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ORIGINAL RESEARCH

Veterinary surgeons', veterinary nurses' and owners' experiences of feline telemedicine consultations during the 2020 COVID-19 pandemic

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Abstract

Background: There has been increasing provision of veterinary telemedicine consultations, particularly during the COVID-19 pandemic; however, little evidence currently exists examining these remote consultations. The aim of this cross-sectional study was to explore veterinary and cat owner experiences of telemedicine consultations during the pandemic.

Methods: Two questionnaires, one aimed at veterinary professionals and one at cat owners, were launched in September 2020. Questions explored the type of consultation conducted remotely, the perceived advantages and disadvantages of telemedicine, and the role of telemedicine in the future of veterinary practice.

Results: Responses were received from 242 veterinary professionals and 98 owners with experience of telemedicine. Monitoring and advice consultations were felt to be most suited to telemedicine. Reduced stress for owners/cats was seen as an advantage of telemedicine, while lack of clinical examination and risk of misdiagnosis were viewed as disadvantages. Most respondents (85.7% [$n = 84/98$] of owners; 67.4% [$n = 163/242$] of veterinary professionals) felt practices should continue to offer telemedicine consultations.

Conclusion: With increasing pet ownership and practice workload, telemedicine may play a crucial role in the future of veterinary practice. Future work should focus on a strategic approach to feline telemedicine, integrating it alongside face-to-face visits and developing technologies to maximise its advantages.

KEYWORDS
feline medicine, primary care, remote consultations, small animal consultations, telemedicine

INTRODUCTION

Telemedicine can be described as 'the use of electronic communication and information technologies to provide clinical healthcare remotely',[1] with the provision of veterinary services via video link, telephone, text and any other remote means. Providing virtual care for veterinary patients is not a new concept, with technology used to enable communication between veterinary surgeons for many years. For example, phone lines were used in 1980 to transmit electrocardiograms to cardiologists, allowing veterinary patients in primary care to benefit from their expertise remotely.[2] The use of technology to enable remote communication between veterinary surgeons and clients has grown in recent years, and the COVID-19 pandemic saw many veterinary surgeons in the UK and beyond providing telemedicine on a wider scale to minimise contact.

Telemedicine is frequently offered in human healthcare, with a larger body of evidence surrounding its use. Approximately 15% of physicians used telemedicine, with those working in larger practices or in non-metropolitan areas using telemedicine more frequently.[3] Telemedicine has been credited with improving access to care for those in rural communities, with transport issues or where there is a shortage of providers.[4] It has also been suggested that telemedicine may provide a reliable means of assessing patients, even when considering the absence of a clinical examination. For example, a comparison of telemedicine and bedside examinations when

assessing febrile children and children with respiratory distress found good to excellent agreement in all cases.[5] Paediatric care is often considered a useful comparator for veterinary consultations, and the veterinary surgeon–client–patient interaction may more closely reflect the physician–parent–child interaction than a straightforward physician–patient interaction. However, the relative importance of the clinical examination for veterinary compared with human patients remains unclear, so caution should be exercised when extrapolating these findings to veterinary practice. In addition, concerns have been raised that prescribing practices differ significantly between telemedicine and face-to-face consultations. One study[6] found that 52% of children with acute respiratory infections were prescribed antimicrobials during telemedicine consultations, compared with just 32% during primary care visits.

Evidence relating to the use of telemedicine in veterinary practice is more limited; however, some evidence of the provision of remote care does exist. Consultations by board-certified veterinary behaviourists for the treatment of canine separation anxiety[7] and aggression[8] were conducted either remotely via fax or in-person. Significant improvements were seen in both groups, with no significant difference between remote and in-person consultations. Other studies have found benefits of telemedicine in other scenarios (eg, post-neutering checks in dogs)[9]; however, it is unclear whether these findings apply across other types of consultation and for other species.

Despite the increase in telemedicine provision in general veterinary practice, there is still relatively little evidence documenting veterinary surgeons' and clients' experiences of telemedicine consultations.[10] The aim of this study was to explore veterinary surgeon/veterinary nurse (VN) and cat owner experiences of feline telemedicine consultations during the COVID-19 pandemic and gather opinions of whether and how telemedicine should be offered by veterinary practices for feline patients in the future.

MATERIALS AND METHODS

Population of interest

The target population for the veterinary questionnaire consisted of veterinary surgeons and VNs with experience of at least one feline telemedicine consultation during the COVID-19 pandemic. Similarly, the target population for the owner questionnaire consisted of cat owners or carers with experience of at least one telemedicine consultation during the COVID-19 pandemic. During the questionnaire, telemedicine was defined as 'veterinary/VN consultations which are not in person but instead have been conducted by video, phone or email'. Respondents could take part from anywhere in the world, had to be at least 18 years old and could only complete one questionnaire per household.

