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Scientific Report

Dog owners' use and perceptions of cannabis products

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ABBREVIATIONS
CBD — cannabidiol
AVMA — American Veterinary Medical Association
HIV — Human Immunodeficiency Virus

Abstract

The legal market for recreational and medicinal cannabis for human consumption is expanding in the U.S. At the same time, marketing of cannabis products for use in pets is expanding. Yet there is little research exploring the effects of cannabis use in veterinary medicine. This study utilized an anonymous, online survey to assess pet owners' reasons for purchasing cannabis products for administration to their dogs, and their perceptions regarding efficacy of these treatments. Older and more educated owners were more likely to purchase cannabis products. Most products were purchased for treatment of pain, inflammation (i.e. redness, heat, pain, or swelling), and anxiety in dogs; and owners perceived these preparations to be equally or more effective than conventional medications. Most owners reported only minimal side effects in their dogs. Despite indicating comfort in discussing cannabis administration for pets with their veterinarians, most owners relied on commercial websites for product information. The main reasons for choosing cannabis products were the ability to use as an adjuvant to other therapies and the perception of it being a natural substance. Given this information, it is incumbent upon veterinarians to appropriately counsel their clients and also to advocate for evidence-based studies to evaluate the efficacy of cannabis use in non-human species.

Introduction

Cannabinoids have been used in traditional medicine for thousands of years for a variety of ailments, yet, due to the psychoactive properties of THC, they are illegal in many countries, including parts of the U.S. Both hemp and marijuana originate from the *Cannabis sativa* plant with

the main difference being the ratio of THC to CBD (1). Cannabinoids can be administered orally, sublingually, or topically and are either extracted naturally from the plant or manufactured synthetically (2). In the U.S., 29 states and Washington, DC have legalized cannabis for medical use, and 9 states and Washington, DC have legalized it for recreational use (3, 4).

Since 1975, more than 100 controlled clinical trials with cannabinoids have been conducted with many promising findings. The German Medical Association, in 2008, reported that the benefit of treatment with cannabinoids for a number of medical conditions has been demonstrated in controlled trials; and, therefore, the use of cannabinoids may be a reasonable alternative for patients when conventional treatments do not achieve adequate relief of symptoms, especially for those suffering from pain, nausea, vomiting, or loss of appetite (5). The therapeutic potential of cannabinoids has been demonstrated in the treatment of pain, inflammation, cancer, asthma, glaucoma, spinal cord injury, epilepsy, hypertension, multiple sclerosis, Parkinson's disease, Alzheimer's disease, nausea and vomiting due to chemotherapy, weight gain in HIV, sleep disorders, and Tourette syndrome (6, 7). The National Institutes of Health website includes information about the positive effects of cannabis on cancer, and has recently added information about its potential to reduce opioid use and overdose (8). As a result of these findings, there is increasing interest in cannabinoids for both humans and animals, with quite a few countries, including Australia, Greece, Croatia, Israel, Poland, Mexico, Finland, Turkey, the Czech Republic, Switzerland, Macedonia, and Italy, Germany, Peru, Uruguay, the Netherlands ,and Jamaica having legalized cannabis-based medicines in the past several years (7, 9).

Perhaps unsurprisingly, the global market for legal cannabis has been identified as one of the fastest-growing industries, estimated to be approximately $7.7 billion as of November 2017, with projections up to $31.4 billion by 2021 (10). The market for legal cannabis in the United States is predicted to be $9.7 billion in 2017, a 33% increase over 2016 (11). This expansion has extended into the veterinary realm with several companies now selling oils, biscuits, edibles, and capsules containing non-psychoactive cannabinoid compounds (e.g., CBD) to pet owners (12). Sales of cannabis products marketed to pets increased 1,000% between Sept 2016 and 2017, with stock in these companies rising 122% between January and September 2017 (13).

