Pet ownership and risk factors for cardiovascular disease: another look

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ABSTRACT

Objective: To test the claim that pet ownership reduces cardiovascular risk.

Design: Community survey.

Participants: 2528 adults aged 40–44 years and 2551 aged 60–64 years who lived in the Australian Capital Territory and Queanbeyan, New South Wales, and were drawn randomly from the Australian electoral roll in 2000 and 2001.

Main outcome measures: Sociodemographic measures, including pet ownership, and measures of physical health (including body mass index [BMI], alcohol and cigarette consumption, and levels of physical activity). Two readings of diastolic and systolic blood pressure were also taken.

Results: While pet owners and non-pet owners had similar levels of systolic blood pressure, those with pets had significantly higher diastolic blood pressure. Pet owners also had higher BMI and were more likely to smoke. While those with pets undertook more mild physical activity, they continued to have significantly higher diastolic blood pressure after controlling for hypertensive risk factors.

Conclusions: In this study, we found no evidence that pet ownership *per se* is associated with cardiovascular health benefits. Rather, pet owners had higher diastolic blood pressure than those without pets. It is likely that this increased health risk is linked to other hypertensive risk factors that are only indirectly associated with pet ownership.

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PETS CAN PROVIDE a range of benefits to humans, including non-judgemental companionship and the opportunity of physical contact with another living being. Researchers have also found pet ownership to be associated with health benefits, including better 1-year survival rates after acute myocardial infarction and lower blood pressure responses to psychological stress.[1,2] Associations between cardiovascular health and pet ownership were explored in Australia in a 1992 cross-sectional study of 5741 community-based participants attending a free cardiovascular disease risk clinic.[3] Men aged 20–60 years and women aged 40–60 years who owned a pet had significantly lower systolic blood pressure than their counterparts who did not own pets.[3] While the authors of that study expressed doubts about attributing the differences to pet ownership, these findings have been widely referenced in the lay media as support for the hypothesis that pet ownership *per se* reduces cardiovascular risk.

Two aspects of that study indicate that these results require confirmation. Firstly, participants self-presented for free cardiovascular risk screenings. It has been noted that people who do not attend such screenings generally have a higher body mass index (BMI), higher blood pressure, smoke more often, consume unacceptably high levels of alcohol, and consider they are at higher risk of the disease.[4,5] Secondly, the level of pet ownership in the Australian study was significantly lower than that found in the general population. Only 784 study participants (13.7%) owned a pet,[3] while a national study undertaken two years after that study found that 60% of Australian households had pets.[6] This large difference suggests that pet owners in the earlier Australian study may not be representative of pet owners in the wider community. Confirmatory analyses of associations between pet ownership and cardiovascular disease risk factors are still required.

We used data from the PATH Through Life Project, conducted by the Centre for Mental Health Research, Canberra, Australian Capital Territory, to explore associations between pet ownership and cardiovascular risk factors.

METHODS

The PATH Through Life Project is a longitudinal study of a random selection of residents living in the ACT region. Participants were aged between 40 and 44 or between 60 and 64 years and were drawn from the electoral rolls for Canberra and the adjacent town of Queanbeyan, New South Wales, in 2000 and 2001. (Enrolment is compulsory for Australians aged 18 and over.) For the 40–44-years age group, 3919 potential participants were contacted and 2528 (64.5%) participated in the survey. In the 60–64-years age group, 4378 potential participants were contacted and 2551 (58.3%) participated.

Measures

Participants were asked whether they had a dog, cat, or other pet that they could touch or talk to. Those identifying as pet owners were then asked whether they had one or more dogs, cats, birds, fish or other pets. They were also asked about their level of education, with years of education taken as a measure of socioeconomic

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1: Years of education and physical health measures for pet owners and non-pet owners

