Pet owners' perceptions of veterinary safety practices

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Veterinary workers must care for their animal patients while simultaneously protecting their own health and safety. This process can be complicated by the presence and perception of pet owners who may not agree with a given tactic used to protect veterinary workers from injury. We conducted focus groups of pet owners in the Seattle area during November 2016 to gain a deeper understanding of their perceptions relating to veterinary worker safety practices. Focus group interviews were recorded and transcribed and study themes identified and summarised. Twenty pet owners participated in three focus groups. Study themes arising from the focus group discussions could be categorised into human, animal, behavioural and environmental domains as outlined in a One Health Occupational Safety and Health (OHOSH) model. Communication was a recurring study theme identified, suggesting that lacking or impaired veterinary personnel-client communication plays a key role in the safe delivery of veterinary services and can negatively impact the use of safety practices among veterinary personnel. Our study suggests that it is important for veterinary personnel to communicate to clients the reasons for policies related to worker safety. Such communication can help engage the veterinary client in order to effectively avoid situations that precipitate injury.

Introduction

Occupational health and safety hazards are numerous in the clinical veterinary setting.[1–14] The most common and significant hazards, regardless of the type of animals receiving treatment (eg, exotics, food animal, companion animal, etc), appear to be those posing a risk of physical injury. Studies of veterinary workers have found that the most common injuries include animal-related trauma such as animal bites, kicks, scratches or getting stepped on or crushed by animal equipment.[2 15–18] While the types of physical injuries may depend on the species being treated, it appears that there are common precipitating factors.[1 2 5 13 14 19–23] These factors have human, animal, behavioural and environmental aspects and include the impact of the clinical environment on animal and worker behaviour, the skill set of the workers themselves and other animal-specific characteristics.

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The One Health approach is based on the premise that the health of humans, animals and their shared environment are often linked.[24–26] This approach suggests an advantage to integrated approaches to health challenges at the human-animal-environment interface.[27 28] Previously, the approach has been primarily applied to zoonotic infectious disease outbreaks and risks. We suggest using this approach as it relates to other public health issues including those workplace safety situations, such as veterinary workplaces, where all three sectors are represented.

To apply the One Health paradigm to occupational health and safety in the veterinary care situation, the authors have proposed simultaneously considering human factors, environmental factors and animal factors in a unified prevention model.[2] The resulting One Health Occupational Safety and Health (OHOSH) model adapts Bandura's Social Cognitive Theory approach[29 30] to include animal-specific components. This conceptual model outlines human, animal, environmental and behavioural factors that interact and therefore could impact safety behaviours of veterinary medical and animal care workers. An explanatory model outlining the pathway to injury in the veterinary medical setting was then created to further outline the route to injury in this occupational setting with the hope of gaining of deeper understanding of the factors that influence safety behaviour among this workforce (Fowler, 2017b, manuscript in preparation). This explanatory model

was based on the OHOSH conceptual model created by the study team outlining the human, animal, behavioural and environmental domains present in animal care worker settings that precipitate injury. In the clinical veterinary setting, factors addressed by the OHOSH model may include the health and mental state of animal patients, the presence or absence of other personnel and/or safety devices in the workplace environment, as well as personal relationships and safety culture possessed by an individual veterinary worker. Together, these factors could influence injury incidence in this clinical setting by encouraging or discouraging the utilisation of safety devices, practices and policies for injury prevention by personnel.

In addition to being influenced by other veterinary team members, it is possible that worker behaviour in the clinical setting can also be affected by the presence of and/or interactions with pet owners. Previous studies focusing on the role of veterinary clients in the clinical setting have assessed cost of care, communication around these costs as well as delivery of care and other client-focused issues, but none has assessed client perceptions of safety behaviours.[31–33]

In order to understand the role of the pet owner in this pathway, the authors conducted focus groups with pet owners in their area. The objective of this study was to explore the role of pet owners in causing animal-related injuries (ARIs) and needle-stick/sharps-related injuries (NSIs) in the small animal setting by focusing on their perception of veterinary worker safety activities and how these perceptions may inadvertently affect veterinary personnel's safety behaviours. It is hoped that the findings from this study can be used to strengthen the relationship between pet owners and their local veterinarian while simultaneously removing barriers that are either consciously or subconsciously perpetuated by pet owners regarding safety practices and policies employed in veterinary clinics.

