

Cat and Dog Companionship and Well-being: A Systematic Review

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Abstract Existing literature on pet-human relationships reports mixed evidence indicating both positive and negative impacts of pet possession. Based on specific inclusion criteria, including only considering pet ownership in terms of cats and dogs, this paper reviewed 11 empirical studies published in eight journal articles to explore whether pet possession has any impact on owner's health and well-being. Results of this review failed to demonstrate a clear relationship between pet possession and owner's well-being. Few studies report, that having a cat or dog promotes physical activity and overall fitness of the owners. Additionally, few studies claim pet-owner companionship impacts positively on the owner's psychological well-being in terms of decreased depression, anxiety and loneliness. No other areas within the general health of the owner were noted to benefit from cat or dog ownership. However, these findings need to be considered very cautiously because of the methodological flaws in pet-human well-being studies. Robust scientific enquiry is needed to claim the health benefits of pet possession.

Keywords Pet Possession, Well-being, Physical health, Psychological Health

1. Introduction

Pet ownership has become a cultural phenomenon in the modern world. In the UK currently around 48% of households own a pet (excluding fish), about 13 million households[1]. Dogs (23%) and cats (18%) are the most common animals Britons currently have in their houses as pets. In the USA, around 62% of all households have a pet[2]. In terms of number of dogs and cats the figures are around 78.2 million and 86.4 million respectively. A similar picture has been observed in Europe, Australia, China and Japan. This increasing trend of having a pet in the home has been attributed to various reasons including 'misfiring of parental instincts, biophilia (a hypothetical biologically based love of nature), social contagion, the tendency for the middle class to emulate the customs of the rich, the need to dominate the natural world, social isolation in urban societies, and the desire to teach responsibility and kindness to children'[3]. The investigation of a relationship between pet possession and owner's well-being has been contradictory indicating both positive and negative outcomes. Pychyl[4] identified human animal companionship as the primary benefit gained from living with an animal while it has also been acknowledged as significant in the promotion of psychological well-being[5]. Others reported pets can be the

source of unconditional support, love, comfort, security, and stability[6]. A small number of studies found a positive impact of pet possession on mental health, such as reducing the feelings of loneliness and depression[8, 9], stress[9] and anxiety[10]. Pet owner relationships are also claimed to improve feelings of self-worth and self-esteem[11] and increase emotional and social support[12]. Furthermore, companion animals can have therapeutic benefits in numerous clinical settings through Animal-Assisted Therapy (AAT) programs[13].

When looking for the physical health impact of pet ownership, there is plenty of evidence claiming numerous benefits, such as reduced risk of cardiovascular disease [15,16], better survival rates after a heart attack[16] and lower use of general practitioner services[18,19].

However, more recent literature has generated an opposing viewpoint indicating no beneficial impacts of pet possession on human health and well-being[6, 20, 21]. Findings include the exacerbation of psychological symptoms[21], which include higher reports of depression[5, 11, 8], increased levels of emotional distress[22], psychoticism[23] and greater loneliness and boredom[5]. A recent review investigating psychological and psychophysiological effects of human-animal interaction (HAI) on human well-being also reported mixed evidence. Although some areas such as social attention, social behaviour, interpersonal interactions and mood stress-related parameters such as cortisol, heart rate, and blood pressure; self-reported fear and anxiety and especially cardiovascular diseases have been well-documented, limited evidence exists for positive effects

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of HAI on reduction of stress-related parameters such as epinephrine and norepinephrine; improvement of immune system functioning and pain management; increased trustworthiness of and trust toward other persons, reduced aggression, enhanced empathy and improved learning[24].

A popular conception in studies of physical and psychological health benefits of pet ownership has been to conceptualise pet possession in terms of enhanced social support. Social support, information leading people to believe that they are cared for and loved, esteemed, and a member of a network of mutual obligations, has been associated with wide range of physiological and psychological health outcomes[25, 26, 27, 28, 29]. Longitudinal studies conducted with ethnically diverse population indicate low levels of social support from family members was prospectively associated with negative well-being, e.g., depressive symptoms of adolescents[28]. Social support is claimed to protect individuals from psychological distress thereby moderating the effects of stress and promoting well-being. Lower stress and higher well-being are thought to influence stress hormones and positively impact the immune system[24].

In summary, studies on pet possession and owner's well-being have been contradictory. There are also marked difference in the design, sample characteristics and measures used in those studies. To what extent feline and canine pets impact physical and psychological well-being of the owners irrespective of socio-demographic characteristics is a critical question.

1.1. The Review

This review attempts to understand the health impact of pet ownership from the most recent scientific literature in this area. More specifically this review addressed the following questions:

- What is the relationship between pet possession and owner's physical and psychological well-being?
- Is there any unique contribution of pet possession to the owner's well-being?
- How is pet-ownership defined and measured?

