

Review of Risk Factors for Feline Obesity: Investigating factors that contribute to its frequency

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Word count: 984

Introduction

Feline obesity is now recognised as a major disease affecting pet cats in the US, the UK and Australia (Bissot *et al.*, 2010; Colliard *et al.*, 2009; Courcier *et al.*, 2010; German *et al.*, 2010; Linder & Freeman 2010; Zoran, 2010). Adipose tissue was once thought to be a “passive fuel depot”, but recent studies have revealed that it acts as an independent endocrine organ, secreting a wide range of hormones and influencing multiple biological systems, including glucose homeostasis, fluid balance, and inflammation (German *et al.*, 2010). As such, obesity has been conclusively linked to a wide array of disease conditions: obese cats are more likely to develop diabetes mellitus, hypertension, urinary tract disease, skin conditions, and certain cancers (Courcier *et al.*, 2010; German *et al.*, 2010). These conditions are undoubtedly detrimental to the wellbeing of affected cats, as they are associated with measurable pain and discomfort.

Discussion

Reducing the incidence of feline obesity is confounded by many factors identified in recent studies, including a tendency for owners of obese cats to underestimate Body Condition Score (BCS), owner misinterpretation of feline feeding behaviour, variation in commercial diets designed for weight loss, and inconclusive information on optimal feeding frequency and macronutrient content of diets.

While most cat owners are aware of the deleterious effects of obesity on pets in general, they are often unaware that this information applies to their pets in particular. Several studies have shown that owners of overweight cats have a strong tendency to underestimate their cat's BCS (Colliard *et al.*, 2009; Courcier *et al.*, 2010; Allan *et al.*, 2000). This is associated with over-feeding (Colliard *et al.*, 2009). The veterinarian may help owners by training them to accurately assess BCS using visual cues and palpation.

Owner misinterpretation of feline feeding behaviour may also lead to over-feeding (Bissot *et al.*, 2010). In the wild, cats tend to eat small, frequent meals and have controlled access to food (Rochlitz, 2005, cited in Bissot *et al.*, 2010). Most pet cats in the US and Australia are fed three or fewer meals per day (Laflamme *et al.*, 2008, cited in Bissot *et al.*, 2010). Bissot *et al.* describe this practice as “inherently stressful” for cats, resulting in behaviours owners may find undesirable (e.g., scavenging or “begging”), which they interpret as hunger. What is more likely is that these cats have associated certain triggers from the owner with the delivery of food (e.g., opening the cupboard where the food is kept) and they respond with social behaviours of their own (e.g., rubbing, vocalising). If a cat is always fed in this situation, he learns to associate these behaviours with receiving food, and may display them more often, whether he is truly hungry or not. If the owner responds by giving the cat more food, this can lead to weight gain (Rochlitz *et al.*, 2005, cited in Bissot *et al.*, 2010).

One major cause of owner dissatisfaction with a weight-loss program is the perception that their cats are hungry (and therefore unhappy) due to the energy restrictions of the diet plan. This places a strain on the human/animal bond and is largely responsible for non-compliance and withdrawal (Bissot *et al.*, 2010). The veterinarian plays an important role by educating owners on feline feeding behaviour, and by varying the type of diet, amount fed, and feeding frequency for individual animals until a balance is found that simultaneously promotes healthy weight loss and minimises begging.

The wide variation in caloric density and feeding directions for commercially available diets designed for weight loss can make it confusing for owners and veterinarians aiming to

prevent or treat obesity in cats. In a recent study, Linder and Freeman (2010) evaluated 93 such diets. Not only were they found to vary markedly in their caloric content, but more than half the diets were found to exceed the maximum caloric density allowed by AAFCO for light diets. Feeding directions were also found to vary and were typically based on current weight. Pet-food companies could contribute to improved feline health and welfare by developing weight-loss diets with lower caloric densities and by providing more accurate feeding directions based on ideal weight (Linder & Freeman, 2010). Veterinarians may then take into account individual energy requirements and offer clients a personalised weight-loss program that is more likely to succeed.

Frequent feeding was identified as a risk factor in a study of 118 cats by Courcier *et al.* and cats fed ad libitum were four times less likely to be overweight or obese than cats fed two or three times a day (2010). These results contrast with those of a study by Russell *et al.* (2000), which propose a strong association between ad libitum feeding and risk of obesity (cited in Courcier *et al.*, 2010). In other studies, feeding frequency did not appear as a risk factor at all (Courcier *et al.*, 2010; Colliard *et al.*, 2009).

Another factor requiring further exploration is the effect of specific macronutrients on satiety in cats. Studies in humans and dogs suggest that certain foods may be more effective in reducing hunger, specifically those high in protein or fibre (Bissot *et al.*, 2010). A 2008 study investigating the ability of different diets to satiate cats suggests that reducing the protein and increasing the fibre is effective in reducing hunger (Servet *et al.*, 2008, cited in Bissot *et al.*, 2010).

Conclusion

Veterinarians are pivotal in the successful management of feline obesity. Cat owners need assistance in navigating this complex issue and will benefit from training in correctly appraising their pet's BCS and understanding normal feline feeding behaviour. Pet-food companies have the opportunity to contribute significantly to reducing the feline obesity epidemic by offering affordable low-calorie diets with clear labelling and accurate feeding instructions. More research is required to determine optimal feeding frequency for cats on a weight-loss program and the optimal macronutrient content of these diets.

References

- Allan, F.J., Pfeiffer, D.U., Jones, B.R., Esslemont, D.H.B., Wiseman, M.S. (2000) A cross-sectional study of risk factors for obesity in cats in New Zealand. *Preventative Veterinary Medicine* 46, 183-196.
- Bissot, T., Servet, E., Vidal, S., Deboise, M., Sergheraert, R., Egron, G., Hugonnard, M., Heath, S.E., Biourge, V., German, A. (2010) Novel dietary strategies can improve the outcome of weight-loss programmes in obese client-owned cats. *Journal of Feline Medicine and Surgery* 12, 104-112.
- Colliard, L., Paragon, B.M., Lemuet, B., Benet, J.J., Blanchard, G. (2009) Prevalence and risk factors of obesity in an urban population of healthy cats. *Journal of Feline Medicine and Surgery* 11, 135-140.
- Courcier, E.A., O'Higgins, R., Mellor, D.J., Yam, P.S. (2010) Prevalence and risk factors for feline obesity in a first opinion practice in Glasgow, Scotland. *Journal of Feline Medicine and Surgery* 12, 746-753.
- German, A.J., Ryan, V.H., German, A.C., Wood, I.S., Trayhurn, P. (2010) Obesity, its associated disorders and the role of inflammatory adipokines in companion animals. *The Veterinary Journal* 185, 4-9.
- Linder, D.E., Freeman, L.M. (2010) Evaluation of calorie density and feeding directions for commercially available diets designed for weight loss in dogs and cats. *Journal of the American Veterinary Medical Association* 236, 74-77.

Zoran, D.L. (2010) Obesity in Dogs and Cats: A Metabolic and Endocrine Disorder. *Veterinary Clinics of North America: Small Animal Practice* 40, 221-239.