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Attitudes of veterinarians and veterinary students to recommendations on how to improve dog and cat welfare in veterinary practice

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ABSTRACT

The veterinary profession is an ambassador for the welfare of animals, but the visit to a veterinary practice is in itself stressful for many animals. A multitude of recommendations how to reduce stress during a visit to the veterinarian is available, but they are often not implemented in practice. Therefore, the aim of this study was to survey veterinarians and veterinary students regarding their attitudes toward recommendations to improve cat and dog welfare in veterinary practice. We conducted 2 similar online surveys asking veterinarians and veterinary students to rate 20 statements about pet-friendly handling and practice environment and other measures to improve animal welfare on a scale ranging from 1 to 6 regarding their importance for animal welfare and their feasibility in practice. Single items were averaged to overall importance and feasibility scores. These scores and single items were compared between veterinarians and veterinary students using Mann-Whitney U tests. In general, the rating of importance was high and the overall score did not differ between veterinarians (N = 342) and veterinary students (N = 258) after correction for multiple testing (mean ± SD: 5 ± 0.63 vs. 4.93 ± 0.51, $P = 0.046$). The recommendations rated as most important were "dog ward: possibility to urinate/defecate at least 3 times a day," "separate cats from dogs during hospitalization," and "cat ward: provide hiding possibility." Regarding feasibility, veterinarians had higher overall scores than students (4.82 ± 0.65 vs. 4.62 ± 0.48, $P < 0.001$). The rating of 9 single items was higher than that of veterinary students ($P \leq 0.001$). Higher feasibility ratings in students were only found for the items "Advise owner on how to reduce stress during transport," "use muzzle training with dogs and advise owner on how to do it," and "report animal abuse to the authorities." The items "separate cats from dogs in the waiting room" (3.63 ± 1.54), "exam table: let cats exit carrier on their own" (4.31 ± 1.42), "separate cats from dogs during hospitalization" (4.41 ± 1.67) received the lowest feasibility ratings by veterinarians. In conclusion, the greatest barriers for the implementation of recommendations aiming to increase animal welfare in veterinary practice seem to be related to constructional aspects or perceived time constraints. Furthermore, veterinarians might have experienced low compliance of owners to their advice and might find reporting of suspected abuse cases challenging.

Introduction

Who if not veterinarians should be advocates for animal welfare? However, the visit to a veterinary practice is in itself stressful for many animals (e.g., Döring et al., 2009; Lind et al., 2017; Mariti et al., 2016). As these two aspects are in stark contrast, many ways to make visits to a veterinary practice less stressful or even pleasant are suggested (e.g., Carney et al., 2012; Hammerle et al., 2015; Herron and Shreyer, 2014; Moffat, 2008; Rodan et al., 2011; Yin, 2009). In particular, refinement of handling of cats and to a lower extent also of dogs but also the optimization of the practice environment and the management of hospitalized patients are addressed in the abovementioned literature. Evidence-based recommendations include, for example, the use of pheromones to

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promote calm behavior (Mills et al., 2006; Pereira et al., 2016) and emphasize the importance of the presence of the dog's owner and how interactions between owner and dog may improve the animal's welfare (Csoltova et al., 2017). Providing hiding places (Kry and Casey, 2007; Vinke et al., 2014), a calm and predictable environment (Stella et al., 2014), and gentle interactions such as petting (Gourkow et al., 2014) have been found to reduce stress levels in cats during hospitalization. Carrier training resulted in reduced stress in cats during a car ride to a veterinary practice and a better compliance of the cat during the veterinary examination (Pratsch et al., 2018).

