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Owners' perceptions of dog treat management in Western Romania

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Introduction: Within the broader-than-ever palette of pet foods, dog treats are an assortment sustained by powerful marketing tools and compelling advertising. The wide range and availability of these products often pair with the fondness of owners for their companions, leading to overfeeding them with rewards.

Methods: This study explored owner treat provision behaviors among 890 voluntarily participating dog owners in Western Romania through an online survey conducted between June and November 2023.

Results: The majority of respondents were women (72%) and younger adults aged 18–24 (39%). Emotional attachment was the primary motivation for providing treats (52%), followed by perceived health benefits (35%) and training purposes (25%). However, 84% of respondents did not account for the caloric value of treats in their dogs' daily diet, and only 16% adjusted their dogs' main meals to compensate for treat provision. Preferences leaned toward treats with dental benefits (58%) and biscuits (52%). Many owners reported offering treats multiple times daily, highlighting the role of treats in owner-dog bonding. Chi-square tests of independence, with Bonferroni-adjusted post-hoc pairwise comparisons, revealed significant associations between treat provision frequency, owner demographics, and dog characteristics. Younger owners (18–24 years) were significantly more likely to provide treats at higher frequencies, with 31.8% giving treats 'multiple times daily' compared to 7.1% of older owners (>55 years) ($p < 0.002$). Similarly, single owners provided treats more frequently, with 31.9% giving treats 'once daily' and 42.1% 'multiple times daily', compared to 7.1% and 22.4%, respectively, among owners in committed relationships ($p < 0.005$). Owners who provided treats less frequently, 'seldom' (80.7%) or 'a few times a week' (87.8%), were more likely to have dogs with an ideal weight, while higher treat frequencies – 'once daily' (40.0%) or 'multiple times daily' (52.7%), were significantly associated with overweight or obese dogs ($p < 0.003$).

Discussion: These findings underscore the importance of educating dog owners on aligning treat provision with caloric requirements and promoting responsible

feeding practices. Veterinarians play a critical role in guiding owners toward balanced feeding strategies that incorporate treats into comprehensive dietary plans. Addressing treat provision behaviors is essential to mitigating health risks, improving canine nutrition, and promoting overall well-being.

KEYWORDS

pet owners, feeding, nutrition, rewards, dogs

1 Introduction

Pet treats are a fast-growing segment of the pet food industry. Various types of commercial treats are available, including crunchy (biscuits), chewy-soft, animal parts, dehydrated, dental, rawhide, among others (Case et al., 2011). Considering the increasing demand, the pet food industry and nearly all major pet food brands continue to produce an ever-growing diversity of treats (Assalco-Zoomark, 2017; Morelli et al., 2020). Romania is ranked 18th in pet food sales in 2023, trailing Bulgaria by €47 million. In contrast, France, the United Kingdom, and Spain lead the market ranking second, third, and fourth, respectively. Meanwhile, Romania's pet food market, including treats generated revenues of \$933 million in 2022 and are forecasted to reach \$1.464 billion by 2028, expanding at a Compound Annual Growth Rate, of 7.8% from 2023 to 2028 (<https://www.reportlinker.com/clp/country/5704/726388>). This increase in demand for dog treats seems to be sustained by the growing awareness of dog owners for the welfare of their dogs paired with emotional attachment (Linder and Mueller, 2014). Although dog treats seem very popular, information about their chemical composition, or their impact on dogs' health and welfare is many times scarce (Galvão et al., 2015), with most studies focusing only on bacterial contamination analysis (Clark et al., 2001; Adley et al., 2011; Cavallo et al., 2015).

Some commercially developed dog treats are usually made using a variety of ingredients, many of which are undefined since the exact term is replaced by the name of the group to which the feed materials belong ('cereals', 'animal derivatives', 'vegetable by-products', 'oils and fats', 'vegetable protein extracts', etc.) (Regulation (EC) No 767/2009, 2009). Ingredient lists should be clearer and include more specific information. Their energy value should also be specified to help veterinarians provide appropriate advice for provision of dog treats, as treats have been identified as a risk factor for canine obesity (Bland et al., 2009; Hand et al., 2010; German, 2010, German, 2011; White et al., 2016; Bjørnvad et al., 2019). Treats are not required to have full pet food labeling unless they claim to be nutritious, low-fat, highly digestible, or similar. As a result, many of these products do not include a calorie content statement or guaranteed analysis (AAFCO, 2023). The latest European Commission (EU) regulation states that dog treats should be labeled as 'complementary foods', defined as

'compound food that has a high amount of specific components but is suitable for a daily diet only if used in combination with other food' (Regulation (EC) No 767/2009, 2009). European feed legislation for dogs also sets out rules and labeling requirements to provide pet owners with adequate information (Regulation (EC) No 767/2009, 2009), also taking into account that treats should not exceed 10% of the maintenance energy requirement (MER) (Freeman et al., 2011). Although treats are not meant to make a large contribution to the daily ration, their amounts definitely affect total calorie intake (Gaylord et al., 2018).

