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# Portrayals of canine obesity in English-language newspapers and in leading veterinary journals, 2000-2009: Implications for animal welfare organizations and veterinarians as public educators

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In industrialized societies, more than 1 in 3 dogs and people currently qualify as overweight or obese. Experts in public health expect both these figures to rise. Although clinical treatment remains important, so are public perceptions and social norms. This article presents a thematic analysis of English-language mass media coverage on canine obesity from 2000 through 2009 and compares these results with a thematic analysis of articles on canine obesity in leading veterinary journals during the same time period. Drawing on Giddens's theory of structuration, this study identified articles that emphasized individual agency, environmental structure, or both as contributors to canine obesity. Comparisons with weight-related health problems in human populations were virtually absent from the veterinary sample. Although such comparisons were almost always present in the media sample, quotations from veterinarians and other spokespeople for the welfare of nonhuman animals emphasized the agency of individual caregivers (owners) over structural influences. Now that weight gain and obesity have been established as a pressing animal welfare problem, these results suggest a need for research and for interventions, such as media advocacy, that emphasize intersections between animal-owner agency, socioenvironmental determinants, and connections between animal welfare and human health. Taylor & Francis Group, LLC.

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# Portrayals of canine obesity in English-language newspapers and in leading veterinary journals, 2000-2009: Implications for animal welfare organizations and veterinarians as public educators

Degeling C, Rock M, & Toews L. (2011)

## ABSTRACT

In industrialized societies, more than one in three dogs as well as people currently qualify as overweight or obese. Experts in public health expect both these figures to rise. While clinical treatment remains important, so are public perceptions and social norms. This article presents a thematic analysis of English-language mass media coverage on canine obesity from 2000 through 2009, and compares these results with a thematic analysis of articles on canine obesity in leading veterinary journals during the same time period. Drawing on Giddens' theory of structuration, articles that emphasised individual agency, environmental structure or both as contributors to canine obesity were identified. Comparisons with weight-related health problems in human populations were virtually absent from the veterinary sample. While such comparisons were almost always present in the media sample, veterinarians and other animal welfare spokespeople were quoted in ways that emphasized the agency of individual owners over structural influences. Now that weight gain and obesity have been established as a pressing animal welfare problem, these results suggest a need for research and for interventions such as media advocacy that emphasizes intersections between animal-owner agency and socio-environmental determinants, and connections between animal welfare and human health.

## INTRODUCTION

Canine obesity is an emerging and complex problem facing companion animal owners and health care providers in many Cosmopolitan societies. By definition obesity occurs when a dog is at least 15% over its ideal weight; less well defined, a dog is generally considered to be overweight when it is 10-15 % heavier than the ideal. It is estimated that between 20-40% of pet dogs in Britain, Australia and North America are overweight or obese (Lund, Armstrong, Kirk, & Klausner, 2006; McGreevy, Thomson, Pride, Fawcett, Grassi, & Jones, 2005). The underlying cause of weight gain and obesity in pet dogs is most often described

as a positive mismatch between energy intakes in the form of food, and energy outputs determined by the duration and intensity of exercise (Burkholder & Toll, 2000). The occurrence of obesity in dogs is a veterinary medical and welfare concern because it is a health risk for other chronic diseases such as diabetes, osteoarthritis, heart failure, cancer, and the quality of life and longevity of the affected animal (German, 2006; Laflamme, 2006).

Anything that lowers a dog's metabolic rate (increasing age, neutering status or underlying disease) will increase its risk of developing obesity, as do certain breed-related genetic predispositions (e.g. Labradors and Cocker spaniels). While what can loosely be described as endogenous biological factors are important, there is also clear evidence that obesity in dogs is also affected by the owner's food management strategies, exercise levels and other socially-mediated factors (Bland, Guthrie-Jones, Taylor, & Hill, 2009). The risks described above are mediated through their combined effects on the animal's basal metabolic rate, food-seeking behaviour and levels of physical activity. Consequently, current conceptions of this condition treat the owner as an intervening variable in the balance between dietary intake and the energy expenditure. Owners typically determine the amount of calories consumed, and their choices and capacities can promote more or less physical activity through walking or playing with their animal. Therefore 'types' of owner can promote 'lifestyles' that increase the risks of canine obesity. The epidemiological profile of typical owners of 'at risk' dogs are: overweight people themselves; individuals on lower incomes; and, older people who are relatively inactive and spend much more time in the company of their pets (Courcier, Thomson, Mellor, & Yam, 2010; Kienzle, Bergler, & Mandernach, 1998).

