

## ORIGINAL ARTICLE

# Preferences of owners of overweight dogs when buying commercial pet food

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**Summary**

Most pet dogs in developed countries are fed commercial diets. The aim of this study was to evaluate the preferences of owners of overweight dogs when buying commercial pet food. The study was a descriptive observational multi-centre study on a group of 198 owners of urban household dogs. Personal interviews were conducted to examine the owners' opinions with questions rating the importance of certain qualities of prepared dog food. Bivariate analyses for comparisons of absolute means between groups of owners of dogs with excess weight ( $n = 137$ ) and owners of normal weight dogs ( $n = 61$ ) were made using the Mann–Whitney  $U$ -test. A low price ( $p < 0.001$ ) and special offers ( $p = 0.008$ ) of commercial dog food were more important for owners of dogs with excess weight than for owners of normal weight dogs. The quality of ingredients ( $p = 0.007$ ) and the nutritional composition ( $p < 0.001$ ) were more important for owners of normal weight dogs than for owners of dogs with excess weight. The veterinarian was the most important source of information on dog nutrition for both groups (83.6% for owners of normal weight dogs and 83.2% for owners of dogs with excess weight) ( $p = 0.88$ ). The owners of dogs with excess weight had less interest in corrected dog nutrition than owners of normal weight dogs ( $p < 0.001$ ).

**Introduction**

Obesity is an escalating global problem in humans and in the dog population (World Health Organization (WHO), 2000; Remillard, 2006; Bland et al., 2009). Studies from various parts of the world have estimated the prevalence of canine overweight and obesity as between 10% and 44% (McGreevy et al., 2005; Colliard et al., 2006; Becker et al., 2009b; Bland et al., 2009; Handl et al., 2009; Courcier et al., 2010). The main reason for the development of dog obesity is a positive mismatch between energy intake and energy expenditure. Therefore, either excessive dietary intake or decreased energy expenditure can lead to a state of positive energy balance; numerous

factors may be involved including genetics, the amount of physical activity and the energy content of the diet (German, 2006).

Diet is a component of lifestyle that plays an important role in the development of overweight and obesity in humans (Beunza et al., 2010). Pet owners play an active role in determining the diet of their pets, and the vast majority of pet dogs in developed countries are fed with commercial diets (Laflamme et al., 2008; Michel et al., 2008; Becker et al., 2009a; Courcier et al., 2010; Sallander et al., 2010). The widespread use of nutritionally complete and balanced commercial diets has been cited as a contributing factor for longer, healthier life spans in pets (Kraft, 1998). Social and cultural factors along

with individual beliefs govern people’s eating behaviour, and it is likely that these same factors influence their choice of diet and feeding practices for their pets (Michel, 2006). It is also known that overweight people are more likely to have overweight dogs (Kienzle et al., 1998; Holmes et al., 2007). The nutritional choices made when owners select food for their dogs are determined by numerous factors, including the owners’ perception of their pet’s nutritional needs, their knowledge of healthy diets, and their perception of the pet food industry. Moreover, currently, the owner has numerous sources of information (veterinarians, dog trainers, pet shop employees, books of canine nutrition, pet nutrition company’s information, dog clubs, other pet owners, and internet) regarding the correct nutrition for dogs, these sources not always being rigorous and correct. Effective communication by a veterinarian with a dog’s owner regarding their pets’ nutrition and diet management can be complicated. Understanding how people choose to feed their pets could help to find an adequate psychological approach for practitioners in nutrition consultation.

The aim of this study was to compare the preferences of owners of overweight and normal weight dogs, in relation to the importance of certain qualities when buying commercial pet food.

**Materials and methods**

**Procedure**

The study design was a multi-centred cross-sectional study on a group of 198 owners of urban household dogs on the island of Gran Canaria (Canary Islands-Spain). These owners and their dogs came from several veterinary centres visited for routine consultations, the owners giving their consent to participate in this study. The research meets ethical guidelines, including adherence to the legal requirements of European legislation.

The weight status of the dogs was determined by Body Condition Score (BCS) and was assessed using a 9-point scale (Laflamme, 1997). The dogs were considered obese when the BCS score was over 6. The BCS was determined by one of the veterinarian authors and was always carried out by the same person. The clinical evaluation of the dogs was performed by the Veterinary Internal Medicine Service of the University of Las Palmas de Gran Canaria (Spain).