Materials and methods

Study design

A qualitative focus group study of small animal pet owners was carried out in the Seattle metropolitan area in Washington State during November 2016. The focus group interview guide was piloted and finalised using a convenience sample of pet owners working in or around the research centre office. Focus groups were facilitated by members of the research team with non-veterinary backgrounds (BI and EG) so as to minimise interference with data collection or invoke social desirability as it relates to the veterinarian-client relationship.[34] Three focus group sessions consisting of 4–10 participants each interviewed pet owners on factors related to animal restraint and related policies, and client-veterinary personnel communication. Before the focus group commencement, pet owners were asked to complete a short, written survey that collected information on

Figure 1 Safety signs used in veterinary practice. (a) It provides an example of a safety sign that would be placed in a veterinary practice to facilitate worker restraint of animal during a given appointment. (b) It is used to label areas off limits to pet owners (AVMA PLIT)[57].

number of pets owned, animal signalment including species, breed, age, sex and reproductive status, history and frequency of veterinary visits as well as pet owner demographic information. Questions asked during the focus group covered information related to veterinary worker behaviour and practices, clinic environment, animal behaviour and human behaviour and practices, that is, the four domains of the OHOSH model (see online supplementary appendix A). During the course of the focus group interview, participants were shown two images of signs that are commonly found in veterinary clinics to promote worker safety and questioned on their thoughts and impressions related to the signs. These signs included text such as 'For your safety please allow our staff to restrain your animal during the exam' and 'Only personnel beyond this point' (figure 1a,b). Each focus group lasted approximately 60 min and was recorded for transcription. The goal of each focus group was to determine pet owner impressions regarding safety policies and practices in veterinary care. Participants were asked not to refer to their veterinarian or clinic by name. Each participant was given a US$25 gift card for his or her participation. Study protocols were reviewed and approved by the University of Washington Institutional Review Board (Study # 49387).

Study recruitment

Pet owners were recruited using the 'Nextdoor' app, a free social network app servicing local communities. Recruitment efforts targeted 16 neighbourhoods in the Seattle metropolitan area. Using this platform, an advertisement was posted soliciting pet owners' opinions on veterinary care. The advertisement outlined eligibility requirements and a link was included that allowed participants to complete a short screening survey confirming their eligibility and allowing them to register for the focus groups. Respondents who owned at least one cat or dog and had taken at least one pet to a clinic for veterinary care in the past 12 months before study enrolment were invited to participate in the focus groups. All focus groups were held in private meeting rooms at public libraries serving the neighbourhoods where participants were recruited. Focus group interviews were recorded and transcribed in preparation for qualitative analysis and theme identification.

Explanatory model and qualitative code development

The explanatory model outlining the human, animal, behavioural and environmental domains that lead to ARIs in the small animal veterinary setting was used to develop codes to be used in the thematic analysis, that is, deductive codes, before the start of the study. The possibility of additional codes arising from the analysis, that is, inductive codes, was also allowed and added following the deductive code analysis(Fowler, 2017,a,b, manuscript in preparation). Human factors relate specifically to the individual, in this case to the client or worker, and include communication with other people present in the veterinary clinic setting, skill set or competency in a specific area and feelings of self-efficacy or ability to affect change or enact a given behaviour in a specific scenario.[29 30] Behavioural factors describe a specific safety or human behaviour that either protects or predisposes a worker to injury. Environmental factors relate to the physical nature and characteristics of the workplace setting including the clinic layout and sensory characteristics that can influence the behaviours of animal patients. These factors also include the presence and/or absence of restraint equipment as well as other workers or clients that may influence worker behaviour. Workplace safety culture, that is. the combination of the knowledge, beliefs and practices possessed by workers in a specific workplace setting or profession also falls in the realm of environmental factors. Finally, animal factors describe factors related to the animal itself including species and temperament or behaviour as well as the age, breed and reproductive status of the pet. In this case, the presence of the pet owner represents only one factor in the explanatory model yet can potentially influence all four domains of the OHOSH model that lead to worker injury. These factors can also be used to describe the pet owner's role in worker injury. For instance, pet owners can influence worker safety at all four domains: how they interact with veterinary personnel, how they express positive or negative behaviours in the veterinary setting, how they respond to the physical and social workplace environment and how they interpret and respond to their pet's behaviour.

