clarity, face validity, and length, the questionnaire was pretested by a group of graduate students with DVMs at the Ontario Veterinary College and 2 groups of 6 veterinarians in private practice who were selected to represent a range of geographic locations, years of graduation, gender, and practice types.

Data were collected through a self-administered questionnaire using Limesurvey, an online survey tool. All participants were licensed veterinarians in Ontario, had an e-mail address, were members of the

Ontario Veterinary Medical Association (OVMA), and regularly treated dogs and/or cats in their practice. Participants were recruited through advertisements in the OVMA magazine “Focus,” as well as the online newsletter “Newshound.” The survey was conducted from September 13th, 2012 through January 6th, 2013. Veterinarians who completed the survey were included in a draw to win one registration for the next annual OVMA annual conference. This study was approved by the University of Guelph Research Ethics Board (ref: 12FE031).

Separate, similar questionnaires were available for dogs and cats, and participating veterinarians were directed to complete either one or both questionnaires. If the participants chose to complete both questionnaires, they had the choice of which one to complete first. If the veterinarians chose to complete only one of the questionnaires, they were assigned to the dog questionnaire if their year of graduation was an odd number, and the cat questionnaire if their year of graduation was an even number.

The questionnaire included demographic information and 6 distinct sections addressing different aspects of veterinarians’ attitudes and practices on pain assessment and use of analgesics. The section on demographic information included gender, age, year of graduation, and details of post-graduate training. The year of graduation variable was categorized post-collection into 4 groups: pre-1981, 1982–1991, 1992–2001, 2002–2012. Analysis involved responses to 3 sections of the questionnaire that were focused on attitudes, knowledge, and practices in relation to pain relief and pain assessment.

The first section assessed attitudes toward pain relief in dogs and cats by providing participants with statements about pain relief and asking them to provide a numbered response from 1 (strongly disagree) to 5 (strongly agree). For the second section, veterinarians were asked to rate the amount of pain they perceived an animal to experience in the 12 h following particular surgeries if no analgesia was provided. Participants answered on a scale from 1 (no pain at all) to 5 (worst pain imaginable). The specified surgeries listed were: ovariohysterectomy, castration, dental with major extractions, fracture repair, exploratory laparotomy, onychectomy (cat survey only), and thoracotomy. Additionally, participants were asked to rank the importance of common clinical signs of pain in dogs and cats on a scale of 1 (not important at all) to 5 (extremely important) following surgery. Finally, the third section assessed whether or not participants considered their knowledge about recognizing pain to be sufficient, and asked them to rank the importance of various types of continuing education resources such as journal articles, conferences, and on-line resources, to improve their knowledge of pain recognition.

Statistics

Participants completed the survey anonymously and it was not possible to identify individuals who completed both the cat and dog survey. Because of this, data from the 2 surveys could not be considered strictly dependent or independent, and direct comparison between the cat and dog surveys was determined to be inappropriate.

All statistical analyses were performed using SPSS version 21.0 (IBM Corp, Armonk, New York, USA). The OVMA provided demographic information for the OVMA membership for the 2014/2015 membership period for comparison with participant data. To determine whether our sample was representative of the general OVMA membership, we compared the number of participants in our sample against the OVMA membership data across all year of graduation periods (before 1974, 1975–1984, 1985–1994, 1995–2004, 2005–2012) using the Chi-square test. We also compared participation for men and women between our participants and the OVMA membership for each of the year of

graduation periods provided by the OVMA (before 1970, 1970 to 2010 for each 5-year bin, and 2010 to 2012) using either Chi-square or Fishers exact test. Note that the year of graduation periods differ from those used for our analyses. In addition, associations between gender and year of graduation for the participant data were evaluated using a Chi-square test.

Descriptive statistics were computed separately for the dog and cat surveys, and data are presented as either means, or medians with first (Q1) and third (Q3) quartiles. For binary outcome variables (i.e., Yes/No for sufficient knowledge about recognizing pain), effects of gender and year of graduation were examined using the Chi-square test. For ordinal outcome variables (i.e., agreement with attitude statements, ranking of pain following surgery, ranking of importance of clinical signs of pain, ranking of importance of continuing education resources), effects of gender and year of graduation were examined using the Mann-Whitney and Kruskal-Wallis tests, respectively. Statistical results were considered significant at $P < 0.05$.