Questionnaire design

Both the veterinary and owner questionnaires comprised 14 questions. Initial questions asked basic demographic data (i.e., whether a cat owner, breeder, shelter worker, etc., for the owner questionnaire, whether a veterinary surgeon, VN, etc., for the veterinary questionnaire, and country resided in for both). Respondents were then asked whether they had any experience of telemedicine during the COVID-19 pandemic to ensure that they met the inclusion criteria, with those answering no directed out of the survey. The remaining questions focused on the method of telemedicine (e.g., video consultation, telephone consultation, etc.), the type of consultation (e.g., emergency assessment, preventative healthcare, routine check-up, etc.), the perceived advantages/disadvantages of telemedicine and whether telemedicine should continue to be offered in the future. The questions took a variety of forms, including numerical scoring, selecting a single option from a drop-down menu, multiple choice and free text boxes. The initial draft of the questionnaire was piloted with a small group of colleagues, and any suggested amendments were made prior to launch of the final questionnaire. The final questionnaire was hosted on the Vet Professionals website in full compliance with General Data Protection Regulation (EU) 109 2016/679.

Questionnaire distribution

The owner survey was launched on 1 September 2020, and the veterinary survey was launched to members of VetPartners practices on 3 September 2020 and then to the wider veterinary profession on 15 September 2020. An invitation to complete the relevant survey was emailed to the owners and veterinary surgeons/VNs on the Vet Professionals database and was also shared with small animal practices within the VetPartners group by email and internal communications (eg, Facebook). The Vet Professionals database contains approximately 2000 cat owners, veterinary surgeons and VNs from around the world, although approximately half of the owners in this database are from the UK, while VetPartners has approximately 2500 staff in small animal practice teams across the UK. After the initial invitation to complete the relevant survey, three further email reminders were sent for both the owners and veterinary surveys between the initial launch and 20 October 2020. Snowball sampling, where existing respondents helped recruit further respondents by sharing the survey with their acquaintances, was also conducted. Surveys were also promoted on social media platforms (e.g., Facebook and Twitter) alongside promotion by International Cat Care, Cats Protection and Vet Times. Surveys were closed to all respondents on 1 December 2020. Data collected from the survey were collated and stored using FormSite (Vroman Systems) before downloading to Microsoft Excel for analysis.

Data management and analysis

Data processing and descriptive statistics were performed in Microsoft Excel. Responses around type of telemedicine were complex, with many selecting multiple combinations of modalities, so these were recoded into simplified categories representing each component of the interaction; for example, a respondent who said they used phone consultations in combination with sharing videos would be recoded into both the 'phone consultation' and 'sharing videos' categories. Free text responses to questions on the advantages and disadvantages were scanned for common themes and then recoded into set categories. Each response could be included in multiple categories where applicable; for example, a veterinarian who stated that disadvantages of telemedicine were not being able to examine the patient and worrying that they had missed something would be recoded into both 'inability to perform complete clinical examination' and 'concerns about misdiagnosis and/or delayed diagnosis'.

RESULTS

Basic data

After data cleaning, there were 196 responses from cat owners/carers and 269 responses from veterinary surgeons/VNs. Of these, 98/196 (50.0%) cat owners and 242/269 (90.0%) veterinary surgeons/VNs had experience of telemedicine consultations; these responses were taken forward for further analysis. Of these 98 cat owners, 39 (39.8%) had experienced one telemedicine consultation and 59 (60.2%) had experienced more than one, with 17 (17.3%) experiencing five or more telemedicine consultations (median 2; interquartile range 1–3).

Demographics

Of the 98 respondents to the owner survey, 97 (99.0%) were cat owners, three (3.1%) were cat breeders and 20 (20.4%) also worked in animal care (including cattery workers, veterinary professionals, etc.). Most respondents to the veterinary survey were veterinary surgeons (n = 218/242; 90.1%), while the remaining 24 (9.9%) were VNs.

Most respondents were from the UK (n = 83/98 [84.7%] owners; n = 204/242 [84.3%] veterinarians/VNs), with the remaining respondents being from outside the UK (n = 15/98 [15.3%] owners; n = 38/242 [15.7%] veterinarians/VNs). In total, 21 different countries were represented.

Half of the veterinary respondents worked in a corporately owned practice (n = 121/242; 50.0%), with 84 (34.7%) working in an independently owned practice, 10 (4.1%) in a charity-owned practice, seven (2.9%) in a referral practice, four (1.7%) in a university-owned general practice, 18 (7.4%) for a specialist telemedicine service and 10 (4.1%) selected 'other'. Just over a quarter of the responses were from veterinarians or VNs working in VetPartners practices (n = 71/242; 29.3%), and the rest were from other practices.

Method of telemedicine

Phone consultations were the method of telemedicine experienced by the largest proportion of cat owners, while sharing photos and phone consultations were used by almost all veterinary respondents (Figure 1). Veterinary respondents using video consultations utilised a range of platforms, including bespoke video consult platforms (n = 55/113; 48.7%), WhatsApp (n = 29/113; 25.7%), Zoom (n = 25/113; 22.1%), Facetime (n = 13/113; 11.5%) and Skype (n = 11/113; 9.7%).