Yet, there are still only a handful of published studies examining the clinical use of cannabinoids in veterinary medicine. Most papers published on animals and cannabinoids to date have focused on marijuana poisoning and its treatment rather than therapeutic applications (14, 15). A frequently investigated medical use for cannabinoids in companion animals is as a topical treatment of glaucoma. Other potential and promising indications for cannabinoid use under investigation in veterinary medicine include inflammation, pain treatment, oncology, and dermatological conditions (7). Some recent studies have found that cannabinoids offer a viable treatment method for canine osteoarthritis, immune-mediated and inflammatory disorders, and epilepsy (16, 17, 18).

Due to the fact that cannabis is classified as a Schedule I controlled substance under Federal law in the United States, its use, sale, and possession is illegal at the Federal level. Schedule 1 status creates strict limitations on clinical research, severely hampering the ability to help educate clinicians and pet owners about its benefits and risks from an evidence-informed perspective. Yet, this has not stopped pet owners from giving their pets cannabinoid treatments on their own, as noted by a recent article by National Public Radio in which it was reported that many owners give their pets CBD products to help with anxiety related to fireworks around Independence Day celebrations (19). But this is not without risk. As the use of cannabis for both people and pets has become more common, the rate of overdose or toxic levels in pets has increased. The Pet Poison Helpline, for example, reported a 448% increase in marijuana cases

between 2011 and 2017 (20). It has also been noted that while in the past most pets' marijuana exposure was due to plant material, today's pets can be exposed to edibles such as cookies and brownies, which can be more appealing to dogs. In addition, many of these products contain chocolate, which can exacerbate negative effects (21).

The lack of data pertaining to toxicity, as well as potential benefits, has prompted the AVMA House of Delegates to officially ask the AVMA Board of Directors to consider creating and disseminating information on the current research and the legal status of cannabis as it applies to veterinary medicine. The AVMA House also recommended that the AVMA Board of Directors work with other stakeholders, including the American Medical Association, American Public Health Association, and National Association for Public Health Policy, to reclassify cannabis from a Schedule 1 to Schedule 2 substance. This would help researchers more easily investigate potential cannabinoid uses in veterinary and human medicine (22).

Even with limited data from clinical trials, pet owners are purchasing cannabis products for their pets, with anecdotal reports indicating that many owners find the products helpful in the treatment of their dogs' and cats' pain, arthritis, seizures, and anxiety. A study summarized by the AVMA reported that pet owners are using cannabis to treat behavior-based disorders and management of pain, nausea, and seizures (23). Another recent study surveyed pet owners who had purchased hemp products from one company (24). They found that dog owners reported the hemp products were helpful for many ailments, with the most common uses including pain relief, sleep aid, and relief from anxiety. The most common uses cited by cat owners were pain relief, reduction of inflammation (e.g. reduction of redness, heat, or swelling in the injured area), and aid in sleeping. The most common side effects reported by both cat and dog owners were sedation and an over-active appetite. When asked to compare hemp products to other forms of medication or therapy, most dog and cat owners felt hemp products were more effective than other treatments.

This current study expands on the Kogan 2016 study by exploring more generally the perceptions and behaviors of dog owners regarding hemp and/or marijuana products. While the 2016 study explored the use of products from one specific hemp company, the purpose of the current study was to survey dog owners throughout the U.S. about which products (e.g., capsules, liquid, chew, etc.) they are purchasing, reasons for their purchases, and the perceived value of these products on their dogs' health.

Materials and Methods

An online survey was created in Qualtrics to assess perceptions held by dog owners residing in the United States regarding hemp and marijuana products for their dogs. The survey was designed, reviewed, and tested by the co-investigators and their colleagues at Colorado State University (CSU) and North Carolina State University (NCSU) who provided feedback on content, navigability, survey questions and choices, and overall questionnaire design. The survey originated from CSU and received approval from the Institutional Review Board at CSU. Participants were recruited via social media from September 1, 2017 to December 15, 2017. All data were collected anonymously. The survey began by asking participants to indicate if they were dog owners and lived in the U.S.. Non-dog owners and those not residing in the U.S. were eliminated from analysis.