Data analysis

Pet owner demographic and ownership information were summarised to describe the study sample. Dual, deductive and inductive, coding strategies were used to identify study themes (see online supplementary appendix B for deductive codes).

Following each focus group, a verbatim transcription was completed by a paid, professional transcriber and the quality of the transcription verified and/or corrected by the first and second author before data analysis. Each transcript was coded independently by the first and second author a total of three times. Deductive codes were assigned on the first pass and possible inductive codes considered. The transcripts were then reviewed again and inductive codes assigned by each reviewer independently. The third review involved discussion and recoding of the transcripts in order to arrive at a single, final code that was summarised for inclusion in this manuscript.

We used the following taxonomy to code data: themes were defined as reoccurring patterns associated with inductive or deductive codes identified during thematic analysis. These themes were then grouped according to the OHOSH domains, that is, human, animal, behavioural and environmental factors.

Overarching themes were different from these primary themes, and were defined as: those study themes that spanned beyond the four domains of the OHOSH model and/or applied to a broader overarching issue.

Data were coded by two coders independently and agreement reached on a single code. Statistics on all qualitative data were computed using ATLAS.ti V.7.5.16. Quantitative data were cleaned in Microsoft Excel and descriptive statistics calculated using R studio by R.

Results

Twenty pet owners participated in the study with focus groups ranging from 4 to 10 participants per session. Focus group participants were primarily white females (n=17, 85 per cent) who were middle aged, with a range from 30 to 80 years old (table 1). Participants owned an average of two pets consisting of cats, dogs and a bird. Eighty per cent of participants possessed at least a Bachelor's degree and 73 per cent earned at least US$65,000 per year.

Human factors

Human factors identified in this study related directly to communication between veterinary personnel

Table 1 Small animal pet owner characteristics

Pet owner demographics, n=20	N (%)
Age in years, mean (range)	60 (30–80)
Gender, N (%)	
Female	17 (85)
Race, N (%)	
White	18 (90)
Black	0 (0)
Asian	2 (90)
Individual income, N (%)	
Less than US$45,000	3 (17)
US$45,000–US$64,999	2 (11)
US$65,000–US$79,999	3 (17)
US$80,000–US$99,999	3 (17)
Greater than US$100,000	7 (39)
Education, N (%)	
High school diploma/GED	1 (5)
Associate's degree	3 (15)
Bachelor's degree	7 (35)
Graduate school (Master's or PhD)	9 (45)
Total number of pets owned, mean (range)	2.3 (1–8)
Type of pet owned, N (%)	
Cats	11 (55)
Dogs	15 (75)
Pet birds	1 (5)

and the pet owner (table 2). In several instances, pet owners expressed some resistance to animal restraint as performed by the veterinary staff. At times, these individuals also admitted to being open to many procedures if the personnel explained the reasoning behind it as seen in the case of one pet owner when discussing care of her dog:

> But if I saw like my dog who was injured or something be restrained, it would probably be stressful for me, but if they explained it well on why they have to do it, and you also have to respect the fact that they don't want to get bit… the vets that ask if I want to hold my dog while they give them the shot or whatever versus just bringing in another tech. But some clients probably wouldn't want to hold their pet. They'd be nervous. I think it's good to give an option.

This sentiment was indicated by another participant while sharing their experience of taking their dog in for an emergency visit, an already high stress situation. The following quote reiterates the importance of veterinary personnel communicating their medical plan with owners when attempting to provide quick and efficient, lifesaving care even in emergency situations:

> I went to [an] emergency [clinic] recently actually for a dog with a broken foot, and they were very clear about why they were taking him back. What they did well was, 'We need to take him back. We're going to do an x-ray. We're going to do this. We're going to set it in a splint, and we'll examine his walking'. So they talked me through the entire thing. And that was a good—I did appreciate that that they knew exactly what they were going to do…

Overall, focus group participants mentioned that they appreciated members of the veterinary team taking the time to communicate to the pet owner their wants and needs as it relates to safety and/or general business policies in the practice.

