

## Understanding Feline Obesity, Successful Interventions and Prevention

*Discusses the implications of the human-animal bond, societal perceptions of obesity and environmental factors for managing feline obesity.*

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### Introduction

Feline obesity, defined as being 20% over ideal weight, is a significant welfare issue – 25-65% of cats are overweight or obese (Linder & Mueller, 2014; Michel & Scherk, 2012). Obese cats have reduced life expectancy and are at greater risk of orthopaedic, cardiorespiratory, urinary, and oral diseases as well as *diabetes mellitus*, neoplasia and dermatitis (Linder & Mueller, 2014; Sandøe *et al.*, 2014). Management strategies have most often focussed on nutritional and lifestyle contributions to feline obesity. Recent research suggests environmental factors, the human-animal bond and societal perceptions also contribute to feline obesity and should be considered in weight-loss planning.

### Discussion

Risk factors for obesity are numerous. Cats are at greater risk of obesity if male, neutered, 5-12 years old, have a confined or sedentary lifestyle, a frequent-feeding regime, or high-calorie content food (Linder & Mueller, 2014). Mixed breed cats are 2.5 times more likely to be obese than pure breed cats (Corbee, 2014). Obese cats are more likely to have owners who are socially isolated, elderly and female (Linder & Mueller, 2014).

Confinement and a sedentary lifestyle are established risk factors for feline obesity, however, spontaneous exercise by cats may also be influenced by other environmental and physiological factors. Deng *et al.* (2014) found that cats (n=10) fed hydrated dry food were more likely to engage in voluntary exercise than those fed on non-hydrated diet. There was no difference in activity for cats fed once or multiple times daily. Kappen *et al.* (2013) observed that cats (n=11) given access to longer daylight hours had increased activity levels but also higher food intake and higher resting metabolic rate than cats exposed to less daylight. Reduced water intake and poor natural lighting may increase sedentary behaviour and contribute to obesity.

An owner's psychosocial needs and the human-animal bond have emerged as indicators for feline obesity risk. German (2010) found owners of overweight cats have a closer relationship with their cats, are more likely to humanise them and substitute a cat for human companionship. They are less likely to play with their cats and will use food as an alternative form of communication. They are more likely to feel guilty about denying food, stigmatised by negative feedback from veterinarians and less likely to adhere to weight-loss plans (German, 2010; Michel & Scherk, 2012; Sandøe *et al.*, 2014). [Ownership styles may parallel parenting styles linked to obesity in children (German, 2015).] Recent case studies by Linder & Mueller (2014) support German's 2010 findings and suggest that assessment of the human-animal bond is a key success factor for feline weight-loss programs.

These human-animal bond factors may be exacerbated by a social perception of feline obesity as benign or attractive. Societal fat tolerance, such as that typified by the cartoon character Garfield, may reduce owner understanding of the severity of their cat's condition and the importance of weight-loss compliance (Sandøe *et al.*, 2014). In a study of 268 show cats, Corbee (2014) found a correlation between Body Condition Score (BCS) and weight-associated breed descriptors in Persian, British Shorthair, Birman and Ragdoll cats. Increased normalisation of obesity could lead to the incorporation of obesity into future breed standards. Fat tolerance probably underpins underestimation of BCS by owners of obese cats (Allan *et al.*, 2000; Courcier *et al.*, 2010; Linder & Mueller, 2014; Sandøe *et al.*, 2014).

Feline obesity strategies have most often focussed on nutrition and energy content, but food with low calorie density, higher water and protein content, and lower fat content is more likely to assist weight loss (Linder & Mueller, 2014). Emerging multidimensional strategies incorporate owner education, voluntary exercise, cat predatory behaviour and the human-animal bond (Ellis *et al.*, 2013; Linder & Mueller, 2014). Empirical evidence around weight-loss strategy success is limited. Anecdotally, single-dimension strategies commonly fail. Even where lifestyle factors are changed, failure is common. Deagle *et al.* (2014) found 46% of 26 cats in a nutrition-lifestyle-adapted obesity program regained >5% of weight lost, and 52% of these regained >50% after 954 days. Age was the only significant predictor.

Case-based evidence suggests multidimensional strategies may be more successful both because they incorporate normal animal behaviour, and because they maintain and strengthen the owner-pet relationship (Linder & Mueller, 2014). In one example (Linder & Mueller, 2014), owner concern about forced exercise and perceived pet resentment was countered by the enjoyable task of hiding food in small portions around the house. In another case, a family who each valued the feeding role, shared responsibility for feeding a fixed food quantity. Treats must be included in total diet when part of the normal human-animal interaction (Linder & Mueller, 2014).

The emerging role of the human-animal bond suggests that cat contributions to the human-animal bond could also be factors in feline obesity. Both owners and cats may develop a learned association between feeding and emotional comfort. A cat that seeks food more frequently and who rewards the owner by affection or decreased anxiety behaviours may strengthen food-based communication with the owner. Some cats may value this interaction more than others and react more negatively to new feeding regimes.

Breed differences in cat obesity imply a genetic contribution to obesity (Corbee, 2014). Whether this is due to a physiological predisposition, or temperament factors occurring alongside breed differences, is unknown. However, it remains likely that some cats are more predisposed to becoming obese.

Cat physiology may also matter. Anxiety and obesity are concurrent risk factors for many feline health conditions. Both stressed and obese cats have a higher incidence of urinary tract disease (Buffington, 2011) and cardiovascular disease (Levine, 2008). Prolonged corticosteroid release in chronically stressed cats alters metabolic processes and reduces immunological fitness (Levine, 2008), as do inflammatory mediators and hormones released by adipose tissue (Linder & Mueller, 2014). Whether anxiety is correlational, the result of obesity, or causal is unknown.

## Conclusion

Overall, emerging research into feline activity and the human-animal bond supports a multidimensional approach to feline weight-loss, but comparative empirical evidence is required. The cat's contribution to obesity is another area so far unexplored.

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