Respondents were first asked to indicate demographics including sex, educational level, age, and state in which they currently reside. Their state of residence was used to determine if they live in a state that currently has laws permitting legal use of marijuana for medical and/or recreational purposes. They were then asked if they had ever purchased hemp or marijuana products for their dog and if so, where they obtained the products. If they replied no, they were asked to select the reasons why they have not bought hemp or marijuana products for their dogs. For those who had purchased these products, they were then asked specific questions about types of hemp or marijuana products including capsules/pills, biscuits/edibles, and oil for topical use.

The next section of the survey asked respondents to identify the ailments related to the purchase of the hemp or marijuana products, how they felt these products compared to prescription or conventional medication, and side effects. Next, they were asked to identify where they obtained information about hemp or marijuana products and to categorize their comfort level discussing these products with their veterinarian. They were then asked if they had recommended hemp or marijuana products to their friends.

The last section of the survey asked participants' level of agreement with several statements regarding the decision to purchase hemp or marijuana products. Lastly, they were asked if they use hemp or marijuana products either medically or recreationally for themselves.

Survey responses were downloaded into SPSS for data analysis. The initial 1196 submissions were screened in order to exclude respondents who reported they did not own a dog (n = 55) or did not answer the question (n = 17), as well as if they did not live in the U.S. (n = 31) or did not answer the question (n = 76). This resulted in 1068 respondents for analysis.

Descriptive statistics and frequency distribution (reported in percentages) were performed using commercially available

software. Because not all questions were answered by all participants, the totals for each question vary. Reported percentages for each individual question are based on total responses for that question. Chi Square was used to test for any differences in decision to obtain hemp or marijuana products for their dog based on respondents' gender, age, educational level, legal status of products in their state for human usage (medical or recreational), and personal use of hemp or marijuana products (medical or recreational). Differences were considered significant when $p < 0.05$.

Results

Owner demographics:

A total of 1196 responses were collected. Participants who did not currently own a dog or did not live in the U.S. were eliminated, leaving a total of 1068 participants for analyses. Out of those who reported gender (n=1053), 885 (84.0%) indicated they were female, and 168 (16.0%) indicated they were male. When asked about age (n=1065), 71 (6.7%) reported being 18–25 years of age, 67 (6.3%) ages 26–30, 95 (8.9%) between 31–35, 105 (9.9%) between 36–40, 96 (9.0%) between 41–45, 132 (12.4%) between 46–50, 128 (12.0%) between 51–55, 156 (14.6%) between 56–60, and 215 (20.2%) older than 60.

When asked about education (n= 1066), 93 (8.7%) reported some high school or diploma, 350 (32.8%) reported some college, 345 (32.4%) a 4-year degree, and 278 (26.1%) a graduate degree. When asked to report what state they live in (n= 1021), the largest percentages were Colorado (258, 25.3%), California (138, 13.5%), and Washington (122, 11.9%). Based on reported state of residence (n= 1068), 861 (80.6%) were residing in a state where medical marijuana is legal, and 593 (55.5%) were residing in a state where recreational marijuana is legal. When asked about personal use of hemp or marijuana products (n=1068), 210 (10.7% reported using recreational hemp or marijuana products, and 276 (25.8%) reported using medical hemp or marijuana products.

Use of hemp or marijuana products for dogs

When survey respondents were asked if they had ever bought hemp or marijuana products for their dog(s) (n=1068), 852 (79.8%) replied yes, and 216 (20.2%) said no. Those who reported they have never purchased hemp or marijuana products for their dogs were asked to indicate all their reasons for this decision. The most common responses were that their dog does not have any medical issues they feel these products could help (66, 30.6%) or they had not really thought about it (67, 31.0%) (**Table 1**).

