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Veterinarians' experiences of treating cases of animal abuse

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Veterinarians' experiences of treating cases of animal abuse: An online questionnaire study

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Abstract

Background: This study aimed to examine veterinarians' experiences of treating cases of nonaccidental injury and other forms of animal abuse and to assess their support needs and barriers to reporting cases.

Methods: An online questionnaire was completed by 215 veterinarians. The survey included items on demographics and veterinary experience, experience of nonaccidental injuries during the last 12 months, case studies, perceptions of the roles of veterinarians in identifying and reporting cases, and barriers to reporting.

Results: Fifty-three percent reported treating cases and 9% reported suspected cases of abuse in the last 12 months. Experience of abuse in the last 12 months did not vary in terms of veterinarians' age, sex or number of years in practice. The most commonly affected animals were dogs, cats and rabbits, and the most common forms of abuse were neglect and physical abuse. Case studies focused on physical abuse cases, but neglect cases more often resulted in death. Veterinarians showed high concern about animal abuse but varied in their confidence to intervene and perceived barriers to reporting.

Conclusion: Experience of animal abuse is common, and veterinarians feel a strong moral duty to act, but can lack confidence in intervening. Abuse cases affect stress levels and compassion fatigue; therefore, support and training are needed.

INTRODUCTION

Veterinarians play a key role in identifying and addressing animal abuse.[1] Defining and identifying animal abuse is complex, with varying definitions being used by veterinarians, social science researchers and legal professionals. For the purpose of this paper, we use veterinary definitions of animal abuse[2]: physical abuse (or nonaccidental injuries [NAI]), where the perpetrator causes physical injury; sexual abuse, where an animal is abused sexually; emotional abuse includes failure to provide comfort or causing fear and emotional distress in an animal; and neglect, where there is a failure to meet the animals' basic welfare needs. All veterinarians will encounter animal abuse, but the extent of veterinarians' exposure to abuse cases remains unclear.[3] Exposure to high levels of animal abuse could lead to occupational stress, burnout and compassion fatigue among veterinarians.[4] Compassion fatigue is a term used to describe the stress and secondary trauma associated with treating or caring for traumatised individuals and has only recently been applied to those working with animals. This study therefore explores veterinarians' experiences of animal abuse, and issues around support needs and reporting of animal abuse.

The first studies of veterinarians' experiences of animal abuse were carried out in the UK.[1,5,6] In a sample of 404 participants, 91.3% of veterinarians acknowledged the existence of NAI, and of these, 48.3% had suspected or seen NAI in cats and dogs. The authors reported case studies of NAI in 243 dogs and 182 cats, revealing a range of indicators of NAI, including the nature of the injuries; implication of a particular person, case histories and behaviour of the owner and/or animal. Repetitive injuries were indicative of NAI, but no single injury or group of injuries indicated NAI. Injuries included bruises, incised wounds, poisoning, fractures, asphyxiation, drowning and trauma caused by firearms.

More recently, a study of 115 veterinarians in Ireland found that 92% acknowledged animal abuse and 43.3% reported having seen or suspected animal abuse cases.[7] Other studies have attempted to determine the incidence rates of animal abuse. A US study of 1000 small animal practice veterinarians estimated an incidence rate of 0.56 per 100 cases seen but noted considerable variation in how veterinarians defined animal abuse.[8] A study of Australian veterinarians found a lower incidence rate of 0.12 animal abuse cases per 100 patients seen.[9] Dogs appear to be the most victimised species, followed by cats and horses.[10] The most prevalent types of abuse included neglect, burns, poisoning, injury to genitalia, dental disease, gunshot wounds, lacerations, bruising, fractures and haemorrhages.[5,7,9] The predominant reasons for suspicion of abuse reported by veterinarians include the behaviour of the owner or the animal, abuse witnessed or reported, participation of a referral agency, nature of the injuries, repeated presentation of injuries or abused pets, high pet turnover and involvement of a specific person.[7,9,10]

Despite the veterinary advances in identifying typologies of abuse,[2] operationalising these in practice to identify cases of abuse is challenging.[11,12] Identification of animal abuse by veterinarians will depend on a combination of factors, including the type of injuries and features of the case,[13] and previous experience of the veterinarian and the team they work with. This may impact the confidence veterinarians feel in identifying animal abuse and reporting of cases to other authorities. The Royal College of Veterinary Surgeons Code of Professional Conduct for Veterinary Surgeons states that veterinarians should make animals' health and welfare their first consideration, that they should be compliant with animal welfare legislation, that it is acceptable to break client confidentiality where animal welfare is at risk, and that it is advisable to make comprehensive notes and involve senior colleagues when there is a need to do so. This is reflected in the findings of one study that 73% of 367 veterinarians sampled agreed that it should be obligatory to report cases of animal abuse.[9] Barriers to reporting NAI and animal abuse include fear of litigation, client loss, fear for the future safety of the animal, fear of retaliation by the perpetrator and a lack of widely accepted standards of identification of animal abuse.[7] Further reasons for not reporting animal abuse include confidentiality issues, commercial concerns and mistrust of authorities to manage the cases efficiently.[9]

To further support veterinarians in cases of animal abuse, there remains a need to understand the common types of abuse veterinarians might encounter and veterinarians' perceptions of their responsibilities, current barriers to reporting and opinions on appropriate responses. However, there is little direct research linking these factors or exploring how they impact the likelihood that animal abuse will be reported. This study, therefore, aimed to address this gap in the literature by providing an in-depth exploration of veterinarians' experiences of animal abuse and their perceptions of issues around support and barriers to reporting. To address these aims, we set out three research questions:

1. What are veterinarians' experiences of animal abuse in companion animals over a 12-month period and as reported through case studies?
2. What are veterinarians' perceptions of their roles in identifying and reporting animal abuse?
3. What factors impact the likelihood that veterinarians will report animal abuse?

