Author’s response to reviews

Title: Companion dog acquisition and mental well-being. A community-based three-arm controlled study

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Author’s response to reviews:

25th September 2019

Dear Dr N. Pafitis,

Re: PUBH-D-19-03078

Companion dog acquisition and mental well-being. A community-based three-arm controlled study

Thank you for offering us the opportunity to revise and re-submit our manuscript entitled “Companion dog acquisition and mental well-being. A community-based three-arm controlled study”.

We would like to thank the reviewer and Associate Editors for re-evaluation of our manuscript. Unfortunately, we have been put in a rather uncomfortable position and it is becoming impossible to further address the comments raised by Reviewer 1 who insisted that “Would you please kindly Apply the requested changes, they have been often justified.” In the large majority of cases, the information that was requested by Reviewer 1 was already present in the original
submission of the manuscript. In our rebuttal letter we elaborated on a point by point basis and provided detailed information, including line numbers, to help the Associate Editor and reviewer locate the requested information in the manuscript. We often copied the relevant paragraphs of information to the rebuttal letter as well.

We have again provided detailed explanations as to why we cannot follow and often, do not understand what the requested changes are due to the less than optimal grammar and syntax used by the reviewer. We have also ensured that the relevant information is highlighted in the manuscript and the rebuttal letter. If the Associate Editor has a better understanding of the reviewer comments that we could not understand and if they feel that we have not addressed any comments fully we would be very pleased to improve the revision once we are provided with some specific guidance.

The revised manuscript is being submitted only to BMC Public Health and will not be submitted elsewhere while under consideration.

We hope that you will find our revised article appropriate for publication in BMC Public Health.

Best Regards,

Lauren Powell
Principal Author

Editor Comments:

The authors are encouraged to highlight all changes to the manuscript in line with the request of Reviewer #1

I am looking forward to your revision.

Thank you.

Thank you. We have now highlighted all of the requested information in the manuscript.

Reviewer reports:

Maryam Akbarilakeh (Reviewer 1): Dear authors Would you please kindly Apply the requested changes, they have been often justified.

We have copied the comments from our first revision below. We have also provided further information and justification regarding each comment. Unfortunately, in many cases, we do not
understand what further changes the reviewer is requesting. We are reasonably confident that we understood the reviewer’s initial comments and we are unsure how to revise further because much of the requested information was already provided in the manuscript.

Also please highlight the responses in manuscript.

Thanks

In line with the reviewer’s suggestion, we have now highlighted the relevant text in the manuscript for further clarity.

Reviewer report from first revision:

Maryam Akbarilakeh (Reviewer 1): Dear,

please consider the following:

- study’s problem statement is weak! you should emphasize on the problem in your own context which motive you to such a study, there are many evidences exist which certify that animal ownership improve mental well being, as you said in your introduction! then i didnt understand what is your problem ? what is the necessity of your study? correct it.

In previous revisions, Reviewer Two’s commented that “the background gives a vivid description of the study objective”. We also believe our problem statement is clearly described in the introduction (lines 15-43). We have now copied this information below. In brief, we highlight that the majority of studies investigating mental health and human-dog interactions have examined the efficacy of animal-assisted interventions among institutionalised or clinical populations (25-30). These acute interventions are vastly different to the conditions of dog ownership, in which owners are responsible for the complete care of their dog. We also explain that, to our knowledge, there have only been two longitudinal studies to investigate human mental well-being in relation to dog acquisition (33-34).

In our previous response, we welcomed recommendations of literature regarding dog acquisition and mental well-being among community dog owners that we had potentially missed. However, the reviewer has not provided any further literature or clarification and regrettably, we do not understand what needs to be amended.