Chi Square was used to assess the potential correlation of age, gender, and education level with the decision to purchase hemp or marijuana products for their dogs. Age was found to correlate with the decision to use these products, with younger dog owners less likely to purchase cannabis products (Chi Square 140.081, $p < .001$) Dog owners with more education were more likely to report purchasing cannabis products (Chi Square 12.37, $p = 0.006$). The gender of the owner was not correlated with purchasing decisions. Based on participants' state of residence, the legal status of medical or recreational marijuana was determined. The legal status of marijuana (medical or recreational) was not correlated with owners' decisions to purchase cannabis products for their dogs.

The participants were also asked if they personally use any hemp or marijuana products either medically or recreationally. Recreational use of hemp or marijuana products was not correlated with the decision to purchase cannabis products for their dogs, but personal medical use was correlated with this decision. Those who reported using medical marijuana products were more likely to purchase products for their dogs (Chi Square 7.56, $p < 0.006$). (**Table 2**).

Table 1. Owner reasons for not purchasing hemp or marijuana products for their dogs (n=216)

Owner reasons	Number (percentage)
My dog has not had any issues I think hemp or marijuana products could help with	66 (30.6%)
Have not really thought about it	67 (31.0%)
Don't know where to get it	51 (23.6%)
Lack of research about hemp or marijuana products	45 (20.8%)
Safety or toxicity concerns	31 (14.4%)
Lack of standardization/regulation of products	28 (13.0%)
Cost	23 (10.6%)
Don't think it would work compared to conventional or prescription medication	4 (1.9%)
Legal concerns	18 (8.3%)

Table 2. Relationship between the owner's personal marijuana use and decision to purchase hemp or marijuana products for their dog.

Owners' personal use of marijuana or hemp	Purchase for dog	
	Yes	No
Personal medical use		
Yes	236 (85.5%)	40 (14.5%)
No	616 (77.8%)	176 (22.2%)
Personal recreational use		
Yes	160 (76.2%)	50 (23.8%)
No	692 (80.7%)	166 (19.2%)

Selecting only those who indicated they had bought hemp or marijuana products for their dog (n=852), participants were asked to indicate the places they acquired the products (they could select all that apply so total equals more than 100%). The most common response was online (621, 72.9%), followed by local pet or animal supply store (187, 21.9%), stores selling hemp or marijuana for human consumption (134, 15.7%), friends/family (86, 10.1%), veterinarian (82, 9.6%), and use of a product previously purchased for personal use (59, 6.9%).

Questions about the type(s) of hemp or marijuana products used were asked next. Regarding capsules/pills marketed for animals (n=852), 485 (56.9%) reporting using these for their dog, compared to 33 (3.9%) who reported using capsules/pills that were marketed for people. This same trend was seen for biscuits/edibles, with more owners (250, 29.3%) reporting using biscuits/edibles marketed for animals, compared to (22, 2.6%) using those marketed for people. For topical oil, however, more people reported using products marketed for people (72, 8.5%) compared to products marketed for animals (60, 7.0%). Due to concerns about variability in patient size and difficulties associated with calculating the correct dosage and administration of liquid medications to veterinary patients, this study did not inquire about the use of liquid extracts.

The next set of questions asked participants to indicate what dog ailment(s) they were treating with the hemp or marijuana products (selecting all that apply, n = 852). The most common responses were pain relief, anxiety, and reduction of inflammation. Many people also selected "other" (307, 36.0%). The most common "other" responses included epilepsy/seizures (98, 11.5%), cancer (80, 9.4%), arthritis (16, 1.9%), and allergies (11, 1.3%). For each listed medical condition, participants were then asked to compare perceived effectiveness of hemp or marijuana products with prescription or conventional medications prescribed by their veterinarian. For all medical conditions, hemp or marijuana products were viewed more favorably or equal to prescription or conventional medications (**Table 3**).