In total, 36 respondents to the owner survey and 223 respondents to the veterinarian/VN survey had experienced more than one method of telemedicine. Approximately half of these owners and veterinarians said their preferred method involved a phone consultation, while one-third of owners and approximately half of veterinarians said their preferred method involved sharing photos between the owner and the practice (Figure 2).

Type of consultation

Respondents to the owner survey had most frequently received a telemedicine consultation for the monitoring or management of an ongoing health problem (Figure 3), although a range of different consultation types were represented among the respondents. Most respondents to the veterinary survey had used telemedicine consultations for monitoring/management of an ongoing health problem, new non-emergency illnesses, advice and repeat prescriptions, while just over half had used telemedicine for emergency assessment and preventative healthcare (Figure 3).

Of the respondents to the veterinary survey with experience of telemedicine for more than one type of consultation (n = 227/242; 93.8%), most felt that the success of the telemedicine consultation varied with the type of consultation (n = 164/227; 72.2%), while 39 (17.2%) felt the consultation type did not make a difference, 20 (8.8%) were not sure and four (1.8%) selected 'other'.

Of the veterinary respondents who stated success of telemedicine varied with type of consultation (n = 164), most selected consultations to monitor/manage an ongoing health problem as well suited to telemedicine followed by repeat prescription requests, then advice (Figure 4).

Cats versus other species

Just over half of the veterinary respondents (n = 128/242; 52.9%) felt that the species of the animal

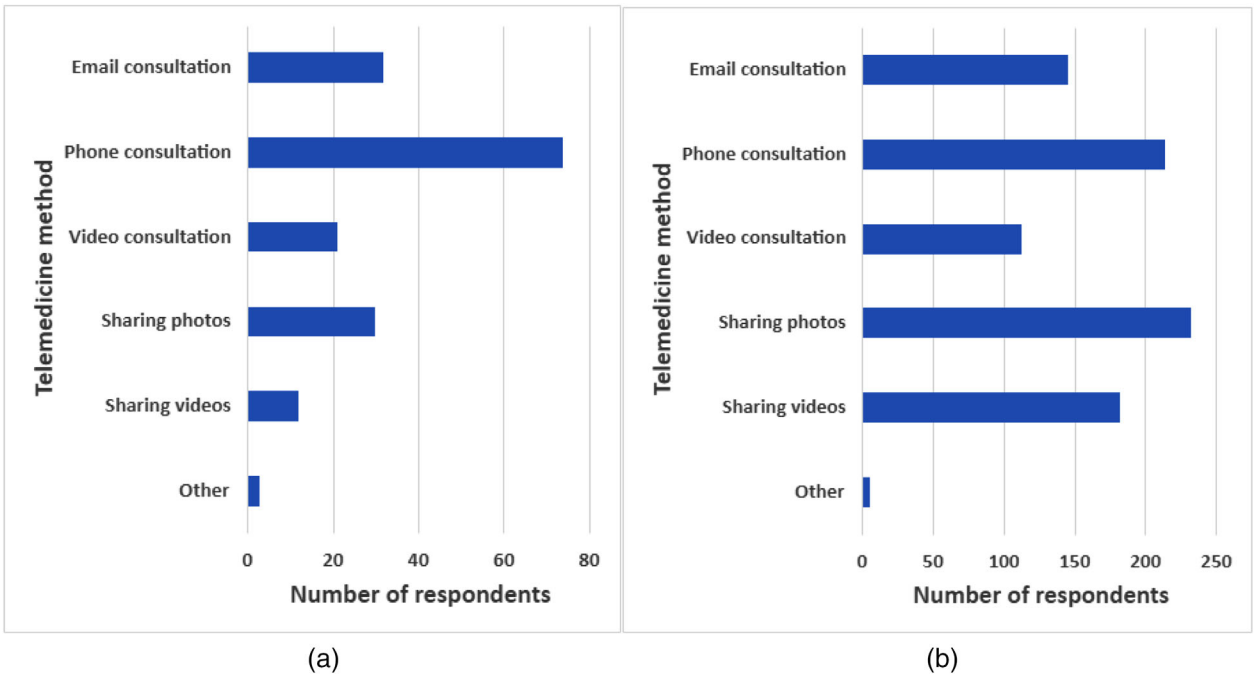

FIGURE 1 Number of respondents with experience of each telemedicine method from (a) the owner survey ($n = 98$ respondents) and (b) the veterinarian/veterinary nurse survey ($n = 242$ respondents). Respondents were able to select all telemedicine methods that they had experience with

