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Kendra B. Keene

Philadelphia College of Osteopathic Medicine, kendrake@pcom.edu

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Keene, Kendra B., "Is the Use of Animal Assisted Therapy/Activity Effective in Improving Quality of Life through Self-Efficacy, Self-Perceived Health, Sense of Coherence and Mood?" (2013). *PCOM Physician Assistant Studies Student Scholarship*. Paper 111.

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**Is The Use Of Animal Assisted Therapy/Activity Effective In
Improving Quality Of Life Through Self-Efficacy, Self-Perceived
Health, Sense Of Coherence And Mood?**

Kendra B. Keene, PA-S

A SELECTIVE EVIDENCE BASED MEDICINE REVIEW

In Partial Fulfillment of the Requirements For

The Degree of Master of Science

In

Health Sciences – Physician Assistant

Department of Physician Assistant Studies
Philadelphia College of Osteopathic Medicine
Philadelphia, Pennsylvania

December 14, 2012

ABSTRACT

Objective: The objective of this selective EBM review is to determine whether or not the use of Animal Assisted Therapy/Activity is effective in improving quality of life through self-efficacy, self-perceived health, sense of coherence and mood.

Study Design: Review of three English language randomized control trials, two published in 2008, and one published in 2009.

Data Sources: Three randomized, controlled trials comparing Animal Assisted Therapy/Activity to restricted or absent animal contact or alternative control therapy were found using PubMed Health and Cochrane Systematic Reviews.

Outcomes Measured: Depression measured via BDI (Beck Depression Inventory), Anxiety measured via BAI (Beck Anxiety Inventory), Quality of Life measured via QOLS-N (Quality of Life Scale-N), Moods measured via POMS (Profile of Mood States), Self-Perceived Health measured via Self-Perceived Health Questionnaire, Self-Efficacy measured via GSE (Generalized Self-Efficacy Scale), Sense of Coherence measured via OTLQ (Orientation to Life Questionnaire)

Results: In a study by Berget et al, AAT was found to improve self-efficacy within the treatment group in the post treatment period and when comparing 6 months post treatment to before treatment. However, no changes were found when comparing the AAT group to the control group. No statistically significant changes were found directly related to the QOLS-N questionnaire regarding quality of life. No significant changes were found at all in Johnson et al as all p-values were greater than 0.05. Their investigation included changes in mood, self-perceived health and sense of coherence. LE ROUX et al showed improvement in BDI scores within the AAA group but no statistical difference was found in the comparison between the AAA group and the control groups. No statistically significant changes were noted in any of the BAI score comparisons. There were no adverse effects of AAT/AAA noted.

Conclusions: The results of two of the randomized control trials demonstrate AAA/AAT to improve QOL within the treatment groups. None of the studies showed that AAA/AAAT improved QOL in comparison to control groups.

Key Words: Animal Assisted Therapy (AAT), Animal Assisted Activity (AAA), Quality of Life, Self-Efficacy, Self-Perceived Health, Sense of Coherence, Mood, Depression, Anxiety

INTRODUCTION

Quality of Life (QOL) is inherent in human existence and society. With regard to cost, no illness or disease is specifically addressed in this paper, and although the studies used involved cancer patients, elderly and psychiatric patients, the objective of the paper is to evaluate the effects of AAA/AAT in relation to QOL of all humans in general. Due to the broad nature of QOL and its relevance to all illnesses and disease processes, it could be considered part of all healthcare visits. Subsequently, no information about any particular condition is included in this paper because no illness or disease process is addressed in this paper. Although no specific condition was studied, there are certain methods used improve QOL which are numerous. Some of the most utilized and widely practiced methods include green farms, psychotherapy (including Cognitive Behavioral Therapy, and medications such as selective serotonin reuptake inhibitors, serotonin norepinephrine reuptake inhibitors, electroconvulsive therapy, etc. especially for those already diagnosed with a mood disorder), physical activity, social interaction, setting/achieving personal goals, religion and spirituality.¹⁰ This paper assesses three randomized control trials which evaluate the ability of Animal Assisted Therapy (AAT) and/or Animal Assisted Activity (AAA) to improve upon QOL.