Participants were then asked to report their perceptions of side effects experienced by their dog. Side effects were reported by only a minority of dog owners, with the most common ones including sedation and dry mouth/excessive drinking (**Table 4**).

When participants were asked where they obtained information about hemp or marijuana products (n=852) (selecting all that apply), the most common responses included information on an animal hemp or marijuana product company website (324, 38%), veterinarian (286, 33.6%), and neighbor/friend/relative (229, 26.9%). Participants were asked if they had ever talked to their veterinarian about hemp or marijuana products (n=785), and 588 (74.9%) said yes. They were also asked how comfortable they feel talking to their veterinarian about hemp or marijuana products (n=783), and 557 (71.1%) said extremely comfortable, 95 (12.1%) said somewhat comfortable, 77 (9.8%) said neither comfortable nor uncomfortable, 43 (5.5%) said somewhat uncomfortable, and 11 (1.4%) said extremely uncomfortable. When asked if they would recommend hemp or marijuana products to their friends to use with their own dog (n= 782), 677 (86.6%) said yes and 105 (13.4%) said no.

Lastly, respondents who purchased hemp or marijuana products were asked to indicate their level of agreement with several statements about these products. For example, most participants agreed that they purchased hemp or marijuana products because they prefer them to conventional medication or liked the idea they come from natural sources (**Table 5**).

Table 3. Reported use and perceived efficacy of hemp or marijuana products for pet health conditions, as compared to conventional medications

Health conditions	Effectiveness level of hemp or marijuana products compared to conventional medication				
	Used hemp or marijuana products for this ailment	More effective than conventional meds	Same as conventional meds	Less effective than conventional meds	Not a condition my dog has/ NA
Provide pain relief	513 (60.2%)	373 (43.8%)	262 (30.8%)	62 (7.3%)	155 (18.2%)
Reduce inflammation	415 (48.7%)	321 (37.7%)	297 (34.9%)	41 (4.8)	193 (22.7%)
Help relieve anxiety	401 (47.1%)	353 (41.1%)	259 (30.4%)	45 (5.3%)	195 (22.9%)
Helped with thunderstorm or fireworks phobia	152 (17.8%)	184 (21.6%)	256 (30.0%)	29 (3.4%)	383 (45.0%)
Aid with sleep	93 (10.9%)	189 (22.2%)	252 (29.6%)	17 (2.0%)	394 (46.2%)
Reduced vomiting and nausea	71 (8.3%)	92 (10.8%)	250 (29.3%)	16 (1.9%)	494 (58.0%)
Helped suppress muscle spasms	69 (8.1%)	117 (13.7%)	250 (29.3%)	10 (1.2%)	475 (55.8%)

Discussion

This is the first national study to explore dog owners' use and perceptions of cannabis products for their dogs. Results of this study offer insights into dog owners' experiences, including perceived benefits and side effects of purchasing canine cannabis products as well as owner characteristics that might influence these decisions.

The majority of survey respondents (79.8%) indicated they have purchased cannabis products for their dogs. It is not suggested that this percentage can be generalized to the national population. The authors suggest this large percentage is likely due to the social media postings and sharing of this survey on dog as well as pet cannabis Facebook pages. Although it is not suggested this sample is indicative of current usage rates of pet cannabis products among U.S. dog owners, we do feel there are valuable insights that can be gleaned from this sample's responses. For example, this study suggests that older, more educated pet owners who have personal experience with medical marijuana are more likely to purchase cannabis products for their dogs.

It appears that the most common form of cannabis products currently purchased for dogs is capsules/pills marketed specifically for dogs, with biscuits/edibles trailing significantly behind (56.9% compared to 29.3%). Few owners report administering products, whether capsules/pills or edibles, which are made for human consumption. Given the potential

Table 4. Side effects of hemp or marijuana products experienced by pet dogs, as reported by owner.