2. Methods and Search Strategy

A systematic review with a narrative synthesis was applied to investigate the relationship between pet possession and owner's well-being. In order to find out the appropriate published literature for the current systematic review, four data bases, i.e., PubMed, PsycINFO, PsycARTICLES and Google Scholar, were consulted. Using the core search words 'pet and well-being', 'pet possession', 'pet and health outcomes', 'pet and owner's health', a literature search was carried out. A number of studies were initially found, but not all were suitable and met the inclusion criteria for this review. Abstracts of the literature were then reviewed and 20 studies were shortlisted for thorough review. Finally, out of the 20, only papers which met specific predefined criteria were included for the final review. Thus, a total of 8 (see Table 1) original and most relevant articles consisting 11 studies were selected for review.

Table 1. Description of the Studies

Study	N	Design	Variables		Statistical Tests	Results
			IVs	DVs		
Mental health implications of human attachment to companion animals[34]	150	Cross sectional survey	• Companion animal attachment	• Psychological well-being • Social support	Pearson product-moment correlation coefficient Hierarchical regression analyses Fisher's exact tests	Attachment to a companion animal was a significant positive predictor of psychological distress in the form of depression, and somatoform symptoms. Degree of companion animal attachment was not found to buffer anxiety the effect of social isolation on psychological distress.
Pet ownership and adolescent health: cross-sectional population study[33]	928 Adolescent	Cross sectional survey	• Pet ownership • Daily pet caring time	• Quality of Life • Physical and mental well-being • BMI • Blood pressure	Regression analysis Non-parametric analysis	Neither owning a pet nor time spent caring for/playing with a pet was related, positively or negatively, to adolescent health or well-being.
About Cats and Dogs Reconsidering the Relationship Between Pet Ownership and Health Related Outcomes in Community-Dwelling Elderly[30]	1410	Cross sectional survey	• With or without pet	• Perceived general and mental health • Physical activity, social contacts and loneliness • Use of health services	• One way ANOVA • Chi-square tests • Linear and Logistic regression analyses	• Having a pet does not significantly contribute to the explanation of general health, mental health, the frequency of social contacts and loneliness in the elderly. In case of physical activity it does. • Pet ownership does not contribute to the explanation of the number of GP contacts or outpatient visits to medical specialists in the elderly. • Elderly with cat however are more

Study	N	Design	Variables		Statistical Tests	Results
			IVs	DVs		
						likely to use ambulatory mental health care services than elderly without pets.
A tail of two personalities: How canine companions shape relationships and well-being[37]	77	Cross species	<ul style="list-style-type: none"> • Pet personality • Human personality • Human-dog closeness 	<ul style="list-style-type: none"> • Relationship satisfaction • Well being 	<ul style="list-style-type: none"> • ANOVA • Correlation • Multiple linear regression • Hierarchical regression analyses 	<ul style="list-style-type: none"> • No significant relationship between any of the demographic variables (gender, age, marital status, children at home) and relationship satisfaction with canine companions. • Dog's openness and agreeableness each significantly predict relationship satisfaction, controlling for all other variables. • With human-dog relationships, well-being appears to be greater in longer, close relationships
Friends with benefits: on the positive consequences of pet ownership[31]	Study 1= 217 Study2= 56 Study3= 97	Cross sectional 2X3 between subject factorial design	<ul style="list-style-type: none"> • Individual differences in pet ownership • Sources of social support (i.e., pet and people) • Presence of pet 	<ul style="list-style-type: none"> • Common well-being measures • Owner's well-being • Source of social support 	<ul style="list-style-type: none"> • Zero-order correlation • T-test • Multiple regression analyses • F test • Repeated measures ANOVA 	<ul style="list-style-type: none"> • Pet owners fared better than non-owners in half of the well-being measures • There was no evidence that relationships with pets 'came at the expense' of human relationships Dogs make unique contribution above and beyond the effect of human sources • Pet can offset negativity resulting from a rejection experience
The influence of dog ownership in childhood on the sociality of elderly Japanese men[36]	220	Questionnaire survey	<ul style="list-style-type: none"> • Degree of attachment with dogs • Companionship with others • Experience of dog ownership in the past 	<ul style="list-style-type: none"> • Health outcomes • Social support • Sense of life worth • Loneliness 	<ul style="list-style-type: none"> • Cluster analyses • ANOVA • Chi-square test • Multiple linear regression 	<ul style="list-style-type: none"> • The experiences of dog ownership in childhood were related to the sociality of elderly men, such as the enhancement to companionship with others.
Pet ownership and older women: the relationships among loneliness, pet attachment support, human social support, and depressed mood. (2012)	159	Cross-sectional survey	<ul style="list-style-type: none"> • Pet attachment • Human social support 	<ul style="list-style-type: none"> • Loneliness • Depression 	<ul style="list-style-type: none"> • Multiple regression 	<ul style="list-style-type: none"> • Significant relationships between loneliness, pet attachment support, human social support, and depressed mood. • No relationship was found between human social support and depressed mood. • Pet attachment support, but not human social support, influenced the relationship between loneliness and depressed mood.
Health Effects of Ownership of and Attachment to Companion Animals in an Older Population (2008)	314	Interview	<ul style="list-style-type: none"> • Pet attachments 	<ul style="list-style-type: none"> • Health effects 	<ul style="list-style-type: none"> • Multiple regression 	<ul style="list-style-type: none"> • Neither pet attachment or pet ownership significantly predicted health variables