From this perspective, dogs at risk of obesity are those whose owners provide too much food, too little opportunity for exercise, or both. Treatment strategies have tended to emphasize only one of these factors. Dietary therapy is considered to be the "cornerstone to weight management in dogs" (German, 2006, 1944S). Any number of specialised diets have been developed and marketed as the frontline treatment for pet obesity problems. These diets typically aim to restrict calories while still permitting satiation – thereby minimizing the potential for unwanted begging and food seeking behaviours. Trials suggest that dietary restriction takes much longer to work in owned animals than in experimental studies (German, Holden, Bissot, Hackett, & Biourge, 2007). Poor dietary compliance through continued overfeeding has consistently been identified as the most likely reason for slow weight loss, leading to owner frustration and eventual treatment failure (Laflamme, 1995; Rohlf, Toukhsati, Coleman, & Bennett, 2010). It has been suggested that overfeeding occurs for various reasons including the owner's inattention to the calorie-content of the diet, attempts to control their dog's scavenging behaviour, misplaced generosity, or explicitly to nurture feelings of love between them and their animals (Kienzle et al., 1998; McGreevy et al., 2005).

Veterinarians and animal welfare agencies find the most difficult problem to tackle in formulating their approach to canine obesity is the behaviour of the owner (Bland, Guthrie-Jones, Taylor, & Hill, 2010; Morris, 2009). Veterinarians often report that significant numbers of their clients do not recognise that their animal is over-weight, or their contribution to the problem. Of those that do, many individuals, families or both find it difficult to adopt appropriate patterns of feeding and exercise behaviour in the longer term. While owner education is seen as critical to combating this problem, there has also been a

concerted campaign to educate veterinarians as to how to diagnose the condition, understand the health risks, and communicate this information as part of effective monitoring and treatment strategies. Based on current estimates, the incidence of this condition is set to continue to rise, prompting a concerted campaign to raise awareness about the causes and consequences of obesity in companion animal populations, and about effective strategies for treating canine patients (German & Morgan, 2008). This information has been disseminated through two channels. Veterinarians have been informed of research results through professional publications, while owners have been targeted through the propagation of these findings through newspapers and other mass media.

Media coverage reflects, amplifies, and can also inform public perceptions and social norms (Oliver & Lee, 2005; Saguy & Almeling, 2008). Public health professionals and researchers have sought to harness the media influences on public perceptions and social norms through media campaigns and media advocacy (Kline, 2006; Wallack & Dorfman, 1996). By serving as credible sources in media coverage, health professionals serve as role models and public educators (Chapman, 2004). Perhaps because healthcare professionals identify with credible spokespeople in media coverage of health issues, media coverage has also been demonstrated to influence practices such as prescribing patterns (Maclure, Dormuth, Naumann, McCormack, Rangno, Whiteside et al., 1998). In other words, the influences on practicing professionals include their initial training, continuing professional education activities such as conferences and journal clubs, outreach by industry representatives, and mass media coverage. By influencing the knowledge and views of veterinary professionals in clinical practice and in the role of an expert media source, publications in leading veterinary journals on the subject of overweight dogs may also play a vitally important albeit indirect role in public education. Although there are only a handful of studies that examine the effectiveness of veterinary public health media-campaigns — and these focus on rabies prevention — we can safely assume that veterinary publications and representations in the media may influence public perceptions in ways that matter for human and animal health.

The main purpose of this study is to invite further consideration of veterinary and animal welfare professionals as public educators in relation to the societal and cultural dimensions of weight gain and obesity. There is a substantial corpus of research on the impact of expert- and media-representations of the causes, consequences and meaning of obesity in human populations, and their influence upon the popularity of different types of intervention (Barry, Brescoll, Brownell, & Schlesinger, 2009; Evans, Finkelstein, Kamerow, & Renaud, 2005). In essence, these forms or modes of intervention occur on a continuum. At one end, attempts to curb obesity focus on individual owners; for example, publicity campaigns have been designed to encourage people to exercise regularly. At the other end of this continuum are measures that focus on changing environmental attributes. Measures to increase the walkability of a residential neighbourhood are an example of a structural intervention to prevent and curb obesity. Between them are mixtures of both intervention types. By framing this continuum with reference to Anthony Giddens' (1984) theory of structuration, we can describe 'agency' as a function of an individual's capacity to make choices about their actions or behaviour, and 'structure' as the social and physical environment that constrain the actions of individuals. It is important to remember that agency and structure interact. For our purposes, the salient insight is that agency and

structure both give rise to sets of social practices and thereby shape the world we inhabit. Now that companion animals tend to be considered as fully-fledged family members while also continuing to serve as familiar referents in popular culture, media portrayals of overweight dogs stand to exert considerable influence on how citizens view this animal welfare concern as well as related issues in human populations. Educating the public has long been a preoccupation for animal welfare advocates. It is our position that in the contemporary period, it is becoming an increasingly important role for veterinarians in companion animal practice as well as for animal welfare societies.

