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The Effects of Animal-Assisted Therapy on Loneliness in an Elderly Population in Long-Term Care Facilities

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Background. Animal-assisted therapy (AAT) is claimed to have a variety of benefits, but almost all published results are anecdotal. We characterized the resident population in long-term care facilities desiring AAT and determined whether AAT can objectively improve loneliness.

Methods. Of 62 residents, 45 met inclusion criteria for the study. These 45 residents were administered the Demographic and Pet History Questionnaire (DPHQ) and Version 3 of the UCLA Loneliness Scale (UCLA-LS). They were then randomized into three groups (no AAT; AAT once/week; AAT three times/week; $n = 15$/group) and retested with the UCLA-LS near the end of the 6-week study.

Results. Use of the DPHQ showed residents volunteering for the study had a strong life-history of emotional intimacy with pets and wished that they currently had a pet. AAT was shown by analysis of covariance followed by pairwise comparison to have significantly reduced loneliness scores in comparison with the no AAT group.

Conclusions. The desire for AAT strongly correlates with previous pet ownership. AAT reduces loneliness in residents of long-term care facilities.

As the geriatric population in the United States is steadily increasing, many older Americans eventually come to live in some type of long-term care facility. These facilities tend to restrict the resident's personal belongings, including the possession of pets. Loneliness is common in these facilities (1–3).

As discussed by Peplau and Perlman (4), predisposing factors make individuals prone to loneliness, and precipitating events can cause the onset of loneliness. The onset of loneliness can be caused by a change in an individual's actual or desired need for social relationships. Physical separation from loved ones, such as when a family member moves to a new community, can precipitate loneliness (4).

How can loneliness be decreased among elders in long-term care facilities? One method that has been suggested is the use of animal-assisted therapy (AAT), also known as pet-facilitated therapy (5). AAT has been used in other settings to combat loneliness or to increase socialization. Levinson (6) used the dog "Jingles" in psychotherapy sessions to enable children to better express their feelings. Brickel (7) used cat mascots on a hospital ward of total-care elderly patients. Friedmann and colleagues (8) found pet ownership to be the most robust of several factors that predicted survival in patients with a history of myocardial infarction or angina. Mugford and M'Comisky (9) found that, among old-age pensioners living alone in an urban area in Yorkshire, England, and randomly given either budgerigars (a type of bird) or begonias, the budgerigar owners were better off emotionally, had more friends, had more visitors, and generally were more involved with the community than the plant owners. Many other, mostly anecdotal, reports suggest a positive effect of association with animals (10–21).

No randomized, prospective study has determined whether AAT is effective in combating loneliness among elderly adults. A simplified version of the UCLA Loneliness Scale was used in a retrospective analysis of patients already participating in resident pet or visitation pet programs (22). The study found that nursing home patients who reported a high level of voluntary contact with pets had lower scores for loneliness than those who reported a low level of contact.

Here, we used a questionnaire called the Demographic and Pet History Questionnaire (DPHQ) to characterize individuals in a long-term facility who volunteered to participate in AAT. Loneliness was measured with Version 3 of the University of California at Los Angeles Loneliness Scale (UCLA-LS) before and after exposure to AAT.

Methods

The research study was conducted in three long-term care facilities in a city in southern Mississippi. Each of the facilities is privately owned and is licensed to maintain between 75 and 100 beds. The facilities receive private, Medicaid, and Medicare funds. The occupancy rate for each of the facilities is about 95%. Most of the rooms are semiprivate.

The Institutional Review Board of the Louisiana State University Medical Center (LSUMC) and the three long-term care facilities reviewed and approved the study.

Power analysis based on pilot study data (not presented) was used to estimate that 15 residents per group would be needed to achieve statistical significance for a clinically rel-

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Table 1. Demographic and Pet History Questionnaire

In order for me to understand your needs, I would like to gather information about your background. Please complete the following:

1. Your sex is

_____ Male _____ Female

2. Your marital status is

_____ Single, never married
_____ Married
_____ Divorced
_____ Separated
_____ Widowed

3. Your age is _____ years old.

4. What is your race?

_____ African-American
_____ White
_____ Hispanic
_____ Native American
_____ Asian
_____ Other, please state

5. What is the highest level that you finished in school?

_____ Less than sixth grade
_____ Less than ninth grade
_____ High school graduate
_____ College, 1–3 years
_____ College graduate
_____ Postgraduate

