

Veterinary telerehabilitation was as satisfactory as in-person consultations

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Abstract

Objective

To evaluate client satisfaction with telerehabilitation consultations compared to in-person consultations for veterinary rehabilitation referrals.

Animals

We surveyed the owners of 32 client-owned dogs.

Procedure

Dog owners were scheduled for telemedicine (telerehabilitation group) or in-person (control group) based on a combination of owner requests and medical recommendations. Medical records were obtained before evaluation. Owners were sent an electronic questionnaire following in-person or telerehabilitation consultations. A total of 32 surveys were received (16 for each group). The response rate was 55% (32/58 surveys sent). Mann-Whitney U tests were used to compare ordinal characteristics between satisfied and unsatisfied clients. Descriptive statistics for the client population, including ranges and medians, were calculated for owner travel distance and patient signalment.

Results

Satisfaction regarding scheduling appointments was higher in the telerehabilitation group compared to the group receiving in-person consultations ($P < 0.001$). For all other aspects of client satisfaction, there were no significant differences between groups.

Conclusion

This study demonstrated high client satisfaction with using telemedicine for canine rehabilitation consultations that was comparable to that for in-person consultations.

Clinical relevance

Telerehabilitation is a viable option that can be easily implemented by rehabilitation practitioners for assessment, progression, and monitoring of canine patients. Further studies are indicated to evaluate the efficacy of telerehabilitation.

Résumé

La téléadaptation vétérinaire a été aussi satisfaisante que les consultations en personne

Objectif

Évaluer la satisfaction des clients à l'égard des consultations de téléadaptation par rapport aux consultations en personne pour les patients aiguillés en réadaptation vétérinaire.

Animaux

Enquêtes auprès des propriétaires de 32 chiens appartenant à des clients.

Procédure

Les propriétaires étaient programmés en télémédecine (groupe de téléadaptation) ou en personne (groupe témoin) en fonction d'une combinaison de demandes de propriétaires ou de recommandations médicales. Les dossiers médicaux ont été obtenus avant l'évaluation. Les propriétaires ont reçu un questionnaire électronique à la suite de

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consultations en personne ou par téléadaptation. Au total, 32 sondages ont été reçus (16 pour chaque groupe). Le taux de réponse a été de 55 % (32 sondages sur 58). Les tests Mann-Whitney U ont été utilisés pour comparer les caractéristiques ordinales entre les patients satisfaits et ceux qui ne l'étaient pas. Des statistiques descriptives pour la population de clients, y compris la portée et les médianes, ont été calculées pour la distance de déplacement du propriétaire et la signalisation du patient.

Résultats

La satisfaction à l'égard des rendez-vous était plus élevée dans le groupe de la téléadaptation comparativement aux consultations en personne ($P < 0,001$). Pour tous les autres aspects de la satisfaction des clients, il n'y avait pas de différences significatives entre les groupes.

Conclusion

Cette étude a démontré une satisfaction élevée des clients qui utilisent la téléadaptation pour des consultations de réadaptation canine, comparable aux consultations en personne.

Pertinence clinique

La téléadaptation est une option viable qui peut être facilement mise en œuvre par les praticiens de la réadaptation pour l'évaluation, la progression et le suivi des patients canins. D'autres études sont indiquées pour évaluer l'efficacité de la téléadaptation.

(Traduit par les auteurs)

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Introduction

Telemedicine using 2-way video conferencing can extend healthcare services to patients and healthcare providers who otherwise might not have access to these services. The core purpose of telemedicine is to improve the health of individuals and communities by providing education and treatment recommendations (1). With increased use of telehealth during the COVID-19 global pandemic, patient satisfaction with traditional healthcare is a growing concern (2). In small animal veterinary practices alone, telehealth services increased from 12% before the pandemic to 38% between March 15 and June 15, 2020, among both general practice and specialty hospitals (3). Veterinarians must continue to embrace telehealth services to stay relevant for the needs of clients and their animals.