MATERIALS AND METHODS

A retrospective, cross-sectional study employing a self-administered online survey was used to collect data on veterinarians' experiences and beliefs surrounding suspected cases of animal abuse.

Questionnaire

An online questionnaire was created using Online Surveys. It combined a range of items informed by previous studies of veterinarians' experiences of animal abuse[1,7–10] and newly developed items.

Sociodemographic and veterinary experience: Items included country of residence, sex, age, country of training, highest level of veterinary qualification, number of years in practice, type and location of the practice, number of veterinarians in the practice, number of companion animals attended to per year and views that animals can experience abuse.

Veterinarians' experiences of NAI in the last 12 months: First, veterinarians were asked if they had suspected or seen animal abuse in the last 12 months and, if so, how many cases. They were presented with a table comprising eight body parts (columns: abdomen, head, limbs, thorax, tail, genital/rectum/anus and the whole body), 16 injury types (rows: gunshot/pellet injuries, stab wounds, fractures, burns, bruises, lacerations, poisoning, scalds, haemorrhage, abrasion, sharp cut, sprains/strains, foreign body, ligature injury and willful neglect) and were asked to tick all that they had seen in their practice in the last 12 months. An 'other' option allowed veterinarians to report other types of abuse they had treated. Participants were then requested to rank the three types of animals most commonly involved in animal abuse cases in their practice in the last year.

Veterinarians' case studies of animal abuse: We asked participants to estimate how many cases of animal abuse they had ever seen and then asked them to provide information on up to three specific cases. For each case reported, participants were asked the year it happened, the type, sex and age of the animal, and the reason they recognised abuse (nature of injury, history inconsistent with the injury, change in story across time, reported or witnessed, inexplicable injury, old untreated fractures and other affected animals in the household, knowledge of violence at home, the specific person implicated, recurring injuries, high

pet turnover, suspicious behaviour of client or animal and other reasons). They then selected all the injuries observed in the animal from the table of injuries and injury loci described above. Veterinarians were then asked to indicate the outcome for the animal from a range of options: survived, died of injuries or euthanised. The veterinarians were subsequently asked if they suspected or knew the perpetrator and to select from a range of options, including 'children' and 'adolescents'.

Veterinarians' roles in identifying and reporting abuse: First, veterinarians were asked to define animal abuse. They then completed the newly developed *Vet roles and responsibilities* scale of 12 statements that veterinarians could agree with on a seven-point scale. This scale was developed specifically for this study; eight of the items were novel, and four of the items were adapted from existing research.[9] Then, participants were asked to complete the *Barriers to reporting NAI* scale that had 10 items that veterinarians could endorse (yes/no). These items were adapted from previous studies that referred to barriers as part of their discussion.[7] Finally, veterinarians completed the six-item *Response to abuse* scale: 'do nothing', 'ask client if animal was abused', 'report severe cases', 'report all cases', 'assist client', 'provide advice' and 'other' as an open option (yes/no response options), which was adapted from previous research.[8]

Procedure

Ethical approval was granted by the Clinical and Health Psychology Ethics Committee, University of Edinburgh. A pilot version of the survey was tested with one member from each of the three collaborating organisations (Scottish Society for Prevention of Cruelty to Animals [SPCA], Dog's Trust, The Links Group) to detect errors or ambiguous questions, with the subsequent revisions amended prior to survey distribution. The survey was launched in the Bristol Online service on 6 June 2019 and ran until the 31 December 2019. Qualified veterinarians in a clinical practice with companion animals were eligible to participate. Non-probabilistic convenience sampling was employed, and participants were recruited through an unrestricted self-selection survey.[14] A link to the survey was shared through the project's dedicated social media accounts (Twitter and Facebook), and a letter regarding the study was published in Vet Record.[15] The survey link was also promoted by the collaborating animal welfare organisations. All participants were automatically given an ID number following survey completion to assure confidentiality.

