

Obesity Management in Pet Animals

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Introduction

In today's hectic modern lifestyle, humans have found great comfort and companionship in pets. With increasing bond between pets and humans, there is also increase in occurrence of obesity in pets. Currently obesity is the most prevalent nutritional disorder in pets affecting approximately 25-40% of dogs and cats worldwide (*German, 2006*). Obesity is defined as excessive accumulation of body fat leading to increased body weight by 20% or more than optimum body weight. It not only affects the appearance of our pet but also predisposes them to serious health risks like diabetes, joint diseases, reduced life span *etc.* By proper nutritional and managerial interventions this condition may be overcome ensuring a quality life and increased life spans of our pets.

Causes of obesity

1. **Metabolic and nutritional imbalance:** Feeding the pet more than their requirement is the primary cause of obesity due to sustained positive energy balance as caloric intake exceeds the expenditure. Feeding the table scraps, frequent treats and giving highly processed energy dense canned products easily lead to overconsumption (*Loftus and Wakshlag, 2014*)
2. **Lifestyle:** Dogs and cats that are confined indoors have reduced daily energy expenditure due to reduced physical activities leading to more fat accumulation
3. **Physiological factors:** With advancing age the resting metabolic rate of the pets decrease naturally increasing the chances of overweight. Additionally neutering/spaying alters the hormonal regulation causing lower basal energy requirements hence with little overfeeding more accumulation of fats take place in both cats and dogs (*Saavedra et al., 2024*).
4. **Breed predisposition:** Purebreds of dog like pugs and labradors are highly prone due to presence of POMC (Pro-opiomelanocortin) gene mutation increasing the appetite

and lowering the metabolic rate. In case of cats mixed breeds (domestic shorthairs) are at higher risk (Pegram *et al.*, 2021).

Health risks associated with obesity

1. **Endocrine and metabolic disorders:** With accumulation of more adipose tissues there is also increase in levels of adipokines promoting chronic, low grade systemic inflammation and disrupt glucose metabolism. This significantly increases the risks of type 2 diabetes mellitus due to insulin resistance in cats (German, 2006).
2. **Cardiorespiratory compromise:** There is restriction in diaphragmatic movements and increase in workload on the heart and lungs due to fat accumulation in thoracic and abdominal cavity. Overweight dogs are at higher risks for exacerbations of conditions like tracheal collapse and brachycephalic obstructive airway syndrome (Loftus and Wakshlag, 2014).
3. **Orthopaedic and joint diseases:** Excess weight increases the mechanical stress on the weight bearing joints accelerating the progression of osteoarthritis and increasing the chances of cranial cruciate ligament rupture in dogs. Increased levels of adipokines chemically damage the joint cartilages causing more wear and tear (German, 2006).
4. **Reduced lifespan and quality of life:** Overweight dogs have lesser lifespan. Dogs managed in lean body condition live additional 2 years than their littermates and delayed chronic diseases (Kealy *et al.*, 2002).

Strategies for management of obesity

1. **Caloric restriction and target weight calculation:** Reducing the volume of standard maintenance diet of a pet arbitrarily is not recommended as it may lead to malnutrition. Estimation of pet's ideal body weight (IBW) using a standardized body condition score (BCS) is the initial step for a successful weight loss programme (German, 2016).
2. **Macronutrient modulation in therapeutic diet:** A safe weight loss is the goal for this purpose.
 - a) **Protein:** To maintain lean body mass during caloric restriction the protein to calorie ratio is elevated, which helps in preventing sudden decline of resting metabolic rate. It helps in prevention of breakdown of healthy muscle tissue for energy and preventing the excess weight gain caused due to low metabolic rate resulting from muscle loss (Loftus and Wakshlag, 2014).
 - b) **Fibre:** Soluble and insoluble fibres are specifically blend together to distend the stomach resulting in sending signals to the hypothalamus to suppress the release of appetite stimulating neuropeptides which helps in avoiding overconsumption. The bulky mass of fibre delays the gastric emptying and delays the nutrient absorption

in intestine this stabilizes the postprandial glucose levels and reducing hunger between meals (Kealy *et al.*, 2002).

- c) **Nutraceuticals:** L-Carnitine is most used nutraceutical in weight loss. It facilitates the mobilization of fatty acid for cellular oxidation. This helps in speedy fat burning process keeping the daily energy levels high (Bland and Hill, 2011).
3. **Managing adaptive thermogenesis and weight loss plateaus:** With reduced caloric intake the body relies on adaptive thermogenesis lowering the resting metabolic rate resulting in a weight loss plateau. Regular weight checkups in 2-4 weeks are essential to adjust the pet's diet according to its shifting metabolic rate. The steady loss of 1-2% of initial body weight per week is safe. In case of cats any attempt to make the process faster results in overloading the liver leading to a fatal condition known as feline hepatic lipidosis (German, 2016).
4. **Modifying feeding behaviours:** Owners naturally equate giving more food as a sign of affection which is often exploited by pets for more treats. Breaking this behavioural loop is important for a successful weight loss programme. High calorie low nutrient treats should be replaced with grooming or play sessions as a reward. Use of slow bowls or interactive puzzle feeders helps in slow rate of ingestion and also prevents boredom providing additional physical activities (Bland and Hill, 2011).
5. **Low impact physical rehabilitation:** With dietary changes exercise is also important to ensure daily energy expenditure. High impact exercise like running, jumping aggressive fetching is not recommended in obese pets as there is high chances of cartilage degradation, accelerated osteoarthritis or ligament rupture. Low impact physical activities like controlled leash walking on flat surface is best for starting. Hydrotherapy like underwater treadmills is gold standard as buoyant force from water helps in reducing the effective body weight and viscosity of water ensures gentle uniform resistance. This ensures good cardiovascular health without injuries (Chauvet *et al.*, 2011)
6. **Gut microbiome modulation:** Obesity also alters the microbial population in gut known as dysbiosis. This obesogenic microbiome extracts energy more efficiently from same volume of food compared to lean animal. Use of targeted prebiotics and specific probiotic strains in diet is a modern strategy in weight loss programmes (Kieler *et al.*, 2017).

Conclusion

Obesity is not just a matter of aesthetics; it is a serious metabolic disorder risking the quality of the life of our pet and reducing the life span. By adopting above strategies and providing purpose formulated therapeutic diet with physical exercise, obesity

can be easily prevented thereby reducing the chances of chronic diseases.

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