By implementing these recommendations, veterinarians can positively affect the welfare of animals in their own practice, but they may also address welfare issues regarding the animal's home environment (Dawson et al., 2016). The veterinary profession can function as an ambassador for the welfare of companion animals, on the one hand, via modeling favorable human behavior and providing environments beneficial to animals in their practice, and, on the other hand, by supporting owners in acquiring knowledge and developing skills that benefit their pets' welfare at home. In Austria, a group of veterinarians from the "Austrian Association of Small Animal Veterinarians" (Vereinigung Österreichischer Kleintiermediziner [VÖK]) initiated a project to improve welfare of cats and dogs in veterinary practice in 2015. In collaboration with a group from the Institute of Animal Husbandry and Animal Welfare, University of Veterinary Medicine, Vienna (Vetmeduni Vienna), several aspects considered to be highly important to cat and dog welfare were identified: these were the design and management of the practice environment; husbandry of hospitalized patients; management of day surgery; handling of animals; management of pain and hygiene; knowledge transfer to pet owners on animal behavior, needs and appropriate interactions; decision taking and procedures for euthanasia; and how to deal with animal abuse cases. After discussions with the executive committee of the VÖK, recommendations regarding these aspects were published (Arhant et al., 2017). However, recommendations that require veterinary staff to change the practice environment or management, routine procedures, or their own behavior might be perceived as not feasible in practice. For this reason, implementation in daily routines might fail. The aim of this study was to survey veterinarians and veterinary students regarding their opinions on importance and feasibility of specific recommendations to improve cat and dog welfare in veterinary practice.

Material and methods

The questionnaires

Two similar questionnaires, one for veterinarians and one for veterinary students, were developed based on discussion with a group of veterinarians from the VÖK and a review of the literature regarding the establishment of a pet-friendly veterinary practice including low-stress handling practices, the prevention of welfare and behavior problems in the pets home, and the handling of suspected animal abuse cases that led to recommendations published in German language (Arhant et al., 2017). The final questionnaires contained questions on characteristics of the respondents and their work experience/environment (gender, veterinarians: age group/veterinary students: age, pet ownership; only veterinarians: type of practice [clinic vs. practice; small animals, large animals, both], whether animals are hospitalized, type of animals [percentage of dogs, cats, other]; only veterinary students: country of origin, progress in studies of veterinary medicine; working experience outside the university), and 20 recommendations that are suggested by literature or practical experience to improve welfare of dogs and cats in veterinary practice (Table 1). Apart from the section containing demographic questions, the questionnaires were identical. The respondents were asked to score these recommendations once for importance regarding animal welfare and once for feasibility in veterinary practice on a 6-point scale ranging from 1 to 6. At the end of the questionnaire, the respondents could leave a comment. Draft versions of the questionnaires were tested with persons from the target groups. To complete the revised final questionnaires, respondents needed about 10 minutes.

The survey

The survey was performed as an online survey via SurveyMonkey between mid of December 2015 and mid of February 2016. It was advertised to the Austrian veterinarians via a mailing of the VÖK and the Austrian Chamber of Veterinarians. The students of the Vetmeduni Vienna, which is the only veterinary school in Austria, were contacted via their student email address. To increase participation in the survey, we held a prize draw for an education course for veterinarians (sponsored by the VÖK) and a gift coupon for pet accessories and pet food for veterinary students (sponsored by "Hörschläger Energiemanagement GmbH").

Data analyses

All statistical analyses were carried out with IBM SPSS Statistics, versions 21 and 22. To combine the scores of the 40 items into overall scores for importance (20 items) and feasibility (20 items), we calculated the mean of the scores according to category. This resulted in the 2 scales "Importance overall" (Cronbach's alpha = 0.870, N = 525, Table 1) and "Feasibility overall" (Cronbach's alpha = 0.830, N = 487, Table 2). To compare the overall importance rating to the overall feasibility rating, a Wilcoxon signed-rank test was used. To compare the ratings of the veterinarians to the ratings of the veterinary students, multiple Mann-Whitney U tests were conducted (Tables 1 and 2). We corrected for multiple testing separately for the 2 scales using the Bonferroni method, that is, for 21 tests per scale (overall score plus 20 single items). This resulted in a *P*-value of 0.0024 considered to be significant. In addition, we ranked the recommendations based on the mean value of the single item's rating (Tables 1 and 2). Finally, to get an insight in perceived barriers and the current state of implementation of the recommended measures in practice, we tested whether a discrepancy between the rating of importance and feasibility was present in the group of veterinarians by using a sign test (Table 3; correction for multiple testing: 20 tests, significant *P*-value = 0.0025). For descriptive statistics of the difference between the rating of importance and feasibility, we subtracted feasibility from importance. This means that a negative value indicates a higher feasibility rating than importance rating and a positive value a higher importance rating than feasibility rating.