Quality of Life is used to cover a broad range of factors that can influence a person's health due to the mind-body connection and in this paper QOL will encompass mood, self-perceived health, sense of coherence and self-efficacy.^{3,5,6,10} Animal Assisted Therapy is "goal-directed" in that the animal is considered part of the treatment process with involvement of those with expertise regarding the therapy. It is "designed to promote improvement in human physical, social, emotional and/or cognitive well-being."^{2,6} Animal Assisted Activity is considered to be more informal with delivery involving a range of expertise from professionals to volunteers, i.e.

the interaction is better thought of as pet visitation.^{1,5,6} This paper evaluates three randomized controlled trials comparing AAA, AAT or companions to no animal interaction (restricted or absent animal associated activity) for effectiveness in improving quality of life.

Currently, there is no exact strategy, medicine, therapy or lifestyle change that is directly linked to improving QOL. At present, AAA/AAT is utilized strictly as a complementary treatment in several medical fields (oncology, behavioral medicine, occupational therapy, physical therapy, etc.) for improving energy level, walking ability and QOL.

OBJECTIVE

The objective of this selective EBM review is to determine whether or not the use of Animal Assisted Therapy/Activity is effective in improving quality of life through self-efficacy, self-perceived health, sense of coherence and mood.

METHODS

Specific criteria were outlined for selection of the studies, more precisely the randomized control trials (RCT). The population chosen was patients with cancer undergoing radiation therapy, patients greater than 65 years of age in a long-term care facility or patients with psychiatric disorders. The interventions employed were animal assisted therapy or activity via visits and/or interaction with animals compared to no animal visits, lack of animal visits or patients in a quiet reading group. Outcomes measured in each study were based on patient oriented evidence that matters (POEM) and included improvement in quality of life, self-efficacy, self-perceived health, sense of coherence or mood. Although QOL has been defined in this paper, it's necessary to comprehend the extent of the other terms used which have been considered a subset or aspect of one's QOL. Self-efficacy is defined as "the measure of one's

own competence to complete tasks and reach goals.”⁸ Self-perceived health is otherwise known as or related to “functional status, morbidity, and mortality and is an important measure in determining health status and health-related quality of life scales.”⁴ Sense of coherence can be thought of as recognition of the world as something with meaning which “may have positive correlation to health and longevity.”⁹ Finally, mood is “the emotional or state of mind of an individual.”⁷

Key words used in the searches were “aat; quality of life,” “dog; animal assisted; depression” and “cancer; sense of coherence; animal assisted.” All articles searched were published in peer-reviewed journals in the English language. The author researched the articles via PubMed Health and Cochrane Systematic Review and included patient oriented outcomes (POEMs). Inclusion criteria consisted of studies that were randomized, controlled, published after 1996, participants at least 18 years of age and included POEMs. Exclusion criteria consisted of studies published before 1996 or participants less than 18 years of age. The statistics used in the studies included standard deviation, mean difference, p-value and F-score.

OUTCOMES MEASURED

Outcomes measured were based strictly on patient surveys, inventories, questionnaires and scales. Depression was measured through the Beck Depression Inventory (BDI), a 21-item self-report measure. Anxiety was measured via the Beck Anxiety Inventory (BAI), a 21-item self-report measure. A Statistical Package for Social Sciences (SPSS), version 15, was used to analyze data from the BDI and BAI. Due to small groups and the lack of normal data distribution, the non-parametric Wilcoxon Signed Rank Test was used.⁵ Self-efficacy was measured with the Generalized Self-Efficacy Scale (GSE), with 10 items assessing strength of an

individual's belief in his/her ability to respond to novel or difficult situations on a 4-point scale, 1 'not at all true' to 4 'exactly true.' Quality of life was measured via the Quality of Life Scale (QOLS-N) with 16 items addressing relation to other humans, work and leisure on a 7-point scale from 1 'very content' to 7 'very discontent.' High scores reflected high degree of self-efficacy, coping and quality of life. The data was then analyzed using analysis of variance (ANOVA), performed by standard least square means with two difference scores. Mood was recorded on a 5-point Likert-type scale, 'not at all' to 'extremely' for adjective words or phrases describing various moods. Total instrument scores were not used in the analysis, but subscales were used to measure the dependent variable of mood. Self-perceived health was recorded on a 4-point scale, 'excellent, good, fair, or poor' for present and previous physical and emotional health in relation to others of the same age. Sense of coherence was measured on a 7-point analog scale with selective phrases at each end of the scale for each item. Items corresponded to the 3 components of sense of coherence: manageability, meaningfulness and comprehensibility. Total scores were used for sense of coherence. Higher scores indicated a stronger sense of coherence with a "cut-score" of 145 or greater to indicate strong sense coherence. For mood, self-perceived health and sense of coherence, difference scores were calculated by subtracting pretest scores from post-test scores. The Wilcoxon sum rank test was used for variables measured on an ordinal scale to compare group median difference score values and identify whether the dog or human visits or reading sessions affected mood, self-perceived health, and sense of coherence. All p-values for the previous were calculated based on the Wilcoxon rank sign test.

