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THE IDENTIFICATION OF THE EXTERNAL FACTORS THAT HAVE INFLUENCED THE PROGRESS OF A WEIGHT MANAGEMENT PROGRAMME IN A POPULATION OF DOGS

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Abstract

Raising awareness and educating dog owners about weight gain and the risk of obesity in their animals has become a priority for veterinarians and nutritionists. The prevalence of obesity in dogs in the United States and some European countries has been estimated to range from 30% to 70%. In the current research, external factors related to the animal, the owner and the family members of the investigated dogs were observed in relation to the implementation of nutritional programmes for excess weight management. Exogenous factors discussed included the physical activity level, environment and lifestyle of the animal, and the influence and behaviour of the owners and family members involved in the dog's weight loss programme. The research highlights the importance of obese dog owners' awareness and acceptance of the need to implement and run nutritional weight management programmes to improve the health and well-being of the animal.

Key words*: dogs, nutritional programmes, obesity, weight loss.*

INTRODUCTION

The official recognition of obesity as a disease by the American Medical Association was achieved in 2013 and marked a turning point in the understanding and management of this public health problem (Kyle et al., 2016).

In parallel with this recognition among humans, major animal welfare organizations, including the BSAVA, have adopted the same perspective on obesity in pets. It has also been pointed out that neglecting the problems associated with overweight pets can be a violation of pet welfare and may be contrary to the terms of the Animal Welfare Act 2006.

In a study conducted in the UK in 2016 by applying a questionnaire to owners it was concluded that overweight and obese canine patients showed a decrease in quality of life caused by altered health status (Yam et al., 2016).

To gain a detailed insight into the prevalence of obesity or overweight among dogs, data collected in 2022 revealed significant numbers in both the United States and European countries. According to the US Association for Obesity Prevention, approximately 59% of the country's canine population is overweight. In parallel, in European countries, a comprehensive study estimated that the prevalence of obesity among dogs ranges from 31.3% to 69.4% (Muñoz-Prieto et al., 2018), highlighting a wide range of the problem in European countries as well.

This integrated approach to obesity in both humans and animals highlights the importance of coordinated action and ongoing education in these areas.

MATERIALS AND METHODS

Medical and nutritional studies highlight the contribution of both internal and external factors in the development of overweight in dogs. In the literature, internal or endogenous factors mentioned include age, gender, hormonal status, presence of hormonal abnormalities and genetic predisposition.

The current study cohort consists of 29 dogs that were brought to a private veterinary clinic in Iasi between 2020 and 2023. These dogs were diagnosed as overweight, forming the basis of the biological material for the analysis and research conducted in this study.

In the current research, external factors contributing to weight gain in dogs were

investigated and considered as part of an extensive nutritional monitoring programme.
The external factors discussed included the level of physical activity, environment and lifestyle of the animal, and the influence and behaviour of owners and family members involved in the dog's weight loss programme. Therefore, both pet and owner behaviour, along with the implementation of healthy habits, became goals in achieving and maintaining a healthy body weight in pets.

RESULTS AND DISCUSSIONS

The causal agents that induced obesity but also influenced the animal's weight loss programme were divided into two categories in order to highlight as concretely as possible the less positive contribution of each party in the development of the nutritional programme, as can be seen in Table 1.

The factors most often mentioned were categorised as animal factors with a behavioural explanation and human factors related to the environment and the owner's responsibility towards the dog.
The seven external factors followed in dogs have been systematized in Table 1, three of these factors are behavioral factors related to the animal and have been defined as follows: sedentary dog that does not play and prefers to sleep, dog with increased appetite, greedy that steals or asks for food and uncooperative dog that aggressively asks for food or becomes aggressive when food is restricted. Furthermore, the factors that concerned the owner as well as the family of the monitored dog were also addressed, and in the table the four factors were defined as follows: owner who was uncooperative or made infrequent visits to the veterinary practice or did not keep appointments at the veterinary practice, owner who had periods of non-compliance with the nutritional plan, owner who was sedentary or limited the activity time of the animal and family members who were uncooperative or did not follow the weight loss program of the monitored animal.
Both the influence of factors related to the dog and those related to the dog's owner or family members have been presented graphically in Figure 1. Therefore from the first chart the more obvious influence of the owner in the progress of the dog's nutritional weight loss plan is observed.