Statistical analysis

Data were imported from Online Surveys into IBM SPSS version 25 for statistical analysis. Analysis occurred in three phases: (1) descriptive characteristics of veterinarians' experiences of animal abuse over a 12-month period and as described in case studies, (2) descriptive statistics and dimension reduction analyses of scales investigating veterinarians' views of barriers and responsibilities, and (3) tests of difference investigating the factors that impacted the likelihood veterinarians would report cases of animal abuse. For all tests, parametric assumptions were checked. Where these were met, we used robust tests of mean difference, such as Welch's *t*-test, and where parametric assumptions were not met, appropriate nonparametric tests, such as Kruskal–Wallis, were used. Statistical significance was set at $p < 0.05$ for correlations and tests of difference, and where multiple post hoc tests were performed, the Bonferroni correction was applied. We used all three case studies when reporting the characteristics of animal abuse and focused on case study 1 when relating this back to veterinarian or perpetrator characteristics to avoid biases associated with double- or triple-counting. When performing dimension reduction analyses, we performed either a principle components analysis (PCA) for scale variables or the categorical equivalent, CATPCA, for dichotomous variables. We verified relevant assumptions, including sampling adequacy (using the Kaiser–Meyer–Olkin value above 0.60) and covariance (using Bartlett's test of sphericity). PCA and CATPCA procedures were run using direct oblimin rotation and extracting factors with eigenvalues greater than 1.

A priori power analyses performed using G*Power, with standard alpha (0.05) and beta (0.80) values and assuming a moderate effect size, suggested that we needed to achieve a sample size of at least $n = 80$ to detect significant correlations, at least $n = 160$ to detect differences between three groups and $n = 200$ detect differences between five groups. Although estimating required sample sizes for PCA is less straightforward, established 'rules-of-thumb' suggest having at least 150 participants or 10 participants per variable, whichever is larger.[16] Thus, we determined that we needed an absolute minimum sample size of 160 but aimed to collect around 200 valid responses.

RESULTS

We recruited 215 veterinarians ($n = 161$ females, 75%) from the UK ($n = 185$), other European countries ($n = 12$), the US ($n = 7$), other international countries ($n = 7$), or not providing a response ($n = 5$). Veterinarians had a median age of 30–39 years and a median of 11–15 years of practice experience. Most veterinarians worked in a corporate practice ($n = 112$), followed by independent ($n = 61$) and charity ($n = 25$) practices, mostly in urban settings ($n = 104$), followed by suburban ($n = 68$), rural ($n = 38$) and other ($n = 6$) settings.

Veterinarians' experiences of animal abuse

Almost all veterinarians agreed that animals could experience abuse ($n = 210$, 98%). Most veterinarians

TABLE 1 Frequencies for each type of animal veterinarians suspected to have been harmed in the last 12 months

Type of animal	Rank 1	Rank 2	Rank 3	Weighted frequency
Dog	84	34	10	330
Cat	33	68	18	253
Rabbit	4	15	53	95
Horse	3	4	10	27
Small mammal	1	4	15	26
Exotic animal	3	1	11	22
Bird	1	2	3	10

had seen/suspected animal abuse in the last 12 months ($n = 113$, 53%), with 9% 'maybe' having seen abuse ($n = 20$) and 38% reporting they had not suspected or seen abuse ($n = 82$). During their whole career, only 12.6% had never experienced treating abuse cases ($n = 27$), with the median range being one to five abuse cases ($n = 85$), and more than half the sample ($n = 102$) had experienced more than six abuse cases.

Those who reported treating animal abuse in the last 12 months were asked approximately how many cases had occurred. The mean number of reported incidents within a year was 6.9, although there was wide variation (from 1 to 200 reported yearly incidents of abuse). A Kruskal–Wallis H-test showed a significant difference in the number of cases reported over the last year between the different types of practices ($H(2) = 17.96$, $p < 0.001$). Specifically, post hoc Mann–Whitney U-tests showed that veterinarians working in charities ($n = 20$, mean rank 74.63, $p < 0.001$) and independent practices ($n = 35$, mean rank 61.06, $p = 0.018$) reported significantly more cases than veterinarians working in corporate settings ($n = 53$, mean rank 42.58); however, there was no significant difference between independent and charity settings ($p = 0.064$). The same pattern was apparent for career-long exposure to animal abuse ($H(2) = 27.13$, $p < 0.001$). Exposure to abuse over the last 12 months did not vary by sex, age, number of years of experience or practice setting. However, the number of cases a veterinarian had experienced through their career correlated significantly with their age ($r_s = 0.255$, $p < 0.001$) and years of experience ($r_s = 0.252$, $p < 0.001$).

Types of animal abuse veterinarians experienced over a 12-month period

Veterinarians who indicated they had (or maybe had) seen abuse cases in the last 12 months ($n = 123$) provided information about the type of animal, type of injury and area of the body affected. Regarding the type of animal, veterinarians were asked to rank the top three most abused animals. Dogs were the most common type of animal identified as victims of abuse, followed by cats, rabbits, horses, small mammals, exotic animals and birds. Table 1 presents the ranks that veterinarians gave each type of animal,

along with an overall 'weighted frequency' (weighted sum of number of animals) to give a rough estimate of the relative occurrence of abuse for each animal type.

Table 2 presents the frequency of types and locations of injuries from most to least common type abuse. Neglect was the most common form of abuse ($n = 107$), followed by gunshot injuries ($n = 85$), bruising ($n = 82$) and fractures ($n = 66$). The table also demonstrates that certain types of injuries occurred more in certain locations, so while neglect and poison affected the whole body ($n = 67$ and 27, respectively), fractures often occurred in limbs ($n = 47$), bruising on the abdomen ($n = 23$) and gunshots on the thorax ($n = 21$). The most injured areas were the whole body, followed by the limbs, head, abdomen and thorax.