Owners were asked to fill out a questionnaire containing questions about certain qualities of prepared dog food (Table 1); the confidentiality of

**Table 1** Importance of certain qualities of prepared dog food in owners of normal and obese dogs

Variable scaling from 1 = not important to 5 = very important	Owner of dogs		p-Value (Mann–Whitney U-test)
	Overweight dogs N = 137 Mean (SD)	Normal dogs N = 61 Mean (SD)	
Low price	3.01 (1.42)	2.28 (1.45)	<0.001
Special offers of commercial dog food	2.88 (1.47)	2.28 (1.42)	0.008
Dog preferences	3.80 (1.53)	3.79 (1.39)	0.482 (NS)
Presentation	2.15 (1.52)	2.61 (1.59)	0.028
Colour and odour	2.75 (1.63)	3.08 (1.57)	0.213 (NS)
Quality of ingredients	3.94 (1.41)	4.48 (1.01)	0.007
Nutritional composition	3.50 (1.53)	4.51 (0.96)	<0.001
Quality of Trademark	3.50 (1.54)	3.85 (1.31)	0.183 (NS)
Available at the nearest supermarket	3.43 (1.61)	3.10 (1.66)	0.193 (NS)
Advertises	1.75 (1.16)	1.80 (1.27)	0.903 (NS)
Easy storage	2.34 (1.50)	2.59 (1.59)	0.359 (NS)
Package friendly to the environment	1.31 (0.77)	1.48 (0.95)	0.171 (NS)
Out of date time	3.64 (1.57)	3.61 (1.70)	0.869 (NS)
Recommended by veterinarians	3.88 (1.45)	3.85 (1.45)	0.855 (NS)
Recommended by other owners	2.17 (1.40)	2.26 (1.32)	0.496 (NS)

NS, no significant.

the collected data was maintained. Only one dog per household was included. Participation in the survey was limited to owners who feed their pets with commercial pet food. All the owners were asked to fill out the questionnaire by one veterinarian research fellow.

Personal interviews were conducted to examine the owner opinions regarding their dog’s nutrition, on the basis of part of a questionnaire designed by Bergler (1988) which served as a psychological evaluation of dog ownership. The questionnaire contained questions rating the importance of certain qualities of commercially prepared dog food. The answers ranged from 1 = not important to 5 = very important (1 = not important; 2 = little importance; 3 = important; 4 = quite important; 5 = very important).

**Statistical analysis**

The SPSS statistical package (version 17.0. for Windows) was used throughout this study. Descriptive analysis of the variables was carried out using measurements of central tendency (mean) and measures of dispersion (standard deviation; SD). For continuous

variables, we used the Kolmogorov–Smirnov test to check that the variables were normally distributed. Normality was accepted at  $p > 0.05$ . Bivariate analyses for comparisons of absolute means between groups of owners of dogs with excess weight and owners of normal weight dogs were made using the Mann–Whitney *U*-test. A  $p$ -value  $< 0.05$  was determined as indicating significance.

## Results

A total of 198 questionnaires were completed by owners of dogs fed with commercial pet food. Of the 198 subjects, 61 owners had dogs with normal weight (30.8%) and 137 owners had dogs with excess weight (69.2%).

Table 1 shows the comparison of the importance of certain qualities of prepared dog food between owners of normal and obese dogs.

For owners of dogs with excess weight, a low price ( $p < 0.001$ ) and special offers ( $p = 0.008$ ) of commercial dog food was more important than for owners of normal weight dogs. On the other hand, for owners of normal weight dogs, the presentation ( $p = 0.028$ ), quality of ingredients ( $p = 0.007$ ), and the nutritional composition ( $p < 0.001$ ) were more important than for owners of dogs with excess weight. The age of the owners of dogs with excess weight was significantly higher ( $42.8 \pm 14.5$  years old) than the age of the owners of normal weight dogs ( $36 \pm 12.6$  years old) ( $p = 0.002$ ).

Ease of availability of commercial pet food was more important for the owners of dogs with excess weight than for the owners of normal weight dogs ( $p = 0.193$ ), whereas environmentally friendly packaging was less important for this group ( $p = 0.171$ ), although there were not statistically significant differences between both groups.

The vets was the most important source of information on dog nutrition and commercial pet food recommendation for both groups (83.6% for owners of normal weight dogs and 83.2% for owners of dogs with excess weight) ( $p = 0.88$ ). Meanwhile, the commercial pet food recommendations by other owners were a less important source of information on dog feeding for both groups (44.3% for owners of normal weight dogs and 41.3% for owners of dogs with excess weight) ( $p = 0.38$ ). Also pet food advertisers were a less important source of information on dog feeding for both groups (24.6% for owners of normal weight dogs and 22.7% for owners of dogs with excess weight, respectively) ( $p = 0.41$ ).