Results

Veterinarians

Of the participating Austrian veterinarians (N = 342; response rate 11.5%), 72% were female and 28% male. Most of them were aged between 40 and 49 years (35%), between 30 and 39 years (27%), or between 50 and 59 years (26%). The remaining participants were either older than 60 years (8%) or aged between 20 and 29 years (4%). Eighty-five percent worked in a veterinary practice and 15% in a veterinary clinic. Overall, 73% reported that they also cared for hospitalized patients. Seventy-two percent worked in small animal

Table 1
Ratings of the importance of recommendations for the improvement of dog and cat welfare in veterinary practice by veterinarians and veterinary students and their ranking based on the item's mean value (1 = most important to 20 = least important)

Questionnaire items	Veterinarians				Veterinary students				Sig.
	N	Mean	SD	Ranking	N	Mean	SD	Ranking	
Importance overall	298	5.00	0.63		227	4.93	0.51		0.046
Dog ward: provide possibility for urinating/defecating at least 3 times a day	313	5.63	0.74	1	234	5.72	0.57	1	0.219
Separate cats from dogs during hospitalization	315	5.41	1.00	2	235	5.4	1.00	3	0.932
Cat ward: provide hiding possibility in cage. For example, hiding box, blanket on front door	319	5.4	0.89	3	235	5.35	0.86	4	0.329
Hospitalization: provide tender loving care at least 5 minutes 2 times a day	315	5.35	0.94	4	234	5.27	0.86	5	0.081
Keep waiting time short	325	5.3	0.88	5	236	5.15	0.85	7	0.013
Approach dogs slowly from the side and let them initiate contact on their own	325	5.2	1.00	6	235	5.13	0.87	8	0.081
Minimize the use of handling aids. For example, restraint cage and nets	325	5.19	1.14	7	236	4.91	1.03	11	**<0.001**
Advise owner on how to prevent behavioral problems	324	5.15	0.97	8	234	5.16	0.92	6	0.911
Report animal abuse to the authorities	324	5.09	1.20	9	234	5.53	0.78	2	**<0.001**
Day surgery: allow dog owner to be present until dog is anesthetized	322	5.00	1.31	10	235	4.55	1.27	16	**<0.001**
Minimize use of restraint during examination and treatment. For example, avoid scruffing cats	325	4.97	1.19	11	236	4.59	1.13	15	**<0.001**
Hospitalization: provide a familiar smell to animals. For example, blanket from home	318	4.87	1.18	12	235	4.85	1.12	12	0.545
Advise owner on how to reduce stress during transport	326	4.84	1.07	13	234	5.08	0.93	9	0.012
Examine or treat animals where they feel comfortable. For example, on the floor or lap of a person	324	4.76	1.34	14	236	4.42	1.24	18	**<0.001**
Use muzzle training with dogs and advise owner on how to do it	324	4.75	1.23	15	236	4.97	1.07	10	0.066
Use food during examination/treatment to distract the animal	323	4.71	1.39	16	236	4.54	1.15	17	0.006
Day surgery: keep time of unanesthetized cat waiting in carrier shorter than 30 minutes	319	4.66	1.23	17	235	4.4	1.14	19	**0.002**
Examination table: let cats exit the carrier on their own	324	4.56	1.34	18	236	4.69	1.07	14	0.683
Separate cats from dogs in the waiting room	324	4.55	1.14	19	236	4.7	1.02	13	0.180
Keep records on successful handling techniques for each patient	323	4.31	1.45	20	234	4.36	1.20	20	0.701

P-values in bold are significant after Bonferroni correction for multiple testing.

practices, 27% treated both small and large animals, and only 1% worked in a large animal practice (occasionally small animals are treated during farm visits). On average, the animals treated were reported to be 37% dogs, 44% cats, and 20% other animals. Ninety-two percent of the participants reported to own pets.

Veterinary students

Of the participating veterinary students of the Vetmeduni Vienna (N = 258; response rate 18.2%), 87% were female and 13% male. The mean age was 24 years (SD: 4). Sixty-seven percent originated from Austria, 25% from Germany, and 8% from other countries. Half of them were in the last third of their studies, and 93% had already worked in a veterinary practice outside the university. Eighty-six percent of the students reported to have pets.