Veterinary case studies of abuse

Veterinarians who reported treating abuse cases could provide a total of three case studies: case study 1 included 186 veterinarians, case study 2 included 115 veterinarians and case study 3 included 62—a total of 363 case studies. Echoing the results for abuse cases in the previous 12 months, the most common animals reported in case studies were dogs ($n = 232$), followed by cats ($n = 105$), rabbits ($n = 10$) and horses ($n = 7$). Table 3 provides the types and locations of injuries reported in the case studies. There are some differences in the types of injuries reported, with fractures instead of neglect being most commonly reported. The difference in patterns may highlight particularly salient injuries/cases recalled over a longer timeframe.

Table 4 provides details of the case studies and shows that the majority of cases involved dogs, the majority of animals affected were over 2 years of age, and the most common form of abuse was physical abuse (NAI), but 11 cases of sexual abuse were reported. The main features of the case that indicated abuse were the nature of the injury (27.7%), harm that was witnessed or reported (10.3%), history inconsistent with injury (9.9%) and lack of explanation for the injury (8.2%). The perpetrators were most often male or unknown, but 15 cases involved child/adolescent perpetrators. Veterinarians were likely to report abuse, with 80% of cases being reported. Veterinarians most often reported cases of harm to another veterinarian or manager (29.8%), followed closely by animal welfare organisations (28.7%). Only 10.7% of cases were reported to the police, and only 2.1% of cases were reported to social services.

Focusing on case study 1, deeper analysis explored patterns of abuse, outcomes and perpetrators involved. Although neglect ($n = 37$) was less common than physical abuse ($n = 124$), 60% of animals who were neglected died compared to only 29% of animals who were physically abused, a difference that was statistically significant (Fisher's exact test, $p = 0.002$). Outcome and type of abuse did not differ significantly across the perpetrator groups, although most abusers were men ($n = 66$) or not known ($n = 62$). A chi-squared test of independence showed that male

TABLE 2 Types and locations of abuse in cases seen during the last 12 months

Injury type	Head	Neck	Thorax	Abdomen	Limbs	Tail	Genitals	Whole body	Total
Neglect	10	5	6	5	7	3	4	67	107
Gunshot	10	11	21	15	17	1	1	9	85
Bruising	13	9	15	23	9	4	5	4	82
Fractures	4	2	4	0	49	5	0	2	66
Poison	1	0	0	1	0	1	0	27	30
Abrasion	6	2	3	3	6	2	0	4	26
Ligature	1	11	0	0	11	2	0	0	25
Burns	5	5	5	4	2	0	0	1	22
Haemorrhage	9	0	1	6	1	0	2	1	20
Sharp cut	5	4	2	2	3	1	0	0	17
Foreign body	3	0	1	9	2	0	1	0	16
Scalds	3	4	5	0	1	0	1	2	16
Laceration	3	2	4	1	3	0	0	1	14
Stab wound	2	3	4	3	2	0	0	0	14
Sprains	0	0	0	0	6	0	0	1	7
Other	2	0	2	2	3	0	1	14	24
Total	77	58	73	74	122	19	15	133	571

TABLE 3 Types and locations of abuse reported across case studies

Injury type[a]	Head	Neck	Thorax	Abdomen	Limbs	Tail	Genitals	Whole body	Total
Fractures	13	2	12	1	68	0	0	6	102
Neglect	9	2	3	4	8	1	2	68	97
Bruising	27	7	16	14	5	0	4	7	80
Haemorrhage	23	4	2	6	1	0	3	4	43
Gunshot	7	6	12	8	6	0	1	1	41
Laceration	11	6	3	4	3	1	1	3	32
Abrasion	14	2	2	2	3	0	1	4	28
Scalds	5	4	8	3	3	1	2	1	27
Burns	4	5	6	6	2	0	0	3	26
Ligature	2	12	1	0	3	2	1	0	21
Stab wound	2	2	3	2	1	0	0	1	11
Poison	0	0	0	1	0	0	0	9	10
Sharp cut	1	4	1	1	1	0	1	0	9
Foreign body	1	0	0	3	1	0	1	0	6
Sprains	0	0	0	0	3	1	0	0	4
Other	20	3	4	5	7	2	3	22	66
Total	139	59	73	60	115	8	20	129	603

[a]Colour in the case study column denotes the change in rank for that type of injury compared to the results for injuries reported over a 12-month period. Specifically, red means the type of injury was more commonly reported (moving up at least +3 places), no colour means the type of injury was as common (within ±1 place), while green means the type of injury was less commonly reported (moving down at least −3 places).

and female veterinarians had the same likelihood of reporting cases (χ2 [1, $N = 215$] = 2.4, n.s.), and the number of years of experience in practice (split into five categories: 1–5 years, 6–10 years, 11–20 years, 20–30 years, 30+ years) did not impact the likelihood of reporting (χ2 [4, $N = 214$] = 2.4, n.s.). However, cases where the outcome was the animal's death (either due to injuries or euthanasia) were more likely to be reported than cases where the animal survived (χ2 [1, $N = 186$] = 5.9, $p = 0.015$).

Veterinarians' views on responsibilities and barriers to reporting animal abuse

Veterinarians were asked their views on veterinarians' roles in reporting abuse, what should be done in cases of abuse, and barriers to reporting abuse. To enable further analysis, these scales underwent dimension reduction analysis.