Results

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In total, 239 surveys were completed, including 100 dog and 139 cat surveys. Only 10 veterinarians completed both the cat and the dog surveys. According to the OVMA data there were 1416 small animal and 410 mixed animal veterinarians with OVMA memberships in 2014/2015; assuming that membership numbers were similar in 2012, this indicates an approximate response rate of 13%. Demographic characteristics of participating veterinarians are summarized in [Table 1](#). On average, female veterinarians graduated more recently than male veterinarians in both the dog (mean 2000 *versus* 1989, $P < 0.01$) and cat (mean 2000 *versus* 1989, $P < 0.01$) surveys. Furthermore, there were significant associations between gender and year of graduation for both the dog survey participants ($P < 0.001$), and the cat survey participants ($P < 0.001$).

Table 1

Demographic characteristics of Ontario veterinarians who responded to the dog and cat surveys on attitudes and knowledge about pain, 2012

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OVC — Ontario Veterinary College.

The number of participants included within each year of graduation period did not differ significantly from expected participation based on the OVMA membership data ($P > 0.1$). Within gender, year of graduation data for our participants were similar to the OVMA membership data, with a few exceptions. A higher percentage of women who belonged to the OVMA participated compared with men who belonged to the OVMA [16.6% *versus* 11%; odds ratio (OR) = 1.81, 95% confidence interval (CI): 1.3 to 2.4, $P < 0.001$]. Fewer women who graduated from 1990 to 1994 participated in the survey than were represented in the OVMA member data (7% *versus* 13%; $P < 0.01$). In contrast, for the 2010 to 2012 period, a higher proportion of women participated in the survey than were represented in the OVMA member data (19% *versus* 13%; $P < 0.05$). Finally, the proportion of men who graduated

between 1995 and 1999 and who participated in the survey was less than the proportion of these men in the OVMA member data (8.5% *versus* 14.4%; $P < 0.001$).

Attitudes toward pain

Male and female veterinarians were asked to rate their level of agreement with various statements related to attitudes towards the management of animal pain, and median rankings are presented in [Table 2](#). Responses of males and females generally agreed, but differed significantly for 1 statement on the dog survey, and 3 statements on the cat survey. An effect of year of graduation was observed for only 1 statement: veterinarians who graduated more recently reported a higher degree of agreement with the phrase “I feel more constrained by concerns over owner budget from using the degree of pain relief I feel is ideal” than did older veterinarians ($P < 0.005$).

Table 2

Median (Q1, Q3) level of agreement of Ontario veterinarians with statements regarding attitudes about pain in dogs and cats. Responses are on a 5-point scale (1 is strongly disagree and 5 is strongly agree)

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^a P -values indicate within question gender effects as assessed using Mann-Whitney tests.

Pain rankings

For the 5 surgeries included in both the dog and cat survey, the lowest pain scores were reported for castration, and the highest scores were reported for thoracotomy ([Table 3](#)). Compared with male veterinarians, female veterinarians perceived dogs to experience more pain for ovariohysterectomy and exploratory laparotomy, and perceived cats to experience more pain for all procedures listed except fracture repair and castration. There were no significant differences in pain rankings based on year of graduation for either the dog or cat surveys.

Table 3

Ontario veterinarians' median (Q1, Q3) ratings of pain in dogs and cats following various surgeries, with responses on a 5 point scale (1 is no pain at all and 5 is the worst pain imaginable)

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^a P -values indicate differences between gender as assessed using Mann-Whitney tests.

^bOnychectomy is not typically performed in dogs; therefore, this procedure was not included on the dog survey.

Pain recognition

Most veterinarians indicated that their knowledge about recognizing pain is sufficient; 77.7% of the dog survey participants and 77.5% of the cat survey participants responded positively to this question. No significant effects of gender or year of graduation were found for either the dog or cat survey.

Participants ranked the importance of all of the listed pain indicators as greater than 3 on a 5-point scale ([Table 4](#)). For both dogs and cats the 3 highest ranked clinical indicators of pain were “Attempts to bite when surgical site palpated,” “Abnormal Posture,” and “Snarls/Hisses when surgical site palpated” (median = 5 for dogs and cats). Neither gender nor year of graduation had a significant effect on the mean importance rankings for any of the clinical signs for either the dog or cat survey.

Table 4

Median (Q1, Q3) rankings of the importance of various clinical signs used by Ontario veterinarians to recognize pain in dogs and cats, with responses on a 5 point scale (1 is not important at all and 5 is very important)

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Sources of information

Veterinarian rankings of the importance of various sources of information for continuing education are summarized in [Table 5](#). Additional sources of information that veterinarians reported which were not listed as options on the questionnaires included the following: Veterinary Information Network website (VIN), consultations, personal experience/pets, input from colleagues and support staff, and membership in professional organizations such as the *International Veterinary Academy of Pain Management* and the *American Association of Feline Practitioners*. In the dog survey, there was an effect of year of graduation on participant rankings of lectures at conferences and meetings ($P = 0.008$), and commercial literature/data sheets ($P = 0.002$), with a numerical trend for higher rankings for these materials as year of graduation became more recent. In the cat survey, more recent graduates reported that commercial literature/data sheets ($P = 0.017$) and reviewing information on the internet ($P = 0.034$) were more important sources than was the case for less recent graduates.