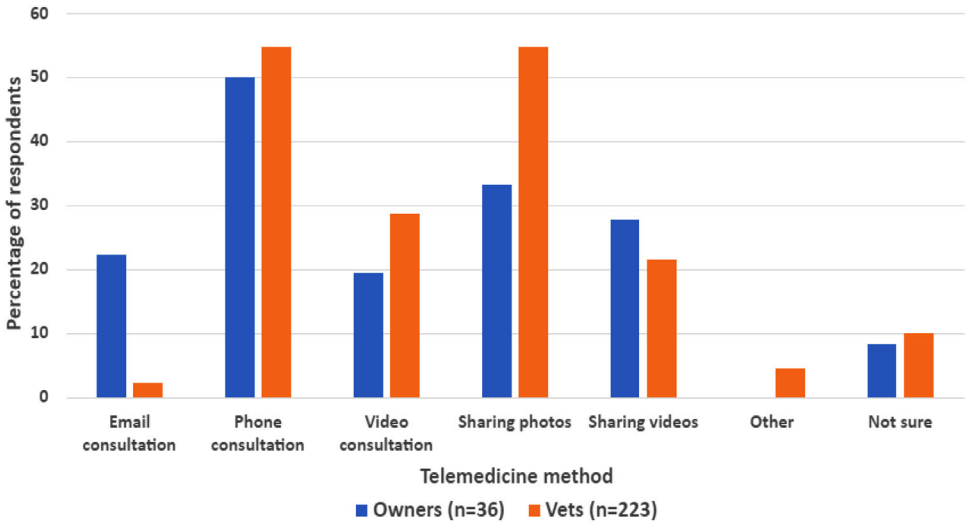

FIGURE 2 Preferred telemedicine method for respondents to the owner survey ($n = 36$) and veterinarian/veterinary nurse survey ($n = 223$) with experience of more than one type of telemedicine. Percentages total more than 100 as respondents were able to select a combination of two methods (e.g., sharing photos alongside a phone consultation) if that is what they had experienced/preferred

made no difference to the success of telemedicine consultations. A further 57 (23.6%) felt that telemedicine consultations were less successful for cats compared with other species, 27 (11.2%) felt they were more successful for cats, and 30 (12.4%) were not sure. Free text comments from those who felt telemedicine was less successful for cats often focused on the owner's ability to identify illness in and handle their cats ('they tend to be less compliant with owner'; 'cats are so subtle that it's easy for owners to miss signs'), while those who felt it was more successful for cats often focused on the stress aspect ('cats are much more relaxed at home'; 'feline clients embraced it more and were more relaxed').

Advantages/disadvantages of telemedicine

Owners

Most owners ($n = 73/98$; 74.5%) described at least one advantage of telemedicine for their cat, while around a quarter ($n = 25/98$; 25.5%) felt there were no advantages for the cat. The advantage most frequently mentioned was less stress for the cat compared with a face-to-face consultation ($n = 55/98$; 56.1%), followed by avoiding transportation ($n = 32/98$; 32.7%). Being assessed more quickly ($n = 15/98$; 15.3%) was also mentioned by some owners, and some mentioned avoiding the need to

