Reviewer's report

Title: Does owning a pet protect older people against loneliness?

Version: 2 Date: 19 June 2014

Reviewer: Cathal McCrory

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Major Compulsory Revisions

Introduction

1. The introduction was generally well structured - citing relevant and current literature that relates to the hypotheses under investigation. However, I feel manuscript could benefit from a proof-read and edit. There were numerous grammatical errors that interrupt the flow of the argument. For example:
   • Raina et al assessed influence of pet on physical and mental health of older people (line 88)
   • Guest et al report that hearing dogs succeeded had a big impact on reducing loneliness among their hearing-impaired owners. (lines 92-94)
   • Is pet ownership the protection against later loneliness? (line 107)

Method

The method was generally well described.

1. The authors’ dichotomised scores on the loneliness scale with those scoring in the range (6-9) classified as lonely (lines 157-159). They comment later that the prevalence of loneliness in ELSA is higher compared with other European countries participating in SHARE (lines 312-315). Was loneliness measured in the same way in SHARE (i.e. score 6-9) on the UCLA loneliness measure?

2. Why did the authors choose to categorise income in quintiles? Categorising a continuous variable leads to loss of power. There are no summary statistics for the income measure in Table 1 but the authors employ it as a control variable.

Statistical Methods

3. I think the authors should indicate why they chose to use Odd Ratios (OR) as opposed to Relative Risks (RR) as their measure of association. I think RR is the more appropriate measure here for a number of reasons.

   (1) They are using cohort data so they can directly estimate prevalence
   (2) RR’s are easier to interpret (ratios of proportions rather than ratios of odds)
   (3) RRs diverge from ORs as prevalence increases (Schmidt, 2008). This could be an issue because both dependent variables, pet ownership (~40% at Wave 1) and loneliness (~20% at Wave 5) have high prevalence.

4. The authors perform multiple hypothesis testing (15 comparisons in Table2) but this may increase the family-wise error rate. Some attention to this issue is
warranted.

5. The authors indicate on a number of occasions that non-significant effects may be a consequence of small sample size (e.g. lines 271-273). Did they consider performing power calculations?

6. Were the data weighted to take account of differential selection probabilities into the initial sample and sample attrition across waves? I don’t see any reference to this in statistical analysis plan.

Discussion

The discussion was well structured and I think the authors make reasonable inferences with the data as presented in the paper, notwithstanding my comments concerning some of the statistical analysis. Again, I have a few suggestions that might improve the analysis.

1. The authors find that pet ownership is protective against loneliness, but the effect is only evident among women. I wonder if there is some unobserved heterogeneity here. Presumably pet ownership offers increased opportunities for social engagement? I think ELSA collects information on social participation. The authors should include it as an additional control variable in the analysis.

2. In a similar vein, families might be more likely to own pets. I think they should control for family size and not just parenthood (assuming they have this information, which I think ELSA collects).

3. I notice that the odds of owning a pet at wave 5 by different loneliness trajectories increased in the multivariable adjusted models. What is causing this? Might be worthy of exploration and comment.

Minor Essential Revisions

Type on Table 3 “PET OWNESHIP”

Level of interest: An article of importance in its field

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.