## **MATERIALS AND METHODS**

To identify media coverage on canine obesity, the database *Newspaper Source* (EBSCO) was searched using the following terms as textwords: (overweight or obes\* or fat) and (dog\* or canine\* or pet\*) for the period 1 January 2000 through 31 December 2009, identifying and downloading 435 full-text of items. *Newspaper Source* is a database that catalogues and archives the contents of many major and regional newspapers in North America, the United Kingdom and Australia. These include: *USA Today*, *New York Times*, *Washington Post*, *Toronto Star* (Ca), *The Times* (UK), *Daily Mail* (UK) and *The Australian*. Pretesting confirmed that this search strategy would produce a larger and more heterogeneous sample of news reports, while still including all the coverage that focussed more narrowly on obesity. Duplicate articles and those that were not immediately relevant to canine obesity were discarded, after which 219 unique articles remained to be analyzed.

The media sample was then read, catalogued manually, reread several times, and compared by the lead author — both chronologically and across the corpus — in order to distil the meanings and messages promulgated by the media coverage of canine obesity, and to track prominent concepts, differences, and themes (Bryman, 2001). Next, a keyword search was undertaken of the media corpus to confirm and to extend the preliminary thematic analysis, using the following pairs of terms: “diet” OR “eat”; “control” OR “treat”, “walk” OR “exercise”, and “lifestyle” OR “environment.” The results from keyword searching were then tabulated in matrix form and displayed visually as descriptive statistics in charts (Miles & Huberman, 1994). Regular discussions among the authors served to generate additional inquires and to validate insights as they emerged (Stewart, 1998). This approach is consistent with ethnographic content analysis (ECA), which is a qualitative research method for interpreting documents in context (Krippendorff, 2004). Drawing on both numerical and narrative data, ECA involves constant comparison and enables researchers to generate insights about how documents promote particular ways of understanding, interpreting and responding to an issue or event (Altheide, 1987).

The media analysis revealed a prominent role for veterinary research in establishing canine obesity as a newsworthy topic, and so the study was extended to veterinary publications. The key database for veterinary publications, *C.A.B. Abstracts* (OVID) was searched with a more sensitive strategy, using the following subject headings/thesaurus terms: (adipose tissue or body fat or body mass index or obesity or overfeeding or overweight or weight control or weight gain or weight reduction) and dogs. Results were limited to articles published in English between January 2000 to December 2009. A total of 301 records were

retrieved. The search was then refined by restricting the dataset to publications in twelve high-impact veterinary journals: the *Journal of the American Veterinary Association*, the *Australian Veterinary Journal*, the *American Journal of Veterinary Research*, *In Practice* (UK), the *Journal of Veterinary Internal Medicine*, the *Journal of Veterinary Pharmacology and Therapeutics*, *Veterinary Clinics of North America* (US), *Journal of the American Animal Hospital Association*, *Preventive Veterinary Medicine*, *Journal of Small Animal Practice*, *The Veterinary Times* (UK), and *The Veterinary Record* (UK). These journals were selected because of their relative prestige, wide readership or both amongst companion animal practitioners in North America, the United Kingdom and Australia. Duplicate and non-relevant materials were removed manually, which left 76 articles to be analyzed. Following the same analytic procedures and approach described above for the media analysis, the veterinary articles were then examined, coded and sub-divided on the basis of the primary thematic focus into the following categories: diet, health risks, exercise, veterinary-contributions, owner contributions, and obesity as a secondary factor in another disease. A keyword search of the veterinary professional publications was then conducted using the pairs of search terms derived from the media analysis. After that, the veterinary thematic analysis was compared with the media thematic analysis.

## RESULTS

Weight gain and obesity in dogs had become a prominent animal welfare concern by 2009, in both the popular media and in leading veterinary journals. Even in satirical commentaries published in the mass media, the overall tone of the coverage was sympathetic to animal welfare. The topic appears to be firmly lodged by 2009; the phenomenon of overweight and obese dogs was no longer presented as ‘breaking news’ to readers of veterinary journals or to members of the general public, but as a perennial problem. In keeping with our approach to these materials we will present our analysis of the media coverage before turning to our analysis of the professional literature. Notwithstanding the importance of peer-reviewed knowledge to veterinary perceptions of the causes, consequences and meaning of canine obesity — and thus how they communicate with clients and how journalists construe and explain the issue — media coverage is the most publically-visible portrayal of how animal owners should understand the problem and its likely solutions.

### ***Thematic Analysis of Media Coverage on Overweight Dogs:***

Media interest in canine obesity is part of a larger story about a global obesity ‘epidemic’ affecting human populations, and by extension, their companion animals. Consequently, human comparisons are common currency in newspaper articles. The co-incident and increasing rate of obesity in human populations is almost always mentioned early on to describe and characterize the problem. A typical example appeared in *The Toronto Star* in 2003:

The old wives' tale holds that people start to look like their pets. Turns out it's the other way around: North America's pets are starting to look like their owners – overweight (Schmid, 2003, LO6).