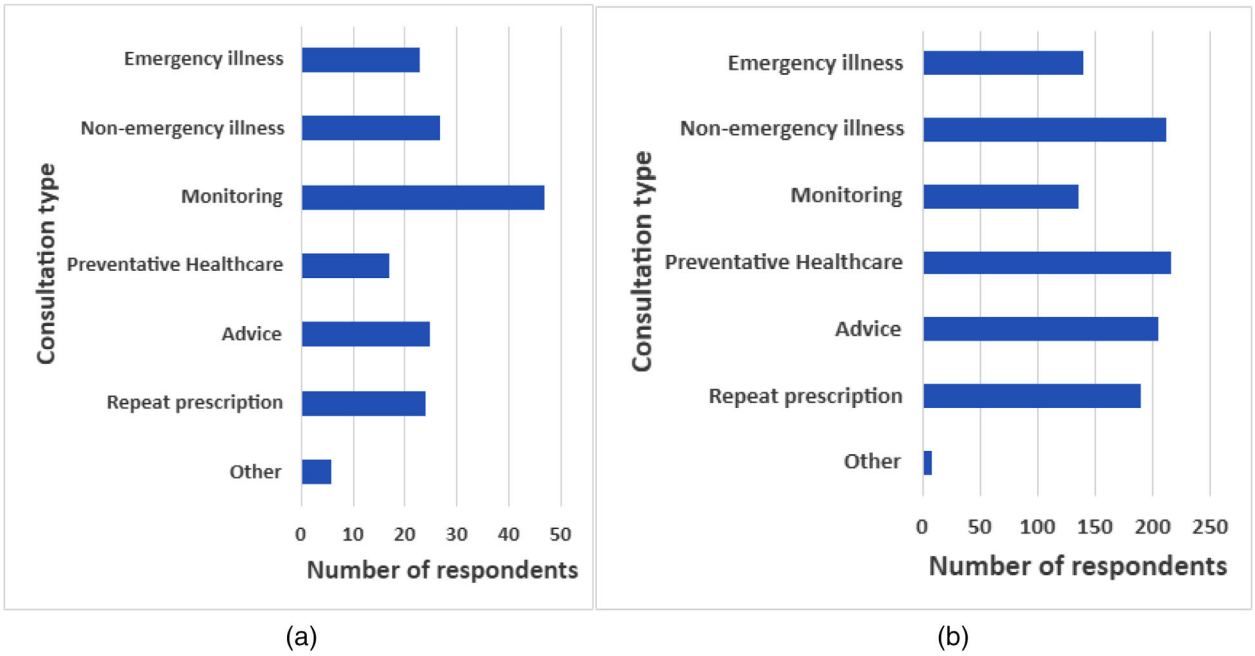

FIGURE 3 Number of respondents with experience of telemedicine for each consultation type from (a) the owner survey ($n = 98$ respondents) and (b) the veterinarian/veterinary nurse survey ($n = 242$ respondents). Respondents were able to select all consultation types that they had experience of telemedicine with

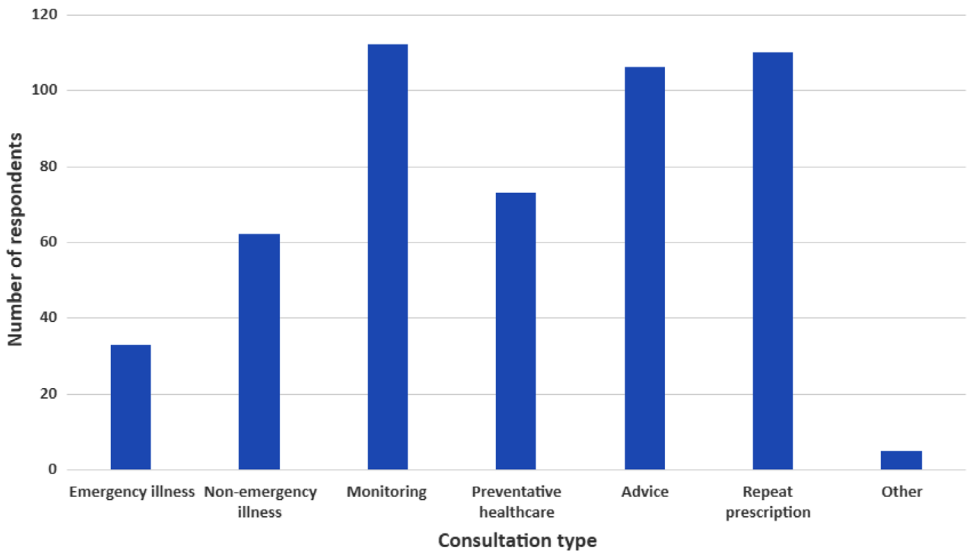

FIGURE 4 Number of respondents to the veterinarian/veterinary nurse survey selecting each consultation type as best suited to telemedicine (out of 164 respondents with experience of more than one type of telemedicine). Numbers total more than 164 as respondents could select all consultation types they felt were best suited to telemedicine

spend time in the practice waiting room ($n = 7/98$; 7.1%).

Most owners ($n = 68/98$; 69.4%) also described one or more disadvantages of telemedicine for the cat, while 30 (30.6%) felt there were no disadvantages to telemedicine for their cat. The most frequently mentioned disadvantage was lack of clinical examination ($n = 50/98$; 51.0%), followed by delays in receiving a diagnosis or treatment ($n = 18/98$; 18.4%) and the risk of misdiagnosis ($n = 17/98$; 17.3%).

Most owners ($n = 74/98$; 75.5%) listed one or more advantages of telemedicine for themselves, while 24 (24.5%) felt there were no advantages. Convenience was the most frequently mentioned advantage ($n = 48/98$; 49.0%), followed by time benefits ($n = 24/98$; 24.5%) and less stress for themselves ($n = 24/98$; 24.5%). Ten owners (n = 10.2%) mentioned the safety of not having to visit in-person during a pandemic, and six (6.1%) mentioned the reduced cost of the consultation. Most owners ($n = 71/98$; 72.4%) identified at least one disadvantage for themselves from telemedicine, with 27 (27.6%) not listing any disadvantages. The most common disadvantage given was difficulty communicating with the veterinarian ($n = 43/98$; 43.9%), followed by a feeling that diagnosis and/or treatment were delayed by the process ($n = 29/98$; 29.6%). Some also felt that the time taken and cost of telemedicine (both $n = 10/98$; 10.2%) were

disadvantages, while some found telemedicine consultations more stressful for themselves (n = 9/98; 9.2%).