6. Before you came to live in this long-term care facility, did you live

_____ in a home _____ in an apartment _____ on a farm

Pet History Questionnaire

1. Did you have a pet when you were a child?

_____ Yes _____ No

2. How old were you when you had your first pet?

_____ years old

3. Did you grow up with pets?

_____ Yes _____ No

4. If YES, what kinds of pets did you have? (Please check off all that apply)

_____ Birds _____ Cats _____ Dogs
_____ Fish _____ Farm animals

5. Did you have a pet when you lived in your home or apartment?

_____ Yes _____ No

6. If the answer to number 5 is yes, how many years did you have the pet?

_____ years

7. When did you first have responsibility for the care of the pet?

A. _____ Childhood (1–12 years)
B. _____ Teenage (13–18 years)
C. _____ Young adulthood (19–30 years)
D. _____ Middle age (31–61 years)
E. _____ Old age (62 and older)
F. Never

Continued

Table 1. Demographic and Pet History Questionnaire (*Continued*)

8. What kind of pet was it?

_____ Bird _____ Cat _____ Dog
_____ Fish _____ Farm animal

9. How attached were you to this pet?

_____ Very attached _____ Attached
_____ Not at all attached

10. What was your pet's name?

_____

11. What happened to your pet?

_____ Died _____ Gave it away
_____ Ran away _____ Other

12. How much time did you spend with your pet as an adult?

_____ Less than 1 hour per day _____ More than 1 hour per day

13. Was the time spent with your pet in these activities

_____ Enjoyable _____ Not enjoyable

14. Did touching your pet

_____ Make you feel good _____ Make you feel bad
_____ Make you feel nothing

15. When you felt bad, did your pet

_____ Help you feel better _____ Help you feel worse
_____ It made no difference

16. When you had your pet, did you talk to your pet?

_____ Yes, all the time _____ No, not at all
_____ Sometimes

17. Were you able to confide in your pet?

_____ Yes, all the time _____ No, not at all
_____ Sometimes

18. How much does it bother you that you do not have a pet?

_____ A lot _____ A little _____ Not at all

19. What are your reasons for not having pets now?

_____ I can't keep a pet at this present place.
_____ I am no longer interested in pets.
_____ The staff at this facility may not like pets.

20. If possible, would you like to have a pet at this place?

_____ Yes _____ No

evant effect. Inclusion criteria were no cognitive impairment as stated by the physician in the history and physical examination; no known history of psychiatric disorders or diseases; no known allergies to dogs or cats as stated verbally by the resident; a minimum of a sixth-grade education; ability to speak, read, and write English; a score greater than or equal to 24 on the Mini-Mental State Examination; completion of the Demographic and Pet History Questionnaire; and a score greater than or equal to 30 on the UCLA-LS (a score demonstrating a significant degree of loneliness).

Residents were recruited and screened until 45 were found who met all criteria. The number of residents recruited from each nursing home was 11, 16, and 18. Residents were randomly distributed into three groups consisting of 15 residents each: the control group (no AAT),

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AAT-1 (one 30-minute session of AAT/week), and AAT-3 (three 30-minute sessions of AAT/week). Residents were allowed to withdraw from the study at any time, but none chose to do so.

Instruments

Three instruments were used: (a) the Mini-Mental State Examination (23); (b) the Demographic and Pet History Questionnaire (DPHQ); and (c) the UCLA-LS (24).

The DPHQ is a 26-item instrument questionnaire used by us to elicit data on demography, the history of pet ownership, the ages of pet ownership, the types of pets previously owned, the length of ownership, and the desire to have an animal in the long-term care facility (Table 1). The preference for a particular pet was ascertained by a verbal response.

Table 2. Selected Responses to the Demographic and Pet History Questionnaire

	N/n	*%*
Age when resident had first pet		
5–8	43	95.5
18	1	2.2
42	1	2.2
Age when resident had responsibility for pet care		
5–8	43	95.5
18	1	2.2
42	1	2.2
Resident grew up with pets		
Yes	43	95.5
No	2	4.4
Time spent with the pet was enjoyable		
Yes	45	100.0
No	0	0.0
Touching the pet made resident feel good		
Yes	45	100.0
No	0	0.0
When residents felt bad, pets helped to make them feel better		
Yes	45	100.0
No	0	0.0
Animals that residents had as a child		
Dogs	38	84.4
Cats	5	11.1
Dogs and cats	2	4.4
Degree of attachment to pet		
Very attached	43	95.5
Attached	2	4.4
Remembers pet's name	43	95.5
Cannot remember pet's name	2	4.4
Resident talked to pet		
All the time	41	91.1
Sometimes	4	8.8
Resident confided in pet		
All the time	44	97.7
Sometimes	1	2.2
Reasons for not having a pet now:		
I can't keep a pet at this place	42	93.3
The staff may not like pets	3	6.6
It bothers the residents that they do not have a pet now		
Yes	45	100.0
No	0	0.0
Residents would like to have a pet at this facility		
Yes	45	100.0
No	0	0.0

The UCLA-LS is a 20-item questionnaire (24) with scores ranging from 20 (never lonely) to 80 (always lonely). The UCLA-LS has a high internal consistency with a coefficient alpha of 0.89 to 0.94 (24). The UCLA-LS was given prior to the 6 weeks of AAT and again before the last session of AAT.