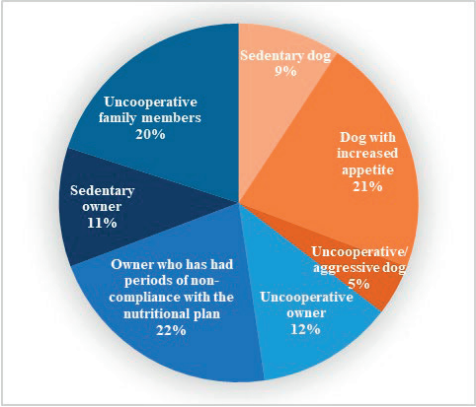

Figure 1. Proportion of each external factor that influenced the dogs' weight loss programme

The evolution of the canine patients enrolled in the study was influenced by external factors in an individual manner, therefore variations in external factors were recorded both in quantitative sense and in the type of majority factors (predominantly animal dependent/ predominantly owner dependent/equal proportion). Quantitatively, the dogs in the study were influenced by a number ranging from 0 to 5 external factors, none of them recorded the maximum possible number (7) of external factors involved. The percentage distribution of the number of patients according to the number of factors that were involved in the evolution of the weight management programme is plotted in Figure 2.

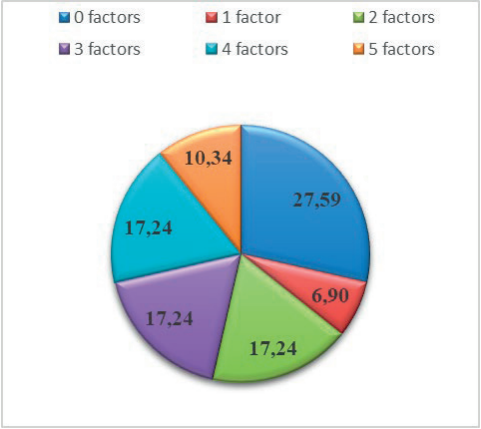

Figure 2. Percent of the dogs reported to the number of external factors involved during the weight loss program

Table 1. External factors influencing weight loss in dogs

No.	Name	External factors - behavioural - related to the animal			External factors related to the owner				Total number of influencing factors
	External factors	Sedentary dog	Dog with increased appetite	Uncooperative/ aggressive dog	Uncooperative owner	Owner who has had periods of non-compliance with the nutritional plan	Sedentary owner	Uncooperative family members	
1	ZIGGY								0
2	BELLA 1		1			1		1	3
3	BELLA 2								0
4	ZENY		1					1	2
5	KYRA		1		1			1	3
6	INDY					1			1
7	KIKI								0
8	BETY	1	1		1	1		1	5
9	FOXIE		1			1	1		3
10	SASHA								0
11	NEGRUTA	1	1			1	1	1	5
12	LIZUCA	1	1			1	1	1	5
13	CORA			1		1		1	3
14	JIMINA		1			1		1	3
15	PUGGY		1	1	1			1	4
16	OLI								0
17	BENI				1				1
18	ALFIE		1		1			1	3
19	DANTE	1				1	1	1	4
20	TOTO	1	1		1	1			4
21	TAZ					1	1		2
22	BERNIE								0
23	FIDO		1			1			2
24	HAPPY		1	1	1			1	4
25	OSCAR		1			1			2
26	JACK								0
27	BOBO	1				1	1	1	4
28	PATRICK								0
29	DIXY				1		1		2
Total (number)		6	14	3	8	14	7	13	65
Total (%)		9.2%	21.5%	4.6%	12.3%	21.5%	10.8%	20.0%	100%