Education or health variable	*n*	Estimated marginal means (95% CI)		*P*
		Pet owners	Non-pet owners	
Mean years of education*	5079	14.02 (13.93–14.11)	14.42 (14.32–14.53)	< 0.001
Mean systolic blood pressure (mmHg)	5079	132.57 (131.93–133.21)	131.90 (131.17–132.64)	0.186
Mean diastolic blood pressure (mmHg)	5079	81.91 (81.54–82.29)	81.09 (80.66–81.53)	0.006
Body mass index (kg/m^2)	5079	26.85 (26.65–27.05)	26.36 (26.13–26.59)	0.002
Physical activity (hours/week)				
Mild	5079	7.35 (7.02–7.67)	6.82 (6.45–7.19)	0.037
Moderate in 40–44-year-olds	2528	2.69 (2.47–2.91)	2.21 (1.91–2.52)	0.014
Moderate in 60–64-year-olds	2551	2.43 (2.16–2.70)	2.67 (2.40–2.93)	0.210
Vigorous in those with fewer than 12 years' education	3935	0.90 (0.80–1.00)	0.99 (0.88–1.11)	0.254
Vigorous in those with 12 or more years' education	1144	0.86 (0.58–1.14)	0.56 (0.22–0.91)	0.191
Currently smoking cigarettes (%)	5079	17.00 (15.70–18.30)	13.60 (12.11–15.09)	0.001
Abstaining from alcohol (%)				
Less than 12 years' education, aged 40–44 years	396	41.82 (36.15–47.50)	42.16 (33.16–51.16)	0.951
12 or more years' education, aged 40–44 years	2132	22.98 (20.71–25.26)	29.28 (26.23–32.32)	0.001
Less than 12 years' education, aged 60–64 years	748	46.15 (41.46–50.85)	35.33 (30.36–40.29)	0.002
12 or more years' education, aged 60–64 years	1803	26.22 (23.31–29.14)	25.72 (22.98–28.46)	0.806
Drinking hazardously/harmfully (%)	5079	6.60 (5.73–7.48)	5.64 (4.63–6.65)	0.159
Diabetes (%)	5079	4.93 (4.15–5.71)	4.55 (3.65–5.45)	0.538

*This analysis controlled for age and sex; all other analyses controlled for age, sex and education, or subgroups of these variables where appropriate.

status (which has been found to be associated with cardiovascular health).[7]

The survey also included various physical health measures known to be cardiovascular risk factors, such as self-reported height and weight, whether participants had diabetes, and, for cigarette smokers, average number of cigarettes smoked daily[8,9]. Respondents estimated average weekly hours spent performing mild physical activities (eg, walking, general housework), moderate physical activities (eg, scrubbing, dancing, golf), and vigorous physical activities (eg, running, tennis). Interviewers took two blood pressure readings using an Omron M4 automatic blood pressure monitor (Omron Healthcare, Inc., Vernon Hills, Illinois, USA) and calculated mean diastolic and systolic blood pressures.

Statistical analyses

We compared the impact of pet ownership on various physical health measures, controlling for age, sex and education, and using logistic regression and generalised linear model analyses. Analyses tested all two-way interactions between age, sex, education and pet ownership. If interaction variables had no effect on dependent measures, they were removed and the model retested. Where interactions were significant, results were provided separately for the different values of interaction variables. We also compared diastolic and systolic blood pressure measures for pet owners and non-pet owners, controlling for identified hypertensive risk factors — age, sex, education, cigarette smoking, being overweight or obese,[8] hazardous or harmful levels of alcohol consumption (> 28 standard drinks weekly for men; > 14 standard drinks weekly for women[10]), and physical inactivity (< 2.5 hours physical activity weekly[11]).

RESULTS

Pet ownership was reported by 57% of participants. Compared with those who did not own pets, pet owners had less education, higher diastolic blood pressure, higher BMI, and were more likely to smoke cigarettes (Box 1). Pet owners reported undertaking more mild physical exercise, while pet owners aged 40–44 also undertook more moderate physical exercise.

We then examined associations between blood pressure and pet ownership, controlling for factors that can contribute to hypertension and that were available for analysis: being overweight, being obese, hazardous or harmful levels of alcohol consumption, insufficient physical activity, and smoking (Box 2). After controlling for these factors, we found pet owners had significantly higher diastolic blood pressure than non-owners, while both groups had similar levels of systolic blood pressure.

DISCUSSION

In this cross-sectional study examining the relationship between pet ownership and cardiovascular risk factors in a random sample of 5079 participants, we found the level of pet ownership (56.96%) was comparable with that reported by a national study (60%), but significantly higher than the 13.7% reported by Anderson and colleagues.[3]

While Anderson and colleagues found significantly lower systolic blood pressure in men with pets and in women aged 40–60 years who had pets, we did not find such an association.

2: Hypertensive risk factors and blood pressure for pet owners and non-pet owners

*(a) Odds ratios for association between risk factor and pet ownership**

Risk factor	*n*	Odds ratios (95% CI)	*P*
Overweight (BMI 25.0–30.0 kg/m^2)			
Age 40–44 years	2528	1.30 (1.08–1.55)	0.005
Age 60–64 years	2551	0.98 (0.83–1.15)	0.778
Obese (BMI > 30.0 kg/m^2)	5079	1.16 (1.00–1.34)	0.057
Hazardous/harmful consumption of alcohol	5079	1.19 (0.94–1.52)	0.158
Any physical activity < 2.5 h/week	5079	1.13 (0.94–1.34)	0.188
Currently smoking cigarettes			
Age 40–44 years	2528	1.09 (0.87–1.35)	0.461
Age 60–64 years	2551	1.77 (1.37–2.29)	< 0.001

* All analyses controlled for age, sex and education or subgroups of these variables where appropriate. BMI = body mass index.