According to the European Pet Food Industry Federation (FEDIAF) Nutritional Guidelines for Complete and Complementary Pet Food for Cats and Dogs, feeding instructions should therefore make it apparent when not to overfeed dogs (FEDIAF, 2024). Research indicates that treats can significantly increase the risk of weight gain in dogs (Forrest et al., 2022; Preet et al., 2021). Additionally, studies suggest that many owners may not fully consider their dogs' nutritional needs when offering rewards (Kienzle et al., 1998; White et al., 2016).

The term treat is often under-defined, given the wide range of foods that could be included in the definition, and little is known about owners' opinions and perceptions in this regard. Thus, a better understanding of owners' attitudes toward provision of treats is needed. Therefore, the main objective of this study was to examine owners' perception and attitude toward dog treat provision in the western part of Romania.

2 Materials and methods

2.1 Recruitment of dog owners

The survey was carried out in the western part of Romania, dog owners were recruited to complete an online questionnaire created using Google Forms and posted on different social platforms (Facebook and Instagram), between June and November 2023. The survey was presented in Romanian to ensure clarity and accessibility for the target population. Respondents who were over 18 years of age and who had at least one dog to which they provided treats were eligible to participate. All participants in this study participated voluntarily and were fully informed about the study's objectives and

data processing procedures. Alongside the survey link, a consent form was provided, detailing the purpose of the research, confidentiality of personal data, and the participants' rights. To manage data accurately and identify responses from individuals with multiple dogs, participants were asked to provide their email addresses. This information was collected exclusively to ensure data integrity, allowing the identification of duplicate entries when necessary. All identifying data, including email addresses, were securely stored and handled according to data protection and privacy guidelines to maintain participant confidentiality and align with ethical research standards. This study was approved by the Research Ethics Committee of the University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, Romania (32258/15.01.2024).

2.2 Questionnaire design

The questionnaire was designed to investigate the perceptions, attitudes, and practices of dog owners regarding the provision of treats. It was structured to take approximately five minutes, with clear and straightforward questions to minimize potential misunderstandings. The survey included 14 questions with single and multiple response options. These questions are strategically organized into three primary sections to address the research objectives comprehensively. The first section of the questionnaire focused on the owner's age, marital status, and gender to identify demographic trends that may influence treat-provision behaviors. The second section addressed characteristics of the dog, including age, breed, body condition, and health status, to provide context regarding factors that might affect treat preferences and provision practices. The dog's self-reported Body Condition Score (BCS) was assessed by asking owners, 'What is the body condition of your dog from your perspective according to the provided charts?' These charts were based on the American Animal Hospital Association (AAHA) 5-point BCS scale, which categorizes body condition as follows: 1 (very thin), 2 (underweight), 3 (ideal), 4 (overweight), and 5 (obese) (AAHA, 2010). The third section of the survey focused on dog treats and owners' perceptions regarding treat provision. This section included questions on the types of treats offered, the frequency and reasons for treat provision, the criteria for selecting specific treats, and sensory aspects (shape, consistency, color, and smell). This study examined whether owners consider treats an integral part of their dog's daily diet, whether they account for the caloric content of treats when calculating the dog's daily energy requirements, or if they overlook this aspect and provide treats 'unaccounted,' in addition to an already sufficient daily diet.

2.3 Statistical analysis

All collected data were exported into Microsoft Excel and then uploaded to IBM SPSS (version 22.0, Armonk, NY, USA) software for statistical analysis. To investigate the associations between owner-reported age, marital status as independent variables, and frequency of treat provision as dependent variable, as well as the relationship between owner-reported treat provision frequency (independent

variable) and their dogs' body condition (dependent variable), we performed Chi-square tests of independence. *Post-hoc* pairwise comparisons were conducted where significant associations were identified, with Bonferroni correction applied to adjust for multiple comparisons. To facilitate more robust statistical analysis and reflect the similarity in treat-giving behaviors reported by owners, the Obese and Overweight categories were combined into a single category named Overweight/Obese. This adjustment reduced the original four categories (Underweight, Ideal, Overweight, Obese) to three final groups: Underweight, Ideal, and Overweight/Obese. This reclassification ensured more meaningful comparisons while aligning with observed patterns of owner-reported behaviors.