Importance

The overall rating of importance of the recommendations was quite high and did not differ significantly between veterinarians

Table 2
Ratings of the feasibility of recommendations for the improvement of dog and cat welfare in veterinary practice by veterinarians and veterinary students and their ranking based on the item's mean value (1 = most feasible to 20 = least feasible)

Questionnaire items	Veterinarians				Veterinary students				Sig.
	N	Mean	SD	Ranking	N	Mean	SD	Ranking	
Feasibility overall	272	4.82	0.65		215	4.62	0.48		**<0.001**
Approach dogs slowly from the side and let them initiate contact on their own	312	5.34	0.98	1	223	5.24	0.89	3	0.058
Cat ward: provide hiding possibility in cage, for example, hiding box, blanket on front door	304	5.32	1.10	2	222	5.52	0.82	1	0.060
Dog ward: provide possibility for urinating/defecating at least 3 times a day	290	5.25	1.22	3	223	5.00	0.88	8	**<0.001**
Use food during examination/treatment to distract the animal	310	5.23	1.14	4	222	5.10	0.96	6	0.005
Hospitalization: provide a familiar smell to animals, for example, blanket from home	297	5.21	1.15	5	222	5.27	1.00	2	0.745
Day surgery: allow dog owner to be present until dog is anesthetized	311	5.17	1.23	6	222	4.86	1.16	10	**<0.001**
Hospitalization: provide tender loving care at least 5 minutes 2 times a day	292	5.01	1.27	7	223	4.43	1.16	13	**<0.001**
Minimize the use of handling aids, for example, restraint cage, nets	313	4.99	1.05	8	222	4.23	1.08	14	**<0.001**
Examine or treat animals where they feel comfortable, for example, on the floor or lap of a person	313	4.91	1.23	9	223	4.21	1.24	15	**<0.001**
Advise owner on how to prevent behavioral problems	312	4.82	1.11	10	222	5.04	1.06	7	0.014
Advise owner on how to reduce stress during transport	314	4.80	1.08	11	223	5.20	1.00	4	**<0.001**
Minimize use of restraint during examination and treatment, for example, avoid scruffing cats	313	4.78	1.20	12	223	3.98	1.03	16	**<0.001**
Report animal abuse to the authorities	310	4.73	1.36	13	222	5.14	1.08	5	**0.001**
Keep records on successful handling techniques for each patient	310	4.69	1.42	14	223	4.52	1.31	11	0.048
Day surgery: keep time of unanesthetized cat waiting in carrier shorter than 30 minutes	309	4.65	1.27	15	222	3.95	1.12	17	**<0.001**
Keep waiting time short	311	4.63	1.10	16	224	3.74	0.96	19	**<0.001**
Use muzzle training with dogs and advise owner on how to do it	308	4.50	1.22	17	223	4.98	1.12	9	**<0.001**
Separate cats from dogs during hospitalization	297	4.41	1.67	18	223	4.44	1.18	12	0.201
Examination table: let cats exit the carrier on their own	312	4.31	1.42	19	223	3.84	1.26	18	**<0.001**
Separate cats from dogs in the waiting room	312	3.63	1.54	20	224	3.67	1.23	20	0.973

P-values in bold are significant after Bonferroni correction for multiple testing.

Table 3
Discrepancy in ratings of importance and feasibility calculated for veterinarians by subtracting the feasibility from the importance rating

Questionnaire items	N	Minimum	Maximum	Mean	SD	*P*
Use food during examination/treatment to distract the animal	308	−5	3	−0.49	1.07	**<0.001**
Hospitalization: provide a familiar smell to animals, for example, blanket from home	296	−4	5	−0.36	1.14	**<0.001**
Keep records on successful handling techniques for each patient	308	−4	3	−0.36	1.11	**<0.001**
Day surgery: allow dog owner to be present until dog is anesthetized	308	−5	3	−0.22	0.91	**<0.001**
Examine or treat animals where they feel comfortable, for example, on the floor or lap of a person	312	−4	3	−0.16	0.96	0.015
Approach dogs slowly from the side and let them initiate contact on their own	311	−3	5	−0.14	0.87	0.006
Day surgery: keep time of unanesthetized cat waiting in carrier shorter than 30 minutes	305	−5	3	−0.01	1.10	0.746
Advise owner on how to reduce stress during transport	314	−2	5	0.04	0.99	0.876
Cat ward: provide hiding possibility in cage, for example, hiding box, blanket on front door	304	−4	5	0.07	1.05	0.852
Minimize use of restraint during examination and treatment, for example, avoid scruffing cats	313	−3	4	0.19	0.93	0.004
Minimize the use of handling aids, for example, restraint cage, nets	313	−4	4	0.23	1.03	**<0.001**
Examination table: let cats exit the carrier on their own	311	−2	3	0.27	0.88	**<0.001**
Use muzzle training with dogs and advise owner on how to do it	308	−4	5	0.29	1.13	**<0.001**
Hospitalization: provide tender loving care at least 5 minutes 2 times a day	292	−2	5	0.32	1.04	**<0.001**
Advise owner on how to prevent behavioral problems	311	−3	5	0.32	0.99	**<0.001**
Report animal abuse to the authorities	309	−5	5	0.36	1.13	**<0.001**
Dog ward: provide possibility for urinating/defecating at least 3 times a day	288	−2	5	0.37	1.12	**<0.001**
Keep waiting time short	310	−3	4	0.67	0.99	**<0.001**
Separate cats from dogs in the waiting room	310	−4	5	0.91	1.38	**<0.001**
Separate cats from dogs during hospitalization	295	−4	5	0.99	1.50	**<0.001**