## Discussion

The results of this study suggest that the owners of overweight dogs had less interest in corrected dog nutrition than owners of normal weight dogs, since they had less interest in the quality of the ingredients ( $p = 0.007$ ) and in the nutritional composition ( $p < 0.001$ ) of the prepared dog food. Also the owners of dogs with excess weight had more interest in the low price of the commercial food ( $p < 0.001$ ) and in special offers of commercial dog food ( $p = 0.008$ ) than owners of normal weight dogs.

This results agree with the study of Kienzle *et al.* (1998), who investigated the human–animal relationship, the feeding and care of dogs and certain personal characteristics (such as eating and health behaviour) of 60 owners of obese dogs in comparison with 60 owners of normal dogs, based on the same questionnaire designed by Bergler (1988). In contrast to the aforementioned study, we did not found a statistically difference between the opinions of the owners of obese and normal dogs as regards the importance of the availability of commercial products in the nearest supermarket, and the fact that packaging was environmentally friendly.

The lower interest of the owners of overweight dogs in the adequate nutrition of their dogs could be influenced by the fact that owners of overweight dogs were often overweight themselves and they took only a rather limited interest in both their own preventive health behaviour and that of their dogs. These results agree with several studies already carried out that have demonstrated that dogs with owners with excess weight are more likely to be obese (Kienzle *et al.*, 1998; Holmes *et al.*, 2007; Peña *et al.*, 2009).

In our study, obese dogs are more likely to have been fed inexpensive rather than more expensive foods; these results agree with other studies which determined that the lower price of the dog food was more important for owners of obese dogs than for owners of normal dogs (Kienzle *et al.*, 1998; German, 2006). In another study by Courcier *et al.* (2010), the importance attributed to lower prices and offers were related to the lower income of the owners of obese dogs, coming to the conclusion that those in a lower income bracket are much more likely to have obese dogs; however, in our study, we have not studied this variable. Concerning the age of the owners of both groups, Becker *et al.* (2009a) found that in younger people (26–36 years old) the food price had a greater relevance than for elder people (46–55 years old). We have not studied this

variable in our study; however, we have found that the age of the owners of dogs with excess weight was statistically significant higher ( $42.8 \pm 14.5$  years old) than the age of the owners of normal weight dogs ( $36 \pm 12.6$  years old) ( $p = 0.002$ ).

In this study, the veterinarian was the most important source of information on dog nutrition for both groups of owners, although there were not statistically significant differences between both groups. These results agree with results from similar studies (Laflamme et al., 2008; Rohlf et al., 2010). Recognition of how perceptions of proper diet and feeding management of companion animals can differ among pet owners is an important consideration for veterinary health-care professionals with regard to being able to communicate effectively on these topics. Although owners generally have good intentions, some of them may lack the scientific knowledge or other resources needed to recognise key nutritional needs of their pets (Streiff et al., 2002). In the present study, the information provided by other owners regarding dog nutrition was less important than the information provided by their veterinarian. Therefore, the veterinarian is perceived by the owner as the main authority regarding the nutritional guidelines for their dog. However, to succeed in persuading a pet owner to adhere to these recommendations, information should be obtained regarding how the pet is currently fed and an understanding of the rationale for those practices should be developed. The importance of other sources of information should also be considered. In other studies, a considerable number of dog owners cited the internet and other media as their primary source of information on pet nutrition (Laflamme et al., 2008; Michel et al., 2008).

The dogs represented in the present study appear to be a representative sample of the population of dogs from the island of Gran Canaria, which suggests that extrapolation of this data to the general dog population, would be appropriate. However, there may have been factors related to the likelihood of an owner agreeing to participate in the survey that could have introduced bias with regard to their preferences for pet food. This is also considered in another study (Michel et al., 2008), where the issue was raised of whether making it known who was to carry out the survey influenced the responses of the owner. In our case, the questionnaire was carried out by one of the veterinarian investigators in the waiting areas of the pet veterinary clinics; therefore, we can consider this fact as a limitation of the study. Also, the studied group of owners may not be

representative to the total group of dog owners, since some of them never visit any veterinary centre.

In conclusion, we demonstrated that the owners of dogs with excess weight had less interest in corrected dog nutrition than owners of normal weight dogs. Because of that the collective of overweight dog owners should be informed during routine veterinarian visits, about adequate or non-adequate food and physical activity habits for their dogs, and the health problems to which obese companion animals may be predisposed. Obesity negatively influences an animal's quality of life and contributes to a high number of diseases. Numerous studies demonstrated that obesity can have detrimental effects on the health and longevity of dogs; the problems to which obese dogs may be predisposed include orthopaedic disease, diabetes mellitus, abnormalities in circulating lipid profiles, cardio respiratory disease, urinary disorders, reproductive disorders, neoplasia (mammary tumours, transitional cell carcinoma), dermatological diseases, and anaesthetic complications (German, 2006).

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