3 Results

3.1 Descriptive information about the owners

The survey was completed by 1,433 respondents, revealing that 66% of them provide their pets with various commercial treats. After excluding surveys from owners who either did not provide treats to their dogs or failed to complete the questionnaire, a total of 890 responses were included for analysis. The largest group of respondents who reported administering treats to their dogs were between the ages of 18 and 24 (39%). Most participants were women (72%), with men comprising 28% of the sample. Regarding marital status, the majority of respondents reported not being in a committed relationship (53%) (Table 1).

3.2 Descriptive information about the dogs

The majority of owners reported their dogs to be between 3 and 5 years old (35%), closely followed by those with dogs in the 6- to

TABLE 1 Owners' characteristics (n=890).

Variable	N	%
Age		
18-24	346	38.9
25-34	314	35.3
35-44	81	9.1
45-55	93	10.5
>55	56	6.3
Marital status		
Single	470	52.8
In a committed relationship	420	47.2
Gender		
Woman	640	71.9
Man	250	28.1

10-year age range (34%). The distribution of purebred and mixed-breed dogs was nearly equal among the respondents. The most frequently reported health issues, as indicated by the owners, were allergies (36%) and digestive problems (27%). Furthermore, 53% of the respondents reported that their dogs had no health issues. Regarding dogs' body condition, the majority of respondents (66%) reported that their dogs maintained an ideal weight, while 21% categorized their dogs as overweight, and 7% classified them as obese (Table 2).

3.3 Owners' perceptions and attitudes toward treat provision

Dog owners usually purchased a wide variety of treats, most preferred those advertised as having dental benefits (58%), and crunchy treats (biscuits) (52%), while the least preferred were dehydrated treats (7%). The majority of respondents (33%) reported providing treats multiple times daily, followed by 26% who provided treats a few times per week and 20% who offered treats once daily. Less frequent treat provision was observed among 11% of respondents, who gave treats once a week, and 10% who provided treats rarely. The most invoked reason for provision of

treats was the emotional bond between owner and dog (52%). Other respondents were motivated by health benefits (35%) and training purpose (25%) while a small percentage cited other reasons (e.g. to facilitate administration of oral medication). When asked to list the primary criteria for choosing a certain type of treat, the advertised health benefits for the dog (57%) and the listed ingredients (51%), were the most commonly selected factors. There was a percent of owners primarily choosing treats by brand reputation (28%), price (19%), and a small group of owners who fed treats only for the dog's enjoyment. The nutritional aspects, including caloric content, protein and fat, were less frequently considered (Table 3). When asked about the most important characteristics in selecting treats, the majority indicated that texture (77%) and shape (66%) were more relevant than aroma (36%) or color (13%). The majority of owners (84%) reported overfeeding their dogs, exceeding the maximum recommended limit of 10% of the daily calorie requirement for treats. These owners did not consider treats an integral part of their dogs's daily diet and do not take calorie intake into account. Only 16% of the respondents reported that they adjusted meal size to account for this, to prevent unnecessary weight gain (Table 3).

The frequency of treat provision, as reported by dog owners, varied significantly across both age groups ($\chi^2(16, N = 890) = 136.73, p < 0.001$) and marital status ($\chi^2(4, N = 890) = 188.04, p < 0.001$). *Post-hoc* pairwise comparisons adjusted using the Bonferroni correction ($p < 0.002$ $p < 0.005$) revealing distinct patterns in treat-provision behaviors based on these factors (Table 4). The frequency of treat administration was analyzed in relation to the owners' age, considered as the independent variable. Owners aged >55 predominantly reported providing treats 'Seldom', significantly more often than all other frequency categories within this age group ($p < 0.002$). In contrast, younger owners (18–24 years) reported providing treats 'Multiple times daily' (31.8%) and 'Once daily' (23.1%), significantly more than all older age groups ($p < 0.002$). For the age group 25–34, 'Multiple times daily' (44.9%) was the most frequently reported category, significantly higher than all other frequencies within this group ($p < 0.002$). Mid-aged groups (35–44 and 45–54) displayed more evenly distributed patterns, with fewer significant differences across categories (Table 4).