The *Vet roles and responsibilities* scale comprised 12 statements that veterinarians could agree with on a

TABLE 4 Case studies of abuse in companion animals

Animals' details	Case 1	Case 2	Case 3	Total	% of total	Case characteristics	Case 1	Case 2	Case 3	Total	% of total
Type of animal						**What made you recognise abuse?**					
Dog	131	69	32	232	63.9	Nature of injury	119	74	46	239	27.7
Cat	43	40	22	105	28.9	Reported/witnessed	52	20	17	89	10.3
Rabbit	3	1	6	10	2.8	Inconsistent history	48	26	11	85	9.9
Other	5	3	1	9	2.5	Lack of explanation	38	20	13	71	8.2
Horse	4	2	1	7	1.9	Suspicious behaviours	30	24	12	66	7.7
						Changing story	26	19	9	54	6.3
Sex of animal						Recurring	28	14	11	53	6.1
Male	63	43	21	127	35.1	Particular person	29	13	7	49	5.7
Female	46	32	16	94	25.9	Other animals in household	17	15	6	38	4.4
Unknown	41	9	11	61	16.8	Animal fear	18	9	5	32	3.7
Male neuter	22	13	9	44	12.1	Knowledge of violence in home	16	6	5	27	3.1
Female neuter	14	17	5	36	9.9	Other	12	10	4	26	3.0
						Old fractures	13	4	5	22	2.6
Age of animal						Higher pet turnover	5	6	0	11	1.3
Over 2 years	83	60	32	175	48.3						
7 months–2 years	48	26	16	90	24.8	**Perpetrator**					
3–6 months	24	14	6	44	12.1	Owner male	66	38	21	125	34.4
Unknown	21	7	6	34	9.4	Not known	62	35	22	119	32.8
Under 12 weeks	10	8	1	19	5.2	Owner female	16	22	10	48	13.2
						Other	20	9	5	34	9.4
Type of abuse						Partner	12	7	3	22	6.1
Physical	139	73	38	250	62.7	Child or adolescent	10	4	1	15	4.1
Neglect	51	40	25	116	32.0						
Other	8	10	4	22	6.1	**Did you report it?**					
Sexual	6	4	1	11	3.0	Colleague or manager	71	50	24	145	29.8
						Animal welfare organisation	63	54	23	140	28.7
Outcome						Did not report	51	28	19	98	20.1
Survived	120	71	62	253	65.0	Police	27	21	4	52	10.7
Euthanised	39	30	17	86	21.6	Other	26	9	7	42	8.6
Died	27	14	9	50	12.5	Social services	4	6	0	10	2.1

seven-point scale. PCA identified factors for dimension reduction. The original extraction produced a three-factor solution explaining 64.98 of the variance. However, one variable did not load well onto any factor (item 8, all loadings below 0.4), and the third factor only had one variable (item 11) with loading above 0.4. Further analysis showed that items 8 and 11 reduced the reliability of the scale as measured through Cronbach's alpha and so were removed. PCA was carried out again on this 10-item scale, which had Cronbach's alpha = 0.81, and two factors were extracted, explaining 63.79% of the variance. The first factor, 'Confidence in dealing with abuse', had six items, while the second factor, 'Moral duty and concerns about abuse', had four items. See Table A1 for the items and their factor loadings.

The *Barriers to reporting abuse* scale had 10 items that veterinarians could endorse (yes/no) as barriers to reporting abuse. The CATPCA generated a four-factor solution, which explained 58.04% of the variance. The first factor 'Lack of resource and knowledge' had four items, the second factor 'Legal fears' had two items, the third factor 'Fear of client loss' had two items and the fourth factor 'Physical safety concerns' had two items. Table A2 provides more details on items and their factor loadings. The results suggest that legal fears are the most frequently perceived barrier to reporting, with well over half of respondents supporting both items. Lack of resources and knowledge was also commonly endorsed as an overall factor, while the item 'Fear the reporting might compromise the safety of the client' was also very highly endorsed as a single item, with 62% of respondents agreeing with it. Table 5 presents the results for each item in more detail.

Finally, the *Response to abuse* scale had six items that veterinarians could endorse (yes/no) regarding appropriate responses in cases of suspected abuse. Exploratory analysis revealed that one of the items, 'Do nothing', was only endorsed by one respondent

TABLE 5 Frequency of item endorsement on 'Barriers to reporting abuse' scale, organised by subscale

Item	Frequency endorsed	%	Subscale average
Concerns about breaking client confidentiality	148	69%	
Fear of litigation	111	52%	129.5
Lack of knowledge of available resources	117	54%	
Lack of accepted standards in identification	116	54%	
A perception no action will be taken	100	47%	108.75
Inexperience in dealing with misleading information provided by client	102	47%	
Fear that reporting may compromise safety of victim	133	62%	
Fear of physical retaliation by perpetrator	75	35%	104
Fear that client will be driven away	90	42%	
Fear of erosion of client base of practice	32	15%	61

and thus was removed from the scale. The CATPCA performed on the remaining five items generated a two-factor solution, which explained 61.02% of the variance: factor 1 'Helping and discussing with the client' had three items; factor 2 'Report the abuse' had two items that were strongly inversely correlated 'report all cases' and 'report severe cases'. Table A3 provides more details on items and their factor loadings. Helping the client was the most common response, with 63% of veterinarians saying they thought vets should assist the client in getting help and 60% of saying they thought veterinarians should provide advice. The fact that 'Helping and discussing with the client' item loaded separately from the 'Reporting' items suggests that these responses are seen as broadly independent of one another.