“Most research investigating mental well-being and human–dog interactions has examined the efficacy of animal-assisted therapies to improve psychological outcomes among institutionalised individuals, such as those living in nursing homes, or clinical populations with mental illness or chronic disease (25-30). Among university students, dog-assisted interventions have also demonstrated that acute human–dog interactions have beneficial effects on measures of positive and negative affect (31, 32). Longitudinal studies of dog ownership and mental well-being among community dwelling dog owners are rare. Only two studies, to date, have analysed the impact of companion animal acquisition on human physical and psychological health (33, 34),
one of which reported positive results (33). Both studies investigated a single indicator of mental well-being prior to and after pet acquisition, with a follow-up period of 6-10 months (33, 34). A one-year prospective cohort study including n=955 community-based older adults (≥65 years) has also been used to examine pet ownership and psychological well-being, documenting no association between ownership and overall satisfaction, happiness or perceived mental health (35). The few cross-sectional correlate studies in the field have produced inconsistent findings (30). For example, a survey of 1101 individuals residing in Perth, Australia suggested that dog owners are less lonely than non-owners (36), but other research found pet owners and non-owners do not differ in measures of loneliness (37) or psychological distress (37, 38).

The paucity of evidence and the conflicting results are partly attributable to a plethora of methodological challenges that are common in the field of human-animal interaction research (30). The above cross-sectional studies (36-38) are limited as they compare existing dog or pet owners to non-owners and cannot rule-out reverse causation, i.e. the possibility that individuals who are interested in dog ownership experience better health prior to acquiring a dog (39). Randomised controlled trials, in which human participants are randomly allocated to dog ownership, are not feasible in this field (40, 41). Randomised assignment of dogs to uninterested members of the community would raise irreconcilable animal welfare concerns, such as the potential for neglect or inadequate care, including veterinary care. Dog ownership necessitates a substantial time and economic commitment which would also introduce human ethical concerns if uninterested individuals were allocated to dog ownership. As randomised controlled trials are not feasible, the strongest possible design for examining the impact of dog ownership on mental well-being may be controlled studies in which non-owners acquire a companion dog (41).”

References


The aim of study is not match with your current design and with title!

The aim of this study was to examine potential changes in mental well-being following dog acquisition, using four common measures: loneliness, positive and negative affect, and psychological distress (described in lines 45-47). We have now specified in the aim that our study was focused in community dog owners. By doing so, we have also ensured the aim matches the title: Companion dog acquisition and mental well-being. A community-based three-arm controlled study’.

“The aim of this controlled study was to examine potential changes in mental well-being among community dog owners following dog acquisition, using four common measures: loneliness, positive and negative affect, and psychological distress.”

We used a controlled study including three groups to investigate this aim (described in lines 55-58).
“Upon completion of the baseline measurements, participants self-allocated to one of three treatment groups based on their dog ownership intentions: imminent dog adopters (“dog acquisition”); individuals interested in dog ownership but delayed from acquisition for the study duration (“lagged control”); and individuals who had no interest or plans to acquire a companion dog (“community control”) (Figure 1).”

Therefore, we do not understand where the mismatch occurs or what needs to be altered.

-what is your main hypothesis? is there any hypothesis?

The study hypothesis was that dog acquisition would have a positive effect on mental well-being. This hypothesis is clearly described and supported by the current literature in lines 7-14 of the introduction. We have now highlighted this information in the text.

“It has been suggested that dog ownership can improve human mental well-being through several possible pathways (7). Dogs may provide their owners with social support and companionship (8, 9) and they may also act as catalysts for increased human social interactions (10-12). Acute human–dog interactions have been shown to elicit positive hormonal effects including reduced cortisol concentrations, a biomarker of stress (13-15), and increased oxytocin concentrations (16-19). Dog owners may also be more physically active than non-owners, as a result of dog-walking (20-24), with a well-established link between physical activity and positive mental well-being (3, 4).”

-did your study a case study? is there any socio demographical characteristics in your context which motive you to such a study?

This is not a case control but a prospective study, as explained in the methods section from lines 51-60. We studied a sample of 71 community dwelling adults. The baseline sociodemographic characteristics of our sample are provided in Table 1 in the Results section. Therefore, it is not clear what changes are being requested.