The distribution of treat frequencies differed significantly between single owners and owners in a committed relationship, as determined by pairwise comparisons with Bonferroni correction ($p \leq 0.005$) (Table 4). Among single owners, treat provision was predominantly at higher frequencies, with 42.1% providing treats 'multiple times daily' and 31.9% 'once daily,' both significantly higher than lower frequencies ($p < 0.05$). Lower frequencies, such as 'seldom' (4.7%) or 'once a week' (6.4%), showed no significant differences between them. Owners in a committed relationship, treat provision was most common 'a few times a week' (38.1%), with significantly fewer owners providing treats 'multiple times daily' (22.4%, $p < 0.05$) or 'once daily' (7.1%, $p < 0.05$). Lower frequencies ('seldom' and 'once a week') were not significantly different from each other ($p > 0.005$) (Table 4).

The chi-square test revealed a significant association between the frequency of treat provision (independent variable) reported by

TABLE 2 Dog characteristics based on owner descriptions (n=890).

Variable	n	%
Age		
0-2	89	10
03-5	312	35.1
06-10	300	33.7
>10	189	21.2
Health problems*		
Allergies	152	36.2
Gastrointestinal disorders	112	26.7
Cardiovascular disorders	12	2.9
Urinary disorders	53	12.6
Dental disorders	70	16.7
Reproductive system disease	9	2.1
Other disorders	10	2.4
No Reported Health concern	470	52.8
Body condition (5-point)		
1-Very thin	0	0
2-Underweight	46	5.2
3-Ideal weight	590	66.3
4-Overweight	188	21.1
5-Obese	66	7.4

*Respondent could select more than one response option.

TABLE 3 Treat provision practices and perceptions among dog owners in Western Romania.

Variable	n	%
Treats type*		
Dental treat	516	58
Crunchy(biscuits)	463	52
Chewy-soft treats	347	39
Animal parts	127	14.2
Rawhide	89	10
Dehydrated tres	62	7
Frequency of Treat Provision		
Multiple times daily	292	32.8
A few times a week	230	25.8
Once daily	180	20.2
Once a week	100	11.2
Seldom	88	9.9
Main reason for providing treats*		
Emotional bonding	463	52
Health benefits	223	35.1
Training purposes	312	25.1
Other (please specify)	89	10
Main criteria when purchasing treats*		
Health benefits	507	57
Ingredients	454	51
Brand reputation	249	28
Price	187	21
For enjoyment or happiness only	169	19
Energy value	86	9.7
Protein percentage	45	5.1
Fat percentage	42	4.7
Other	18	2
Most important characteristics of treats*		
Texture	686	77.1
Shape/size	578	66
Aroma	320	36
Color	116	13
Treats as an integral part of dog's daily diet or a supplementary addition?		
Integral Part of Daily Diet (considered in daily caloric intake)	142	16
Supplementary Administration (given occasionally without counting calories)	748	84

*Respondent could select more than one response option.

owners and their dogs' body condition (dependent variable) ($\chi^2(8, N = 890) = 216.20, p < 0.001$). After applying the Bonferroni correction ($p < 0.003$), several significant patterns emerged. 80.7% of owners reporting 'Seldom' providing treats had dogs in the ideal weight category, significantly more than owners of underweight (14.8%, $p < 0.003$) or overweight/obese dogs (4.5%, $p < 0.003$). In the 'Once a week' category, the highest proportion of treat provision was reported for ideal weight dogs (79.0%), which was significantly higher than for underweight dogs (12.0%, $p < 0.003$) or overweight/obese dogs (9.0%, $p < 0.003$). The majority of owners providing treats 'A few times a week' reported doing so for ideal weight dogs (87.8%), significantly more than for underweight dogs (5.7%, $p < 0.003$) or overweight/obese dogs (6.5%, $p < 0.003$). Owners who reported providing treats 'Once daily' (58.3%) did so more often for ideal weight dogs, followed by overweight/obese dogs (40.0%), with significantly lower frequencies for underweight dogs (1.7%, $p < 0.003$). In the 'More Than Once Per Day' category, 52.7% of the reports came from owners of overweight/obese dogs, significantly higher than ideal weight (45.5%, $p < 0.003$) or underweight dogs (1.7%, $p < 0.003$) (Table 5).