What factors impact whether veterinarians are likely to report abuse?

To understand what factors might impact a veterinarian's views on reporting and intervening in cases of abuse, analyses related the subscales described above to demographic factors and practice experience.

Demographics: For the *Veterinarians' roles and responsibilities* subscales, there was no difference between male and female veterinarians on the 'Confidence in dealing with abuse' subscale, but Welch's *t*-test showed that females scored significantly higher (mean = 5.48, SD = 1.38) than male veterinarians (mean = 4.86, SD = 1.68) on the 'Moral duty and concerns about abuse' subscale ($t[78.64] = -2.435$, $p = 0.017$). There were no differences between males and females on the *Barriers to reporting* or *Response to abuse* scales. Practice type did not have an impact on the *Vet roles and responsibilities* or *Response to abuse* scales, but there was a difference for one of the *Barriers to reporting abuse* subscales. A Kruskal–Wallis *H*-test showed that the subscale 'Legal fears', which included 'fear of litigation' and 'fear of breaking client confidentiality', was different for veterinarians working in different settings ($H[2] = 7.87$, $p = 0.02$). Post hoc tests showed that it was higher for veterinarians working

in corporate settings (mean rank = 108.82) than for veterinarians working in independent settings (mean rank = 86.73) ($p = 0.028$).

Likelihood of reporting abuse: To explore what factors make a veterinarian more likely to report cases of abuse, we focused on the subset of veterinarians who described at least one case study ($n = 187$). Welch's *t*-test showed that veterinarians who had not reported the case scored lower on the 'Vet confidence' subscale (mean = 3.39, SD = 1.36) than veterinarians who had reported the case (mean = 3.95, SD = 1.58) ($t[102.5] = 2.134$, $p = 0.021$). There was no difference in scores for the 'Moral concern' subscale between those who did and those who did not report the case. Furthermore, veterinarians who had not reported the case endorsed more items on the 'Lack of resource and knowledge' subscale (mean = 0.59, SD = 0.31) than those who reported the case (mean = 0.48, SD = 0.31) ($t[90.4] = -2.134$, $p = 0.036$). There were no significant differences on the subscales 'Fear of client loss', 'Physical safety concerns' or 'Legal fears'. Finally, a Mann–Whitney *U*-test showed that veterinarians who reported the case had experienced significantly more cases of abuse through their career (mean rank = 102.3) than veterinarians who had not reported the case (mean rank = 72.0) ($U = 2324.5$, $p < 0.001$).

To investigate the impact of experience of animal abuse and potential indicators of compassion fatigue, the number of cases of abuse a veterinarian had experienced over their career was categorised: no cases ($n = 27$), 1–5 cases ($n = 84$), 6–10 cases ($n = 46$), 11–20 cases ($n = 27$), 21–50 cases ($n = 12$) and 51 or more cases ($n = 16$). Kruskal–Wallis *H*-tests were used to assess group differences in the scales: 'Vet moral concern', 'Vet confidence', 'Barriers to reporting abuse' and 'Response to abuse'. Only the subscale 'Vet moral concern' was significantly different between the different levels of exposure to abuse categories ($H[5] = 14.43$, $p = 0.013$). To ensure that this effect was not due to confounding factors of years of experience and sex, the Kruskal–Wallis was run again using the residuals of a general linear model performed controlling for these variables, and the test remained
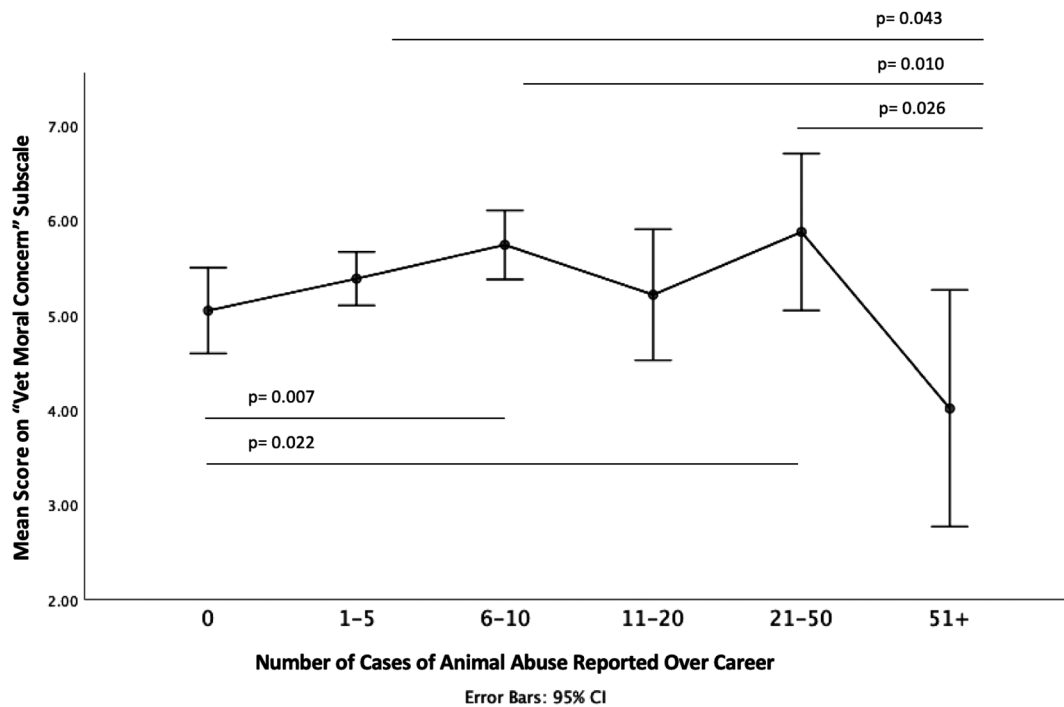
FIGURE 1 Mean scores on the 'Vet moral concern' subscale by number of cases of abuse experienced over the veterinarian's career. Significant *p*-values are reported for post hoc pairwise Mann–Whitney *U*-tests on residuals controlling for years of experience and sex. Note that these *p*-values were no longer significant after applying the Bonferroni correction due to the high number of tests. CI, confidence interval

