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Experiences and effectiveness of canine-assisted interventions on the health and well-being of older people residing in long-term care: a mixed methods systematic review protocol

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Table 1: Types of animal-assisted interventions[5]

Animal-assisted therapy (AAT)	A goal directed intervention in which an animal meeting specific criteria is an integral part of the treatment process. AAT is delivered and/or directed by health or human service providers working within the scope of their profession. Animal-assisted therapy is designed to promote improvement in human physical, social, emotional, or cognitive function. The process is documented and evaluated.
Animal-assisted activities (AAA)	AAAs provide opportunities for motivation, education, or recreation to enhance quality of life. AAAs are delivered in a variety of environments by specially trained professionals, paraprofessionals, or volunteers in association with animals that meet specific criteria.
Animal-assisted education (AAE)	AAE is a planned and structured intervention directed and/or delivered by educational and related service professionals with specific academic or educational goals.

Abstract

Objective: To synthesize and integrate the best available evidence on the experiences and effectiveness of canine-assisted interventions (CAIs) on the health and well-being of older people residing in long-term care.

Introduction: Canine-assisted interventions (CAIs) are commonly used as an adjunct therapy to enhance health and well-being and are often implemented in long-term care facilities. The number of studies undertaken in this area has increased substantially over the last five years; therefore, an update of two previous systematic reviews is warranted.

Inclusion criteria: This review will consider older people who reside in long-term care facilities and who receive CAIs. For the quantitative component, CAIs will be compared to usual care, alternative therapeutic interventions or no interventions, and outcomes will be grouped under the following headings: biological, psychological and social. For the qualitative component, the experiences of older people receiving CAIs, as well as the views of people directly or indirectly involved in delivering CAIs, will be explored. Quantitative, qualitative and mixed-methods studies published from 2009 to the present will be considered.

Methods: A search of 10 bibliographic databases and other various resources for published and unpublished English language studies will be undertaken. Study selection, critical appraisal, data extraction and data synthesis will be undertaken following the segregated JBI approach to mixed-methods reviews.

Systematic review registration number: PROSPERO XXXXX.

Keywords: Animal-assisted; canine; dog; pet therapy; mixed methods

Introduction

The term 'human–animal bond' refers to the connection that people and animals experience, which is considered to be mutually beneficial and to enhance health and well-being.[1] This two-way relationship (which some consider links to Bowlby's attachment theory)[2,3] has led to the introduction of animals being used in therapeutic roles such as animal-assisted interventions (AAI, the focus of this review) and service animals.[4] Animal-assisted interventions refers to the "utilization of various species of animals in diverse manners beneficial to humans"[5para4] and are often further grouped into animal-assisted therapies (AAT), animal-assisted activities (AAA) and animal-assisted education (AAE) (see Table 1 for explanation of terms).

<Insert Table 1 here>

Commonly used as an adjunct to both pharmacological and non-pharmacological therapies, AAIs can be delivered one-on-one or in group formats with a range of animals being used. Shen and colleagues suggest that AAIs are highly accepted interventions across different populations, conditions and settings,[6] with canines being the most common species utilized.[6-8] The holistic nature of AAIs suggests potential benefits may extend across the physical, emotional and social spectrum;

however, results are varied. [6,7,9-18] Nimer and Lundahl showed that AAIs produced moderate effect sizes to improve emotional well-being, behavioral problems, medical difficulties as well as autism spectrum symptoms.[8] In this meta-analysis, dogs were consistently associated with moderate effect sizes which did not occur in the other animals examined.[8] Reviews in this area generally indicate some small benefit in outcomes but go on to acknowledge that the lack of methodological rigour in studies impacts on the results of research. Despite these limitations, the popularity of AAIs continues to increase, with the number of published studies rising. A search of "animal-assisted therapy" in PubMed produced close to 450 results with over 50% of papers being published over the last five years (search undertaken on 9 May 2019).

One population and setting where AAIs are used is older people in long-term care facilities. With an increasingly aging population[19,20] there is a demand for high-quality long-term care. Additionally, once a person enters a care facility, increases in physical and psychosocial morbidities can occur.[21] Animal-assisted interventions may be able to play a role in improving health and well-being of residents, for example, by reducing depression and improving quality of life.[7] This type of intervention seems particularly relevant to older people living in long-term care facilities as human–animal interactions are not dependent on a high level of cognitive function[22] nor on high physical and functioning ability.[23] Further MacLean suggests that people with mental health issues who may be reluctant to use conventional treatment may prefer alternative treatments such as AAIs.[24]