Animal factors

Animal-related factors identified in the analysis related to the pet owners' relationship with their pets. Participating pet owners often appeared to speak from a position of authority and expertise when it came to their pet's behaviour in the clinical veterinary setting. One pet owner described her dog's behaviour as being the antithesis of aggression stating, "My dog, she doesn't

Table 2 Pet owner focus group study themes

OHOSH domain	Study theme	Supporting quote
Human factors	Personnel communicating their needs as it relates to safety practices are paramount to receiving approval from pet owners	"Probably explaining why they need to do it, that it's not necessarily about your animal. It's about their safety, too. They are at risk every time…But I think you're so focused on your pet that you don't always think about what it means to the person caring for your pet".
		"I went to [an] emergency [clinic] recently actually for a dog with a broken foot, and they were very clear about why they were taking him back. What they did well was, 'We need to take him back. We're going to do an x-ray. We're going to do this. We're going to set it in a splint, and we'll examine his walking'. So they talked me through the entire thing. And that was a good—I did appreciate that that they knew exactly what they were going to do. They came back and told me. That helped as well, that they would come back in, and say, 'Here's what we're finding. Here's what we're going to do next'".
		"But if I saw like my dog who was injured or something be restrained, it would probably be stressful for me, but if they explained it well on why they have to do it, and you also have to respect the fact that they don't want to get bit. But I do like the option, the vets that ask if I want to hold my dog while they give them the shot or whatever versus just bringing in another tech. But some clients probably wouldn't want to hold their pet. They'd be nervous. I think it's good to give an option".
Animal factors	Pet owners consider themselves competent in interpreting their pet's behaviour and felt that their pets behaved better when they, the owners, were allowed to participate in the delivery of care	"My dog is very responsive to me. She just stays really calm if I'm there, and I pet her,…"
		"…I could hear him fighting them, and he was a big guy. So they would try to muzzle him and such, and finally I had to say, 'If you let me go with him, that won't happen. He will calm down'. Yeah, and he did, and I think they 'were afraid of him more than they were… particularly a big powerful dog like that…"
		"My dog, she doesn't even know what biting is. She just doesn't even go there. I would be very offended if the vet came out and said, ' Well, you know, I think we need to do this'. 'Well, I don't think so. If you let me come with her, she'll be calm. She's fine. She'll let you do anything'".
Behavioural factors	Pet owners prefer to restrain their own pets and will interfere with animal restraint activities as they see fit	"I intervened when they restrained my dogs".
		"I like to [restrain] my dog [she] is very responsive to me. She just stays really calm if I'm there, and I pet her…"
Environmental factors	Pet owners prefer to either be present or directly observe the delivery of care to their pets	"We've noticed that instead of the procedures occurring in front of us in the room, they're starting to take our dogs back to a procedure room and separating them from us, and that's just a practice that my wife and I do not appreciate. And we have vowed that the next time they try to take our dog back to a procedure room to do an abscess or some sort of procedure, that we would like to ask to accompany them, if at all possible. It just makes us uncomfortable to hear our dogs unhappy or howling in another room if we aren't there". "It's a certain amount of a leap of faith, [that] they do need to go back there [to the treatment area] and be treated or x-rayed or whatever…They could do a webcam".

even know what biting is". This owner then continued to comment on her dissent of veterinary personnel's use of physical restraint on her dog:

> I would be very offended if the vet came out and said, 'Well, you know, I think we need to do this....' [I would say,] 'Well, I don't think so. If you let me come with her, she'll be calm. She's fine. She'll let you do anything'.

In a similar vein, two other pet owners described their pet's temperament as being 'calm' and/or able to be readily calmed down during a veterinary procedure, especially if they themselves could be present. It appears as though the pet owner's perceived understanding of their animal may directly influence their acceptance of the use of animal restraint in the veterinary hospital setting.

Behavioural factors

Owners expressed concern about whether their animals were either stressed or fearful by a given procedure. Many pet owners voiced concern when it came to allowing personnel to restrain their pet during an appointment given the additional stress it appeared to add to the situation. One pet owner suggested that she was better equipped (than the veterinary personnel) to assist in this process in her statement: "I like to [restrain] my dog [she] is very responsive to me. She just stays really calm if I'm there, and I pet her..." Another pet owner admitted to intervening in the work of veterinary personnel as they attempted to restrain her pet in order to alleviate the stress of the animal: "I intervened when they restrained my dogs". The sentiment expressed in response to questions related to pet owners' reactions to the use of animal restraint during veterinary procedures suggested that pet owners felt that their pets behaved better when they, the owners, were allowed to participate in the delivery of care, and that physical restraint and other animal equipment was not always needed.