Veterinarians/VNs

Almost all respondents to the veterinary survey (n = 238/242; 98.3%) identified at least one advantage of telemedicine consultations, with only four (1.7%) stating there were no advantages. The most common advantage mentioned was less stress for the cat (n = 192/242; 79.3%), followed by a reduced need for unnecessary travel to the surgery (n = 76/242; 31.4%) and the ability to assess the animal's behaviour in their home environment (n = 67/242; 27.7%). Reduced stress for the owner (n = 59/242; 24.4%), reduced time pressure (n = 40/242; 16.5%) and convenience for the owner (n = 37/242; 15.3%) were also frequently mentioned. Some respondents also mentioned improved communication with owners (n = 28/242; 11.6%), safety (n = 27/242; 11.2%) and cost advantages (n = 4/242; 1.7%) of telemedicine.

Almost all respondents to the veterinary survey (n = 236/242; 97.5%) identified one or more disadvantages to telemedicine, with only six (2.5%) listing no disadvantages. The most common disadvantage given was inability to perform a complete clinical examination (n = 208/242; 86.0%), followed by concerns about misdiagnosis and/or delayed diagnosis (n = 68/242; 28.1%), communication difficulties (n = 59/242; 24.4%) and technical difficulties (n = 52/242; 21.5%). Other disadvantages mentioned were increased time pressure (n = 16/242; 6.6%), challenges around costs for owners (n = 14/242; 5.8%) and inability to administer injectable treatments (n = 12/242; 5.0%).

Advantages versus disadvantages

Of the 98 respondents to the owner survey, 37 (37.8%) said the advantages of telemedicine outweighed the disadvantages, while 33 (33.7%) said they did not and 28 (28.6%) were not sure. Only approximately a quarter of respondents to the veterinary survey (n = 64/242; 26.4%) felt the advantages of telemedicine outweighed the disadvantages, while 124 (51.2%) said they did not and 54 (22.3%) were not sure.

Future of telemedicine

Most owners (n = 84/98; 85.7%) felt that practices should continue to offer telemedicine as one option in the future, while eight (8.2%) felt practices should not offer this option, and six (6.1%) were not sure. However, approximately half of owners (n = 50/98; 51.0%) stated that they would still prefer a face-to-face consultation over a telemedicine consultation, while 27 (27.6%) said they would prefer a telemedicine consultation, three (3.1%) were unsure and 18 (18.4%) selected 'other', with some of these suggesting a combination of the two, or that it may depend upon the reason for the consultation.

Most veterinarians/VNs (n = 163/242; 67.4%) also felt telemedicine consultations should be an option, where appropriate, in the future, while 40 (16.5%) did not think these should be offered, and 39 (16.1%) were not sure. Most veterinarians/VNs (n = 224/242; 92.6%) felt that it would be appropriate for Member of the Royal College of Veterinary Surgeons (MRCVS) registered veterinary surgeons to conduct telemedicine consultations, and 192 (79.3%) felt that it would be appropriate for qualified VNs to conduct these consultations. A smaller number also felt that these consultations could be conducted by veterinary students (n = 32/242; 13.2%) or trainee VNs (n = 28/242; 11.6%) under appropriate supervision, and nine (3.7%) selected 'other'.

DISCUSSION

The results of the current study represent an important addition to the existing evidence base on telemedicine at a time of much change in the UK veterinary profession, where new strategies may be needed for managing a shortage of veterinary surgeons and VNs, alongside a growing pet population. To the authors' knowledge, this study is novel in being the first to focus solely on feline telemedicine consultations, considering both the experience of their owners and of the veterinarians/VNs involved in their care. The RCVS Professional Code of Conduct for Veterinary Surgeons references telemedicine, with one section of the supporting guidance stating 'specific advice provided remotely, for example via phone or video-link with or without additional physiological data (commonly referred to as telemedicine or telehealth), should only be given to the extent appropriate without a physical examination of the animal. The more specific the advice, the more likely it is that the animal's owner should be advised to consult a veterinary surgeon in person for a physical examination'.[11] While small animal veterinary practice saw a large-scale move to telemedicine during the pandemic out of necessity for the health and safety of staff and clients, this highlights that there may be a role going forward for telemedicine under certain scenarios. The crucial role of telemedicine in managing the increasing workload faced by UK veterinary practices has recently been highlighted by some in the charity sector.[12]

A previous study[13] conducted a survey of veterinary surgeons to examine their use of and attitudes towards communication technologies. The results suggested that telemedicine may be more appropriate for some scenarios than others, with postoperative checks, monitoring of diabetic patients and nutritional counselling all suggested as potentially appropriate candidates for telemedicine. This echoes the findings of the current study, in which respondents to the veterinary survey highlighted telemedicine as best suited to monitoring, advice and repeat prescription consultations, and previous findings that telemedicine was most

frequently used for ongoing case management.[14] Further research could focus on examining the success of telemedicine consultations for specific scenarios to identify where this could provide a useful, and potentially more efficient, alternative to face-to-face consultations. Some work has already been done in this area, with dogs randomised to receive a face-to-face or virtual recheck following routine neutering.[9] While owners from both groups were satisfied with their recheck, owners in the virtual group noted that their check took less time and their dogs were less stressed than if they had to travel to the clinic, with no dogs in this group suffering a complication requiring a subsequent visit to the clinic. As this study was limited to 30 dogs in total, it is unclear whether these results will be applicable to all clinics, other species and other scenarios, but the results suggest that further work to explore the benefits of telemedicine is justified.