Negative values indicate higher feasibility than importance and positive values higher importance than feasibility.
P-values in bold are significant after Bonferroni correction for multiple testing.

and veterinary students ("Importance overall," Table 1). The ranking of single items according to the importance rating identified "dog ward: provide possibility for urinating/defecating at least 3 times a day," "separate cats from dogs during hospitalization," and "cat ward: provide hiding possibility in cage, for example, hiding box, blanket on front door" as the 3 most important recommendations according to the veterinarians (Table 1). For the veterinary students also "report animal abuse to the authorities" ranked under the 3 most important recommendations and the rating of this item was significantly different between veterinarians and veterinary students, with students assigning higher importance to this recommendation ($P < 0.001$, Table 1). Other recommendations for which the ratings of the veterinarians and the veterinary students differed significantly, with students assigning less importance to these recommendations were "examine or treat animals where they feel comfortable, for example, on the floor or lap of a person," "minimize the use of handling aids, for example, restraint cage and nets," "minimize use of restraint during examination and treatment, for example, avoid scruffing cats," "day surgery: allow dog owner to be present until dog is anesthetized," and "day surgery: keep time of unanesthetized cat waiting in carrier shorter than 30 minutes" (all $P \leq 0.002$, Table 1). Ranked as least important by both groups was "keep records on successful handling techniques for each patient." Furthermore, veterinarians assigned "separate cats from dogs in the waiting room" and "examination table: let cats exit the carrier on their own" low importance. Veterinary students ranked the items "day surgery: keep time of unanesthetized cat waiting in carrier shorter than 30 minutes" and "examine or treat animals where they feel comfortable, for example, on the floor or lap of a person" under the 3 least important recommendations.

Feasibility

The overall rating of feasibility was lower than the overall importance rating (veterinarians: N = 256, U = −5.620, $P < 0.001$; veterinary students: N = 209, U = −9.797, $P < 0.001$), and a significant difference between the rating of veterinarians and veterinary students was found, with lower overall feasibility assigned by students (Table 2, $P < 0.001$). The 3 recommendations with the lowest feasibility ratings in veterinarians were "separate cats from dogs in the waiting room," "examination table: let cats exit the carrier on their own," and "separate cats from dogs during hospitalization" (Table 2). Veterinary students also ranked "keep waiting time short" under the 3 measures with lowest feasibility, whereas "separate cats from dogs during hospitalization" ranked higher in feasibility. The highest feasibility was attributed by the veterinarians to "approach dogs slowly from the side and let them initiate contact on their own," "cat ward: provide hiding possibility in cage, for example, hiding box, blanket on front door" and "dog ward: provide possibility for urinating/defecating at least 3 times a day." Veterinary students also ranked "hospitalization: provide a familiar smell to animals, for example, blanket from home" under the 3 most feasible recommendations, whereas "dog ward: provide possibility for urinating/defecating at least 3 times a day" ranked lower in feasibility. Significantly lower ratings of feasibility in veterinary students compared with veterinarians were found for 9 of the 20 items (Table 2). Higher ratings of feasibility in veterinary students were only found for the items "advise owner on how to reduce stress during transport," "use muzzle training with dogs and advise owner on how to do it," and "report animal abuse to the authorities."