Once the connection has been suggested, the media report usually introduces a professional voice, typically a veterinarian, to describe the associated risks to canine health and what this phenomenon means for pet owners. Most newspaper articles mention at least two issues that are thought to be central to the problem. As our choice of keyword pairs suggests, most prominent are concerns surrounding the diet and opportunities for physical activity people provide for their pet animals, and how these two factors are shaped by their relationship and shared lifestyle.

Each of the thematically paired terms also represent a set of descriptors that point to specific causes of and remedies for canine obesity. Notably each *causal* theme can also be broken down into *agentic* and *structural* elements. For example “diet” and “eat” refer to the quantity and content of foodstuffs available to the animal, both as a cause and a potential remedy. Owners have agency over the type and amount of food their dogs eat, while the nutritional composition of the diet is part of the structure that shapes the effects these choices have on the animal. Buying the appropriate type of food for your dog is not the same as also restricting the amount fed to ensure the animal does not receive more calories than it needs. Similarly terms like “walk” and “exercise” are interchangeable, and can be seen to represent or encode broad concern with levels of physical activity; whereas the terms “lifestyle” and “environment” broadly signified that the owner’s social context or daily routines somehow factored into dogs becoming overweight. Acknowledging that the dog also has agency—dogs can beg for food, or be frightened of walking near busy roads—in our corpus, articles that focussed on human agency in owner-animal interactions included the word “control,” the word “treats,” or both.

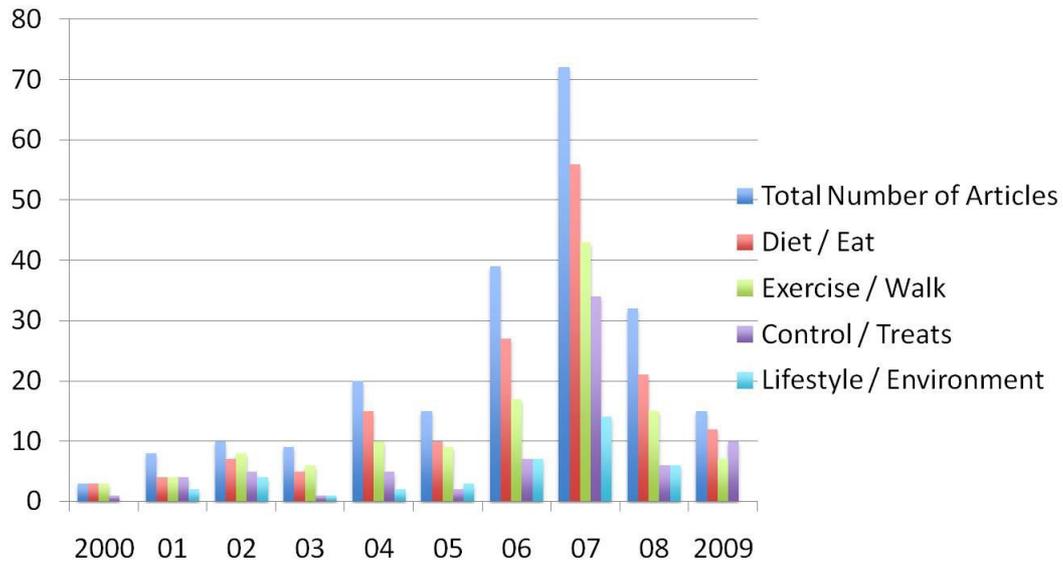
**Figure1. Keyword Table**

<b>Keyword Pair</b>	<b>Identified Problem</b>	<b>Agentic, Structural, or Mixed Emphasis</b>
diet & eat	Owners feed too much of the wrong foods	agentic
<p>“We are not about getting people prosecuted but we are about getting the message across of the dangers and the need for vets to be vigilant about getting owners to put overweight pets on a diet.” (Whitfield, 2002, 9)</p> <p>The best solution to overweight pets and overweight pet owners is the same: Eat less and exercise more. (Editorial, 2006)</p>		
exercise & walk	Pet dogs do not get enough exercise	mixed
<p>“[M]ore dogs than cats were overweight because they relied on their owners to take them out to exercise” (Utton, 2002, 25)</p> <p>"Instead of rewarding our dogs with exercise and attention, we are just throwing them treat after treat after treat .... As a result, they are becoming seriously overweight and are reluctant to go for walks or run it off." (Sims, 2007, 35)</p>		

control & treats	Owners need to be disciplined	agentic
<p>Best treat for pets: Restraint (Hayes, 2007, )</p> <p>"We control the situation," Ward said. "Dogs and cats can't open the refrigerator. They can't have that midnight snack unless you provide it. But they look at us with those big doe eyes and we give in." (Morgan, 2006)</p>		
lifestyle & environment	Owners and dogs now live in a way conducive to an imbalance between diet and exercise	mixed
<p>AUSTRALIAN'S inactive lifestyle and poor diet is killing our dogs and cats, animal experts claim. (Florez, 2002, 29)</p> <p>Dogs are increasingly exhibiting the canine equivalent of a lifestyle built on the twin pillars of home-delivered pizza and all-day Sky Sport. (Hamilton, 2004,9)</p>		