2.1. Eligibility Criteria

- Is the paper based on an original empirical study rather than a review or individual clinical case study without data?
- Does the study examine the relationship between pet ownership and human well-being?
- Does the study only consider pets that are usually

keep in households, and not for business or research purposes?

- Does the study exclude people whose profession is related to animals, i.e., veterinarian, animal caretaker, etc.?
- Only studies on dog and cat possession were considered for this review as these animals constitute the majority of household pets in the West.

- Has the study been published or formally translated in the English language?

3. Results

3.1. Information about the Studies

For this review 8 original papers were selected based on the specific inclusion criteria. There were 11 different studies including an experiment. These papers reflected studies conducted in different parts of the world, namely, Japan, Australia, The Netherlands, France, and USA. The sample (in total 3628) of these studies covers the age range from adolescents to the elderly. Participants with normal health and chronic illness were included. Table 1 depicts the studies with necessary information such as sample size, design, variables studied, data analysis techniques and results. A narrative synthesis approach has been used to summarize the observations.

3.2. Cat and Dog Companionship and Physical Health

Out of the 11 studies, three identified the physical health impact of pet possession[25,3]. Involving a large sample size of 1410 elderly people with chronic illness, Rijken & Beek[30] investigated whether perceived general and mental health of the participants varies according to their pet ownership status. Their results indicated that having a pet did not significantly contribute to the explanation of general health, mental health, the frequency of social contacts and loneliness in the elderly. Additionally, pet ownership did not contribute to the explanation of the number of general practitioner (GP) contacts or outpatient visits to medical specialists. In case of physical activity, however, elderly pet owners are more likely to get more physical exercise than counterparts without a pet. Interestingly, having a cat impacts adversely on the physical activity of older people. Elderly people with a cat are more likely to use ambulatory mental health care services than those without pets[30]. However, the use of a single item subjective measure of perceived general health may not have been a sensitive enough instrument to measure general health status. Employing comparatively healthy older adults (60+) and using more robust measures, Winefield, Black, & Chur-Hansen (2008) also observed, after controlling for demographic variables, neither pet ownership nor attachment with the pet added any significant variance in health and well-being outcomes.

In contrast to the above studies, McConnell et al.[31] revealed that community dwelling participant (n=217) pet owners fared better than non-owners in a number of outcome measures including having a greater level of exercise and physical fitness and being less lonely than non pet owners. For adolescents, pet possession or spending time with pets was found to be neutral with no positive or negative health benefits[33].

From the above studies, it is apparent that the physical

implication of pet ownership is still contradictory and varies with life stage. In case of the elderly, owning a pet does impact, to some extent, on the physical activity of an owner irrespective of their illness status while ownership remains neutral for adolescents.

3.3. Cat and Dog Companionship and Mental Health

Although Rijken & Beek[30] did not find any impact of pet ownership on the mental health of the owner, Peacock et al.[34] found attachment to a companion animal was a significant positive predictor of psychological well-being in the form of decreased depression, anxiety, and somatoform symptoms. However, the construct 'attachment with animal' is not clear from the existing literature. Types of attachment or duration of attachment with a pet impacting on better mental health is yet to be revealed. Additionally the cross-sectional survey was unable to draw the causal direction of the relationship. To ascertain the impact of pet ownership, McConnell et al.[31] in their third study, conducted a laboratory experiment with pet-owners. Results revealed that pet ownership can offset negativity resulting from a rejection experience just like a best friend can. Thus, owning a pet is seen as having an unconditional friend who helps to attenuate psychological distress by increasing mobility, engagement and social connection. Similarly, with elderly women, pet attachment support influenced the relationship between loneliness and depressed mood[35]. Importantly, in this case, pet attachment support but not human social support was the significant variable associated with less loneliness and depression of the participants.

Not only current pet ownership, but also earlier experiences of dog ownership in childhood were related to the sociality of elderly men, such as enhanced companionship with others[36].