Telemedicine has been used in veterinary specialties such as radiology, cardiology, and pathology for several decades (4). Expanding the use of telemedicine beyond diagnostics to treatments and consultations is a logical evolution. A previous study demonstrated that owners who used telemedicine for postsurgical recheck appointments were satisfied with the virtual appointments and felt their dogs were less fearful than at in-clinic appointments (5). This same study, which evaluated 30 client-owned dogs, demonstrated overall high client satisfaction, with clients noting improved communication and feeling better-informed regarding their pets' illnesses (5). Telemedicine has also been used for behavioral treatment of aggression, with comparable efficacy noted between in-person and remote service groups (6). In addition, telemedicine may provide benefits to veterinary businesses by being more cost-effective and concurrently increasing access for clients, with associated improvements in consistency of follow-up care and owner compliance (5,7,8).

As with all aspects of healthcare during the COVID-19 pandemic, veterinarians have been faced with surging demands for care. In 2020 alone, veterinary medical appointments increased

by 4.5% and wait times increased 20 to 45% beyond regular times, causing a backlog of appointments for non-urgent issues such as arthritis, weight concerns, nutrition counseling, and advice on medication regimes (9). Veterinary telemedicine can meet the needs of clients for these non-urgent types of appointments. Veterinary rehabilitation primarily consists of non-urgent referrals and is well-suited for telemedicine consultation.

In multiple studies in humans, telerehabilitation was effective for musculoskeletal, neurological, and cardiovascular rehabilitation (10–12). Client satisfaction with veterinary telemedicine has not been previously studied; however, based on human studies, is expected to yield substantial benefits. To the authors' knowledge, this is the first study that evaluated client satisfaction with veterinary telerehabilitation consultations. We hypothesized that client satisfaction with telerehabilitation consultations is comparable to that for in-person rehabilitation evaluations.

Materials and methods

Sample

All dogs scheduled for rehabilitation consultation at the Schwarzman Animal Medical Center (AMC) in New York, New York, USA, between September 2021 and February 2022, were eligible for the study. All telerehabilitation patients had been physically evaluated by a New York State veterinarian within the previous 4 mo. All owners consented to receive a satisfaction survey and have their anonymous responses used and published for research purposes.

Study design

This was a prospective client satisfaction survey approved by the Institutional Animal Care and Use Committee of the AMC (PROTOCOL AMC_10_28_20). All dogs were evaluated by either a Diplomate of the American College of Veterinary Sports Medicine and Rehabilitation (DACVSMR) or a DACVSMR resident. The consultations were either in-person or *via* Teletvet

(Televet, Austin, Texas, USA) telemedicine practice management software with 2-way video conferencing. Owners were assigned telerehabilitation or in-person consultations based on a combination of requests by the owners or recommendations from the referring veterinarians. These appointments were booked by 1 client care coordinator. A veterinary patient client relationship (VPCR) was established within the confines of New York State regulation as outlined by the American Veterinary Medical Association (13). A modified version of the Hospital for Special Surgery's (New York, New York, USA) Q-Review Survey (Quality Reviews, New York, New York, USA), previously used to evaluate patient satisfaction with telerehabilitation, was used in this study (14). All owners were instructed to answer a 9-question survey through the Televet platform (see Appendix 1, available online from: www.canadianveterinarians.net).

Information regarding concerns, goals, and previous medical conditions was obtained from electronic medical records before telerehabilitation evaluation. The dogs were being managed for rehabilitation disorders including palliative pain management, geriatric care, obesity management, and orthopedic and neurologic conditions. All telemedicine consultations were 30 min in length, and in-person owner conversations were also 30 min (+/- 5 min) in length. The in-person conversation followed an allotted 30-minute examination of the dog, without the owner present, for a total consultation time of 1 h. This followed the standard recheck format for the department. Pricing for telemedicine consultations and in-person consultations was comparable.

