

Effect of owners education and vets communication on therapeutic adherence in pet practice

Efeito da educação dos proprietários e da comunicação com os médicos veterinários na adesão terapêutica na clínica veterinária

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ABSTRACT

The success of disease treatment in veterinary medicine depends on a correct diagnosis, the choice of an appropriate therapy, and the ability of the animal's owner to administer the medication correctly. This study aims to identify and understand the factors that interfere with therapeutic adherence (TA), namely the level of education of owners and the influence of veterinary communication, based on questionnaires conducted in a small animal University Hospital in Vila Real, Portugal. "Oversight" was identified by 25% of respondents as the reason for not administering medication properly to their pets. However, when we correlated these answers with owners' characterization, we found that households made up of more than one person were less likely to forget their treatment regimen ($p=0.04$). Owners with higher education levels and a more transparent relationship with their veterinarians are more likely to deliver superior health care to their pets. This study suggests that veterinarians should consider these aspects when communicating with the owners to promote a better outcome for their clinical cases. The owners' perspective regarding veterinarian instructions therapy is crucial to design strategies and to improve TA in the long term.

KEYWORDS: Companion animal. Education. Therapy. Veterinary.

RESUMO

O sucesso do tratamento de doenças em medicina veterinária depende de um diagnóstico correto, da escolha da terapêutica adequada e da capacidade do proprietário do animal em administrar corretamente a medicação. Este estudo tem como objetivo identificar e compreender os factores que interferem na adesão terapêutica (AT), nomeadamente o nível de educação dos tutores e a influência da comunicação veterinária, com base em questionários realizados num Hospital Escolar Universitário de pequenos animais em Vila Real, Portugal. "Esquecimento" foi identificada por 25% dos inquiridos como a razão para não administrarem corretamente a medicação aos seus animais de companhia. No entanto, quando correlacionámos estas respostas com a caracterização dos proprietários, verificámos que os agregados familiares constituídos por mais do que uma pessoa tinham menor probabilidade de se esquecerem do regime de tratamento ($p=0,04$). Os tutores com níveis de educação mais elevados e uma relação mais transparente com os seus veterinários têm maior probabilidade de prestar cuidados de saúde superiores aos seus animais de estimação. Este estudo sugere que os veterinários devem ter em conta estes aspectos quando comunicam com os donos para promover um melhor resultado para os seus casos clínicos. A

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perspetiva dos tutores relativamente às instruções terapêuticas do veterinário é crucial para conceber estratégias e melhorar as AT a longo prazo.

PALAVRAS-CHAVE: Animal de companhia. Educação. Terapia. Veterinária.

INTRODUCTION

A high level of therapeutic adherence (TA) is crucial for the success of clinical cases, in veterinary and human medicine (WAREHAM et al. 2019). The owner's compliance is vital in primary care, diagnostic exams, prescribed treatments, and preventive measures. It is vital to ensure animal health and safety, well-being, and a proper clinical approach by the veterinarians. In contrast, non-adherence to the instructions provided by the vet has implications for animal health. Moreover, sometimes, it can have legal ramifications for veterinarians and damage the reputation of their veterinary practices (AMERICAN ANIMAL HOSPITAL ASSOCIATION 2003).

The most damaging impacts resulting from deficient TA include, but are not limited to: 1) emergence of resistant bacteria and an increased likelihood of recurrent infections, 2) side effects associated with the abrupt withdrawal of medication, 3) side effects due to toxicity caused by overdosing, 4) deficit in the management of important chronic diseases such as epilepsy, cardiovascular diseases, and cancer, 5) decrease in disease prevention, 6) increased treatment costs due to the lack of treatment success, leading to the adoption of more stringent therapeutic regimens characterized by higher doses, more expensive drugs, and increased veterinary fees due to more consultations, 7) failure in managing the primary clinical complaint of the owner, 8) higher recurrence of diseases, 9) loss of confidence in the healthcare professional, 10) inappropriate disposal of medications, which leads environmental toxicity (AMERICAN ANIMAL HOSPITAL ASSOCIATION 2003, DUNBAR-JACOB et al. 1991, KRASS et al. 2015, MADDISON et al. 2021, TALAMONTI et al. 2015, WAREHAM et al. 2019).