Monitoring each overweight or obese patient involved an initial nutritional consultation that required the owner to follow a new feeding protocol for the pet (Petrescu, 2022).
The consultation questionnaire involved questions related to the pet's voluntary activity time manifested by its need to go for walks or to do activities such as playtime with the owner, family members or other animals in the household.
The communication with the owner during the implementation of the weight loss programme included questions about possible pathological feeding behaviours of the animal such as seeking food in inappropriate places, obtaining food from other animals in the household or showing aggression when food was restricted.
The observations made above are consistent with research on canine physiological behavior. Hence researchers have observed that similar to wolves, dogs also over-consume food or eat too quickly if fed in the presence of other dogs in the household (Case, 2005) which may cause pathological behaviour manifested by over-consumption or consumption in excess of the dog's nutritional needs.
The success of a weight loss programme is also a matter of the owner's willingness and responsibility towards his pet. Hence, in the current research, the influence factors manifested by the owners and the family of the animal studied were also analysed, such as: compliance with the recommended visits to the vet's clinic, compliance with the recommended nutritional plan and with the activity or play time with the pet included in the weight loss programme, as well as the cooperation of the family members in the correct implementation of the weight loss plan.
Maintaining communication with the owners of the monitored dogs was achieved by recommending and scheduling visits to the veterinary practice by sending notifications for nutritional recheck throughout the DigiTail veterinary software. As user-friendly methods for changing the nutritional program or for body weight updates for monitored dogs, email and WhatsApp were chosen as communication methods.
A complete nutritional program requires 3 to 6 months of adherence to see results. At the start of the pet's weight management programme, the dog owners receive an explanation regarding the difficulties they will face during the 3 to 6 months of their pet's diet depending on the correctness and compliance with the protocol that was imposed if they wanted their pet to lose weight. Behavioural changes that will occur in the dog following the nutritional weight management programme were explained.
Exogenous influencing factors were counted in the table and so a score of 0 meant that no factor had an influence and the nutritional programme was successful, and a score of 7 would have meant that all the factors presented would have influenced the nutritional programme and then the chances of the animal losing weight would have decreased drastically. Nevertheless, owners were most often unaware of all the changes that occurred when limiting the animal's food intake. As in the case of the animal's behaviour, the reasons given by the owners for their own behaviour or the reasons that emerged when the feeding programme was carried out were also revealed.
The investigation of the external behavioural factors related to pets that took part in the weight reduction nutritional programme shows in Figure 3 an increased tendency for dogs to show their desire for food by demanding food, showing cravings for their owners' or family members' food or even having a tendency to seek food in inappropriate places.

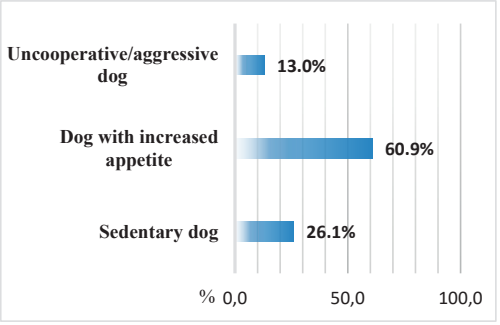

Figure 3. External factors (behavioural-animal-related) that influenced the implementation of the weight loss programme in dogs