Data collection

Upon completion of a consultation, an electronic survey was sent to the dog owners. Surveys were closed-ended and sent from September 2021 to February 2022. The same survey was sent to owners in the in-person and the telemedicine groups. All telerehabilitation and in-person consultations were limited to recheck consultations to ensure establishment of a VPCR. The questionnaire was sent to owners within 1 h after their consultations, as a link *via* text message or email with an explanation of its use. Travel distance for each client was calculated using the addresses provided in the medical record.

Items on the questionnaire were scored on a 5-point Likert scale, indicating 5 for "most satisfied" and 1 for "least satisfied." One question was graded on a 10-point scale, as per the Hospital for Special Surgery questionnaire, as a measure of overall satisfaction (14). Clients that did not fully complete the survey or completed both telerehabilitation and in-person surveys were excluded.

Statistical analyses

Descriptive statistics for the client population, including ranges, average, and medians, were calculated for owner travel distance and patient signalments. A power calculation sample size was determined based on an effect of 30%, with $\alpha = 0.10$, as per a previous study evaluating telemedicine recheck satisfaction (5,15). Mann-Whitney U tests were used to compare ordinal characteristics between satisfied and unsatisfied clients. All tests were 2-tailed and statistical significance was set to $\alpha = 0.05$.

Results

Owner responses

Of the 58 surveys sent, 32 surveys were returned (55% response rate). All 32 owners of canine patients completed the survey within 1 wk after consultation. A total of 16 surveys were received for each group.

The age of dogs ranged from 1 to 17 y, with a median age of 9 y. The presenting complaint for each consultation ranged from mobility disorders secondary to multifocal osteoarthritis (8/32), myelopathies (7/32), and other musculoskeletal conditions (12/32), to palliative nursing care that included long-term home management with diets and medications (5/32). Twelve of the 16 dogs receiving telerehabilitation consultations were previously evaluated by an AMC rehabilitation veterinarian, and the other 4 were referred by either primary veterinarians or specialists. All 16 of the dogs receiving in-person consultations were previously evaluated by an AMC rehabilitation veterinarian. Two of the telerehabilitation patients and 1 in-person patient had an open diagnosis. In-person client travel distance ranged from 0.1 to 33.5 km (median: 11.5 km). Telerehabilitation client travel distance ranged from 0.8 to 122.8 km (median: 12.1 km). The average wait time to schedule a telemedicine appointment was 2 to 3 wk, compared to 4 to 6 wk for an in-person appointment.

Owner satisfaction

Of the 9 questions on the questionnaire, the score for only 1 question, related to scheduling, differed between in-person and telerehabilitation evaluation ($P < 0.001$). Regarding ease of scheduling, the median satisfaction score for in-person consultation was 4.0 (range: 3 to 5, 95% CI: 3.16 to 4.16), compared to a median score for telerehabilitation of 5.0 (range: 5 to 5, 95% CI: 3.317 to 4.023) (Table 1). For the question of overall satisfaction, "My treatment goals were achieved, and I would recommend this service to others," the median satisfaction score for in-person consultation was 9.5 (range: 7 to 10), compared to a median score for telerehabilitation evaluation of 10.0 (range: 8 to 10) ($P = 0.32$). For all other questions, there were no significant differences between in-person and telerehabilitation evaluation groups (Table 1).

Discussion

This study demonstrated a level of client satisfaction with telemedicine that was comparable to that for in-person rehabilitation evaluations, thereby supporting our hypothesis. Furthermore, clients in the telerehabilitation group had higher satisfaction with ease of scheduling appointments. All other survey questions had comparable satisfaction between in-person and telemedicine groups. These results agreed with those from an evaluation of patient satisfaction with human telerehabilitation (14).

In this study, a telemedicine consultation did not involve any staff members aside from the veterinarian and did not cost the dog owner or hospital any additional expenses. A previous study noted that dog owners were willing to pay an additional \$38.04 for veterinary telemedicine consultation, demonstrating

Table 1. Analysis of patient satisfaction in response to each survey question by group.