(b) Blood pressure after controlling for the above factors, age, sex and education

		Estimated marginal mean blood pressure (95% CI)		
Blood pressure	*n*	Pet owners	Non-pet owners	*P*
Systolic (mmHg)	5079	132.36 (131.70–133.02)	131.79 (131.03–132.56)	0.276
Diastolic (mmHg)	5079	81.80 (81.41–82.19)	81.07 (80.62–81.52)	0.018

Rather, we found that pet owners had similar levels of systolic blood pressure to non-owners, but significantly higher diastolic blood pressure, as well as higher BMI and a greater likelihood of being smokers.

After controlling for other hypertensive factors, we found that pet ownership *per se* provided no cardiovascular gain by reducing blood pressure. Instead, pet owners again had significantly higher diastolic blood pressure. The health risks implied by this finding must be qualified with the caveats that current research identifies systolic blood pressure as being more important, and that blood pressure is only one of a number of cardiovascular risk factors.[8] Nonetheless, our study does not support the earlier finding that pet ownership provides cardiovascular benefit as assessed by blood pressure.

The cross-sectional study of Anderson and colleagues has been the only report in the peer-reviewed literature that indicated an association between pet ownership and cardiovascular health benefit outside experimental research settings. Consequently, its findings have carried considerable weight in the broader community. We have no doubts that carefully selected and cared for pets can provide many emotional benefits for humans. Many pet owners would consider such benefits to easily justify the time and energy spent on their non-human companions. However, longitudinally based research on pet ownership and health needs to be conducted before specific cardiovascular health gains can be attributed to owning pets.

CONCLUSION

In a large cross-sectional study of two age-groups of randomly selected participants from the ACT region, we found no evidence that pet ownership *per se* is associated with cardiovascular health benefits. Rather, pet owners in these age groups had significantly higher diastolic blood pressure than those without pets. This apparent health risk linked to pet ownership is probably attributable to differences in levels of hypertensive risk factors only indirectly associated with owning a pet.

COMPETING INTERESTS

None identified.

REFERENCES

1. Friedmann E, Thomas SA. Pet ownership, social support and one-year survival after acute myocardial infarction in the Cardiac Arrhythmia Suppression Trial (CAST). *Am J Cardiol* 1995; 76: 1213-1217.
2. Allen K, Shykoff BE, Izzo JL Jr. Pet ownership, but not ACE inhibitor therapy, blunts home blood pressure responses to mental stress. *Hypertension* 2001; 38: 815-820.
3. Anderson WP, Reid CM, Jennings GL. Pet ownership and risk factors for cardiovascular disease. *Med J Aust* 1992; 157: 298-301.
4. Jones A, Cronin PA, Bowen M. Comparison of risk factors for coronary heart disease among attenders and non-attenders at a screening programme. *Br J Gen Pract* 1993; 43: 375-377.
5. Simpson WM, Johnston M, McEwan SR. Screening for risk factors for cardiovascular disease: a psychological perspective. *Scott Med J* 1997; 42: 178-181.
6. Australian Bureau of Statistics. Australian Social Trends 1995: Culture and leisure – special feature: household pets. Available at: www.abs.gov.au/ausstats/ (accessed Jan 2003).
7. Steptoe A, Marmot M. The role of psychobiological pathways in socio-economic inequalities in cardiovascular disease risk. *Eur Heart J* 2002; 23: 13-25.
8. Grundy SM, Pasternak R, Greenland P, et al. Assessment of cardiovascular risk by use of multiple-risk-factor assessment equations. *J Am Coll Cardiol* 1999; 34: 1348-1359.
9. Eckel RH. Obesity and heart disease: a statement for healthcare professionals from the Nutrition Committee, American Heart Association. *Circulation* 1997; 96: 3248-3250.
10. National Health and Medical Research Council. Australian alcohol guidelines: health risks and benefits. Canberra: AusInfo, 2001.
11. National Institutes of Health. Sixth report of the National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. NIH, 1997. Available at: www.nhlbi.nih.gov/guidelines/hypertension/jncintro.htm (accessed Jan 2003).

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