Table 5

Median (Q1, Q3) rankings of the importance of various sources of information about pain recognition in dogs and cats for Ontario veterinarians, with responses on a 5 point scale (1 is low, 5 is high)

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The results suggest that veterinarians in Ontario are in agreement about the value and necessity of effective management of postoperative pain in companion cats and dogs. Participants showed strong agreement (median of 5 out of 5) with statements supporting the need for pain relief for animals and the use of preventive analgesics, and no gender differences were detected for responses to these key attitude statements. Participants also showed moderate to strong disagreement (median of 1 to 2 out of 5) with statements citing cost and side effects as reasons for not using analgesia for both the dog and cat surveys. Our results are consistent with recent studies assessing attitudes about animal pain in veterinarians in other countries. For example, a study of veterinarians from France found that 99.5% of participants were “moderately” or “extremely” concerned about pain relief in dogs and cats (8). Furthermore, the response trends for the current study are similar to those from other studies that have used the same statements to assess attitudes. Direct comparisons between these studies are not possible due to use of different measurement scales; however, veterinarians in New Zealand showed similar trends for all statements (13), and veterinarians in Brazil generally agreed with the need for pain management for animals and the use of preventive analgesics, and disagreed that pain is good because it keeps animals inactive (18).

The degree of pain a veterinarian perceives an animal to be experiencing has previously been recognized as an important factor in determining whether or not the veterinarian will use analgesics (14,15). Veterinarians rated all of the surgeries included in the current study as moderately to highly painful, with higher levels of pain reported for surgical procedures that are more invasive. However, gender had an effect on pain ratings for some of the reported surgeries, and where differences were found, females consistently rated the surgeries as more painful than did males. Similar gender effects have been found in previous studies (7,10,12,13,18). For respondents to the cat survey, female veterinarians reported higher pain scores than did males in response to 5 of the 7 specified surgeries. This gender difference was seen in only 2 of the 6 surgeries of the dog survey. This difference suggests that there might be more variation in opinion among veterinarians about how much pain is experienced by cats as compared to dogs following common surgical procedures. If so, this could reflect an underlying difference in the species-related discrimination in the way pain is assessed by veterinarians. Indeed, a previous study suggested that veterinarians interpreted identical behavioral expressions of pain in dogs and cats differently; dogs were perceived to be experiencing more pain than cats (19). These results are not surprising, as cats have been suggested to be less behaviorally reactive to pain stimuli than dogs, even though it is thought they are likely to experience pain in a similar manner (20). Thus, reduced behavioral expressions of pain may account for the lack of consistent pain assessment between the species by veterinarians. This suggests that it is important to account for species differences in clinical signs associated with pain when attempting to quantify pain in the clinical setting.

Our results suggest that the nature of information gathering among veterinarians has shifted over the past 15 y. In 1991, Pelzer and Leysen (16) found that the most important sources of information for practicing veterinarians in the United States were journals, books, and continuing education. More recently, Hewson et al (9) found that Canadian veterinarians were placing a similar importance on these same sources for information about analgesia, in addition to discussions with other veterinary practitioners. Importantly, in the latter study Internet-based information was ranked as the least important source of information. In the current study, we found that experience gained in practice and continuing education lectures were ranked as most important, but that journal articles and textbooks

were rated as being only moderately important. Our findings are consistent with other research that suggests that pain assessment is improved through experience and training (21). However, as might be expected given the change to society's use of the Internet, participants in the current study ranked Internet-based information as moderately important. Overall, there appears to have been a shift in recent years towards the Internet as an alternative source of information, with a decline in the perceived importance of books and journal articles. Thus, making relevant information about pain recognition available via the Internet is important to ensure new research findings are widely disseminated to veterinarians.