4 Discussion

This study aimed to provide insights into the patterns and practices of treat provision among dog owners in the western part of Romania, highlighting their perceptions, motivations, and the potential implications of these behaviors on canine health. While there is a lack of data in the literature regarding the nutritional and caloric value of treats, numerous studies have focused on microbiological contamination. This gap in research is particularly relevant given the findings of our study, which highlight the frequent provision of treats by dog owners and the growing role of treats as a significant part of the pet food industry, which continues to exhibit consistent annual growth (Hervera et al., 2013; Dodd et al., 2020). The use of an online questionnaire to collect data introduces a potential limitation, as it may have led to a selection bias favoring respondents with consistent internet access, potentially influencing the representation of demographic or behavioral patterns in the sample. In agreement with other studies, the majority of owners from our study provides a variety of treats to their dogs during their lifetime (Rohlf et al., 2010; Laflamme et al., 2008; Prata, 2022), often as way to diversify their dogs diet (Boya et al., 2015), a behavior that emphasize treat provision as a common practice for bonding and training purposes (Morelli et al., 2020). Dental treats and crunchy biscuits were the most commonly provided by dog owners, highlighting the importance of treats that combine taste with health benefits, particularly in supporting oral health. In accordance with the results of Rohlf et al. (2010), White et al. (2016) and Morelli et al. (2020) dog owners usually purchase more types of treats, and the ones most selected are biscuits and chewable treats. Respondents also reported several health issues in their dogs, including allergies, digestive disorders, dental problems, cardiovascular disorders, urinary issues. These conditions may be influenced, in part, by treat-provision practices, particularly when treats are offered

TABLE 4 Treat-provision patterns reported by dog owners across age groups and marital status (n=890).

Category	Frequency of treats					Total	Chi-square	p-value
	Seldom	Once a week	A few times a week	Once daily	Multiple times daily			
Owners' age							136.73	<0.001
18-24	5.8% ^c	16.5% ^b	22.8% ^b	23.1% ^a	31.8% ^a	346		
25-34	4.5% ^c	4.8% ^c	26.8% ^b	19.1% ^b	44.9% ^a	314		
35-44	14.8% ^b	14.8% ^b	27.2% ^a	22.2% ^a	21.0% ^a	81		
45-54	24.7% ^a	12.9% ^b	32.3% ^a	8.6% ^c	21.5% ^b	93		
>55	33.9% ^a	7.1% ^b	26.8% ^b	25% ^b	7.1% ^b	56		
Owners' marital status							188.04	<0.001
Single	4.7% ^a	6.4% ^a	14.9% ^a	31.9% ^b	42.1% ^c	470		
Committed relationship	15.7% ^a	16.7% ^a	38.1% ^a	7.1% ^b	22.4% ^c	420		

Percentages represent the proportions of owners within each demographic group reporting specific treat provision frequencies. Letters indicate the results of pairwise comparisons between groups within each frequency category, with Bonferroni corrections applied ($p \leq 0.002$) for age comparisons and ($p \leq 0.005$) for marital status comparisons. Groups sharing the same letter are not significantly different, while groups with different letters are statistically different.

TABLE 5 Association between treat provision frequency and owner-reported dog body condition (n=890).

Category	Dogs' body condition			Total	Chi-square	p-value
	Underweight	Ideal weight	Overweight/obese			
Frequency of treats					216.20	<0.001
Seldom	14.8% ^c	80.7% ^a	4.5% ^b	88		
Once a week	12.0% ^c	79.0% ^a	9.0% ^b	100		
A few time a week	5.7% ^c	87.8% ^a	6.5% ^b	230		
Once daily	1.7% ^c	58.3% ^a	40.0% ^b	180		
Multiple times daily	1.7% ^c	45.5% ^b	52.7% ^a	292		

Percentages represent the proportion of dog owners who reported providing treats at specific frequencies for dogs within each body condition category. Letters indicate the results of pairwise comparisons between groups within each frequency category, with Bonferroni corrections applied ($p \leq 0.003$). Groups sharing the same letter are not significantly different, while groups with different letters are statistically different.