By the end of the ECA phase of the analysis, it became apparent that in our corpus, each of these keyword pairs was predominantly used to refer to owner agency, structural influences or both. The themes often intersect, as would be expected for a condition as complex as canine obesity [figure 1]. Nonetheless, tabulation of these result indicated patterns in the emphasis and frequency of these themes [figure2]. Diet was the most prominent theme; being at least mentioned in 73% of all news reports. Statements with a strong structural emphasis were rare and referenced personal agency as well: for example, "The main cause is a combination of more palatable, high-calorie diets coupled with urbanisation" (Florez, 2002, 29). By contrast, discussions surrounding the theme of food were almost entirely about owner choices and behaviours. Exercise was also a prominent theme [55%]. In coverage mentioning physical activity levels, the emphasis was more likely to be mixed, reflecting both structural and antigenic influences on an owner's capacity to exercise their animal appropriately. Notably, as the decade progresses, descriptions of the role of food and physical activity were increasingly framed by discussions about owners needing to take control of themselves, their living situation and their animal's food-seeking behaviour, thereby returning to human agency [34% of all media reports]. Finally, explicit references to the role of environment and lifestyle were relatively sparse [18%]. Those that were present tended to acknowledge that the other causal elements interact, and focus on how modern environments influence human habits and lifestyle choices, rather than canine behaviour.

**Figure 2: Frequency of canine obesity coverage in our newspaper sample and presence of selected keywords, 2000-09**

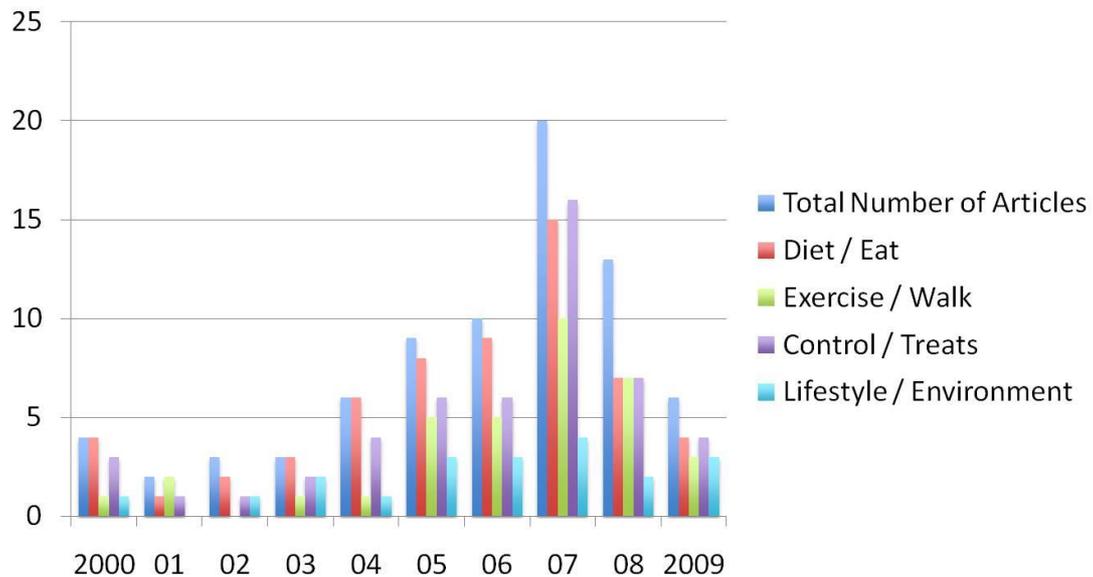


Our analysis of the media sample indicates that connections and correlations between humans and domestic animals are often used to frame stories on animal obesity, but owner agency is emphasised, and the possible implications of this shared health risk are almost entirely unexamined. Only occasionally are structural influences such as demographic changes (e.g., more single person households, aging), urbanisation (e.g., apartment living), paid work (e.g., longer working hours, increased participation of women in the paid labour force), or sedentary pastimes of owners (e.g., television) mentioned as causal contributors to the number of overweight dogs. Crucially, responsibility for these environmental contributors is placed almost entirely on animal owners.