Manifestation of scavenging behaviour has also been found in similar studies; German et al. (2012) discussed a challenge for pet owners

adhering to a weight loss program for their dog, namely energy restriction and its potential to cause hunger, which can then lead to more prominent manifestation of foraging behavior.
The level of voluntary activity was the second most common cause cited by owners with regard to their dog in 26% of cases, explaining that the pet is sedentary, prefers to sleep and is not interested in walking or playing.
According to studies by Zoran (2010), German et al. (2012), Salt (2019), nutritionally unbalanced food, excessive consumption of rewards and a sedentary lifestyle are risk factors leading to obesity in pets.
In the case of the dogs, the restriction of food resulted in behaviour considered by their owners to be ' bothering' or more aggressive, in 13% of cases the dogs became uncooperative, leading to a change in the initial feeding programme.
Training dogs to wait before being fed can be beneficial, increasing the predictability of the environment and reducing anxiety levels. However, studies on canine behaviour show that the expectation from owners that dogs should wait for long periods of time for food can exacerbate frustration in dogs and can have negative effects on their physiological and emotional state (Heath, 2013) which would result in an aggressive reaction when attempting to limit food portions.
Exogenous factors related to pet owners that influenced the implementation of the nutritional weight loss program were observed and compared with the results obtained in peer reviewed studies.
Therefore, it was observed that dog owners did not strictly follow the recommended nutritional program, as can be seen in Figure 4, having periods when they offered treats or more food to the pet indicating several reasons such as: they were away from home for a longer time and the pet stayed with another person, they did not have time to responsibly take care of the pet.
A recent, globally conducted peer-reviewed study investigated the success of a weight-loss plan in dogs, therefore the researchers of the study state that the major challenge for nutritionists and veterinarians who monitored and guided the dog weight-loss program was maintaining owner compliance with their pet's weight-loss program.
Therefore, in the research conducted by Flanagan et al. (2017) it was found that 37% of dogs initially enrolled in the weight loss program did not complete the study program mainly due to owners and noncompliance with the individualized nutritional program or failure to attend scheduled or recommended reweaning visits.
At the beginning of the nutritional weight management program in dogs, dog owners are asked that only they feed the dog and no other family member should be involved in the process, as this attempts to minimize the contribution of external influencing factors on the animal's weight loss plan.

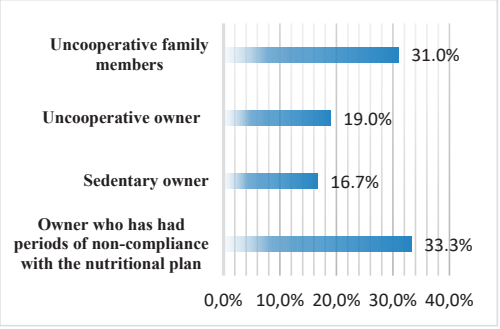

Figure 4. External factors (owner-related) that influenced the implementation of the weight loss programme in dogs

By observing both the behaviour of the dog's owner and its family members, misbehaviour was more often observed in the behaviour of family members, explained by a manifestation of the members' affection towards the dog. Therefore, it was found that in 31% of the cases, family members were not willing to cooperate and comply with the dog's weight loss program given reasons such as pity towards the animal (asking for food or not getting enough food), not being able to offer home-cooked food or table scraps because the dog is greedy.

CONCLUSIONS

The present study reveals that the success of a nutritional weight loss plan for pets is strictly

correlated with limiting as much as possible the interference of external factors. Rigorously maintaining a nutritional weight loss plan for a canine patient is an activity that is the responsibility of the owner and is based on knowledge and training of their pet. External factors related to the owner had a decisive influence on the patient's evolution during the implementation of the nutritional programme, as inconsistency of the owner and their family were the main external factors identified.

The role of the nutritionist and the veterinarian in the development of the nutritional weight management program is to provide solutions to situations encountered by both owners and pet dogs with inappropriate behaviours. For example, in the case of dogs, limiting food-seeking behaviour could be done by controlled stimulation (calculated according to the recommended daily energy requirement) of satiety through the improvement of the individualised nutritional programme.

In terms of limiting the contribution of the human factor in weight management in dogs, this could be addressed by encouraging the whole family to attend nutritional consultations so that all members of the dog's family become aware of the severity of a problem such as obesity in their pet.

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