Discrepancy between importance and feasibility ratings in veterinarians

On the one hand, some recommendations were rated higher in importance than in feasibility: the highest average differences were found for "separate cats from dogs during hospitalization," "separate cats from dogs in the waiting room," and "keep waiting time short" (Table 3). On the other hand, measures were rated as more feasible than important: the measures with the largest average differences were "use food during examination/treatment to distract the animal," "hospitalization: provide a familiar smell to animals, for example, blanket from home," and "keep records on successful handling techniques for each patient."

Discussion

Sample selection

This study reports attitudes of a sample of self-selected veterinarians and veterinary students toward recommendations for improving dog and cat welfare in veterinary practice. Although in

general terms the response rate in this study could be considered low, in comparison with another recent survey on a similar topic (Dawson et al., 2016), the response rate in our population of veterinarians was somewhat higher (7.9% vs. 11.5% in our study). In the survey by Dawson et al. (2016), in particular, the response rates in practicing veterinarians (4.6%) were low compared to veterinarians with expertise in animal welfare (defined as members of animal welfare committees of veterinary associations) (37.5%). Furthermore, professional specialization of veterinarians has been shown to affect attitudes toward animals: veterinary behaviorists had more positive attitudes toward animals and were more critical regarding their use in research and food production (Gazzano et al., 2018). It is therefore likely that our sample consisted to a higher degree of veterinarians who are interested in animal welfare and animal behavior–related topics and may not be representative for vets with less interest in animal welfare. Regarding distribution of gender in our sample compared to the population of active Austrian veterinarians, women were overrepresented in our survey (72% vs. 55%). Concerning age, the age groups 30-39 and 40-49 seemed to be slightly overrepresented (27% vs 25%; 35% vs. 31%) and the age group between 20 and 29 years to be underrepresented (4% vs. 9%).

Importance and feasibility ratings

In general, the ratings of importance and feasibility of the recommendations were high. However, overall importance ratings by both veterinarians and veterinary students were higher than overall feasibility ratings, which may indicate that there are barriers toward implementation of the recommendations in daily routines.

Many recommendations regarding housing and management of animals, such as the separation of cats from dogs during hospitalization, providing hiding possibilities for cats, regular possibilities to urinate/defecate outdoors for dogs or providing so-called "tender loving care" to hospitalized animals were assigned high importance by veterinarians and veterinary students. This is mostly similar to the ratings of comparable items regarding the clinic environment in the survey (stage II) of Dawson et al. (2016). However, some differences in ratings can be found, for example, for items regarding outdoor access in dogs, separation of the dog from the owner, or use of positive reinforcement/food. The most striking difference seems to concern regular outdoor access for hospitalized dogs. The item "dog ward: provide possibility for urinating/defecating at least 3 times a day" ranked first in importance in our study (5.7 on scale from 1 to 6). This is in contrast to the rating of the item "provision of playtime/outdoor access/time outside cage, where appropriate" that received only a mean relative impact score of 2.8 on a scale from 0 to 4 in the Dawson et al. (2016) study. Furthermore, in our study, the item "day surgery: allow dog owner to be present until dog is anesthetized" received a comparably higher rating (5 on scale from 1 to 6) than "separation from owner" (2.9 on scale from 0 to 4) in Dawson et al. (2016). In contrast, use of food during procedures was rated as less important in our study (4.71 on scale from 1 to 6) compared to the result (3.4 on scale from 0 to 4) of Dawson et al. (2016). On the one hand, this probably reflects differences in wording/context of the questions. On the other hand, differences in daily routines might lead to different views of veterinarians regarding importance of recommendations. For example, food might be more commonly used in the countries surveyed (mainly Canada and US) by Dawson et al. (2016) compared to Austria and therefore the benefit of using positive reinforcement during procedures is already well accepted in those countries.