Chronic diseases require a close monitoring of TA. Otherwise, effective responses are not observed, and the health and well-being of the animal are conditioned. In human medicine, not following the treatment instructions is the main contributor to uncontrolled seizures in epilepsy cases (FRENCH 1994). The same happens in veterinary medicine. Ensuring good TA is crucial to controlling epilepsy in companion animals, because it is necessary to reach a stable concentration in plasma, and maintain it within the therapeutic range (BOOTH et al. 2021). On the other hand, lack of TA promotes antibiotic resistance, impacting public health, the environment, and animals, from a One Health perspective (KARON et al. 2001, MCNABB et al. 2001, WAINBERG 1998).

TA seems to be influenced by the owners' perception of the animal's clinical situation and quality of life (GRAVE & TANEM 1999, TALAMONTI et al. 2015). A positive relationship between the vet and the owner shows a highly significant correlation with a good TA. TA is higher when the healthcare professional is perceived as confident, experienced, communicative and non-judgmental about how the owner treats the animal (CASEY & BRADSHAW 2008, KARDAS 2002, WAREHAM et al. 2019). On the other hand, several studies have shown lower TA levels in long treatment periods (CASEY & BRADSHAW 2008, HUSSAR 1987). Furthermore, the level of TA seems to be generally higher when the veterinarian spends more time in

consultation (GRAVE & TANEM 1999). Animals' general behaviour also plays an essential role in TA. If the animal's reaction to the intervention is too adverse or the intervention is too complex to be executed by the owner, there will be a lower TA. Pet owners are better at administering once or twice a day than 3 times a day (BECO et al. 2013). The route of administration and the pharmaceutical formulation also influence TA (BODA et al. 2011, MORRISON & WERTHEIMER 2004). An example of this can be seen in a study evaluating topical treatment for otitis in dogs. The topical treatments consisted of two modalities: the first required the use of a dropper bottle, with the topical application of drops, 3-5 drops twice a day, for seven days. The second modality involved using a dosing device that delivers a single precise dose, once a day, for five consecutive days. The authors concluded that using the dosing device only once a day showed a better TA (BODA et al. 2011). The palatability of the pharmaceutical form facilitates administration, contributing to an increased TA (HUSSAR 1987).

To the authors' knowledge, there is a lack of studies evaluating the effect of education of the owners in TA in veterinary medicine. Therefore, this study aimed to evaluate the factors that interfere with the TA of dogs and cats' owners, at the University of Trás-os-Montes and Alto Douro's Veterinary Hospital, with a special focus on owners' level of education and veterinarians' communication skills.

MATERIALS AND METHODS

Data collection

A cross-sectional study was conducted at the Veterinary Hospital of the University of Trás-os-Montes and Alto Douro (Vila Real, Portugal), between October 2021 and March 2022. A convenience sample of adult voluntary dogs or cats' owners were asked to answer a questionnaire (supplementary file 1). The sample size of this study for a finite sample size population was calculated according to the formula for survey sample size (<https://www.calculator.net/sample-sizecalculator.html?type=1&cl=95&ci=5&pp=10&ps=1000&x=Calculate>). Assuming a 15% default prevalence, a 95% confidence level, and a 7% absolute error, the study required 91 participants. To allow for a 5% non-response, the smallest sample size required was 96 participants. The questionnaire contained an introductory section with nine questions on the owners' personal details and information about the animals; and a second and third sections on their actions and opinions regarding animal medical treatment (supplementary file 1). Before filling out the questionnaire, all the participants were informed of the goals of the study and confidential rights and, then, they were given the option to take part of it or not. A total of 107 individuals of both genders took part of the study. Three people refused to answer the survey. The information obtained was kept confidential. This study was approved by the ethical committee of University of Trás-os-Montes e Alto Douro (44-CE-UTAD-2021).

Statistical analysis

The answers to the questionnaires were entered into a Microsoft® Excel sheet and these data were statistically analyzed using JMP® version 17.2.0 (SAS Institute Inc., Cary, NC, 1989–2023). A descriptive analysis was conducted at first. The Chi-square test and Fisher's exact test were used to compare differences between

independent variables whenever possible. The p-value was considered significant when lower than 0.05.

RESULTS

Owners' characterization

The surveyed owners (n=107) presented an average age of 42 ± 14 years old (mean \pm standard deviation [SD]), with a higher percentage of female owners (69%; 74/107) than male owners (31%; 33/107) ($p < 0.001$). Overall, 75% (80/107) owned dogs and 22% (24/107) owned cats. Regarding the level of education, the highest level of education completed by respondents was Master's degree 21% (23/107), followed by High School Education 20% (22/107). The majority were employed 76% (81/107), followed by retired 9% (10/107). Most respondents lived in the district of Vila Real 72% (77/107), and the majority lived with at least one more person 80% (86/107; $p < 0.001$).

