1 **The experiences and effectiveness of canine-assisted interventions (CAIs) on the health and well-being of**
2 **older people residing in long-term care: A mixed methods systematic review protocol**
3

4 **Abstract**
5

6 **Objective:** To synthesize and integrate the best available evidence on the experiences and

7 effectiveness of canine-assisted interventions (CAIs) on the health and well-being of older people

8 residing in long-term care.

9 **Introduction:** Canine-assisted interventions (CAIs) are commonly used as an adjunct therapy to

10 enhance health and well-being and are often implemented in long-term care facilities. The number of

11 studies undertaken in this area has increased substantially over the last five years; therefore, an

12 update of two previous systematic reviews is warranted.

13 **Inclusion criteria:** This review will consider older people who reside in long-term care facilities and

14 who receive CAIs. For the quantitative component, CAIs will be compared to usual care, alternative

15 therapeutic interventions or no interventions and outcomes will be grouped under the following

16 headings: biological, psychological and social. For the qualitative component, the experiences of older

17 people receiving CAIs as well as the views of people directly or indirectly involved in delivering CAIs

18 will be explored. Quantitative, qualitative and mixed methods studies published from 2009 to the

19 present will be considered.

20 **Methods:** A search of 10 bibliographic databases and other various resources for published and

21 unpublished English language studies will be undertaken. Study selection, critical appraisal, data

22 extraction and data synthesis will be undertaken following the segregated JBI approach to mixed

23 methods reviews.

24 **Systematic review registration number:** PROSPERO XXXXX.

25 **Review questions**

26 The aim of this mixed methods review is to synthesize and integrate the best available evidence on

27 the experiences and effectiveness of canine-assisted interventions (CAIs) on the health and well-

28 being of older people residing in long-term care. More specifically the review questions are:

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

35 **Introduction**

36 The term 'human-animal bond' refers to the connection people and animals experience, considered to

37 be mutually beneficial and enhancing health and well-being.[1] This two-way relationship (which some

38 consider links to Bowlby's attachment theory)[2,3] has led to the introduction of animals being used in

39 therapeutic roles such as animal-assisted interventions (AAI, the focus of this review) and service

40 animals.[4] Animal-assisted interventions refers to the "utilization of various species of animals in

41 diverse manners beneficial to humans"[5para4] and are often further grouped into animal-assisted

42 therapies (AAT), animal-assisted activities (AAA) and animal-assisted education (AAE) (See Table 1

43 for explanation of terms).

44 **<Table 1. Types of animal-assisted interventions[5]>**

45 Commonly used as an adjunct to both pharmacological and non-pharmacological therapies, AAIs can

46 be delivered one-on-one or in group formats with a range of animals being used. Shen and

47 colleagues suggest AAIs are highly accepted interventions across different populations, conditions

48 and settings[6] with the most common species utilized being canines [6-8] The holistic nature of AAIs

49 suggests potential benefits may extend across the physical, emotional and social spectrum however

50 results are varied. [6,7,9-18] Nimer and Lundahl showed AAIs produced moderate effect sizes to improve

51 emotional well-being, behavioural problems, medical difficulties as well as autism spectrum

52 symptoms.[8] In this meta-analysis, dogs were consistently associated with moderate effect sizes

53 which did not occur in the other animals examined.[8] Reviews in this area generally indicate some

54 small benefit in outcomes but go on to acknowledge that the lack of methodological rigour in studies

55 impacts on the results of research. Despite these limitations, popularity of AAIs continues to increase

56 with the number of published studies rising. A search of "animal-assisted therapy" in PubMed

57 produced close to 450 results with over 50% of papers being published over the last five years

58 (search undertaken 9th May 2019).