AAT consisted of bringing a dog into the long-term care facilities. The guidelines for bringing the dog into the long-term care facilities are identical to the Louisiana State University (LSU) School of Veterinary Medicine Tiger Hats Program. The dog was temperament tested and checked by a veterinarian to ensure it was free from all diseases and was current on all the required vaccinations.

A pet attendant (an investigator or owner of the pet) accompanied the dog during the session, but did not interact with either the dog or the resident during the AAT session. The intervention took place in the individual's room of the long-term care facility, although walking the pet in the facility's hallway was also allowed. If the resident's room was semiprivate, AAT was conducted when the roommate was not in the room. In order to circumvent the socialization between the animal attendant and the individual receiving AAT, their interaction was limited to a script read by the attendant at the beginning of each AAT session. The dog always remained on a leash. The resident was allowed to fully interact with the pet. Interactions included holding, stroking, grooming, walking, talking to, and playing with the animal. The same animal was used for the same resident for a period of 6 weeks.

Data Analysis

The demographic data are presented as descriptive statistics and profile the nursing home residents who elected to participate in AAT.

A one-way analysis of covariance (ANCOVA) was used to analyze the data with the pretest score as the covariant, treatment (0, 1, and 3 sessions/week) as the independent variable, and the post-test score as the dependent variable. Pairwise comparison was used to determine differences among groups. The Statistical Package for the Social Sciences (SPSS) was used for data analysis.

Results

Sixty-two residents were interviewed for the full study. Eight residents elected not to participate in AAT as they did not like dogs or cats, and nine residents did not meet the inclusion criteria. Of the remaining 45 residents, 80% were women, 91% were white, 78% were widowed, 60% had less than a 9th grade education, 31% had a high school or GED diploma, 31% were older than 85 years, and 70.9% were older than 75 years. Major medical diagnoses were cerebrovascular accident (CVA), diabetes mellitus (DM), hypertension (HTN), chronic obstructive pulmonary disease (COPD), Parkinson's disease, atrial fibrillation, hip fracture, and severe osteoporosis.

Selected results of the DPHQ are given in Table 2. They show a strong history of association with animals as pets, usually dating from childhood. More than 95% had pets at

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or before the age of 8 years and were responsible for the care of the pet. The majority (84.4%) had dogs as pets, and the remainder had either cats (5%) or cats and dogs (4.4%). All answered questions that indicated that the pets were an intimate part of their lives, and all residents would have liked to have a pet currently, but were prevented from doing so by the institution or other circumstances.

Five residents (11.1%) volunteered that they would like to have a pet as a mascot at their facility. Of the eight residents who did not wish to participate in AAT, none ever had pets as children or as adults. Two of these residents stated that they were scratched by cats when young and are fearful of cats.

AAT reduced loneliness in a statistically significant manner (Figure 1). The Levene test found no significant differences in variance among the groups and so indicated that ANCOVA is an appropriate statistical test for these results: $F(2,42) = 1.56$, $p = .223$. The ANCOVA was significant, $F(2,44) = 5.21$, $p = .001$, showing that there were statistically significant differences among the three groups. Pairwise comparisons showed that those differences were because AAT reduced loneliness. There was no statistically significant difference between the 1 and 3 AAT sessions per week groups.

Discussion

The results of this study show that AAT can effectively reduce the loneliness of residents in long-term care facilities who wish to receive such therapy. This study found that a large subpopulation of residents in these facilities have a strong life-history of a relationship with pets as an intimate part of their emotional support system and, if given a choice, would continue that relationship.