RESULTS

In this systematic review three randomized control trials compared AAA/AAT to lack of

Table 1 – Demographics & Characteristics of included studies

Study	Type	# Pts	Age (yrs)	Inclusion criteria	Exclusion criteria	W/D	Interventions
Berget ³ (2008)	RCT	99	≥18 years old	Informed written consent from patients and a diagnosis of psychiatric disorder using the ICD 10 criteria	Age less than 18 years, acute psychotic disorders, mental retardation, serious drug addiction, being in a job during the 6 months prior to the start of intervention	2	Farm visits for 3 hours twice a week for 12 weeks for work with farm animals, one or two patients at a time
Johnson ⁵ (2008)	RCT	30	≥18 years old	Patients were English-speaking literate adults aged 18 and older, with informed consent, no known pet allergies and beginning nonpalliative 1 st line radiation therapy for cancer for at least four weeks following initial diagnosis	Patients receiving radiation therapy for metastases	0	15 minute sessions three times per week for four weeks with one or two visitor dogs and their handlers
LE ROUX ⁶ (2009)	RCT	16	≥65 years old	Patients had informed consent, no known allergy to dogs, age 65 and older, and resident to Nerina Place in Bishop Lavis, Cape Town, Western Cape, Africa	Patients with a fear to dogs or allergic reactions to dogs	1	30 minute visitations once a week for six weeks from a qualified “Pets as Therapy” dog handler

animal visits, no animal visits or alternative therapies (i.e. reading quietly), lasting variable

animal visits, no animal visits or alternative therapies (i.e. reading quietly), lasting variable lengths of time from 4 to 12 weeks. Also the amount of time spent with the animal and activities were varied between studies (Table 1).

Berget et al compared patients with schizophrenia, affective disorders, anxiety and personality disorders before the intervention and at 6 months follow up. Two-thirds of patients received the intervention and the rest served as controls. The intervention group received farm visits twice a week for 12 weeks and worked with farm animals (AAT), 1 or 2 patients at a time compared to those not receiving farm visits. Outcomes addressed in this study were self-efficacy, coping ability and QOL, with only self-efficacy and QOL applying the POEM discussed in this paper. Data in this study was considered continuous, ANOVA analysis was done and F-scores with p-values can be seen in Table 2. Results show that although differences were not significant during or immediately after treatment, there was a change noted in the post-treatment period and there was a significant difference noted between 6 months post treatment and the start of treatment with an increase noted in the intervention group in self-efficacy only. F-scores were not significant for QOLS-N, Coping Strategies, or GSE when comparing the intervention group to control group during treatment.³

Table 2: F-scores and p-values for Self-Efficacy Within the Intervention Group of the Post-Treatment Period and Comparing 6 Months Post-Treatment to Before Treatment

Statistic	Post-Treatment Period	6 Months Post Treatment – Before Treatment
F-score	5.6	4.2
p-value	0.02	0.02

The RCT of Johnson et al was a three arm study that administered sessions 3 times per week for 4 weeks with 1 or 2 visitor dogs and their handlers compared to a second group that received sessions with an adult visitor and a third group that read researcher-provided magazines

silently during their sessions. All patients in this study had a diagnosis of cancer and were undergoing radiation therapy. Outcomes measured in this study included mood, self-perceived health and sense of coherence. Scores related to sense of coherence were converted to dichotomous data and a cut score listed at 145 was utilized. No explicit dichotomous data was included and all other data was analyzed as continuous. All p-values reported in the study were greater than 0.05 and henceforth not statistically significant enough to show that findings here were not random, but the general investigation and the patient demographics of the RCT were very applicable and significant to the POEMs of this paper. Values for mean differences are shown in Table 3. These values were used in the analyses and the p-value was calculated using the Wilcoxon rank sign test.⁵

Table 3: Mean Differences for those who received AAA vs. Quiet Reading

Mean Difference	AAA	Reading
Depression	0.70	0.45
Coherence	-7.00	-5.00
Physical Health	0.40	-0.12
Emotional Health	0.30	-0.12