Owner reasons	Severity of side effects			
	Side effects	No side effects	Minimal side effects	Significant side effects Don't know/NA
Sedation/tired	410 (48.1%)	268 (43.2%)	33 (3.9%)	41 (4.8%)
Lack of energy	559 (65.6%)	232 (27.2%)	15 (1.8%)	46 (5.4%)
Dry mouth/excessive drinking	525 (61.6%)	246 (28.9%)	14 (1.6%)	67 (7.9%)
Over active appetite	579 (68.0%)	207 (24.3%)	14 (1.6%)	52 (6.1%)
Impaired mental functioning	607 (71.2%)	174 (20.4%)	7 (0.8%)	64 (7.5%)
Dizziness	608 (71.4%)	158 (18.5%)	7 (0.8%)	79 (9.3%)
Panic reactions	643 (75.5%)	147 (17.3%)	6 (0.7%)	56 (6.6%)
Vomiting	643 (75.5%)	148 (17.4%)	4 (0.5%)	57 (6.7%)
Loss of appetite	654 (76.8%)	144 (16.9%)	4 (0.5%)	50 (5.9%)
Dry or red eyes	621 (72.9%)	172 (20.2%)	3 (0.4%)	56 (6.6%)

Table 5. Endorsement of reasons for purchasing with hemp or marijuana products

Owner reasons	Agreement level				
	Strongly agree	Somewhat Agree	Neither agree or disagree	Somewhat disagree	Strongly disagree
I purchased a hemp product because I thought it would work well as an adjunct to other therapies (n=770)	515 (66.9%)	159 (20.6%)	77 (10.0%)	10 (1.3%)	9 (1.2%)
I purchased a hemp product because I like the idea that this product comes from natural sources (n=774)	461 (59.6%)	165 (21.3%)	96 (12.4%)	21 (2.7%)	31 (4.0%)
I purchased a hemp product because I prefer hemp products to conventional medicine (n=776)	365 (47.0%)	171 (22.0%)	167 (21.5%)	36 (4.6%)	37 (4.8%)
I purchased a hemp product because I don't like to support major pharmaceutical companies (n=769)	204 (26.5%)	126 (16.4%)	252 (32.8%)	71 (9.2%)	116 (15.1%)
I purchased a hemp product because the cost of the product was right for me (n=765)	95 (12.4%)	117 (15.3%)	296 (38.7%)	153 (20.0%)	104 (13.6%)

risk of giving dogs cannabis products created for human consumption due to the increased amount of THC present than in hemp-based products, it is encouraging to note that only 3.9% of respondents reported purposely giving their dogs capsules/pills (and only 2.6% edibles) marketed for human usage. This suggests that many dog owners might understand that human consumption products and animal use products are not easily exchangeable. We offer this interpretation even given the increase in the number of THC toxicosis cases reported by Meola that correlates with the increase of medical marijuana licenses in Colorado (25). The fact that the majority of these cases at both facilities in the study involved marijuana edibles (i.e., butter and chocolate) suggest the likelihood that these cases were more likely due to accidental ingestion rather than intentional administration.

As reported by Kogan et al., 2016, the most common use of canine cannabis products was for pain relief (60.2%). This was followed by reduction of inflammation (i.e. lessened redness, heat, or swelling around the injured area) (48.7%) and relief from anxiety (47.1%). This survey only asked owners to report on inflammation in general. Interestingly, using these products as a sleep aid was reported less often in this sample than in the 2016 study by Kogan et al. (10.9% vs 50.5%) (24). Yet, as in the previous study, participants reported feeling that cannabis products were either more or equally effective when compared to conventional prescription medications for all listed conditions. Significant side effects were reported by less than 5% of owners, with most participants reported not observing any side effects. The side effect observed most frequently as significant was sedation/tired, yet even this effect was reported by only 3.9% of respondents. It is perhaps unsurprising that the majority of dog owners (86.6%) said they would recommend hemp or marijuana products to friends to use with their own dogs.