Environmental factors

The major theme related to the environmental factors domain of the OHOSH model dealt primarily with pet owner's interpretation with physical barriers and/or restricted areas, that is, the physical layout of the veterinary clinic, as well as their views on the utilisation of safety signage in the clinical setting. While discussing the safety signs, participating pet owners expressed discomfort, especially as it related to the restricted treatment areas in the clinic. Some participants commented that the sign describing the off limits treatment areas was unclear, and there were negative feelings expressed towards the practice and veterinary personnel as a result of what was perceived as a lack of transparency and communication perpetuated by the signs: "I'd be very put off by that... I mean, I would want to be asked, but a sign puts up a whole different [feeling that says]—you can't communicate verbally with me". Some owners expressed negative attitudes towards clinic policies citing their resulting confusion after reading informational signs and posters about the treatment area.

While discussing hospital practices involving removing the animal from the room and out of the sight of the owner, some pet owners expressed feelings of anxiety. One pet owner expressed discomfort that their pet was being taken out of their sight for procedures they viewed as stressful or painful for their pet:

> We've noticed that instead of the procedures occurring in front of us in the room, they're starting to take our dogs back to a procedure room and separating them from us, and that's just a practice that my wife and I do not appreciate. And we have vowed that the next time they try to take our dog back to a procedure room to do an abscess or some sort of procedure, that we would like to ask to accompany them, if at all possible. It just makes us uncomfortable to hear our dogs unhappy or howling in another room if we aren't there.

Pet owners, when asked for the reasons for their anxiety, said that lack of communication between them and their veterinary care providers was the primary problem. Some pet owners expressed relief when there was clear and open communication about the delivery of care to their pet, especially when care was to take place out of their sight. One pet owner expressed this sentiment when discussing a recent nail trimming experience with her £80 labrador retriever:

> The last time they clipped my dog's nails...they ended up, muzzling him because—he didn't snap at them, but he was very vocal, and they said, 'Do you mind?' [I replied] 'If it's going to make you feel better, you go right ahead. Let's just get this over with'. So I really think that, for most of these things, communication and [it has to go] both ways. You have to say what your preferences are, and they have to be upfront about what's happening and why they're doing it, and sometimes whatever they're doing is unpleasant ...

Although open communication did alleviate some of the anxiety, pet owners expressed their desire for surveillance cameras or other media that would increase visibility of the treatment process their pets received when out of their sight: "It's a certain amount of a leap of faith, particularly, if I've seen that, it's because they are that injured, and they do need to go back there and be treated or x-rayed or whatever...They could do a webcam". Key environmental factors covered the pet owner's perception of clinic policies as well as their want to either be present during or be able to observe the delivery of veterinary care to their beloved pets.

Preferable veterinary characteristics

Additional themes identified during the study transcended the OHOSH model. These study themes, referred to as overarching themes, dealt primarily with human factors including personality traits, interpersonal communication and personal wants and needs of the pet owners (table 3). At the opening of the focus group interviews, pet owners were invited to express their opinions on their current satisfaction with veterinary

Table 3 Pet owner focus group overarching study themes

OHOSH domain	Study theme	Supporting quote
Human factors	Veterinary personnel that are viewed as compassionate, knowledgeable and who communicate well are preferred by pet owners	"Compassion... not talking down to you, and treating you like you might actually understand what they're talking about". "I like her very much. She's an extremely in-depth knowledge of my breed. She's a good listener and is a really good scientist, and I like that a lot. I want science as much as anything ... but particularly for my breed, I like—that's what I like about it because that's what I know, that she has been excellent on keeping up with the issues facing my breed and canines in particular".
Human factors	Communication is needed to improve pet owner acceptance of animal handling techniques	"Probably explaining why they need to do it, that it's not necessarily about your animal. It's about their safety, too. They are at risk every time...But I think you're so focused on your pet that you don't always think about what it means to the person caring for your pet".
Human factors	Communication is needed to improve pet owner acceptance of safety procedures	"I'd be very put off by that...I guess I've always assumed that the animal is going to be handled. I mean, I would want to be asked, but a sign puts up a whole different—you can't communicate verbally with me".

care and the delivery of care from veterinary personnel. When asked about the qualities they look for in small animal veterinary clinics and in their veterinarian specifically, the majority of participants mentioned that communication and compassion were qualities they valued most (table 3). One participant described what she preferred in veterinary personnel: "Compassion... not talking down to you, and treating you like you might actually understand what they're talking about". During this same discussion, competency in veterinary medicine was noted as a preferred trait among pet owners. For example, pet owners mentioned their desire for veterinarians to have in-depth knowledge specific to their breed.