frequently or consist of a variety of ingredients. Frequent treat provision, especially of calorie-dense or low-quality treats, could exacerbate existing health conditions like obesity, digestive problems which is often linked to cardiac and metabolic issues. Similarly, treats with specific ingredients, such as artificial additives or allergens, might contribute to allergic reactions or digestive disturbances (Hand et al., 2010; Morelli et al., 2018; Arhant et al., 2021). This underscores the importance of tailoring treat provision to individual health conditions. The majority of respondents reported that their dogs maintained an ideal weight, while only 27% categorized their dogs as overweight/obese. The significant percentage of overweight and obese dogs highlights the ongoing challenge of weight management in companion animals. This is particularly relevant given the frequent treat provision observed in our study. The use of treats by owners is most commonly aimed at strengthening the emotional bond with their dogs, serving as a vital

tool for fostering relationships. This practice is often driven by the desire to enhance the owner-pet connection, underscoring its emotional significance (White et al., 2016; Morelli et al., 2020). Across studies, this shared motivation consistently highlights the role of treats in owner-dog interactions, while emphasizing the importance of balancing these emotional benefits with considerations for health and nutrition (Luno et al., 2021). Other motivations, such as health benefits and training purposes, were also significant, as owners aim to reinforce desired behaviors and support their dogs' overall well-being (Johnson et al., 2023). This demonstrates that treat-giving serves multiple purposes beyond simple rewards or indulgence. Owners prioritized the advertised health benefits and ingredient lists when choosing treats, reflecting an awareness of product quality and health implications. However, the relatively low consideration of nutritional content (e.g., protein, fat, and calorie content) suggests a gap in understanding the

broader nutritional impact of treats. According to the World Small Animal Veterinary Association (WSAVA) nutritional assessment guidelines, a dog's daily treat intake should not exceed 10% of their total calorie intake to align with weight management goals (Sallander et al., 2010; Freeman et al., 2011; WSAVA, 2011). The nutritional value of dog treats can vary significantly depending on their ingredients and processing methods (Morelli et al., 2018). Some treats contain high levels of protein and fat, which can be beneficial for active dogs but may lead to weight gain in less active dogs if not properly accounted for in the overall dietary plan. Although dog treats are often not considered part of the dog's diet by owners (White et al., 2016), it is essential that they are educated to follow an appropriate feeding plan that accounts for both maintenance foods and treats (Baldwin et al., 2010; German, 2011). This issue is compounded by findings from our study, where a concerning majority of owners (84%) reported administering treats in addition to their dogs' daily food ration without adjusting for their caloric value. The frequent provision of treats, with 32% of owners offering them multiple times daily, further highlights the potential for overfeeding. Moreover, the low percentage of owners who adjusted meal sizes to account for treat calories underscores a gap in understanding comprehensive dietary management. This challenge is consistent with findings from Freeman et al. (2013), which highlighted that many owners underestimated the caloric content of chewable treats, emphasizing the need for greater awareness of how treats contribute to overall caloric intake (White et al., 2016; Morelli et al., 2018; Calancea et al., 2024). The absence of a requirement for European manufacturers to display energy content (expressed as kcal/100 g or kcal/piece) on treat labels (Regulation (EC) No 767/2009, 2009) likely contributes to these misconceptions, leaving owners unaware of the caloric impact of treats. The importance of sensory qualities in treat selection is evident, with factors such as texture and shape reported by the majority of owners as key considerations, while aroma and color were less frequently prioritized. Although sensory appeal, including palatability, appearance, and smell, strongly influences preferences, color has also been noted as significant in certain cases (Yam et al., 2017). The majority of respondents in our study were women (72%) likely because women are typically the primary caregivers responsible for managing a dog's diet and feeding practices within households (Rohlf et al., 2010; Freeman et al., 2013; White et al., 2016).

The frequency of treat provision varied significantly based on owner age and marital status, revealing distinct patterns in treat-giving behaviors. Younger owners (18–34 years) were more likely to provide treats at higher frequencies, reflecting their emphasis on bonding and training. This behavior may also be influenced by modern trends that position pets as family members, as well as by marketing campaigns that actively promote treat-giving as part of pet care (Dodd et al., 2020). Treat provision tends to decline among older dog owners, likely due to their structured routines and a greater focus on maintaining their dog's overall well-being, which may lead to less frequent treat-giving (Preet et al., 2021). This reliance on owner interpretation, a limitation of this study, could impact the accuracy

and reliability of the results, particularly given that a larger proportion of younger owners completed the questionnaire, potentially introducing biases in self-reported assessments.