3.4. Defining Pet Ownership and Attachment

In all studies, pet ownership was determined by the self-reported information of the owner with no specific criteria. No cross-check was done. Only two studies recorded length of the ownership (2.4 months to 17 years)[37, 36]. A possible confound is in the difference between short and long term pet ownership and attachment to the animal. This information is missed in most of the studies in the review and only two studies[34, 36] systematically measured pet attachment by using standardized scales.

3.5. Owner's Demographic Variables as Predictors of Outcome

Results of pet owner well-being studies are vulnerable to varying levels of confusion based on demographic variables of the owner. Is it the presence of a pet or the influence of the demographic variable that impact on the outcome measures? Very few studies have tried to address this question. Rijken & Beek[30] found gender was not an important predictor except for loneliness: women felt less lonely than men. The same study, however, revealed older age was significantly

related to perception of worsening general health, better mental health, a smaller chance of being healthily active, less social contacts and fewer visits to medical specialists. A higher education level was significantly associated with a perception of a better general health and a greater chance of having ambulatory mental health care. Besides, better mental health was significantly related to being married or cohabiting[30]. Cavanaugh et al[37] also found married participants report higher levels of subjective well-being than non-married participants. Additionally, older participants and participants with children at home report greater well-being. It is apparent that socio-demographic variables have clear association with the outcome measures in the study of pet ownership and well-being.

3.6. Support From a Pet: Is It An Alternative to Human Social Support?

Most of the studies failed to address this question. McConnell et al[31], however, investigated whether there was any 'complementary or hydraulic relation' (i.e., people tend to seek less support from pets when they have enough human social support or vice-versa) between pet and owner? Results showed no evidence that relationships with pets 'came at the expense' of human relationships[31]. Controlling all other human resources, they found that dog ownership made a unique contribution above and beyond the effects of human support. This finding is particularly striking in that it invalidates the general argument that a pet is beneficial only for people who are in some sort of crisis, either through lack of social support or being physically challenged. Thus, support from a pet is beneficial for any person even if they have sufficient social support. On the other hand, since pet support is complementary and not alternative to human social support, necessary social support is inevitable for people in need.

3.7. Sample Characteristics and their Selection

Almost all of these studies selected pet owners using convenience sample. That is those who are available and interested to participate have been selected as research participants. This type of sampling suffers from adequate generalization. Few studies had non-owner comparison data. Results from only self-selecting pet owners are likely to bias over-reporting of the positive impact of pet ownership on health and well-being. The emotional relationship with the pet, including affection and attachment, has not been adequately controlled in the sample selection. Additionally, in most of the studies, pet owners were likely to be older, thereby confounding measures of physical activity and possibly general health.

4. Conclusions

Existing literature on pet-human relationships reports mixed evidence indicating both positive and negative

impacts of pet possession. Based on the specific inclusion criteria, this paper reviewed 11 empirical studies published in eight journal papers to explore whether canine or feline pets have any impact on owner's health and well-being. Results failed to demonstrate a clear relationship between pet possession and owner's well-being. Few studies report, having a cat or dog promotes physical activity and overall fitness of the owners. Additionally, few studies claimed pet-owner companionship impacts positively on the owner's psychological well-being in terms of decreased depression, anxiety and loneliness. No other areas within the general health of the owner were noted to benefit from pet ownership. However, these findings need to be considered very cautiously because of the methodological flaws in the pet-human well-being studies. Pet ownership was not operationalised and purposively selected interested participants were recruited with almost no comparison data from non-owners. In addition, there are some strong socio-demographic covariates which are significantly associated with the outcome measures tested. Most of the studies are correlational with subjective response on the measured variables; hence no causal link has been established.

Further in-depth study is needed to explore pet-human associations more clearly. Future studies should consider how pet ownership is defined. Whether it is the length of the ownership or the time spent with the animal or the perceived quality of the interaction that needs to be specified and whether there is an additive effect of multiple pet ownership. Additionally, owners from various age groups and medical conditions might provide useful insight. Although, Beetz et al. (2012) recent systematic review of human – animal - interactions, across a range of ages and physical and mental health conditions, claimed benefits of owners in social attention and behaviour, interpersonal interactions, and mood; stress-related parameters such as cortisol, heart rate and blood pressure; measures of fear and anxiety; and mental and physical health, especially cardiovascular diseases, these effects, however were reported from studies using a wide range of animal species, and interaction scenarios including animal assisted therapy, and are therefore subject to multiple confounds. Feasibility and ethical issues prohibit randomized controlled trials in this area. However, to investigate tangible effects of pet possession, future studies should consider non-owners as control/comparison groups. Multivariate analyses controlling socio-demographic variables are also crucial to describe the impact of pet possession on the well-being of owners.

In summary, there is not enough methodologically sound evidence to support the contention that ownership of cats or dogs has a positive impact on health and well-being. Robust scientific enquiry is needed to control for multiple confounds and claim the health benefits of having feline and/or canine pets.

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