59 One population and setting where AAIs are used is with older people in long-term care facilities. With

60 an increasingly ageing population[19,20] there is a demand for high quality long-term care. Additionally

61 once a person enters a care facility, increases in physical and psychosocial morbidities can occur.[21]

62 Animal-assisted interventions may be able to play a role in improving health and well-being of

63 residents for example by reducing depression and improving quality of life.[7] This type of intervention

64 seems particularly relevant to older people living in long-term care facilities as human animal-

65 interactions are not dependent on a high level of cognitive function[22] nor high physical and functioning

66 ability.[23] Further Maclean suggests that people with mental health issues that may be reluctant to use

67 conventional treatment may prefer alternative treatments such as AAIs.[24]

68 Two systematic reviews undertaken in 2011[23,25] focused exclusively on canine-assisted interventions

69 (CAIs) for this population. The first looked at the effects of CAIs while the other explored the

70 experiences of residents involved in CAIs. Heterogeneity across interventions and outcomes

71 prohibited pooling of studies in the quantitative review however, results from individual studies

72 indicated some physical and emotional short-term benefits. The review went on to acknowledge that

73 CAIs were no more effective than other interventions that were provided such as visits from people.[23]

74 The qualitative synthesis included only two studies with meta-aggregation producing two synthesized

75   findings. The first indicated that residents involved in CAI's may experience a range of mental,

76   emotional, physiological and social benefits while the second finding related to the practical and

77   safety concerns associated with CAI's.[25] With popularity of CAI's increasing (as demonstrated by the

78   rise in primary research recently undertaken), the ageing population and the potential of these

79   interventions to improve the health and well-being of residents in long-term care facilities, it is

80   considered appropriate to strengthen the evidence by updating the original reviews. This aligns to the

81   decision framework developed by Garner et al to assess systematic reviews for updating.[26] The

82   importance of keeping reviews as current as possible has been recognized[26,27] with Garner and

83   colleagues highlighting that by not updating reviews, authors are compromising a review's integrity,

84   potentially misleading readers about the current state of the science.[26]

85   New guidance for the conduct of mixed methods reviews[28] provides the opportunity to combine the

86   two reviews into one thereby allowing the integration of qualitative and quantitative evidence. Mixed

87   methods reviews bring together the findings of effectiveness (quantitative evidence) and patient,

88   family, staff or other's experiences (qualitative evidence) to enhance their usefulness to clinicians and

89   clinical, policy or organizational decision-makers.[28] They broaden the focus of a systematic review

90   allowing for a more in-depth exploration of healthcare phenomena thereby maximizing the findings

91   that one method alone could not achieve.[29]

92   A preliminary search of PubMed, CINAHL, PROSPERO, *The JBI Database of Systematic Reviews*

93   *and Implementation Reports* and The Cochrane Database of Systematic Reviews indicated a number

94   of single method reviews have been conducted since the original reviews were published however

95   most have not focused specifically on this population (older people), the setting (long-term care) and

96   the intervention (canines).[6,7,9,10,12-15,17,18] Cipriani et al (2013) did examine the effect of canine-assisted

97   therapies (CAT) on older adults residing in long-term care however the search was undertaken up

98   until 2010.[11] Out of the 19 studies included in the review, twelve demonstrated statistically significant

99   improvement in outcomes for residents. No mixed methods reviews were located in the search. A

100   PROSPERO record registered in 2017[30] indicates a systematic review containing both qualitative and

101   quantitative evidence is in progress which focuses on older people in long-term care however the

102   review is not restricted to canines and the approach to bringing the results together is not clearly

103   detailed. The authors have been contacted for additional information regarding the approach being

104   taken to integration and when the review is anticipated to be completed (since the expected date

105   provided has passed); however, no further details were provided. Therefore the overall aim of this

106   review is to update and combine two previous systematic reviews to explore the experiences and

107   effectiveness of CAIs on the health and social care of older people who reside in long-term care.