> I like her very much. She has an extremely in-depth knowledge of my breed. She's a good listener and is a really good scientist, and I like that a lot. I want science as much as anything ... but particularly for my breed,...that's what I like about it because that's what I know, that she has been excellent on keeping up with the issues facing my breed and canines in particular.

Overall, knowledge of veterinary medicine, communication style and compassion were the three traits that were highly regarded by veterinary clientele.

Overarching themes: animal restraint, communication

When asked about the use of animal restraint equipment and devices at the clinic, pet owners expressed a desire for more communication and owner input. One pet owner described what they considered to be poor communication by the veterinary staff when their pet required an injection:

> ... he was a big male dog, and the techs would take him back, and it would take three or four, and they would say, 'Well, we're going to go give him the injection, and we're going to take him back', and they would hold him down, and they told me they would do that, and then I could hear him fighting them, and he was a big guy. So they would try to muzzle him and such, and finally I had to say, 'If you let me go with him, that won't happen. He will calm down'.

Another participant recommended that veterinary personnel communicate with owners about why they use restraining devices and what it means for safety:

> Probably explaining why they need to do it, that it's not necessarily about your animal. It's about their safety, too. They are at risk every time...But I think you're so focused on your pet that you don't always think about what it means to the person caring for your pet.

Lack of communication appeared to cause confusion and misunderstanding in pet owners concerning the intent and delivery of care from veterinary personnel. Pet owners felt that communication and explanations from the veterinary personnel about why restraining devices are used could promote trust, a healthy pet owner-veterinary personnel relationship and improved workplace safety for all.

Overall, the main overarching theme that emerged from this analysis suggests that communication with pet owners is crucial to improving relationships between pet owners and veterinary personnel, thereby reducing owner driven barriers to safety practices in veterinary work. Regardless of whether the topic discussed was animal restraint devices, hospital policy around conducting procedures in front of the owner versus in a designated treatment area, and/or what qualities in general denote a healthy pet owner-personnel relationship, communication was repeatedly a key characteristic that pet owners looked for in their veterinary clinic.

Discussion

Occupational injury in the clinical veterinary setting may be caused by a variety of human, animal, behavioural and environmental factors(Fowler, 2017, manuscript in preparation).[1 2 13–15 20] During the focus group discussions, pet owners voiced their opinions on views on the positive attributes of a good veterinarian and support staff as well as their impression of animal restraint and clinic-specific policies related to personnel safety. Major themes identified in the analysis spanned all four domains of the OHOSH model, although human factors relating to pet owner-personnel interactions predominated. The inability of pet owners to physically see or participate in the delivery of care due to clinic-based policies for personnel safety were negatively viewed by the pet owner participants, and had the potential of creating a barrier to safe practices in veterinary care. Breakdowns in communication between pet owners and veterinary personnel, including staff failing to explain the role of the pet owner in the restraint process, was a recurring finding in the study.

These results suggest that improving communication is one potential route for protecting animal care workers from injuries in the clinical veterinary setting.

Lack of open communication as it relates to animal restraint as well as clinic safety policies, such as removing the pet from the view of the owner to conduct procedures, were scenarios that cause anxiety among the focus group participants. A lack of familiarity of the physical space and procedures to be carried out in designated treatment areas out of the owner's view were said to be stress inducing. Several respondents, however, suggested the addition of surveillance cameras or some other mode of improving visualisation would increase visibility in these cases, helping to reduce the anxiety many felt when their beloved pet was removed from their view. One study of companion animal intensive care unit (ICU) patients in a hospital in the Netherlands used surveillance cameras referred to as the Telepet system allowing virtual pet visits between pets and their owners. This study found that 72 per cent of pet owners reported less anxiety and 40 per cent felt less need to visit their pets in person during their hospitalisation as a result of this system.[35]

We suggest the use of surveillance cameras in off limit treatment areas to increase owner compliance with safety procedures. If surveillance cameras are unavailable, personnel should consider either inviting owners to view treatment area spaces and/or implementing alternatives increase visibility of the spaces in order to reduce negative emotions among owners that could potentially lead to resistance in allowing personnel to conduct their work in a safe manner. For example, low stress handling is a clinical approach that provides strategies to reduce patient anxiety and fear, thereby reducing the likelihood of excitation and worker injury.[36–38] Veterinary personnel should explore and identify the best options for them for minimising patient stress while simultaneously preventing personnel injury in their clinical practice.