Interestingly, respondents to both the owner and veterinary questionnaires had frequently used telephone consultations, a finding echoed by recent research,[15] and viewed it as their preferred method of telemedicine, rather than email or video consultations. Veterinary respondents also rated the sharing of photos as a preferred method more frequently than owners. Some owners cited technical problems as a disadvantage to telemedicine, suggesting that technology may be a barrier for some owners, which may be a particular problem for the sharing of photos and videos or the use of video consultations. Identifying ways to increase access to or ease of use of these technologies for owners may help to optimise the success of telemedicine.

In terms of the advantages and disadvantages of telemedicine, the results of the current study found reasonable consistency between owners and veterinary professionals. Both groups highlighted reduced stress to both the patient and the owner, which is particularly important in light of the findings of the Bayer veterinary care usage study, where cat owners were more likely to perceive veterinary visits as stressful for themselves and their pets than dog owners.[16] The current study also highlighted other ways that telemedicine could reduce stress, such as no time travelling or time in the waiting room. As a naturally solitary species, cats may be particularly prone to stress associated with the veterinary visit, which often makes a meaningful clinical examination difficult and potentially affects the results of investigations, such as blood pressure monitoring.[17] However, there was also consensus on the disadvantages of telemedicine, with the inability to perform a physical examination mentioned most frequently and concerns about a delayed or incorrect diagnosis common among both owners and veterinary professionals.

These findings highlight the perceived importance of clinical examination in the diagnosis, treatment and management of disease in veterinary patients. Previous work examining small animal consultations in general practice found that cats were more likely to receive a full clinical examination, rather than a more focused one, than canine or rabbit patients, and that full examinations are more likely to lead to discussion about additional health problems than a more focused clinical examination.[18] However, the role of clinical presentation, history taking and consultation type in influencing the type of clinical examination performed is unclear here. It has been shown that preventive healthcare consultations were also more likely to involve a full clinical examination than consultations for a particular health problem,[18] yet more veterinarians in the current study felt preventative healthcare consultations were more suitable for telemedicine than consultations for an emergency or non-emergency illness.

As solitary predators that, depending on lifestyle, may spend more time outside the house and away from their owners, cats may be better able to hide signs of illness, and cat owners may feel less confident in providing a thorough clinical history than owners of more social species, such as dogs. Interestingly, while just over half of veterinary respondents felt the species made no difference to the success of telemedicine, those who did feel the species made a difference more frequently cited feline consultations as being less successful than canine consultations, suggesting that the trade-off of reducing stress versus lack of clinical examination may be perceived differently for different species by some. Identifying scenarios where a face-to-face physical examination is needed while also trying to maximise the information obtained during a telemedicine consultation could help to successfully integrate telemedicine, where appropriate, into modern veterinary medicine. For example, technologies and resources to facilitate the sharing of photos and videos, optimise clinical history taking and collect data from smart devices (e.g., activity monitors and smart feeders/drinkers) could help to address many of the disadvantages of telemedicine raised in this study.

One limitation of the current study is that it focused on telemedicine during the COVID-19 pandemic, where a rapid switch was made from face-to-face consultations to telemedicine out of necessity and safety for staff and clients. As a result, the experiences of telemedicine reported here may not reflect the reality of telemedicine conducted in a more planned, strategic way, so future work could aim to find ways in which the benefits of telemedicine could be utilised, where appropriate, while minimising the drawbacks. With the majority of both owner and veterinary respondents in the current study feeling that practices should continue to offer telemedicine in the future, finding a way to effectively integrate telemedicine, where appropriate, into modern veterinary practice could be an important priority for the profession in the near future. In addition, the majority of respondents were from the UK, so it is unclear how closely the opinions gathered during this study reflect those globally. Recoding of free text on the advantages and disadvantages of telemedicine required some degree of interpretation, which may be a source of bias, but categories were kept broad to minimise over-interpretation of responses. A further limitation is the conducting of the survey during the COVID-19 pandemic, when

veterinary practices had very heavy workloads, which may have meant that the respondents who were able to complete the survey were not representative of the wider profession during this time. A separate link was launched for respondents from VetPartners practices so that these data could also be used for internal audit and quality improvement; however, this proved difficult, as only a small number of these responses were received.

In conclusion, telemedicine may play a crucial role in the future of feline veterinary care. In the wake of the COVID-19 pandemic, future efforts should focus on a strategic approach to feline telemedicine, identifying scenarios where it can be used for maximum benefit to veterinary practice efficiency, staff morale and patient welfare. The findings from this study suggest that consultations involving feline patients that are highly vulnerable to stress, particularly in the monitoring and management of ongoing health problems, may be potential candidates for the use of telemedicine.