108   **Keywords**

109   animal-assisted; canine, dog; pet therapy; mixed methods; qualitative; quantitative

110 **Inclusion Criteria**

111 **Participants**

112 The review will consider studies that include older people (60 years and older) who reside in long-
113 term care facilities and who receive CAIs. Studies that contain people younger than 60 will be
114 included as long as the mean age is 60. There will be no exclusions based on medical conditions or
115 co-morbidities.
116
117 Additionally for the qualitative component, the views of people directly or indirectly involved in
118 delivering CAIs to older adults such as family and friends of the residents, healthcare workers and
119 volunteers will also be considered

120 **Intervention**

121 The quantitative component of the review will consider studies that evaluate CAIs. Interventions will
122 be grouped as either canine-assisted activities (CAAs) or canine-assisted therapies (CATs). For the
123 purpose of this review definitions will be based on those provided by the American Veterinary Medical
124 Associations.[5] Canine-assisted activities "provide opportunities for motivational, educational, and/or
125 recreational benefits to enhance quality of life."[5para7] Canine-assisted therapies are "a goal directed
126 intervention directed and/or delivered by a health/human service professional with specialised
127 expertise, and within the scope of practice of his/her profession."[5para5] Canine-assisted education will
128 not be considered since this intervention is rarely measured in studies in this area. There will be no
129 limitations to the duration of interventions or the required follow-up.

130 **Comparator**

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

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

139 • Biological (e.g. blood pressure)
140 • Psychological (e.g. depression)
141 • Social (e.g. social interaction)

142   Outcomes can be measured using any validated instrument, via observation or by self-report, and

143   measured during or immediately after the intervention or at a follow-up period.

Phenomena of interest

145   The qualitative component of this review will consider studies that investigate the experiences of older

146   people receiving the CAIs as well as the views of people directly or indirectly involved in delivering

147   CAIs to them such as family and friends of the residents, healthcare workers and volunteers.

Context

149   The review will consider studies undertaken in long-term care facilities which will include any setting

150   for older people who are unable to manage independently in the community including nursing homes,

151   skilled aged care facilities, assisted living facilities and hostels for the aged. There will be no limits

152   regarding cultural factors or geographical location.

Types of studies

154   This review will consider quantitative, qualitative and mixed methods studies. Quantitative studies will

155   include experimental and quasi-experimental study designs, analytical observational studies,

156   analytical cross-sectional studies and descriptive observational study designs. Randomized controlled

157   trials (RCTs) will be considered as the primary focus however in their absence other research designs

158   will be considered. Qualitative studies will include designs such as phenomenology, grounded theory,

159   ethnography, qualitative description, action research and feminist research. Mixed method studies will

160   be considered if data from the quantitative or qualitative components can be clearly extracted. Where

161   data is not reported, authors will be contacted.

162   Studies published in English will be included. Studies published from April 2009 to the present will be

163   included as this is an update of two previous systematic reviews.[23,25]

Methods

165   The proposed systematic review will be conducted in accordance with the Joanna Briggs Institute

166   (JBI) methodology for Mixed Methods Systematic Review (MMSR).[28] This review title has been

167   registered in PROSPERO, registration number XXX.

Search strategy

169   The search strategy will aim to find both published and unpublished studies. An initial limited search

170   of MEDLINE and CINAHL was undertaken to identify articles on the topic. The text words contained in

171   the titles and abstracts of relevant articles, and the index terms used to describe the articles were

172   used to develop a full search strategy for CINAHL (see Appendix I). The search strategy, including all

173   identified keywords and index terms will be adapted for each included information source. The

174   reference list of all studies selected for critical appraisal will be screened for additional studies.

175   Information Sources

176   The databases to be searched include: PubMed, CINAHL (EBSCO Host), EMBASE (Elsevier),

177   PsycINFO (Ovid), PsycARTICLES (Ovid), AUSThealth (Informit), Scopus (Elsevier), Web of Science

178   (Web of Science Core Collection; CABI; Current Contents Connect), OT seeker and PEDro.