Pet owners suggested knowing their pets' behaviour better than veterinary personnel and insisting to assist in the restraint process during veterinary exams. Our previous work included a focus group study of veterinary personnel in Washington State. In this study, personnel expressed fears of injuring the pet owners during procedures either from mishandling needles and/or as a result of restraining their pets, suggesting that pet owner safety was a major concern of these workers (Fowler, 2017b, manuscript in preparation). Not to mention, pet owners restraining their own pets during a veterinary procedure can pose a serious liability issue if the owner is injured in the process.[39–42] Veterinary personnel-pet owner communication is needed to reach consensus on a given restraint approach among these two parties in order to ensure the safety of everyone involved.

Negative perceptions of veterinary clinic policies including signage that denotes restricted areas and personnel use of equipment and other tactics to restrain pets can block the implementation of safe practices among veterinary personnel. The clinical veterinary profession consists primarily of small employers and is consumer-driven.[43–45] As a result, the concern over client satisfaction can take precedence.[46–49] Thus, it can negatively impact worker behaviour as it relates to safety in order to appease the client. This aspect of pet owner perception and/or client satisfaction however had not been previously explored. Our focus group study of veterinary personnel including veterinarians, veterinary technicians and veterinary assistants in Washington State affirms this issue, as they all mentioned that the presence and perception of the pet owner negatively influences their safety behaviour (Fowler, 2017a, manuscript in preparation). The solution for this issue as with all other themes identified in this manuscript relate back to client-personnel communication. Veterinary personnel must work to strengthen relationships with as well as educate clients on these policies in order to prevent unnecessary injuries on the job, while simultaneously identifying scientifically proven ways to alleviate patient stress during clinical activities.

The need for communication between veterinary personnel and pet owners to receive pet owner support to conduct a given procedure in the veterinary clinic was the main overarching theme identified in this study. Veterinary personnel-client communication is key to the delivery of veterinary care and thus related to all aspects of veterinary care, not just safety.[31–33 46 49–52] One study by Coe and others found five major themes that arise during communication between personnel and their client base.[31] These themes spanned both positive and negative factors involved in communication including educating clients, providing choices, engaging owners in conversation, breakdowns in communication and challenges to effective communication. This body of work by Coe and others further explored the topic of veterinary personnel-client communication in other articles, focusing on specific topics, including discussing the cost of veterinary care as well as soliciting information on pet health.[34 49] Other work emphasised the need for communication and building rapport with clients in order to improve client satisfaction.[46 47] Collectively, these studies further reinforce the importance of communication between veterinary personnel and owners in order to provide the appropriate care for the pet patient while simultaneously improving workers' safety behaviours. Competencies in veterinary training programmes surrounding communication have improved in recent years as this issue has gained more attention in the field.[50 53–56]

Limitations

Limitations of this study primarily relate to the limited sample of the pet owners included in this study. Additionally, study participants lacked diversity seen in pet owners very broadly.[44] Participants were pet

owners from the Seattle metropolitan area who made between US$65,000 and US$100,000 on average. It is possible that pet owner perceptions will vary by income limiting the scope of study results and representation. Participants were also predominantly females in their 60s suggesting lack of inclusion of male and younger pet owners. Despite these limitations in the participant demographics, this study provides one of the first assessments of pet owner perceptions of safety behaviours in small animal veterinary clinics and thus has the potential to provide insight on the factors that adversely affect pet owner perceptions. These study findings can be used by veterinary personnel to improve safety behaviour through communication and outreach.

Conclusion

While occupational injury in the clinical veterinary setting is probably multifactorial (Fowler, 2017, manuscript in preparation),[1–5 13–15] this study findings highlight the role of the veterinary client along the pathway to safe practices in the small animal clinical setting. More specifically, the study suggests that improved veterinary personnel-client communication can influence pet owner behaviour during veterinary procedures and facilitate adherence to safety practices in the clinic. Greater training in and prioritisation of client communication specific to educating clients about safety procedures in the delivery of veterinary care could increase the safety of veterinary workers.

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