One recommendation that prevents a severe welfare problem in cats ranked very low on importance and also received low feasibility scores. This recommendation, "day surgery: keep time of unanesthetized cat waiting in carrier shorter than 30 minutes," was added to the survey after discussion with the group of veterinarians from the VÖK: it is common practice that cats that come to the veterinary practice for neutering are brought in the morning and retrieved by their owners in the evening. Often these cats are left in their carriers the entire day. Normally, cats eliminate between 2 and 5 times per day (Guy et al., 2014; Sung and Crowell-Davis, 2006), but in these cases, no possibility to eliminate is provided and often the carriers are so small that the cats cannot stand, sit upright, or lie fully extended (Rose et al., 2010). As a result of this discussion, it is now recommended that cats should stay in their carriers after handing them over to veterinary staff for a maximum of 30 minutes. Afterward, they have to be considered a hospitalized patient and housed according to the recommendations for hospitalized animals (Arhant et al., 2017). Low awareness of the problem and/or widespread use of this practice for economic reasons might have caused the low importance and feasibility ratings. Regarding this problem, there are several ways to improve management of cats during day surgery. Cats can be placed in a cage with a cat toilet within their carrier (with the door opened). This has the advantage that they can stay in the familiar environment of their carrier but are provided with a litter box at the same time. However, additional costs for cleaning and disinfecting cages between patients might be seen as a drawback. Alternatively, day surgery can be scheduled in a way so that cats do not experience extended stays in their carriers; owners could also be advised to use larger dog carriers, where it is possible to provide a cat toilet during the stay in the veterinary practice.

Low feasibility ratings were also found for recommendations that involve constructional aspects (e.g., separation of cats from dogs) and those that seem to be too time consuming, for example, to wait until the cat exits the carrier on its own. Interestingly, a similar recommendation for dogs (let them initiate contact on their own) was rated as the most feasible measure by veterinarians. Veterinarians might have experienced that cats need more time to make contact to the veterinary staff than dogs. However, a study showed that two-thirds of the cats left the carrier on the examination table on their own within 3 minutes (Pratsch et al., 2018). Guidelines for cat handling recommend taking time and being patient as this improves efficiency of handling (Carney et al., 2012; Rodan et al., 2011). A hurried approach might lead to fear and stress and prompt unwanted behavior such as aggression toward the veterinary team (Moffat, 2008).

Differences between veterinarians and veterinary students

In general, most recommendations, on which veterinarians and students scored differently, received lower importance and feasibility ratings by the students. Lower control of veterinary students on the decision how to act under a given circumstance might have led to lower feasibility scores. Regarding importance, the recommendations that relate to minimal use of restraint or to circumstances that can give the animal a feeling of security (e.g., examine the animal where it feels comfortable or allow dog owner to be present) received lower ratings by students. In other studies, veterinary students rated aspects such as pain or lack of shelter similarly as less relevant for dog welfare than veterinarians (Luño et al., 2017). Empathy toward animals and the ascription of sentience to animals were reported to decrease during the course of the veterinary studies, in particular, in male students (Paul and Podberscek, 2000), which might explain our results, as more than half of the students surveyed in our study were in the last third of their studies. Attitudes to animal welfare can be targeted by interventions: a course on animal welfare and ethics led to more positive attitudes to animals in first-year veterinary students (Hazel et al., 2011). As more advanced students might have less positive attitudes to animal welfare and reduced empathy toward animals

(Luño et al., 2017; Paul and Podberscek, 2000), courses on animal welfare, behavior, or handling should also be mandatory in the last years of the veterinary curriculum.

An additional factor that might explain differences between veterinarians and veterinary students is experience. Lower feasibility ratings of students with regard to minimal use of restraint, for example, might reflect positive experiences of veterinarians with minimal restraint during examinations and treatments. Higher feasibility scores assigned by veterinary students to recommendations involving advice to the pet's owner might indicate that veterinarians might have experienced low compliance in pet owners (Abood, 2007) and therefore are less willing to invest effort in advice to the owners that is not directly related to clinical aspects. Veterinarians play an important role in assuring welfare of companion animals as they are in a key position to target welfare problems by giving advice to owners (Dawson et al., 2016; Luño et al., 2017) but changing human attitudes and behavior is one of the greatest challenges regarding the improvement of animal welfare (Whay, 2007). Clearly, efficient methods to transfer knowledge to owners and to increase adherence to advice need to be found. Factors found to increase adherence in behavioral consultations were the client being informed about the goal of the intervention and understanding the advice given but also discussing the animal's needs in simple language, talking about how the animals perceives a given situation, and describing how its welfare improves in the long term if the owner follows the advice given (Lamb et al., 2018). This technique, which needs some time commitment by veterinary staff, can, for example, be used in preventive medicine/wellness consultations (Nappier et al., 2017; Robinson et al., 2016). Another, quicker way to target owners is to give them written advice (Blackwell et al., 2016) or providing them with contacts to knowledgeable sources of information (Roshier and McBride, 2013). Depending on the resources of the veterinary team, the different possibilities to target welfare-related topics should be tailored to the possibilities of the individual veterinary practice.