### ***Thematic Analysis of Veterinary Articles on Overweight Dogs***

The frequency of publications on canine obesity and weight-related issues in the veterinary professional literature shows a similar pattern to that of our press sample – with both peaking in 2007. Notably, veterinary surveys and epidemiological reports of the increasing incidence of overweight pet dogs initiate much of the subsequent media interest in the problem. Like newspaper reports it is rare for an article on canine obesity not to mention multiple issues [figure 3]. Nonetheless, aside from four recent review articles in our sample that focused explicitly on the every-day interconnections between these factors the remaining 72 research studies emphasized a single central theme. In other words, the veterinary articles in the sample were typically restricted in scope to comprehensively elucidating only one causal factor, consequence, or possible point of intervention [see figure 3].

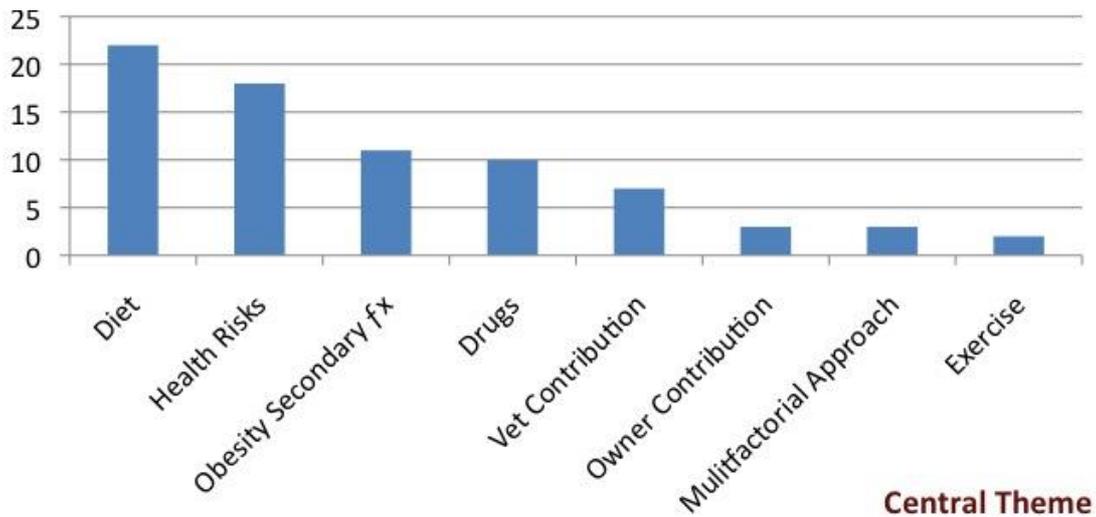
**Figure 3: Causes of and Solutions for Overweight Dogs according to Leading Veterinary Journals, 2000-2009**



As you might expect, articles that appeared in the peer-reviewed veterinary literature were much narrower in focus and more likely to address biological rather than behavioural aspects of weight-related issues in dogs. As a ‘structuated’ discourse, the most salient difference between the professional and media samples was the meaning of the word “diet”. In the veterinary scientific literature this term is used to refer to the properties of different types of pet-food, instead of owners and overfeeding. Consequently the umbrella term “dietary factors” is commonly deployed to talk about both the agentic and structural aspects of energy intake in canine obesity management. In those articles where an explicit distinction is drawn between the composition of the diet, and the owner’s control over what the animal eats, terms like “feeding management” or “dietary plans” are employed. It is also interesting to note that in the news-sample, veterinarians and animal welfare organizations cautioned against the use of the new diet pills for dogs. The reason given was that such pharmaceutical fixes could mask more important animal welfare problems. In contrast, publications in the veterinary literature were restricted to studies of safety and efficacy with intimations on how this drug might be used to initiate rapid weight loss in animals whose health and welfare precludes a traditional approach.

Despite the differences in meaning of the term diet, the increasing frequency of discussions about control in both the professional and media discourses indicates that individual behaviours and choices surrounding diet and exercise are strongly emphasised. Most veterinary articles implicitly identified owner behaviour as both a cause of and solution for overweight dogs, but without contextualizing that behaviour in terms of structural influences that might be a barrier to effective obesity management. Those that did were actually from reader-friendly publications for community-based veterinarians such as the *Veterinary Times* (e.g. Brown, 2009).

**Figure 4: Central Theme of Leading Veterinary Articles on Weight Gain in Dogs, 2000-2009**



The relative inattention to how structure might influence agency was confirmed by classifying the 76 veterinary articles in our sample by central theme. The results shown in Figure 4 suggest that apart from articles on dietary factors and co-morbidities, the next most frequent type of publication are those that report on the efficacy, safety and proper use of new drug-based interventions. Notably the market release and promotion of the appetite-suppressing pharmaceuticals *Yartvin* and *Slentrol* corresponds with the peak in veterinary and media article numbers in 2007 [Figure 2 & 3]. Owner behaviours and veterinary roles — how veterinarians should describe, measure and diagnose obesity—receive some explicit scholarly attention; as does the frequency with which companion animal clinicians consider the weight and bodily condition of their patients. And yet in all, only a small number of research publications focus squarely either on veterinary or on owner roles (n=9). Those articles that sought to accommodate and account for all of the known factors were review articles, and not empirical tests of their interactions and relative contributions in promoting canine weight gain in contemporary urban societies.

