



## SPONTANEOUSLY ARISING DISEASE: REVIEW ARTICLE

# The Financial Costs, Behaviour and Psychology of Obesity: A One Health Analysis

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## Summary

People who are overweight or have obesity are estimated to comprise 30% of the global population and up to 59% of companion dogs and cats are estimated to be above their optimal body weight. The prevalence of human and companion obesity is increasing. The direct and indirect costs of obesity and associated comorbidities are significant for human and veterinary healthcare.

There are numerous similarities between obesity in people and companion animals, likely related to the shared environmental and lifestyle elements of this multifactorial disease. While the study of human obesity is relatively robust, research conducted in pets is generally limited to small studies, studies with cross-sectional designs or reports that have yet to be replicated. Greater understanding of human obesity may elucidate some of the factors driving the more recent rise in pet obesity. In particular, there are overlapping features of obesity in children and pets that are, in part, related to dependency on their ‘parents’ for care and feeding. When feeding is used in a coercive and controlling fashion, it may lead to undesirable feeding behaviour and increase the risk for obesity. A ‘responsive parenting’ intervention teaches parents to respond appropriately to hunger–satiety cues and to recognize and respond to others’ distress. Such interventions may impact on childhood overweight and obesity and have the potential to be adapted for use with companion animals.

Social behaviour towards people with obesity or owners of pets with obesity is often driven by beliefs about the cause of the obesity. Educating healthcare professionals and the public about the multifactorial nature of this complex disease process is a fundamental step in reducing the bias and stigma associated with obesity. Children living in low-income households have particularly high rates of obesity and as household income falls, rates of obesity also rise in pets and their owners. There are risk regulators (i.e. dynamic components of interconnected systems that influence obesity-related behaviours) and internal factors (i.e. biological determinants of obesity) that may influence the development of both childhood and pet obesity, and poverty may intersect with these variables to exacerbate obesity in low-income environments. This review discusses the costs, behaviours and psychology related to obesity in people and pets, and also proposes potential techniques that can be considered for prevention and treatment of this disease in pets. A ‘One Health’ approach to obesity suggests that an understanding of human obesity may elucidate some of the factors driving the more recent rise in pet obesity.

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## The Financial Costs of Healthcare for Obesity in People and Pets

Obesity is often considered to be the most identified and fastest growing epidemic disease in both people and companion animals, with worldwide rates of human obesity more than doubling since 1980 (Flegal *et al.*, 2002; World Health Organisation, 2016). People who are overweight or have obesity are estimated to comprise nearly 30% of the global population, or about 2.1 billion individuals, and obesity accounts for 5% of all deaths worldwide. If current trends continue, up to 50% of the estimated 8.5 billion global adult population (United Nations News Centre, 2015) will be overweight or have obesity by 2030 (McKinsey Global Institute, 2014). In the USA about 35% of adults and 17% of children

2–19 years of age have obesity (defined by a body mass index [BMI]  $\geq 30$  in adults and BMI  $\geq 95$ th percentile of the Centers for Disease Control and Prevention [CDC] sex-specific BMI-for-age growth charts from 2000 for children) (Ogden *et al.*, 2010). Even the youngest children have not been spared; 10% of infants and toddlers have high weight-for-length, and about 25% of 2–5 year olds are overweight or have obesity. Prevalence differs substantially by sex and among subpopulations, including race/ethnicity and socioeconomic status.

In companion animals, the inferences are similar. Of the estimated 71 million dogs and 73 million cats in the USA (Pet Food Institute, 2016), an estimated 54% of dogs and 58% of cats are overweight or have obesity (Association for Pet Obesity Prevention, 2015). Globally, multiple studies have

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