Two systematic reviews undertaken in 2011[23,25] focused exclusively on CAIs for this population. The first looked at the effects of CAIs while the other explored the experiences of residents involved in CAIs. Heterogeneity across interventions and outcomes prohibited pooling of studies in the quantitative review; however, results from individual studies indicated some physical and emotional short-term benefits. The review went on to acknowledge that CAIs were no more effective than other interventions that were provided such as visits from people.[23] The qualitative synthesis included only two studies, with meta-aggregation producing two synthesized findings. The first indicated that residents involved in CAIs may experience a range of mental, emotional, physiological and social benefits while the second finding related to the practical and safety concerns associated with CAIs.[25] With popularity of CAIs increasing (as demonstrated by the rise in primary research recently undertaken), the aging population and the potential of these interventions to improve the health and well-being of residents in long-term care facilities, it is appropriate to strengthen the evidence by updating the original reviews. This aligns to the decision framework developed by Garner et al. to assess systematic reviews for updating.[26] The importance of keeping reviews as current as possible has been recognized,[26,27] with Garner and colleagues highlighting that by not updating reviews, authors are compromising a review's integrity, potentially misleading readers about the current state of the science.[26]

New guidance for the conduct of mixed-methods reviews[28] provides the opportunity to combine the two reviews into one, thereby allowing the integration of qualitative and quantitative evidence. Mixed-methods reviews bring together the findings of effectiveness (quantitative evidence) and patient,

family, staff or others' experiences (qualitative evidence) to enhance their usefulness to clinicians and clinical, policy or organizational decision-makers.[28] They broaden the focus of a systematic review, allowing for a more in-depth exploration of healthcare phenomena and thereby maximizing the findings that one method alone could not achieve.[29]

A preliminary search of PubMed, CINAHL, PROSPERO, *The JBI Database of Systematic Reviews and Implementation Reports* and The Cochrane Database of Systematic Reviews indicated that a number of single-method reviews have been conducted since the original reviews were published; however, most have not focused specifically on this population (older people), setting (long-term care) and intervention (canines).[6,7,9,10,12-15,17,18] Cipriani et al (2013) did examine the effect of canine-assisted therapies (CAT) on older adults residing in long-term care; however, the search was undertaken up until 2010.[11] Out of the 19 studies included in the review, twelve demonstrated statistically significant improvement in outcomes for residents. No mixed-methods reviews were located in the search. A PROSPERO record registered in 2017[30] indicates that a systematic review containing both qualitative and quantitative evidence is in progress which focuses on older people in long-term care; however, the review is not restricted to canines and the approach to bringing the results together is not clearly detailed. The authors have been contacted for additional information regarding the approach being taken to integration and when the review is anticipated to be completed (since the expected date provided has passed); however, no further details were provided. Therefore the overall aim of this review is to update and combine two previous systematic reviews to explore the experiences and effectiveness of CAIs on the health and social care of older people who reside in long-term care.

Review questions

The aim of this mixed-methods review is to synthesize and integrate the best available evidence on the experiences and effectiveness of CAIs on the health and well-being of older people residing in long-term care. More specifically the review questions are as follows:

- What are the experiences of older people residing in long-term care who receive CAIs?
- What are the views of people directly or indirectly involved in delivering CAIs to older adults (such as family and friends of the residents, healthcare workers and volunteers) regarding CAIs for older people residing in long-term care facilities?
- What is the effectiveness of CAIs on the health and well-being of older people residing in long-term care facilities?

Inclusion criteria

Participants

This review will consider studies that include older people (60 years and older) who reside in long-term care facilities and who receive CAIs. Studies that contain people younger than 60 will be

included as long as the mean age is 60. There will be no exclusions based on medical conditions or comorbidities.

Additionally, for the qualitative component, the views of people directly or indirectly involved in delivering CAIs to older adults (such as family and friends of the residents, healthcare workers and volunteers) will also be considered

Intervention

The quantitative component of the review will consider studies that evaluate CAIs. Interventions will be grouped as either canine-assisted activities (CAAs) or CATs. For the purpose of this review, definitions will be based on those provided by the American Veterinary Medical Associations.[5] Canine-assisted activities "provide opportunities for motivation, education, or recreation to enhance quality of life."[5para7] Canine-assisted therapies are "a goal directed intervention … delivered and/or directed by health or human service providers working within the scope of practice of their profession."[5para5] Canine-assisted education will not be considered since this intervention is rarely measured in studies in this area. There will be no limitations to the duration of interventions or the required follow-up.

Comparator(s)

The quantitative component of the review will consider studies that compare the intervention to usual care, alternative therapeutic interventions or no intervention.