significant ($H[5] = 13.69$, $p = 0.018$). Pairwise post hoc tests revealed that moral concern increased slightly for veterinarians who reported more cases of abuse, but there was a sudden drop in score for veterinarians reporting 51 or more cases (see Figure 1), potentially indicative of compassion fatigue.

DISCUSSION

The majority of veterinarians in this study believed that companion animals can be abused (98%), and 62% claimed to have suspected or seen animal abuse in the last year; moreover, only 26.6% reported never having treated a case of animal abuse during their careers. These findings, consistent with previous research, demonstrate that dealing with animal abuse cases is a common experience for veterinarians.[6]

We had two ways of exploring veterinarians' experiences of animal abuse: those encountered in the last 12 months and specific case studies reported by participants. Consistently across these measures, the animal most frequently treated for abuse was dogs, followed by cats and then rabbits and horses, in line with previous studies.[1,9,10] The high involvement of dogs and cats in abuse cases may be because of their closeness to humans.[10] However, animal abuse is likely to be 'hidden' during veterinary appointments, and the number of abuse cases treated by veterinarians is likely to be an underestimate of the full extent of animal abuse in the community. Animals that have experienced abuse may not be taken to veterinarians for treatment, and this may vary with the type of animal (e.g., small inexpensive pets such as rabbits might be

particularly at risk of not receiving veterinary treatment). Abuse that results in death may not lead to veterinary practice visits.

In terms of types and locations of harm, there were some variations over those experienced in the last 12 months and the case studies reported. Over the last 12 months, neglect was most common, followed by gunshots, bruising and fractures (physical abuse). The most affected parts of the body were the whole body, followed by the limbs, head, abdomen and thorax. These results are consistent with previous studies confirming bruising and broken limbs as common injuries in physical abuse cases.[9,10] In terms of the case studies, the most commonly reported type of abuse was those resulting from physical abuse, followed by neglect. It might be that veterinarians chose to report cases of physical abuse because these are the cases that were particularly notable and distressing for them. Veterinarians reported injuries as linked to more sinister motives, including drowning, burns, alcohol feeding and anal penetration.[10] One participant stated, 'I cannot write about the horrible things I have seen'. Out of the 363 case studies, veterinarians reported the death of 50 animals, and 86 animals were euthanised due to the severity of injuries, a similar pattern of severity reported in previous studies.[7] For veterinarians, euthanasia can be an occupational stressor.[17,18]

The main reasons why veterinarians suspected abuse were the nature of the injuries, reported or witnessed accounts of the abuse and inconsistent history. Indicators of abuse from the animals included 'animal fear' but also 'old fractures'. Often, it was the behaviour of the person bringing the animal for treatment that triggered suspicions of abuse. These included 'lack of

explanation', 'suspicious behaviour', 'changing story', 'recurring patterns' and concerns about a particular person, high 'pet turnover' and violence in the home. These findings are also reported in other studies[1,7,9,10] and emphasise the link between animal abuse and family violence.[19–22] The most commonly suspected perpetrator was an adult male, but in 10 cases, it was a child/adolescent. In terms of reporting, only 98 cases were not reported, with the majority being reported to the practice manager or a welfare organisation. Social services were only reported to in 10 cases. There was no effect of veterinarians' experience of abuse cases or sex on reporting cases, but those cases that resulted in an animal death were more likely to be reported.

It is important to note how challenging discerning animal abuse can be in veterinary practice. For example, while the injury patterns may be indicative of abuse, veterinarians are also basing their assessment of abuse on the humans involved, their behaviour and how they explain the injuries in the animals and whether there seems to be intent to harm the animal. Although we have focused on quantitative data in this paper veterinarians provided comments that reveal some insights into this complexity. For example, one participant explained that in one of the case studies they reported '… although I felt the behaviour of the owners was neglectful in the first place, they did ultimately seek medical attention (albeit too late) for their pet'.