Our results found that owners who were not in a committed relationship reported providing treats more frequently, with the highest proportions observed in the 'Multiple Times Daily' and 'Once Daily' categories. These frequencies were significantly higher compared to those reported by owners in committed relationships. These findings align with the idea that treat provision practices may reflect differences in lifestyle, available time, and perceptions of pet care. These differences may stem from variations in emotional attachment, attachment anxiety, decision-making dynamics, and lifestyle factors tied to relationship status (Somppi et al., 2022; Linda et al., 2017; Coy et al., 2021), while committed owners likely approach treat-giving with more structure and restraint, influenced by shared responsibilities (Marinelli et al., 2007).

An evident relationship was identified between treat provision frequencies and a dog's body condition, with higher treat frequencies being associated with overweight or obese dogs, while lower frequencies were more commonly linked to dogs with an ideal weight. Frequent treat provision has been strongly linked to obesity in dogs, as it often contributes to excess caloric intake when not properly integrated into the overall diet (Laflamme, 2012; Morelli et al., 2020; Torda et al., 2020; Forrest et al., 2022). Bjørnvad et al. (2019) found that treats given during relaxation significantly increased the risk of dogs being overweight or obese, emphasizing how owner behaviors and preferences play a fundamental role in shaping body condition. This reliance on owner interpretation, a limitation of this study, could impact the accuracy and reliability of the results, warranting cautious interpretation of the findings, but self-reported BCS align with other studies, which suggest that most owners perceive their dogs to be at a healthy weight (Bland et al., 2009; Heuberger and Wakshlag, 2011; White et al., 2016) or studies that have shown that owners may underestimate or misinterpret their pet's body condition (Courcier et al., 2010; Rohlf et al., 2010; Courcier et al., 2011; German, 2011; White et al., 2011; Eastland-Jones et al., 2014; Diez et al., 2015; Yam et al., 2017). Future studies should aim to recruit a more balanced demographic sample and incorporate objective assessments, such as veterinary evaluations, to strengthen the validity of the results.

The insights from this study offer valuable opportunities to enhance strategies for preventing and managing canine weight issues through improved veterinary counseling and owner education. Understanding the link between treat-giving practices and dogs' body conditions allows veterinarians to provide tailored guidance that encourages responsible treat use and balanced feeding. This includes promoting portion control, selecting treats appropriate for a dog's weight and health, and incorporating treats into a well-structured dietary plan. The findings also emphasize the importance of effective communication strategies to educate owners about the risks of frequent treat provision and to highlight alternative bonding methods, such as play and training. These targeted interventions can support healthier weight management practices and contribute to improved canine well-being.

5 Conclusions

The nutrition of dogs plays a critical role in their physical and mental well-being, underscoring the importance of meticulously managing treat provision to support their overall health. Treats can significantly impact a dog's health, and it is crucial to ensure they are administered properly. This study highlights the significant impact of treat provision behaviors on canine nutrition and health, emphasizing the importance of responsible feeding practices. Owners in Western Romania often provide a wide variety of treats, with younger and single owners reporting higher frequencies of treat provision. Emotional bonding was identified as the primary motivation for giving treats, but most respondents failed to consider their caloric value or adjust daily meals accordingly, contributing to potential weight management challenges. Overweight and obese dogs were more likely to receive treats frequently, underscoring a connection between treat provision frequency and body condition. The findings stress the need for increased owner education on balancing treat provision with daily caloric intake to prevent overfeeding and associated health risks. Veterinary professionals play an essential role in guiding owners toward integrating treats into a comprehensive and balanced feeding plan. Owners should be instructed to look critically at treat labels and to build treats into their dogs' diet appropriately. Targeted educational efforts and owner guidance can help address misconceptions about treat-giving, promote healthier feeding practices, and ultimately contribute to better weight management and overall well-being in dogs. More in-depth future studies are needed on a more detailed nutritional analysis of various types of treats and their impact on well-being in the context of inadequate intake.

Data availability statement

The original contributions presented in the study are included in the article/**Supplementary Material**. Further inquiries can be directed to the corresponding authors.

Ethics statement

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

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SD: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Writing – original draft. AB-P: Conceptualization, Supervision, Writing – review & editing. SP: Supervision, Writing – review & editing, Validation. IP: Data curation, Software, Writing – review & editing. DM: Supervision, Writing – review & editing. AM: Conceptualization, Supervision, Writing – review & editing.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fanim.2025.1502724/full#supplementary-material>

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