In LE ROUX et al, the wheel-chair or crutch bound elderly patients received visits once a week for 6 weeks with visits occurring on the same day at the same time each week with the same dog at each visit. During the visit residents were allowed to groom, pet and talk to the leashed dog. There is some statistical and clinical importance that directly applies to the improvement of depression in a patient receiving AAA. However there was no statistical difference between those not receiving AAA and those receiving AAA. Standard deviations and means were reported (Table 4) with a p-value of 0.017 listed for the difference between the pre and post BDI mean score for the group receiving AAA and a Z-score of -2.85. No other

statistically significant differences were found with regard to depression or anxiety and outcomes were analyzed as continuous data which could not be converted to dichotomous data.⁶

Table 4: Standard Deviation and Mean BDI Scores in those who received AAA

Statistic	Pretest	Post-test
Standard Deviation	8.88	8.75
Mean	19.86	11.86

DISCUSSION

This review analyzed three RCT's for the use of animal assisted activity/therapy on improvement of quality of life through self-efficacy, self-perceived health, sense of coherence and mood. Studies by Berget et al and LE ROUX et al successfully showed improvement within the groups receiving AAA/AAT in some manner, either immediately post treatment or after a period of time post treatment. However, all studies failed to show any statistically significant change or difference between the treatment groups and control groups.

Quality of life is essential and inherent in all aspects of humanity and is particularly addressed with regard to patients of terminal illnesses, mental disorders and also those in need of palliative or even end of life care. Although this statement is readily accepted, one must consider that quality of life is an essential part of each healthcare visit or encounter and every hospitalization or consultation. Therefore, considering that health care embodies 16% of the United States' gross domestic product, a significant amount of money within this country is directed toward quality of life. In 2010, \$2.6 trillion was invested in health expenditures and this has shown quite an increase from the \$256 billion spent in 1980. With the rise in the cost of chronic disease being a major player as well as the cost of prescription drugs and technology, it could be theorized that AAA/AAT might play a significant role in improving the quality of life

for these individuals (i.e. improved self-efficacy, self-perceived health and mood), lessening the need for medications such as SSRI's, SRI's, behavioral therapy, Ibuprofen for joint or muscle pains, and possibly use of ambulatory devices as patients gain more confidence in their abilities to ambulate, complete their goals and improve their health.¹¹

Limitations among the studies may have also played a role in the outcomes of the RCT's included in this systematic review. For Berget et al, these limitations could have been the short length of time of the intervention, lesser frequency of farm visits, characteristics of the animals, farmer, setting and interaction between them, and the length of psychiatric treatment making rapid improvement unlikely. Additionally for Johnson et al, possible hindrances could have been that disease progression for the patients during the time of intervention was not measured, making it impossible to know whether disease progression or symptoms may have influenced responses. Additionally, side effects of radiation therapy were not assessed and possible contamination could have occurred if patients had discussed their participation in the intervention while in the waiting room. Lastly, LE ROUX et al was limited by the small group numbers, the need for better representation of different backgrounds and problems that residents in long-term care may have had. Also, social interaction and loneliness may have also had an effect.

CONCLUSION

Although two of the RCT's investigated in this review showed improvement within the treatment group, there were no statistical differences noted when comparing the treatment groups to the control groups. Therefore, it cannot be concluded at this time that animal assisted activity/therapy improves quality of through self-efficacy, self-perceived health, sense of

coherence and mood. However, if future studies venture to include a greater number of participants, increased frequency of visits and more regulated interactive activities with the animals involved, the improvement may be seen. Additionally, it must be more adequately controlled in that the control groups remain completely unaware of the treatment groups receiving said intervention. Other aspects that may show better results could be to restrict communication between the groups so as not to reveal the intervention or controlled activity in which each person is participating. Continuing research in this field could lead to potential improvements in each and every field of healthcare and medicine, possibly decreasing the cost of healthcare overall. Substantial strides should be made to investigate this topic further with treatment pertaining to, more specifically, daily vs. biweekly vs. weekly physical interaction with one canine consistently and for a set time over a span of 2 months with no other possible animal interaction. The control group could potentially allow for a setting of a complete lack of all animal interaction which may yield better results. Also, the population could be more precise, permitting only subjects who have never owned an animal or worked in a setting with animals (IE pet stores, pet adoption shelters, farms, etc.). A more efficient investigation of the influence AAA/AAT has on quality of life can be conducted with stricter boundaries in place.

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