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CONFLICT OF INTEREST

The authors received financial support from MSD Animal Health. However, the topic of study, study design, statistical analysis, interpretation of the results, decision to publish and writing of the manuscript were undertaken independently of MSD Animal Health.

AUTHOR CONTRIBUTIONS

Sarah M.A. Caney and Rachel S. Dean designed and distributed the survey. Danielle A. Gunn-Moore assisted with the ethical approval process. Natalie J. Robinson performed data cleaning and analysis. All authors contributed to the manuscript.

DATA AVAILABILITY STATEMENT

Due to privacy and ethical concerns, supporting data are not publicly available, as participants of this study did not agree for their data to be shared beyond the research team.

ETHICAL APPROVAL

Approval was obtained from the Human Ethical Review Committee (HERC) at the Royal (Dick) School of Veterinary Studies, The University of Edinburgh for the collection of data through online questionnaires of veterinary surgeons/veterinary nurses and feline owners and subsequent analysis of these data (approved 24 August 2020, references: HERC_558_20 and HERC_559_20).

REFERENCES

1. Royal College of Veterinary Surgeons. RCVS review of the use of telemedicine within veterinary practice: summary analysis. [Cited 2021 Sep 3]. Available from: https://www.rcvs.org.uk/document-library/telemedicine-consultation-summary/
2. Robertson TA. Telemedicine—creating the virtual veterinary hospital. Compend Contin Educ Pract Vet. 1999;21(2):128–33.
3. Kane CK, Gillis K. The use of telemedicine by physicians: still the exception rather than the rule. Health Aff. 2018;37(12):1923–30.
4. Shigekawa E, Fix M, Corbett G, Roby DH, Coffman J. The current state of telehealth evidence: a rapid review. Health Aff. 2018;37(12):1975–82.
5. Siew L, Hsiao A, McCarthy P, Agarwal A, Lee E, Chen L. Reliability of telemedicine in the assessment of seriously ill children. Pediatrics. 2016;137(3):e20150712.
6. Ray KN, Shi Z, Gidengil CA, Poon SJ, Uscher-Pines L, Mehrotra A. Antibiotic prescribing during pediatric direct-to-consumer telemedicine visits. Pediatrics. 2019;143(5):e20182491.
7. Cottam N, Dodman NH, Moon-Fanelli AA, Patronek GJ. Comparison of remote versus in-person behavioral consultation for treatment of canine separation anxiety. J Appl Anim Welf Sci. 2008;11(1):28–41.
8. Dodman NH, Smith A, Holmes D. Comparison of the efficacy of remote consultations and personal consultations for the treatment of dogs which are aggressive towards their owners. Vet Rec. 2005;156(6):168–70.
9. Bishop GT, Evans BA, Kyle KL, Kogan LR. Owner satisfaction with use of videoconferencing for recheck examinations following routine surgical sterilization in dogs. J Am Vet Med Assoc. 2018;253(9):1151–7.
10. Teller LM, Moberley HK. Veterinary telemedicine: a literature review. Vet Evidence. 2020;5(4).
11. Royal College of Veterinary Surgeons. Professional code of conduct for veterinary surgeons: supporting guidance 2. Veterinary care. [Cited 2021 Sep 3]. Available from: https://www.rcvs.org.uk/setting-standards/advice-and-guidance/code-of-professional-conduct-for-veterinary-surgeons/supporting-guidance/veterinary-care/
12. Westgate J. 'No going back' – remote consults 'critical' to PDSA. 2021 [cited 2021 Sep 3]. Available from: https://www.vettimes.co.uk/news/no-going-back-remote-consults-critical-to-pdsa/
13. Kogan L, Hellyer PW, Ruch-Gallie R, Rishniw M, Schoenfeld-Tacher R. Veterinarians' use and perceptions of information and communications technologies. Med Res Arch. 2016;4(2):Article 2. [Cited 2021 Sep 3]. Available from: https://journals.ke-i.org/mra/article/view/502
14. Bishop GT, Rishniw M, Kogan LR. Small animal general practice veterinarians' use and perceptions of synchronous video-based telemedicine in North America during the COVID-19 pandemic. JAVMA. 2021;258(12):1372–7.
15. Dublin RJ, Angliss G, Eng C, Cisneros T, Griffon D. Veterinarians' perceptions of COVID-19 pandemic-related influences on veterinary telehealth and on pet owners' attitudes towards cats and dogs. JAVMA. 2021;259(10):1140–7.
16. Volk JO, Felsted KE, Thomas JG, Siren CW. Executive summary of the Bayer veterinary care usage study. JAVMA. 2011;238(10):1275–82.
17. Quimby JM, Smith ML, Lunn KF. Evaluation of the effects of hospital visit stress on physiologic parameters in the cat. J Feline Med Surg. 2011;13:733–7.
18. Robinson NJ, Brennan ML, Cobb M, Dean RS. Clinical examination and weighing of patients in small animal consultations. Vet Rec. 2015;176(15):387.

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