Veterinarians are quite concerned about animal abuse and active cruelty (Luño et al., 2017; Yeates and Main, 2011). However, dealing with a case in veterinary practice can be challenging and veterinarians might refrain from reporting a case to the authorities because of, for example, economic, safety, or confidentiality concerns (Arkow, 2015). Indeed, the recommendation "report animal abuse to the authorities" received higher importance and feasibility ratings by veterinary students in our study. However, when asked about the importance of abuse or active cruelty for dog welfare, the ratings of veterinary students and veterinarians did not differ significantly (Luño et al., 2017). These results point to similar levels of concern but differences in behavioral intentions to deal with such a problem. Reporting abuse to the authorities might be the last resort for veterinarians working in practice. Other measures such as documentation and risk assessment, discussion of the case with colleagues, the hospitalization of the animal, and giving advice to receptive owners are recommended (Arkow et al., 2011). Cases should be reported when problems cannot be resolved, when the risk of recurrence is high or the conditions may be life threatening. In Austria, veterinarians are committed to confidentiality toward their clients. As animal protection is in the public's interest, this commitment to confidentiality does not apply to reporting animal abuse cases to the authorities (Arhant et al., 2017).

Discrepancy between importance and feasibility ratings

Regarding the discrepancy between importance and feasibility ratings, in particular, recommendations rated higher in importance than in feasibility are relevant from an animal welfare point of view. We found the highest discrepancy and overall lowest feasibility rating for recommendations involving constructional aspects such as separation of cats from dogs in the waiting room or during hospitalization. Exposure to dogs is known to cause fear reactions in many cats (Levine et al., 1990), but due to the view that separation of cats from dogs is not easily feasible in practice, veterinarians might accept having a waiting area and housing for both species together. If space for separation is not readily available in existing buildings, separation can be achieved by time management or at least by using visual barriers for creating separated areas (Carney et al., 2012). When planning new veterinary clinics, recommendations such as separation of species in waiting/examination rooms or during hospitalization should be taken into consideration and put into practice.

On the other hand, measures rated as more feasible than important are at risk to be disregarded by veterinarians because their impact on welfare is assumed to be low. For example, the use of food during the examination or during treatment to distract or direct the animal can be very efficient and spare time of veterinary staff (Yin, 2009). If used in the form of classical counterconditioning, it will result in a positive association with the procedure and will improve the animal's behavior and welfare over time. In addition, it might lead to a decrease in aggressive behavior toward staff and a reduction of the number of animals that need to be sedated (Westlund, 2015).

Overall, we suggest that, in addition to continuing education, veterinarians should receive support for the implementation of recommendations how to improve welfare in veterinary practice. Welfare assessment protocols can help to assess the current conditions (Dawson et al. 2018). Based on these results, professional guidance and staff training tailored to the needs of the individual practice/clinic might ease implementation. Guided practical experience with new techniques can help to change attitudes and behavior toward animals (Hazel et al., 2015), and this might help to overcome preconceptions such as perceived time constraints.

Conclusion

Although the respondents of this survey assigned high importance and high feasibility to most of the recommendations, there might be constraints for the implementation of some of the recommendations in practice, in particular, those related to constructional aspects or those perceived to be too time-consuming or leading to economic losses. Furthermore, the sample presumably consisted of veterinarians and veterinary students interested in animal welfare. Therefore, in a population with less interest for animal welfare, veterinarians might perceive the recommendations as less important and less feasible. Therefore, those veterinarians in particular should be targeted, and further research on how to overcome barriers for the implementation of recommendations to improve dog and cat welfare in veterinary practice should be conducted.

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Authorship statement

The study was designed by Christine Arhant, Nicole Hörschläger, and Josef Troxler. The data collection was carried out by Christine

Arhant and Nicole Hörschläger. The data were analyzed by Christine Arhant and Nicole Hörschläger. The article was drafted by Christine Arhant. It was revised and critically discussed by Nicole Hörschläger and Josef Troxler. The final version was approved by all authors.

Ethical considerations

The study did not include live animals and the ethics committee of the Medical University of Vienna and the University of Veterinary Medicine, Vienna, stated that the study did not require a vote.

Conflict of interest

The authors declare no conflict of interest.

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