-Study Design is near to an association/prediction study instead of controlled study! what did you mean by controlled? randomized controlled trials? study design is not convincing. do you mean Acquire a dog within 1 month as an intervention ? i prefer the survey on comparison these three groups about mental Well-Being. anyway, if you emphasize on controlled study, you should Describe the basics of this type of study thoroughly in your research!

The study design is not a prospective epidemiological study but a non-randomised quasi experimental with two control groups. We did not conduct tests of association, but rather measured changes in mental well-being over an eight-month period. The exposure in each group was controlled (dog acquisition within one month or no acquisition) and data were analysed based on these groups. The study design is described in detail under the sub-heading ‘Study design’ in the methods (lines 49-59). This information is now copied below.

“Study design
This study formed part of a larger three-arm controlled study in which the primary aim was to investigate the impact of community-based dog ownership on device-based and self-reported human physical activity (to be reported in detail elsewhere). Indicators of mental well-being were considered as secondary outcomes in the larger study but are the primary outcomes of the current manuscript. Upon completion of the baseline measurements, participants self-allocated to one of three treatment groups based on their dog ownership intentions: imminent dog adopters (“dog acquisition”); individuals interested in dog ownership but delayed from acquisition for the study duration (“lagged control”); and individuals who had no interest or plans to acquire a companion dog (“community control”) (Figure 1). We included two control groups to account for possible differences in sociodemographic characteristics or health behaviours associated with an interest in dog ownership (42).

inclusion and exclusion criteria for the first screening?

The inclusion criteria for the study are detailed in lines 66-73 under the sub-heading ‘Recruitment’ in the Methods section. The relevant text has now been highlighted in the manuscript.

“Participants were eligible if they were aged 18 or over; resided within 60km of the Sydney city centre, Australia; had an absence of physical limitations that could prevent walking; and did not currently own a dog or other furry pet (e.g. cat, rabbit) or plan to acquire one for the duration of the study. Individuals who had owned a dog in the 12 months prior to recruitment were excluded from the study. Participants in the dog acquisition group had to acquire a dog within one month of baseline measurements and be the main/joint carer of the dog. Additionally, the dog had to be free of veterinary conditions that would limit low intensity activities such as walking, and not have entered the last quintile of expected lifespan for their breed.”

randomization?

As described in lines 37-43 in the introduction, randomisation is not feasible in this context.

“Randomised controlled trials, in which human participants are randomly allocated to dog ownership, are not feasible in this field (40, 41). Randomised assignment of dogs to uninterested members of the community would raise irreconcilable animal welfare concerns, such as the potential for neglect or inadequate care, including veterinary care. Dog ownership necessitates a substantial time and economic commitment which would also introduce human ethical concerns if uninterested individuals were allocated to dog ownership. As randomised controlled trials are not feasible, the strongest possible design for examining the impact of dog ownership on mental well-being may be controlled studies in which non-owners acquire a companion dog (41).”

References


We also acknowledged the lack of randomisation as a limitation of the study (line 279-280).

“Firstly, there is a lack of randomisation of dog ownership, which is not feasible for this exposure.”

what criteria is the basis for assign people to groups?

Participants self-allocated to their treatment group, described under the sub-heading ‘Study design’ in the Methods section (lines 53-57). We have now highlighted this information in the text.

“Upon completion of the baseline measurements, participants self-allocated to one of three groups based on their dog ownership intentions: imminent dog adopters (“dog acquisition”); individuals interested in dog ownership but delayed from acquisition for the study duration (“lagged control”); and individuals who had no interest or plans to acquire a companion dog (“community control”) (Figure 1).”

completely describe baseline assessment results?

The baseline characteristics of the sample are provided in Table 1 and described in detail in lines 144-152, which have now been highlighted in the text and are provided below. The baseline mental well-being results are also presented in Figure 2 which displays the estimated marginal means for questionnaire scores at each time point by dog ownership status.

“The baseline characteristics of participants who completed the study and were entered in the main analyses (n=71) are presented in Table 1. There were statistically significant differences between the groups in terms of age (p=0.01) and education (p=0.02). Mean age was significantly higher in the community control group. The proportion of individuals who had completed university education was also greater in the lagged control and community control groups compared with the dog acquisition group. At baseline, loneliness (p=0.66), positive affect (p=0.39) and psychological distress (p=0.16) were comparable between the groups. Negative affect was significantly greater in the dog acquisition group (p=0.02).”

complete description of intervention?