Animals' characterization

Most animals (55%; 59/107) have an unspecified breed, and the most common breed is the French bulldog (8%; 4/48). From the total of respondents, 75% (80/107) claimed that their pet was sick at least one time, during last year ($p < 0.001$). Most of the diagnosed conditions were under the scope of dermatology (26%; 21/80), followed by gastroenterology (16%; 13/80), and cardiology (13%; 10/80).

Therapy and therapeutic adherence (TA)

Overall, 23% of owners (25/107) claimed they did not administer medication to their animals during last year. Moreover, 34% (36/107) claimed they did, but they are not currently administering medication, and 43% (46/107) said they are still administering medication to their animal when they answered the questionnaire. From those that are still administering some medication (n=46), the average number of medications per animal was 2.3 ± 1.5 , ranging from one to six medications per patient. The main administration route is enteric by a large margin (91%; 42/46). Answers to different practices regarding animal therapy are summarized in Table 1. Similarly, results on which factors most interfere with the correct administration of medication can be found in Table 2.

Table 1. Owner answers regarding their practices and difficulties in animal therapy (n=107).

	YES		NO	
	Nr	%	Nr	%
Are you administering or have you administered any non-prescription medication during the last year?	10	9	97	91
Have you ever administered medicines prescribed for you, for a symptomatology similar to the animal's?	3	3	104	97
Have you ever administered previously prescribed medication to animals without asking the veterinarian for information?	3	3	104	97
Have you ever administered medication to your animal that had been prescribed to other people's animals?	0	0	107	100
Have you ever administered a medicine bought on the internet?	5	5	102	95
Have you ever stopped a medication because of its costs?	7	7	100	93
Have you ever forgotten to administer a planned medication to your animal?	21*	20	86	80
*when asked to specify the frequency of this situation, all the participants chose the option "a few times".				

Table 2. Owners answers regarding the reasons that interfere with the correct administration of a medication (n=107).

	YES		NO	
	Nr	%	Nr	%
Oversight	27	25	80	75
Falling asleep before the time to administer the medication to the animal	7	7	100	93
Having too many medicines to administer at once and not remembering to administer them all	6	6	101	94
Routine changes	14	13	93	87
Being away from home or away from the animals to administer at the right time	39	36	68	64
Lack of financial resources (cost of medication)	6	6	101	94
Difficulty administering the medication to the animal	22	21	85	79
Difficulty in adapting the animal's treatment to their way of life	4	4	104	96
Strong religious or cultural beliefs about health and treatment	3	3	103	97
Out-of-stock medication	10	10	97	90
Side effects / adverse reactions	6	6	101	94
Length of treatment / too long	9	9	98	91
Doubting the effectiveness of the treatment	1	1	106	99
Not seeing improvement	4	4	103	96
Thinking that the animal no longer needs the prescribed treatment	4	4	103	96

When we correlated these answers with owners' characterization, we found that households made up of more than one person were less likely to forget their treatment regimen (oversight), with statistical significance ($p=0.04$).

Regarding how to administer medication, 95% (102/107) said they usually ask the veterinarian, while 5% (5/107) do not. Nevertheless, when asked if they found it difficult to follow the veterinarian's answers and instructions, 84% (90/107) said "no", while 16% (17/107) said "yes". Respondents with a higher education degree found it easier to administer medication to animals when compared to those with other levels of education ($p=0.03$). Similarly, respondents with higher education expressed fewerless obstacles in understanding veterinarians' instructions than the less academically qualified respondents ($p<0.001$).

On the other hand, when asked if the veterinarian explained the costs associated with the treatments, 91% (97/107) said "yes", but 9% (10/107) said "no". When asked whether the adverse/secondary effects of the medication were explained, 90% (96/107) said that the health professional informed them of these effects, but 10% (11/107) said that they did not. Respondents were also asked if they had needed to go to a pharmacist to clarify their doubts about their pet's treatment, and 95% (102/107) said "no", while 5% (5/107) said "yes". For all the questions mentioned in this paragraph, the obtained p-value was less than 0.001. Respondents without a higher education degree were more likely to understand the pharmacist's explanation of the treatment when purchasing medicines/veterinary drugs at the pharmacy ($p=0.001$).

DISCUSSION

Most studies on the subject were conducted with small samples, acute diseases, and antimicrobials (WAREHAM et al. 2019). To authors' knowledge, in 2021, the first study was carried out on chronic diseases, particularly epilepsy (BOOTH et al. 2021).