There are also concerns not only for the animal involved but also for others, including family members and veterinarians. One participant explained 'if you cannot prove who did what, and you did not see it yourself, what are you reporting? If it is legal to hunt rabbits with a gun, how on earth do you prove the [expletive] that shot a cat in his garden did so with mens rea? And if they're happy to shoot animals just for some weird territorial thing, if they then threaten to shoot me in the head, as has happened, what am I to do?'

As animal abuse is often linked to other forms of domestic abuse and violence, there is a need for interagency collaboration between animal and human medical professionals, first responders, and social and care workers who could all work together to provide the intervention and support required for the animals and people involved in abuse. These findings highlight the importance of supporting veterinarians in dealing with the people involved in animal abuse cases, and the need for interagency collaborations to ensure the animals and people involved are adequately supported and that veterinarians are supported in their roles. As one participant commented, 'I think there is a definite link between animal abuse leading onto human abuse and therefore the punishment for animal abuse should be much more severe than it currently is. I also think more proactive action should [be] taken to assist the person who is abusing to aid the issues they have that lead to their actions as a preventative against further abuse. It is not part of the vet's job to do this, so I don't think any further pressure/responsibility should be put on vets as it could affect their mental health/stress'.

A novel aspect of this study is that we explored in some depth veterinarians' perceived roles in dealing with cases of animal abuse. Female veterinarians reported higher moral concern over abuse, and the perceived barrier of legal concerns was higher in veterinarians employed in corporate settings. In terms of reporting, veterinarians who had not reported the case of abuse they shared in this study scored lower on confidence in dealing with abuse, and veterinarians with more experience of abuse cases were also more likely to report cases. These findings accord with previous research that perceptions of barriers to reporting and confidence in reporting influence the management of animal abuse cases.[23] The high level of agreement that veterinarians have a moral duty in relation to abuse is comparable to findings from previous studies.[9,10] Reporting and addressing animal abuse cases helps to build safer communities.[24] Nevertheless, only a minority of veterinarians in the present study reported that veterinary schools provide sufficient training on the identification and prevention of animal abuse. Although veterinarians support active intervention in abuse cases, many feel they lack the training required to act. Veterinarians may avoid involvement or may intervene ineffectively without the appropriate training.[8] A number of sources of support and advice are available to veterinarians in cases of suspected animal abuse, including, in the UK, the Royal College of Veterinary Surgeons and the Veterinary Defence Society, where there are concerns regarding client confidentiality. In the UK, the Royal Society for the Prevention of Cruelty to Animals (RSPCA, in England and Wales) and the Scottish SPCA will provide confidential advice to members of the practice team. Furthermore, in 2021, IVC Evidensia created a confidential advice line to practices, as well as a series of posters detailing how to respond to suspicions of NAI and where to get support. Finally, The Links Group, a cross-professional group focusing on the links between human and animal abuse, can offer advice and support on animal abuse.

There are a number of limitations to the study. The sample is overrepresented by UK and female participants and may not be generalisable. The results relied upon the participant's recollections of case details, and recall errors may have occurred. Last, relying on volunteer participants may have meant that veterinarians who were concerned about animal abuse were more likely to participate in the study. Future directions for research include examining veterinarians' perspectives on the links between animal abuse and human abuse in more depth, further examination of the role animal abuse plays in compassion fatigue and burnout among veterinarians, and research on approaches to interagency working in cases of domestic abuse that may involve both human and animal victims. More development work and research is also required on noncustodial and therapeutic approaches to animal abuse convictions[25] so that veterinarians reporting cases of animal abuse can feel confident

that this will lead to support for the perpetrator and prevent further cases of abuse.

In conclusion, veterinarians' experience of animal abuse is common, dogs are most affected, and neglect and physical abuse are most common. Veterinarians identify animal abuse through indicators from the injury and animal, as well as the behaviour and attributes of the client, highlighting the need for interagency work on animal abuse. While sense of a moral duty to intervene in cases of abuse is high, confidence varies, and perceived barriers to reporting affect whether abuse cases are reported. Treating trauma is linked to secondary trauma and occupational stress, and the veterinarians who experienced very high levels of treating abuse cases showed some evidence of compassion fatigue in this study. There is growing professional support available to veterinarians in dealing with suspected cases of animal abuse as this issue becomes more widely recognised. However, there remains a need for training in veterinary forensics to enhance confidence, and further support for veterinarians to avoid compassion fatigue when they are treating animal abuse.

CONFLICT OF INTEREST
The authors have no conflicts of interest to declare.

ETHICS STATEMENT
Ethical approval was granted by the Clinical and Health Psychology Ethics Committee, University of Edinburgh.

AUTHOR CONTRIBUTIONS
Conception and design, data collection, analysis and interpretation, and drafting and revising the manuscript: Joanne M. Williams. *Data analysis and interpretation, and drafting and revising the manuscript*: Laura Wauthier. *Conception and design, data interpretation and manuscript revision*: Scottish SPCA. *Conception and design, data collection, analysis and interpretation, and manuscript revision*: Monja Knoll. The authors are accountable for the accuracy and integrity of all aspects of the work.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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