## DISCUSSION

Our findings are hardly surprising. Past studies of how the media reports on chronic disease suggest that instead of social determinacy being central to the causal story, the problem is usually framed as one of individual discipline and compliance, which, if needed, can be aided by a clinically orientated intervention (Gollust & Lantz, 2009; Kim & Willis, 2007). Consequently the owner's (in)ability to change the structural and environmental issues that promote companion animal obesity—things like a lack of time and/or space to exercise; animal by-laws; and perceptions of neighbourhood safety—are downplayed in the media. It is arguable that the overarching effect of continually pulling focus to the behaviours and choices of individuals is that these reports typically represent canine obesity as a simple nutritional problem caused by ignorant and irresponsible owners. An Australian veterinarian identified the rationale for this focus:

Denial in owners is a major problem ... Busy people, instead of taking their pets for walks, feel sorry for them and give them food ... they think they

are doing their pets a favour but in fact they're killing them. (Walliker, 2006, WO4)

While the chain of events described above is no doubt common in veterinary experiences of the problem—and modifying owner behaviour is central to any lasting solution—the causal attribution seeks only to reinforce the need for owner compliance and therefore remains relatively shallow.

Instead of recognising that sometimes people are constricted in choices and in their capacity to change their circumstances, typically the message conveyed to the public via the media is that over-weight pets are paying for the failings of individual owners. Veterinarians and animal welfare organizations consistently legitimate this message as expert resources. Implicit in this communication pattern is the claim that the only realistic solution to this social problem is individual in nature. The veterinary literature conveys a similar message. Aside from the handful of review articles, all of which appeared towards the end of the decade (Bars, 2009; Brown, 2009), what is perhaps most striking from our examination of the veterinary professional literature is the lack of an explicit engagement with the structural context—the lifestyle and environment—shared by the afflicted animal and their owner. Moreover, these same environments underlie the major health concerns for human populations in industrialized countries worldwide.

Researchers concerned about canine obesity as an animal welfare issue have surveyed the extent of canine obesity, investigated which people are most likely to over-feed their dogs, and evaluated weight-loss programs designed for both dogs and their human companions (Kienzle et al., 1998; Kushner, Blatner, Jewell, & Rudloff, 2006; Rohlf et al., 2010). Such intervention strategies that only focus on changing how individuals exercise their agency, typically only target high-risk cases. Yet as demonstrated over twenty-five years ago by Geoffrey Rose (1985) the causes of incidence rarely mirror the causes of individual cases. In practical terms this means that treating sick individuals does little to prevent sickness in populations. Consequently, while targeted interventions that focus on individual behaviour can certainly be defended in terms of practicality and ethics, an interventionist approach that is based on the question of why overweight individuals differ from those of normal-weight in the same population will differ fundamentally from an intervention approach that is based on the question of why so many weight-related health problems are currently present in industrialized urban populations. The latter approach guides this discussion of our findings. It is based on preventing incidence — that is, paying attention to how agency and structure interact to help stem the continual creation of new high-risk cases.

While companion animal veterinarians are beginning to consider the influence of environmental factors and formulate interventions for populations of 'at risk' overweight and obese animals (Bland et al., 2009; Bouthegourd, Kelly, Clety, Tardif, & Smeets, 2009), the vast majority of research pertaining to treatment and prevention remains focused on dietary modification, owner behaviour and drug-based interventions (Rohlf et al., 2010; Roudebush, Schoenherr, & Delaney, 2008). These are focussed on agency. Furthermore, given that the effects of weight-related conditions are not limited to the highest-risk members of canine population, even modest improvements can have a greater impact on overall population health. Public perceptions and social norms regarding issues such as physical activity and nutrition appear to impact on the health of both human and canine

populations (Brown & Rhodes, 2006; Hayley Cutt, Giles-Corti, & Knuiman, 2008 ; Rohlf et al., 2010). Yet, interventions to shift public perceptions and social norms — and ultimately, to improve health outcomes — are unlikely to have wide-reaching effects if they exclusively target high-risk cases (Rose, 1992).