The intervention is described in lines 53-57 under the sub-heading ‘Study design’ in the Methods section. The description is also provided below.

“Upon completion of the baseline measurements, participants self-allocated to one of three treatment groups based on their dog ownership intentions: imminent dog adopters (“dog acquisition”); individuals interested in dog ownership but delayed from acquisition for the study
duration ("lagged control"); and individuals who had no interest or plans to acquire a companion dog ("community control") (Figure 1)."

follow up assessment results ?

The follow-up assessment results are described in detail in lines 157-176 under the sub-heading ‘Impact of dog acquisition on indicators of mental well-being’. We have now highlighted this in the text and copied the information below. They are also presented in Figure 2.

“Impact of dog acquisition on indicators of mental well-being

Figure 2 presents the estimated marginal mean scores (adjusted for age and sex) for loneliness, positive and negative affect, and psychological distress by study group (n=71).

Loneliness

Repeated measures ANCOVA showed a statistically significant group*time interaction for loneliness (F(4,132)=2.68, p=0.03, ηp2 =0.08). The dog acquisition group displayed an estimated mean reduction of 8.41 units (95% confidence intervals (CI) -16.57, -0.26, p=0.04) from baseline to mid-study and 7.12 units (95% CI -12.55, -1.69, p=0.01) from baseline to end-of-study.

Positive and negative affect

We observed a significant group*time interaction in repeated measures ANCOVA for positive affect (F(4,132)=2.75, p=0.03, ηp2 =0.08). Among the lagged control group, post-hoc tests estimated a mean reduction of 1.24 units (95% CI -2.33, -0.15, p=0.03) in the positive affect scale from baseline to mid-study. There were no significant differences in the dog acquisition (p=0.15) or control groups (p=0.43). For negative affect, the group*time interaction was F(4,132)=2.39, p=0.05, ηp2 =0.07.

Psychological distress

There were no statistically significant group by time effects for psychological distress (F(4,132)=0.61, p=0.66, ηp2 =0.02).”

Validity and reliability of measures should be described. Correct it -dimensions of measures should be addressed. Your psychological construct is very sensitive, good definition of measures and present the accuracy of measures is necessary.

In lines 89-117 in the Methods section, we provide detailed information regarding the questionnaires, what they set out to measure and their validity and reliability in similar cohorts. We also provide examples of the type of questions comprising each measurement tool. Therefore, we do not understand exactly what information is being requested.
“Loneliness

The UCLA Loneliness Scale (43, 44) is a valid and reliable tool (45, 46) to measure loneliness and social isolation in community populations (34), including multiple Australian cohorts (47-49). The 20-item questionnaire provides brief descriptions of feelings, such as ‘I am unhappy doing so many things alone.’ Participants reported how often they believed each description was indicative of them. The possible responses were never (0), rarely (1), sometimes (2) and often (3). Individual item scores were then added to provide a total score, with a possible range of 0 to 60(44).

Positive and Negative Affect

The Positive and Negative Affect Schedule (PANAS)(50), and its short form(51) are valid and reliable tools to measure affect (52-54) and have been used in similar Australian community cohorts(55-57). The Short PANAS, used in the current study, consists of 10 adjectives describing positive (5) or negative (5) emotions. Participants indicated the intensity of each emotion during the previous week with possible answers ranging from very slightly or not at all (1) to extremely (5). Total positive and negative affect scores were calculated by adding the scores of each relevant item, with possible scores ranging from five to 25(53).

Psychological distress

Kessler10 (K10) is a 10-item questionnaire which uses a Likert-type scale to measure psychological distress, specifically anxiety and depression, over the most recent 28-day period(58). Participants were asked questions such as ‘During the last four weeks, about how often did you feel nervous?’ with 5 possible responses: none of the time (1), a little of the time (2), some of the time (3), most of the time (4) and all of the time (5). K10 has been used extensively across various populations and exhibits good psychometric qualities (59-61). A total K10 score was calculated by summing the individual item scores, with a range of scores from 10 (no distress) to 50 (extreme distress)(62).”