179   The trial registers to be searched include: Cochrane Central Register of Controlled Trials,

180   Clinicaltrials.gov (For quantitative studies only)

181   The search for unpublished studies and gray literature will include: Trove, The Networked Digital

182   Library of Theses and Dissertations (NDLTD), Proquest Dissertations and Theses (Global), Delta

183   Society Australia website (https://www.deltasociety.com.au), Pet Partners website

184   (https://petpartners.org/) (previously known as the Delta Society)

185   **Study selection**

186   Following the search, all identified citations will be loaded into EndNote version 8 (Clarivate Analytics,

187   PA, USA) and duplicates removed. Titles and abstracts will then be screened by two independent

188   reviewers for assessment against the inclusion criteria for the review. Potentially relevant studies will

189   be retrieved in full and their citation details imported into the Joanna Briggs Institute's System for the

190   Unified Management, Assessment and Review of Information (JBI SUMARI; Joanna Briggs Institute,

191   Adelaide, Australia). The full text of selected citations will be assessed in detail against the inclusion

192   criteria by two independent reviewers. Reasons for exclusion of full text studies that do not meet the

193   inclusion criteria will be recorded and reported in the systematic review. Any disagreements that arise

194   between the reviewers at each stage of the study selection process will be resolved through

195   discussion, or with a third reviewer. The results of the search will be reported in full in the final review

196   and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA)

197   flow diagram.[32]

198   **Assessment of methodological quality**

199   Quantitative papers (and quantitative component of mixed methods papers) selected for retrieval will

200   be assessed by two independent reviewers for methodological validity prior to inclusion in the review

201   using standardized critical appraisal instruments from JBI SUMARI based on study design e.g. RCT,

202   quasi-experimental studies etc.[33]

203   Qualitative papers (and qualitative component of mixed methods papers) selected for retrieval will be

204   assessed by two independent reviewers for methodological validity prior to inclusion in the review

205   using the standard JBI critical appraisal checklist for Qualitative Research available in JBI SUMARI.[34]

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

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

212 **Data extraction**

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

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

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

228 **Data synthesis**

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

233 Quantitative synthesis

234 Studies will, where possible, be pooled with statistical meta-analysis using JBI SUMARI. Effect sizes
235 will be expressed as either odds ratios (for dichotomous data) or weighted (or standardized) final
236 post-intervention mean differences (for continuous data) and their 95% confidence intervals will be
237 calculated for analysis. Heterogeneity will be assessed statistically using the standard chi squared
238 and I^2 tests. The choice of model (random or fixed effects) and method for meta-analysis will be

239 based on the guidance by Tufunaru et al.[33] Subgroup analyses will be conducted where there is

240 sufficient data to investigate CATs and CAAs and morbidities. Sensitivity analyses will be conducted

241 to test decisions made regarding methodological quality. Where statistical pooling is not possible the

242 findings will be presented in narrative form including tables and figures to aid in data presentation,

243 where appropriate. A funnel plot will be generated to assess publication bias if there are 10 or more

244 studies included in a meta-analysis. Statistical tests for funnel plot asymmetry (Egger test, Begg test,

245 Harbord test) will be performed where appropriate.

246 Qualitative synthesis

247 Qualitative research findings will, where possible be pooled using JBI SUMARI with the meta-

248 aggregation approach.[34] This will involve the aggregation or synthesis of findings to generate a set of

249 statements that represent that aggregation, through assembling the findings and categorizing these

250 findings based on similarity in meaning. These categories are then subjected to a synthesis to

251 produce a comprehensive set of synthesized findings that can be used as a basis for evidence-based

252 practice. Where textual pooling is not possible the findings will be presented in narrative form.

253 Integration of quantitative evidence and qualitative evidence

254 The findings of each single method synthesis included in this review will then be configured according

255 to the JBI methodology for mixed methods systematic reviews.[28] This will involve quantitative

256 evidence and qualitative evidence being juxtaposed together and organized/linked into a line of

257 argument to produce an overall configured analysis. Where configuration is not possible the findings

258 will be presented in narrative form

259 **References**

260 1. American Veterinary Medical Association (AVMA). Human-Animal Bond; [internet]. [cited

261 Available from: https://www.avma.org/KB/Resources/Reference/human-animal-

262 bond/Pages/Human-Animal-Bond-AVMA.aspx accessed 9th May 2019.

263 2. Cookman CA. Older people and attachment to things, places, pets, and ideas. Image J Nurs Sch

264 1996; 28(3): 227-231.