Recent studies indicate that owner income, working hours, diets and exercise patterns all have an influence upon the risk of excess weight in pet dogs, as they do in human populations (Courcier et al., 2010; Heuberger & Wakshlag, 2010; Nijland, Stam, & Seidell, 2010). These investigations have all appeared in 2010, and were not necessarily published within high profile veterinary journals, and thus were not included in our study. Overall, questions as to structural factors and social determinants of canine obesity remain unaddressed in the veterinary literature. This absence is unsurprising. Most veterinary research into the causes, health consequences and treatment of canine obesity is funded by stakeholders such as pet-food and pharmaceutical companies who have a vested interest in addressing these problems from a perspective that seeks to promote specific types of clinically-focused interventions. The lack of structural context in this literature does, nonetheless, have implications for how veterinary practitioners understand and respond to socially-mediated health risks for chronic degenerative diseases. More concern has been registered in leading veterinary journals with genetic differences between dog breeds than with the contribution of owners and veterinarians and their ability to reshape or overcome structural barriers that promote what are loosely described as ‘obesogenic’ environments. And yet, surely, the rising incidence of weight-related health problems in canine populations cannot be attributed to genetic mutations since WWII, but to changes in the social context and physical setting in which these animals are embedded.

Our examination of public perceptions via media coverage and veterinary publications that stand to influence veterinarians in their capacity as public educators is a unique contribution to the literature on overweight dogs. The analysis opens up many questions for further discussion and future research. In terms of research design, the main strength of the study is the emphasis on exploration (Stewart, 1998), which led inductively to linking and comparing the content of popular media with that of professional publications. The sample sizes are small and should not be seen as strictly representative, and that is why we have limited our presentation to descriptive statistics and to inferences drawn through qualitative comparisons. The rigour and thus confidence in our analysis comes from an in-depth examination based on immersion in the dataset, informed by the professional expertise represented in our team, including more than fifteen years spent by the lead author in veterinary practice with companion animals in the UK and Australia. Even with small sample sizes, it is possible that our selection of materials is more influential than what might first appear to be the case. We deliberately narrowed our sample of veterinary content to articles published in journals that are likely to be most influential, and in doing so we deliberately included some ‘reader-friendly’ publications that often recast academic research with practical application in mind. Also, while our media analysis is based on 219 unique articles, many of these media items would have been reprinted with minor or no editing in multiple publications, in print and on-line.

It is ironic that during the same period in which canine obesity has been established in the mass media as an animal welfare problem caused by certain types of animal owners, a

growing body of literature on the health of human populations attests to the positive influence that dogs can play in facilitating regular exercise (Brown & Rhodes, 2006; Cutt, Giles-Corti, Knuiiman, & Burke, 2007). This positive role was occasionally mentioned in our sample of media coverage on overweight dogs, but not explored in any depth that went beyond relationships of individual people with individual dogs. One reason might be that the veterinary literature tends to emphasize diet over physical activity, and veterinary practitioners may be more likely to focus on over-feeding than on under-exercising, including when they are quoted in the media. There is a role for veterinarians and animal welfare agencies in promoting structural interventions that would complement and even synergistically enhance the efficacy of the current focus on individual cases. Urban design that encourages walking as well as positive feelings about their neighbourhoods are among the factors that have been shown to support moderate exercise for large numbers of people, and these factors have a 'dog angle' (Brownson, Baker, Housemann, Brennan, & Bacak, 2001; Cutt et al., 2008; Kaczynski & Henderson, 2008). While owners are most likely to benefit from dog-walking, there is some evidence that dog-walking can serve as a kind of informal neighbourhood patrol that augments perceptions of safety, which may encourage non-owners to walk as well (Boneham & Sixsmith, 2006; Wood, Shannon, Bulsara, Pikora, McCormack, & Giles-Corti, 2008).

Overfeeding is a major problem that needs to be addressed. By also focusing on community engagement and encouraging participation it is arguable that the veterinary profession can more effectively stem the canine obesity problem, while also promoting activities that provide human health benefits. Examples of efforts down this path include programs by organisations such as the Cinnamon Trust in the UK, which, amongst other things, puts owners and voluntary dog-walkers in contact with each other [[www.cinnamon.org.uk](http://www.cinnamon.org.uk)]. Nevertheless, it must be noted that the influence of dogs on people's physical activity is not uniformly positive; for example, loose dogs appear to act as a deterrent, notably for women in neighbourhoods in North America that are predominantly Black or Hispanic (Frank, Kerr, Rosenberg, & King, 2010; Sallis, King, Sirard, & Albright, 2007). Moreover, to the extent that social inequality increasingly manifests in weight gain among people and in their dogs, but also has the potential to promote human health, attention must be paid to addressing overweight dogs as an animal welfare concern in ways that do not further undermine the capacity of lower-income people who live in rented apartments to benefit physically, mentally and emotionally from canine companionship (Shore, Petersen, & Douglas, 2003). While caution is needed, we think that these positive connections between human and canine health merit further examination, and animal welfare organizations could, and therefore should, play crucial roles.

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