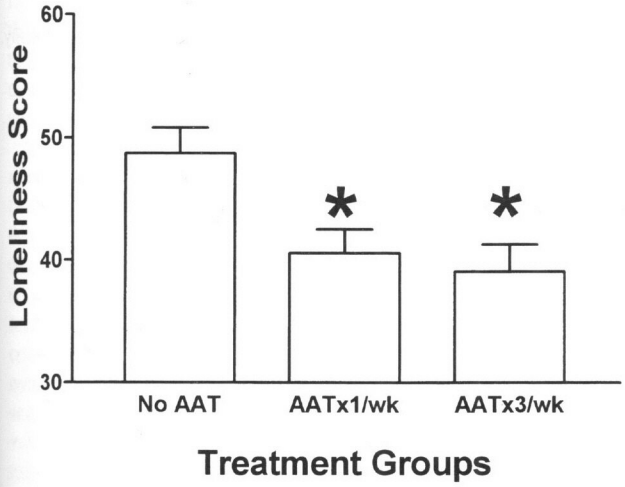


Figure 1. Mean values for UCLA Loneliness Scale (Version 3) for the three groups. Means are shown with their *SE*. *Indicates the loneliness score was significantly lower ($p < .05$) in comparison with the control group. The two animal-assisted therapy (AAT) groups did not differ from each other; $n = 15$/group. [The ANCOVA was significant, $F(2,44) = 5.21$, $p = .001$, with an effect size (eta squared) of 0.206 and an observed power of 0.810. The covariate was also significant, $F(1,41) = 21.14$, $p = .001$ with an eta squared of 0.340 and an observed power of 0.994].

The demographics of the residents in this study population were typical of long-term care facilities in general. The great majority of residents were women, widowed, and older than 75 years of age. More than 31% were older than 85. These results agree well with the 1996 U.S. Census, which found that seniors between the ages of 76 and 90 account for more than 50% of all residents living in long-term care facilities. The major medical diagnoses of the residents were also typical of such facilities. In these particular facilities, the majority of residents did not have a high school education and were white.

All but two residents who elected to participate in AAT had pets during childhood, whereas the other two did not have pets until later in life. Most of the individuals had responsibility for their pets early in life and formed strong emotional bonds with them. The majority of the pets lived outdoors rather than indoors. None of the eight residents who chose not to participate in the study had pets during childhood. The results of the DPHQ clearly show that past life experiences are a major predictor of who desires pet therapy and who does not.

One serendipitous finding of this study was the occurrence of spontaneous recollection by the residents. While visiting with the animal, the residents often spontaneously began to talk to the animal about past events with their pets. For example, one resident spoke to the dog and asked if the dog had gone hunting. She remembered fondly how her pet dog would bring dead squirrels, rabbits, and opossums back to her. She would then "fillet them and fry them in oil" and eat them. Another resident remembered how her dog would sit at her feet and keep her company. One male resident reflected on his hunting dogs and the pleasure he had derived from hunting raccoons with his dogs.

We found that AAT, even one session of 30 minutes per week, was effective in reducing loneliness to a statistically significant degree. The mean UCLA-LS score of the residents not receiving AAT was almost 50, indicating a high degree of loneliness. Even with therapy, scores were still about 40. Increasing the sessions to three times per week did not have a significant effect on further reducing loneliness, but prolonging therapy beyond 6 weeks might. Availability of a pet daily or on a per need basis may also increase the effectiveness of AAT.

This study had several strengths that helped to negate possible confounders. Residents were randomized, and the results were analyzed by ANCOVA, which can correct for any differences in the pretest scores that might have arisen from insufficient randomization. A pretest/post-test design with separate control and intervention groups was used. The pretest/post-test design allows the change in any individual to be measured, greatly strengthening statistical power. Any retesting effect would occur for the control as well as the treatment groups and so be negated.

An important feature of this study was that the population studied was self-selected. The results of the DPHQ and the responses of those individuals who declined to participate in AAT show that the desire to associate with animals is a quality-of-life issue generated from life experiences. As

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such, it is likely that populations that are self-selected will derive the greatest benefit from AAT.

The patients studied here were cognitively intact. Whether similar results would be obtained in demented individuals is an important question.

A confounder in many studies of pet–human interactions is that the pet can act as a catalyst for socialization or human–human interactions. In this study, AAT was administered on an individual basis, and interactions between the therapist and the resident were minimized. Therefore, the benefit found here with AAT is likely to be due to associating with the pet.

The study tested AAT for a graded response; that is, residents were exposed to AAT either once or three times a week. Use of such a graded response has several advantages. First, it is more difficult to achieve statistical significance by chance in two treatment groups than in one. Second, this design gives an indication of how much AAT is needed to affect loneliness. The results show that AAT once a week is as effective as three times a week.

In summary, we found that the loneliness of self-selected residents in long-term care facilities improved with AAT. These residents had a strong life-history of responsibility and emotional attachment to pets, usually beginning in early childhood. These residents missed their pets and desired to have pets in their current environment. A single, 30-minute session of AAT per week for 6 weeks significantly reduced loneliness as measured by the UCLA-LS and was as effective as three sessions per week. The results show that AAT is effective in combating loneliness in long-term care facilities.

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