265 3. Zilcha-Mano S, Mikulincer M and Shaver PR. Pet in the therapy room: an attachment perspective

266 on Animal-Assisted Therapy. Attach Hum Dev 2011; 13(6): 541-561.

267 4. Ernst L. Animal-Assisted Therapy: An Exploration of Its History, Healing Benefits, and How Skilled

268 Nursing Facilities Can Set Up Programs. Annals of Long-Term Care: Clinical Care and Aging 2014;

269 22(10): 27-32.

270 5. American Veterinary Medical Association (AVMA). Animal-Assisted Interventions: Definitions;

271 [internet]. [cited Available from: https://www.avma.org/KB/Policies/Pages/Animal-Assisted-

272 Interventions-Definitions.aspx accessed 9th May 2019.

273 6. Shen RZZ, Xiong P, Chou UI and Hall BJ. "We need them as much as they need us": A systematic

274 review of the qualitative evidence for possible mechanisms of effectiveness of animal-assisted

275 intervention (AAI). Complement Ther Med 2018; 41: 203-207.

276 7. Farid A. 111REVIEW OF ANIMAL ASSISTED THERAPY WITH VISITING DOGS IN DEMENTIA. Age and

277 Ageing 2019; 48(Supplement_1): i32-i35.

278 8. Nimer J and Lundahl B. Animal-assisted therapy: A meta-analysis. Anthrozoös 2007; 20(3): 225-

279 238.

280   9. Charry-Sanchez JD, Pradilla I and Talero-Gutierrez C. Animal-assisted therapy in adults: A
281   systematic review. Complement Ther Clin Pract 2018; 32: 169-180.
282   10. Charry-Sanchez JD, Pradilla I and Talero-Gutierrez C. Effectiveness of Animal-Assisted Therapy in
283   the Pediatric Population: Systematic Review and Meta-Analysis of Controlled Studies. J Dev Behav
284   Pediatr 2018; 39(7): 580-590.
285   11. Cipriani J, Cooper M, DiGiovanni NM, Litchkofski A, Nichols AL and Ramsey A. Dog-Assisted
286   Therapy for Residents of Long-Term Care Facilities: An Evidence-Based Review with Implications for
287   Occupational Therapy. Physical & Occupational Therapy In Geriatrics 2013; 31(3): 214-240.
288   12. Hoagwood KE, Acri M, Morrissey M and Peth-Pierce R. Animal-Assisted Therapies for Youth with
289   or at risk for Mental Health Problems: A Systematic Review. Appl Dev Sci 2017; 21(1): 1-13.
290   13. Hu M, Zhang P, Leng M, Li C and Chen L. Animal-assisted intervention for individuals with
291   cognitive impairment: A meta-analysis of randomized controlled trials and quasi-randomized
292   controlled trials. Psychiatry Res 2018; 260: 418-427.
293   14. Jones MG, Rice SM and Cotton SM. Incorporating animal-assisted therapy in mental health
294   treatments for adolescents: A systematic review of canine assisted psychotherapy. PLoS One 2019;
295   14(1): e0210761.
296   15. Lundqvist M, Carlsson P, Sjodahl R, Theodorsson E and Levin LA. Patient benefit of dog-assisted
297   interventions in health care: a systematic review. BMC Complement Altern Med 2017; 17(1): 358.
298   16. Stern C and Chur-Hansen A. Methodological Considerations in Designing and Evaluating Animal-
299   Assisted Interventions. Animals (Basel) 2013; 3(1): 127-141.
300   17. Yakimicki ML, Edwards NE, Richards E and Beck AM. Animal-Assisted Intervention and Dementia:
301   A Systematic Review. Clinical Nursing Research 2019; 28(1): 9-29.
302   18. Zafra-Tanaka JH, Pacheco-Barrios K, Tellez WA and Taype-Rondan A. Effects of dog-assisted
303   therapy in adults with dementia: a systematic review and meta-analysis. BMC Psychiatry 2019; 19(1):
304   41.
305   19. Australian Bureau of Statistics. 2071.0 - Census of Population and Housing: Reflecting Australia -
306   Stories from the Census, 2016 2017.
307   20. United Nations. World Population Prospects. Key findings and advance tables. In: Division
308   DoEaSAP editor. New York2017. p. Working Paper No. ESA/P/WP/248.
309   21. Richards S. The experiences of older people permanently relocating from their home in the
310   community to a long term care facility: a systematic review. Faculty of Health Science. Adelaide:
311   University of Adelaide; 2011.
312   22. Marx MS, Cohen-Mansfield J, Regier NG, Dakheel-Ali M, Srihari A and Thein K. The impact of
313   different dog-related stimuli on engagement of persons with dementia. Am J Alzheimers Dis Other
314   Demen 2010; 25(1): 37-45.
315   23. Stern C and Konno R. The effects of Canine-Assisted Interventions (CAIs) on the health and social
316   care of older people residing in long term care: a systematic review. JBI Libr Syst Rev 2011; 9(6): 146-
317   206.
318   24. MacLean B. Equine-assisted therapy. Journal of Rehabilitation Research & Development 2011;
319   48(7): xi-xii.
320   25. Stern C. The meaningfulness of Canine-Assisted Interventions (CAIs) on the health and social care
321   of older people residing in long term care: a systematic review. JBI Libr Syst Rev 2011; 9(21): 727-
322   790.
323   26. Garner P, Hopewell S, Chandler J, MacLehose H, Schunemann HJ, Akl EA, et al. When and how to
324   update systematic reviews: consensus and checklist. BMJ 2016; 354: i3507.
325   27. Higgins JPT, Green S and Scholten RJPM. Chapter 3: Maintaining reviews: updates, amendments
326   and feedback. In: T HJP and Green S, eds. Cochrane Handbook for Systematic Reviews of
327   Interventions, 2011.
328   28. Lizarondo L, Stern C, Carrier J, Godfrey C, Rieger K, Salmond S, et al. Chapter 8: Mixed methods
329   systematic reviews. In: Aromataris E and Munn Z, eds. Joanna Briggs Institute Reviewer's Manual,
330   The Joanna Briggs Institute, 2017.