Survey question	Group	Mean score	Median score	P-value
1. How would you rate your ability to schedule an appointment?	In-person	3.62	4	< 0.001
	Telerehabilitation	5	5	
2. How would you rate the amount of time your rehabilitation doctor spent with you and your pet?	In-person	4.75	5	0.734
	Telerehabilitation	4.875	5	
3. How well did your doctor explain the findings of your pet's initial evaluation?	In-person	4.75	5	0.763
	Telerehabilitation	4.81	5	
4. How would you rate our concern for your questions and worries?	In-person	4.81	5	0.342
	Telerehabilitation	5	5	
5. Overall, how would you rate your experience during this visit?	In-person	4.81	5	0.806
	Telerehabilitation	4.81	5	
6. How would you rate the courtesy and friendliness of the doctor?	In-person	4.87	5	0.763
	Telerehabilitation	4.93	5	
7. How would you rate your confidence in the skill of your doctor?	In-person	4.87	5	0.546
	Telerehabilitation	5	5	
8. How would you rate the degree to which our outpatient therapy services have helped you and your pet progress towards your goals?	In-person	4.56	5	0.534
	Telerehabilitation	4.75	5	
9. "My treatment goals were achieved, and I would recommend this service to others with similar issues." How much would you agree with this statement?	In-person	9.25	10	0.327
	Telerehabilitation	9.62	10	

the financial viability of telemedicine (7). In an urban setting such as the facility in which this study was conducted, the cost and time associated with transportation can be crucial factors for owners traveling for in-person consultation. In a previous study (5), the average travel time saved with telemedicine was ~50 min; we suspect a similar benefit occurred in this study given the limited availability of rehabilitation specialists in urban settings. In this study, the longest travel distance for telerehabilitation was 122.8 km, which was $\sim 4 \times$ the distance traveled for in-person evaluations (33.5 km). In addition, the wait time for a telemedicine consultation was half (2 to 3 wk) that for an in-person evaluation (4 to 6 wk). Convenience regarding time required for travel (for finding parking, public transportation, or ride shares) may have influenced scheduling satisfaction, although transportation satisfaction was not evaluated specifically.

The efficacy of owner-directed rehabilitation has not yet been evaluated, but the approach is commonly used by rehabilitation practitioners in home exercise plans. In the study from Donham and Wickett (16), animal owners were directed to perform a series of behavior modifications at home using positive reinforcement, daily exercise, and dietary modifications. During telerehabilitation consultations, owners were frequently guided to help facilitate evaluation of functional mobility and visual assessment of discomfort over video. Owner involvement and the ability to assess their pet's progress in the home environment may have added to their overall experience and satisfaction with the service. Bennet *et al* (17) previously evaluated owner satisfaction in reference to dog training facilities. In that study, owner satisfaction was multifactorial, and there was a correlation between satisfaction in the facility and satisfaction with the progress made by the handler and the dog. In another study (18), satisfaction with dog ownership was unrelated

to perceived emotional closeness, shared activities, and class attendance (18), but there was a strong correlation with high perceived costs of ownership (18). Further research evaluating the efficacy of telerehabilitation and owner satisfaction should be considered.

Dogs in this study were all evaluated at recheck consultations and thereby had established VPCRs. In North America, the requirement for a physical examination by the veterinarian currently varies among states and provinces. In New York State, an in-person evaluation is not required (13). At the time of the last Canadian Veterinary Medical Association position statement in 2021, Ontario, British Columbia, and Alberta allowed temporary establishment of a virtual VPCR (19). Further research on the satisfaction with and success of telemedicine consultations could provide evidence regarding the utility of establishing virtual VPCRs.

There were several limitations in this study. Most notably, the small sample size is associated with the risk of Type II error (false negative) in the data analysis and the potential of not accurately representing the general population. In addition, the study was not randomized, presenting a risk of selection bias. Another shortcoming was the fact that 4 of the 32 dogs were not previously evaluated in person by the veterinarians performing the telerehabilitation consultations, which may bring into question the risks of reliance on referral evaluation and history. Notwithstanding these limitations, the results of the present study supported our hypothesis that client satisfaction with telerehabilitation is high and is comparable to that for in-person evaluation.

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