Outcomes

The quantitative component of this review will consider studies that include outcomes related to health and well-being including but not limited to: loneliness, depression, anxiety, well-being, quality of life, mood, satisfaction, morale, self-esteem, activity participation/involvement, activities of daily living, blood pressure, and social interaction. Where possible review outcomes will be grouped under the biopsychosocial model[31] as follows:

- biological (e.g. blood pressure)
- psychological (e.g. depression)
- social (e.g. social interaction).

Outcomes can be measured using any validated instrument, via observation or by self-report, and measured during or immediately after the intervention or at a follow-up period.

Phenomena of interest

The qualitative component of this review will consider studies that investigate the experiences of older people receiving the CAIs as well as the views of people directly or indirectly involved in delivering CAIs to them such as family and friends of the residents, healthcare workers and volunteers.

Context

The review will consider studies undertaken in long-term care facilities which will include any setting for older people who are unable to manage independently in the community including nursing homes, skilled aged-care facilities, assisted living facilities and hostels for the aged. There will be no limits regarding cultural factors or geographical location.

Types of studies

This review will consider quantitative, qualitative and mixed-methods studies. Quantitative studies will include experimental and quasi-experimental study designs, analytical observational studies, analytical cross-sectional studies and descriptive observational study designs. Randomized controlled trials (RCTs) will be considered as the primary focus; however, in their absence other research designs will be considered. Qualitative studies will include designs such as phenomenology, grounded theory, ethnography, qualitative description, action research and feminist research. Mixed-method studies will be considered if data from the quantitative or qualitative components can be clearly extracted. Where data is not reported, authors will be contacted.

Studies published in English will be included. Studies published from April 2009 to the present will be included as this proposed review is an update of two previous systematic reviews.[23,25]

Methods

The proposed systematic review will be conducted in accordance with the JBI methodology for mixed-methods systematic reviews (MMSR).[28] This review title has been registered in PROSPERO, registration number XXX.

Search strategy

The search strategy will aim to find both published and unpublished studies. An initial limited search of MEDLINE and CINAHL was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy for CINAHL (see Appendix I). The search strategy, including all identified keywords and index terms, will be adapted for each included information source. The reference lists of all studies selected for critical appraisal will be screened for additional studies.

Information sources

The databases to be searched include: PubMed, CINAHL (EBSCO Host), EMBASE (Elsevier), PsycINFO (Ovid), PsycARTICLES (Ovid), AUSThealth (Informit), Scopus (Elsevier), Web of Science (Web of Science Core Collection; CABI; Current Contents Connect), OT seeker and PEDro.

The trial registers to be searched include Cochrane Central Register of Controlled Trials and ClinicalTrials.gov (for quantitative studies only).

The search for unpublished studies and gray literature will include: Trove, The Networked Digital Library of Theses and Dissertations (NDLTD), Proquest Dissertations and Theses (Global), Delta Society Australia website (https://www.deltasociety.com.au) and Pet Partners website (https://petpartners.org/) (previously known as the Delta Society).

Study selection

Following the search, all identified citations will be uploaded into EndNote version 8 (Clarivate Analytics, PA, USA) and duplicates removed. Titles and abstracts will then be screened by two independent reviewers for assessment against the inclusion criteria for the review. Potentially relevant studies will be retrieved in full and their citation details imported into the Joanna Briggs Institute's System for the Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide, Australia). The full text of selected citations will be assessed in detail against the inclusion criteria by two independent reviewers. Reasons for exclusion of full-text studies that do not meet the inclusion criteria will be recorded and reported in the systematic review. Any disagreements that arise between the reviewers at each stage of the study selection process will be resolved through discussion, or with a third reviewer. The results of the search will be reported in full in the final review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram.[32]

Assessment of methodological quality

Quantitative papers (and the quantitative component of mixed-methods papers) selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review, using standardized critical appraisal instruments from JBI SUMARI based on study design e.g. RCT, quasi-experimental studies.[33]

Qualitative papers (and qualitative component of mixed-methods papers) selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review, using the standard JBI critical appraisal checklist for qualitative research available in JBI SUMARI.[34]

Authors of papers will be contacted to request missing or additional data for clarification, where required. Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer. The results of critical appraisal will be reported in narrative form and in a table.

All studies, regardless of the results of their methodological quality, will undergo data extraction and synthesis (where possible) and the impact of methodological quality will be considered when developing conclusions and recommendations for practice.

Data extraction

For the quantitative component, data will be extracted from quantitative and mixed-methods (quantitative component only) studies included in the review by two independent reviewers using the standardized JBI data extraction tool in JBI SUMARI.[33] The data extracted will include specific details about the populations, study methods, interventions, and outcomes of significance to the review objective.