To better understand why dog owners are purchasing canine hemp or marijuana products, they were asked a series of questions related to their beliefs about cannabis products. From their responses, it appears the most common reasons for purchasing cannabis products include the perception that they would be of benefit as an adjunct to other therapies, they like the idea that the product comes from natural sources, and because they prefer these products over conventional medicine. Less common responses included the fact that they do not like to support major pharmaceutical companies or because of the price. It is noteworthy that 66.9% of respondents strongly agree that hemp or marijuana products can work well as adjunct therapies. This would appear to suggest that while the market for these products continues to expand, it might not come at the cost of other medical interventions.

For participants who responded they have not obtained cannabis products for their dogs, the most common reasons given for this decision included the fact that they were not currently needed, they had not thought about it, they did not know how to acquire it, or they had concerns about the lack of research. These results suggest that with additional education on its potential benefits as well as legal and logistical factors associated with purchasing it, many current non-users might be willing to try cannabis products for their dogs. Results further suggest that the legal status of marijuana in an owner's state does not appear to influence this decision, perhaps because most owners are acquiring these products online (72.9%). This would suggest that the market for pet cannabis products is not limited to specific states or regions of the country.

Given the constantly changing laws and regulations on cannabis products as well as the lack of scientific study, obtaining accurate information on cannabis products is critically important. Interestingly, the sources most often identified for information are animal hemp or marijuana product company websites (38%) followed by veterinarians (33.6%) and neighbor/friend/relative (26.9%). The fact that veterinarians are not the most common source for cannabis related information is noteworthy. It appears this is not due to owners' discomfort talking about the subject; the majority of these dog owners (83.2%) reported feeling comfortable talking to their veterinarian about hemp or marijuana products. Understandably, the current laws make it challenging for veterinarians to share their knowledge and perceptions related to cannabis products, yet it is imperative for the veterinary field to rise to this challenge. Given the legal ramifications involved for veterinarians who so much as recommend cannabis products, we encourage the veterinary community to work towards legislative change that would allow for the use of medical cannabis in animals. Pet owners are hungry for information, and the fact that they are most commonly finding answers on cannabis company websites that may or may not be factual and unbiased leads to concern.

There are several limitations to the current study that should be noted. First, it is important to avoid interpreting these results as an endorsement for the efficacy of any cannabis product in veterinary medicine. Limitations of this study are the potential bias of gathering owners' opinions based on their own observations, the lack of placebo or control group, the lack of verification of an owner's ability to accurately and objectively report changes in their pet's medical condition, and the anecdotal nature of the survey responses. Nevertheless, the survey clearly demonstrates that pet owners are viewing hemp or marijuana based products for their pets favorably, emphasizing the need for veterinarians to be informed about these options as well as the need for objective, placebo controlled clinical trials.

Although the potential of a placebo effect cannot be ignored, these results do suggest a large number of pet owners felt hemp products helped their pets for numerous ailments with minimal side effects. In addition to providing some support for the growing number of anecdotal stories, these results give guidance to researchers seeking to perform clinical studies on hemp or marijuana in terms of its putative effectiveness and possible adverse outcomes. We have identified the positive outcomes most commonly observed by consumers. The next step to determine the viability of cannabis use is through carefully controlled clinical trials. Furthermore, studies that include independent laboratory analysis of product contents, including amounts of active ingredients, impact of non-active ingredients/additives, stability in the products administered, batch-to-batch variability, and potential contamination with pesticides, fungicides, and herbicides, are necessary. The field of veterinary medicine is ideally poised to lead these efforts.

Conclusion

Due to the current lack of evidence-based research and conflicting legislation surrounding the use of cannabis products in veterinary populations, it is challenging for veterinarians to provide explicit client recommendations in this arena. The results of this study show that pet owners are frequently considering cannabis products for use in treating pain, inflammation and other similar conditions in their dogs. Thus, it is incumbent upon veterinarians to advocate for scientific research to be conducted regarding this use.

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