331 29. Bressan V, Bagnasco A, Aleo G, Timmins F, Barisone M, Bianchi M, et al. Mixed-methods research
332 in nursing - a critical review. Journal of Clinical Nursing 2016; 26(19-20): 2878-2890.
333 30. Orr N, Bethel A, Whear R, Abbot R, Garside R, Thompson-Coon J, et al. What are the effects of
334 human-animal interaction on the health and wellbeing of residents in care homes? A synthesis of
335 qualitative and quantitative evidence; [internet]. [cited Available from: PROSPERO 2017
336 CRD42017058201 Available from:
337 http://www.crd.york.ac.uk/PROSPERO/display_record.php?ID=CRD42017058201 accessed.
338 31. Engle G. The clinical application of the biopsychosocial model. American Journal of Psychiatry
339 1980; 137(5): 535-544.
340 32. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gotzsche PC, Ioannidis JP, et al. The PRISMA
341 statement for reporting systematic reviews and meta-analyses of studies that evaluate health care
342 interventions: explanation and elaboration. J Clin Epidemiol 2009; 62(10): e1-34.
343 33. Tufanaru C, Munn Z, Aromataris E, Campbell J and Hopp L. Chapter 3: Systematic reviews of
344 effectiveness. In: Aromataris E and Munn Z, eds. Joanna Briggs Institute Reviewer's Manual,
345 2015/09/12 edn. The Joanna Briggs Institute, 2017.
346 34. The Joanna Briggs Institute, Lockwood C, Porrit K, Munn Z, Rittenmeyer L, Salmond S, et al.
347 Chapter 2: Systematic reviews of qualitative evidence. In: Aromataris E and Z. M, eds. Joanna Briggs
348 Institute Reviewer's Manual 2017.

349

350 **Appendix I - Search Strategy**

351 CINAHL - search conducted 16th May 2019

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

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

364 S3 S1 AND S2 **(851)**

365 S4 S1 AND S2 Limiters - Published Date: 20090401-20190531; English Language **(480)**
366