- results;

-you may show the Comparison of Well-Being between three groups by diagram or table. you may show the descriptive statistics and t-test results on the measures by ownership status by table, and so on. results should be revised after you did corrections and clarify the methodology and your main objectives and hypothesis.

The current presentation of the results is in line with your above suggestion. For instance, the comparison of changes in mental well-being between the three groups are presented as a diagram in Figure 2. Specifically, Figure 2 shows the estimated marginal mean scores (adjusted for age and sex) for loneliness, positive and negative affect, and psychological distress by study group using repeated measures ANCOVA.
The descriptive characteristics of participants who completed the study and were entered in the main analyses (n=71) are shown in Table 1. Comparisons in descriptive characteristics between the group are also described in detail in the text, and provided below.

“The baseline characteristics of participants who completed the study and were entered in the main analyses (n=71) are presented in Table 1. There were statistically significant differences between the groups in terms of age (p=0.01) and education (p=0.02). Mean age was significantly higher in the community control group. The proportion of individuals who had completed university education was also greater in the lagged control and community control groups compared with the dog acquisition group. At baseline, loneliness (p=0.66), positive affect (p=0.39) and psychological distress (p=0.16) were comparable between the groups. Negative affect was significantly greater in the dog acquisition group (p=0.02).”

-where is ethics considerations about your study?

The ethical considerations of the study are provided in lines 78-81 of the Methods section, under the sub-heading ‘Recruitment.’

“Ethical approval was obtained from the University of Sydney Human Research Ethics Committee (2016/921) and Animal Ethics Committee (2017/1134). The study was registered with the Australian New Zealand Clinical Trials Registry (ACTRN12617000967381). All methods were performed in accordance with the relevant guidelines. All participants provided informed written consent.”

discussion part;

-you should write about the implications of your study for your context and of course for the whole body knowledge in this domain

The implications of the study are discussed in detail in the Discussion section (lines 218-290). Here, we also consider our findings in the context of the broader literature in the discussion. Following Reviewer Two’s previous comment (Discussion, The section is well-written by the authors) we have decided not to update the discussion.

The implications of the study for Australian urban dog owners and future researchers are also detailed in the conclusion. Please see our response to the below comment for further information.

-conclusion part; write conclusion?

The conclusion is provided at the end of the manuscript under the heading ‘Conclusions’ (lines 293-297). We have highlighted this text in the manuscript for clarity.

“In this sample of Australian urban dog owners, acquisition of a dog was associated with a reduction in loneliness within three months, with the observation persisting to the end of the study. Our results are suggestive of a relatively rapid, positive impact of dog acquisition on some indicators of human mental well-being. Our study provides preliminary, albeit unique, insights to
inform future larger controlled studies on the relationship between dog ownership and human mental health.”

-where are the limitations of your study??

Be Lucky

The limitations of the study are provided in the last paragraph of the discussion (lines 278-290). This information is now highlighted in the tracked version of the manuscript.

“There are also several limitations of the study which necessitate cautious interpretation of our findings. Firstly, there is a lack of randomisation of dog ownership, which is not feasible for this exposure. There is also a lack of allocation concealment and blinding. As a result, selection bias may have occurred due to participants’ self-selection to their group. We also found differences between the treatment groups in terms of age and education. To reduce the possible impacts of these imbalances, we investigated changes in mental well-being over time and adjusted for both age and education. However, it must be noted that the adjustment for education nullified the results. There was also a significant difference at baseline between the groups in negative affect. The small sample size of the dog acquisition group suggests this analysis may have been statistically underpowered, which could have contributed to the instability in our results. For example, by altering the grouping of participants, such as pooling the control groups, we found some results were inconsistent with the primary analyses. Finally, the absence of males in the dog acquisition group may limit the generalisability of our findings.”