For both the cat and the dog surveys, most veterinarians (78%) indicated that they have sufficient knowledge on recognizing animal pain. However, we were unable to determine whether this perceived knowledge is predictive of actual ability and appropriate use of analgesics. There was limited variation in the mean response scores to questions asking participants to quantify the importance of different clinical signs of pain; median responses were between 3 and 5, suggesting that all of the listed indicators were ranked as moderately to highly important. These results correspond well with the WSAVA Guidelines for Recognition, Assessment and Treatment of Pain, which indicate that responses to pain may vary between individuals and with different procedures (22). These guidelines suggest using a range of behavioral indicators to assess animal pain with a particular focus on responses to interactions and palpation, which matches the responses of the current participants. Since proper treatment of animal pain is dependent on accurate recognition of related signs, it is important that future research assess the actual abilities of veterinarians to detect pain, and related influences on appropriate use of analgesics.

For the cat version of the survey, there was an oversight in question design for 1 question in the pain assessment section. Participants were asked to quantify the importance of various clinical signs, on a scale of 1 to 5, but the text did not explain the relative value of the scale as was done in the rest of the survey. This oversight may limit the validity of the results in this section of the survey. However, reported values for this section of the cat survey were similar to those for the same section of the properly referenced scale of the dog survey, suggesting that most respondents followed the scale as it had been presented in other sections of the survey.

Analysis of our demographic data indicates that the gender of the veterinarian and the year of graduation variables were not independent; female veterinarians in our sample were more likely to be recent graduates compared with male veterinarians. To account for this lack of independence we analyzed data for male and female veterinarians separately and found that year of graduation was not influential on our results for pain perception or attitudes toward pain. While recent veterinary graduates are more likely to be female, based on the lack of significant effects for year of graduation we believe that gender is responsible for driving the trends observed in the current sample. This is interesting given that knowledge about pain recognition and management has increased in recent years; thus, recent graduates should have increased knowledge on these topics compared with older graduates. It is possible that continuing education on this topic is sufficient to overcome deficiencies for older graduates. Alternatively, it is possible that we did not have sufficient power to detect year of graduation effects since sample sizes for each survey were small.

As is generally the case for voluntary surveys, the recruitment methods used for this survey likely introduced some level of bias into the sample. People are more likely to respond to surveys on topics which are of importance to them, which might have resulted in a bias towards participants who are more knowledgeable about and sympathetic towards animal pain than the general veterinary

population. If present, this bias could have numerous effects including increased analgesic use, improved attitudes about pain management, increased rankings of pain severity, and increased ratings of knowledge about pain recognition. The comparison of our demographic data to that from the 2014–2015 OVMA membership suggests that our sample was relatively representative both in general and when assessed by gender for year of graduation, but we found an overall bias towards higher representation by women, with higher participation than expected for women who graduated most recently. However, we found few effects of year of graduation, suggesting that this did not have a major influence on the current data. A bias towards female participants is somewhat concerning, therefore most of the data are presented separately for males and females in order to minimize related effects. However, the overall response rate was low and information regarding the attitudes and use of analgesics by non-responders is not available. Given that there is a strong possibility that study participants were individuals who are particularly interested in the subject, and hence, more likely to use analgesics, participant attitudes about post-operative pain and analgesic use are likely overestimated.

Veterinarians for this survey were recruited through the OVMA; because membership is not mandatory for Ontario veterinarians, it is possible that persons who chose to be members might have had increased commitment and access to ongoing education and peer evaluation when compared to non-members. Additionally, the survey was administered online, which may have led to an underrepresentation of older veterinarians if they were less comfortable and/or capable of using the internet and computer technology. However, when the current demographic data are compared to the OVMA membership data this does not appear to be the case.

Multiple comparisons were made during analysis for the current data, which increases the possibility that some of the significant effects that were identified are actually due to Type 1 error. Correction for multiple comparisons using Bonferroni was considered to be too conservative for the current data set, given the relatively small sample size and the exploratory nature of the analyses. However, all of the effects that were identified were in the predicted direction based on previous literature, and in many cases we found similar effects for both cats and dogs, even though the participants were largely different between the 2 surveys [in some cases data for the other species showed similar trends ($P < 0.1$) which did not meet the threshold for significance]. The only exceptions were pain ratings for “Dental with Major Extraction,” which were higher for women than men for cat participants only, and agreement with the statement “I use standard analgesic doses based on estimated body weights,” which was higher for men than women for cat participants only. This suggests that other than the noted exceptions, significant results were, in fact, true effects, but further research is necessary to explore these results in a more comprehensive manner.

Our results suggest that Ontario veterinarians have a positive attitude about pain relief for cats and dogs, but that some minor gender differences exist in attitudes and level of pain attributed to different procedures. In addition, sources of continuing education used by veterinarians have undergone a shift from academic journals and textbooks to continuing education lectures and online resources, which provide insight into continuing education opportunities for the future.

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