For the qualitative component, data will be extracted from qualitative and mixed-methods (qualitative component only) studies included in the review by two independent reviewers using the standardized JBI data extraction tool in JBI SUMARI.[34] The data extracted will include specific details about the populations, context, culture, geographical location, study methods and the phenomena of interest relevant to the review objective. Findings and their illustrations, will be extracted and assigned a level of credibility using the JBI ranking scale available through JBI SUMARI.

Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer. Authors of papers will be contacted to request missing or additional data, where required.

Data synthesis

This review will follow a convergent segregated approach to synthesis and integration according to the JBI methodology for MMSR using JBI SUMARI.[28] This will involve separate quantitative and qualitative synthesis followed by integration of the resultant quantitative evidence and qualitative evidence.

Quantitative synthesis

Studies will, where possible, be pooled with statistical meta-analysis using JBI SUMARI. Effect sizes will be expressed as either odds ratios (for dichotomous data) or weighted (or standardized) final post-intervention mean differences (for continuous data) and their 95% confidence intervals will be calculated for analysis. Heterogeneity will be assessed statistically using the standard chi squared and I^2 tests. The choice of model (random or fixed-effects) and method for meta-analysis will be based on the guidance by Tufanaru et al.[33] Subgroup analyses will be conducted where there is

sufficient data to investigate CATs and CAAs and morbidities. Sensitivity analyses will be conducted to test decisions made regarding methodological quality. Where statistical pooling is not possible the findings will be presented in narrative form including tables and figures to aid in data presentation, where appropriate. A funnel plot will be generated to assess publication bias if there are 10 or more studies included in a meta-analysis. Statistical tests for funnel plot asymmetry (Egger test, Begg test, Harbord test) will be performed where appropriate.

Qualitative synthesis

Qualitative research findings will, where possible, be pooled using JBI SUMARI with the meta-aggregation approach.[34] This will involve the aggregation or synthesis of findings to generate a set of statements that represent that aggregation, through assembling the findings and categorizing these findings based on similarity in meaning. These categories will then be subjected to a synthesis in order to produce a comprehensive set of synthesized findings that can be used as a basis for evidence-based practice. Where textual pooling is not possible the findings will be presented in narrative form.

Integration of quantitative evidence and qualitative evidence <subheading>

The findings of each single-method synthesis included in this review will then be configured according to the JBI methodology for MMSR.[28] This will involve quantitative evidence and qualitative evidence being juxtaposed together and organized/linked into a line of argument to produce an overall configured analysis. Where configuration is not possible the findings will be presented in narrative form.

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Conflicts of interest

CS is a Senior Associate Editor of the *JBI Database of Systematic Reviews and Implementation Reports*.

JC and CG are Associate Editors of the *JBI Database of Systematic Reviews and Implementation Reports*.

JA is an invited guest editor for a special issue of the *JBI Database of Systematic Reviews and Implementation Reports.*

SS is a member of the Editorial Board of the *JBI Database of Systematic Reviews and Implementation Reports*.

All listed authors are members of the JBI Mixed Methods Methodology Group.

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Appendix I: Search strategy for CINAHL

Search conducted on 16 May 2019.

S1 ((MH "Aged") OR (MH "Frail Elderly") OR (MH "Aged, 80 and Over")) OR TI ("aged" OR "elderly" OR "senior" OR "older people" OR "geriatric" OR "older person") OR AB ("aged" OR "elderly" OR "senior" OR "older people" OR "geriatric" OR "older person") OR ((MH "Nursing Home Patients") OR (MH "Residential Facilities") OR (MH "Long Term Care") OR (MH "Residential Care") OR (MH "Nursing Homes") OR (MH "Housing for the Elderly") OR (MH "Gerontologic Care")) OR TI ("nursing home resident" OR "residential facilit*" OR "long term care" OR "residential care" OR "nursing home" OR "aged care") OR AB ("nursing home resident" OR "residential facilit*" OR "long term care" OR "residential care" OR "nursing home" OR "aged care") **(879,304)**

S2((MH "Animal Assisted Therapy (Iowa NIC)") OR (MH "Pet Therapy") OR (MH "Dogs")) OR TI ("animal-assisted" OR "pet therapy" OR "animal facilitated therapy" OR "pet facilitated therapy" OR "dogs") OR AB ("animal-assisted" OR "pet therapy" OR "animal facilitated therapy" OR "pet facilitated therapy" OR "dogs") **(10,518)**

S3 S1 AND S2 **(851)**

S4 S1 AND S2 Limiters - Published Date: 20090401-20190531; English Language **(480)**