The population assessed in this study has a high level of literacy, which generally translates into a more significant economic power. As mentioned, our sample consisted of individuals aged 18 or over, primarily female, with an average age of 42 ± 14 years. Animals have a greater affinity with female owners. When under the care of women, animals tend to become more sociable and healthier, which explains why women have a more significant interaction with pets. In addition, women often take responsibility for accompanying family members, including animals, to medical appointments, which may explain the predominance of this gender in the present study (DELGADO-RODRÍGUEZ et al. 2023).

Regarding TA, "oversight" was identified by 25% of respondents as the reason for not administering medication properly to their pets. According to the literature, "oversight" tends to favour non-adherence, which can be mitigated by implementing treatment management strategies, such as reminders (MADDISON et al. 2021). Households of more than one person are less likely to forget the therapeutic regimen. It seems to us that in a family environment, there is always the possibility of someone remembering the need to administer therapy. Another explanation is that implementing certain customs in the family environment, such as the distribution of responsibilities and tasks, may facilitate TA. Another factor that significantly interferes with TA is changes in routine, mentioned by 13% of respondents, as well as absence from home at the time of administration, identified by 36% of respondents. In addition, 21% of respondents reported that the animal's temperament made it difficult to administer the medication. It is well known that administering medication to some animals, particularly some cats, can be complex and challenging due to their behaviour (RODAN 2010).

Considering veterinarians' communication skills, most respondents were satisfied with the communication, explanations and guidance given by veterinarians (84%). Clear, direct and effective communication is critical to ensuring that treatments are followed correctly. However, it is essential to recognize that 16% of the owners have difficulties in understanding the veterinarian, highlighting a need for clear and accessible communication by those veterinarians to ensure TA. JERÓNIMO's (2023) study highlighted the importance of trust and friendliness in owners' perceptions of veterinary services. Also in Jerónimo's study, the most valued attributes on a scale of 0 to 10, where 0 corresponds to "do not value" and 10 to "fully value", trust in the clinical staff, was rated at 8.9, and friendliness on the part of the team, with an average of 8.8 (JERÓNIMO & RATANJI 2023).

Individuals with higher levels of education tend to understand health issues, including disease prevention better, how to perform treatments and preventive care (MADDISON et al. 2021). They also usually have more financial resources to access the services of veterinarians and comply with the regular check-ups prescribed for their animals. They may also be more proactive about their pet's health, leading to earlier diagnosis and better treatment results. Thus, they are generally more likely to

understand and adhere to prescribed treatment plans (LAMB et al. 2018, MADDISON et al. 2021).

A good TA is essential to control different diseases and conditions, especially chronic and long-term therapies (BOOTH et al. 2021, RIBAS et al. 2020). In contrast, the lack of TA promotes worse prognosis and unsatisfactory clinical development. Moreover, the consequences of absence of TA can go beyond the particular clinical case, and can also lead to, for instance, antibiotic resistance, impacting public health, the environment, and animals, from a One Health perspective (KARON et al. 2001, MCNABB et al. 2001, WAINBERG 1998).

CONCLUSION

The owners' perspective regarding therapy and TA is critical to design strategies and improve TA in the long term. The results of this study show a significant influence of educational level on adherence to therapy. A higher level of education correlates with a more in-depth understanding of health information, enabling pet owners to better understand the advice provided by the veterinarian. This improvement not only facilitates the effective execution of treatment, but also fosters a better bond between the owner and the veterinarian. Simple, open and effective communication, combined with a higher level of education, emerges as a decisive factor in promoting TA, thus contributing to the health and well-being of pets. These findings underline the importance of educational strategies aimed at pet owners to strengthen their understanding of healthcare and improve therapeutic outcomes.

AUTHOR CONTRIBUTIONS

Conceptualisation: JD, PAO Methodology: JD, AM. Data analysis and interpretation: JD, AM, CJB. Supervision: PAO. Writing – draft preparation: CJB. Writing – review and editing: AM, ACC, PAO. All authors agreed with the final version of the manuscript.

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INSTITUTIONAL REVIEW BOARD STATEMENT

Not applicable

INFORMED CONSENT STATEMENT

This study was approved by the ethical committee of University of Trás-os-Montes e Alto Douro (44-CE-UTAD-2021). Participants were informed of their rights and ensured confidentiality, and accept to participate in this study.

DATA AVAILABILITY STATEMENT

No data has been generated from the present work.

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CONFLICTS OF INTEREST

Authors have no competing interests to declare.

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