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PET THERAPY AS AN ALTERNATIVE THERAPY FOR RESIDENTS 65 YEARS AND OLDER IN LONG TERM CARE FACILITIES TO DECREASE SIGNS AND SYMPTOMS OF DEPRESSION, BLOOD PRESSURE, AND HEART RATE

Tia Fenstermaker, RN, BSN

Amanda McKendree, RN, BSN, PCCN

Stephanie Swope, RN, BSN

Candidates for the degree of Master of Science in Nursing

_____	_____
Date	Advisor
_____	_____
Date	Program Coordinator
_____	_____
Date	Dean, Venango College of Clarion University

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Committee Signature Page

Student's name _____

Student's name _____

Student's name _____

Committee Chairperson _____

Committee Member _____

Committee Member _____

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Abstract

Pet therapy as an alternative therapy to treating blood pressure, heart rate, and depression is an area needing further research to determine the effectiveness. Pet therapy can be beneficial to all ages; however this study looked at pet therapy in those 65 years of age and older residing in a long term care facility. There are limited studies related to pet therapy and its effectiveness as an alternative management. Research was conducted to determine if pet therapy is a successful alternative treatment for heart rate, blood pressure, and self-reported depressive symptoms. Kolcaba's comfort theory was used as the theoretical framework upon which the research will be based.

Convenience sampling with residents in long term care facilities, 65 years of age and older with self-reported depressive symptoms, from nursing homes in two rural areas within Central Pennsylvania were used for the research. Information obtained consisted of a brief demographic questionnaire, a pre/post test PHQ-9 questionnaire, measurement of blood pressure and heart rate before and after the therapy session.

There was a statistically significant relationship found between pet therapy and heart rate, and pet therapy and self-reported depressive symptoms. However, there was not a statistically significant relationship found between pet therapy and systolic and diastolic blood pressure. This leaves room for further research with less limitation and more control to determine its further significance.

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Chapter 1

Introduction

Pet therapy has been used for hundreds of years without defined results. Depression, high blood pressure, and tachycardia continue to be problematic for many people throughout the country. Pet therapy as an alternative therapy for these people may be beneficial as a substitute to medicine.

Background of the Problem

The exact date of the first use of pet therapy is unclear. It is documented that the use of animal therapy started in the 9th century in Belgium and in England as early as 1792. Florence Nightingale mentioned pet therapy in the 1860s with use of small pets as companions for the sick (Reynolds, 2012). Human-animal therapy was used in the late 1700s in psychiatric institutions (Williams, 2008). Animals decrease stress, anxiety, depression, and loneliness (Le Roux & Kemp, 2009). Therapy dogs have been used successfully in children with autism (Berry, Borgi, Francia, Alleva, & Cirulli, 2013). During therapy sessions, children were more aware of their environment with a therapy dog present (Berry et al., 2013). Pet therapy decreases yelling, screaming, and abusive behavior in dementia patients as well (Williams, 2008). Different animals, such as cats, rabbits, fish, and dogs, can be used for pet therapy. Dogs are generally the most common. According to Williams (2008), there are different terms to describe therapy with animals such as "a resident dog, assisted animal therapy, animal visitation, pet therapy, assisted animal activities, and human-animal bond therapy" (Williams, 2008, p. 32).

Entering a long term care (LTC) facility has been found to cause depression (Le Roux & Kemp, 2009). Depression in a LTC facility is about 39% (Hardy, 2011). Another

18% of residents in long term care facilities have yet to be diagnosed with depression, but have all the symptoms ("Almost half," 2010).

Nearly 50 million people in America have high blood pressure (Fernandez, Scales, Pineiro, Schoenthaler, & Ogedegbe, 2008). According to Fernandez et al. (2008), 65% of older adults have high blood pressure. The elderly population is often affected by heart disease, hypertension, and depression. Research shows that as depressive signs and symptoms increase, blood pressure increases influencing overall poor health outcomes (Doom & Haeffel, 2013). Research shows that those with depression have a higher incidence of heart disease. Depression may as much as double one's chance for sudden cardiac death (Grippo & Johnson, 2009). The physical changes caused by depression makes the heart work harder, in turn increasing the heart rate and allowing easier clot formation on already formed plaque (Litchman et al., 2008).

Pet therapy can be used as an alternative therapy to aid in the treatment of these comorbidities. Elderly who are in care facilities are at risk for feeling isolated from their former life and routine (Le Roux & Kemp, 2009). Seniors tend to withdraw and become introverted as they age (Courtenay, 2008). In addition, there is a lack of desire to develop new relationships (Courtenay, 2008). Of the population of retirees, 25% continue to own pets (Reynolds, 2012). Animals have been found to assist in psychological health (Le Roux & Kemp, 2009). Almost 18% of Americans are elderly and that percentage is increasing each year ("Almost half," 2010).

Hypertension is highest among those 65 years of age and older (Gibson, Fritz, & Kachur, 2009). There is limited research on the relationship between pet therapy and vital signs such as heart rate and blood pressure (Luptak & Nuzzo, 2004). With the increasing

link between heart disease, hypertension, and depression, there is a need to further study the relationship of heart rate, blood pressure, and depression with pet therapy as an alternative treatment. Current studies have been criticized as being biased. It is felt the researchers are pet lovers and have an inability to remain objective throughout the study (Reynolds, 2012). Williams (2008) felt pet therapy lacks goals and does not have a distinct evaluation plan.

The study to be conducted provides three goals: a decrease in blood pressure, a decrease in heart rate, and a decrease in self-reported signs and symptoms of depression. Direct physical measurement will be used for blood pressure and heart rate and a survey will be used to measure depressive symptoms on the day of pet therapy as opposed to a routine day at the LTC facility.

Elderly individuals moving to LTC facilities often have feelings of depression related to changes in their routine. New studies are linking heart disease and hypertension to depression, which increases the importance of discovering alternative therapies, such as pet therapy, to treat blood pressure and elevated heart rate.

Statement of the Purpose

The purpose of this cross-sectional descriptive correlational study was to determine if there is a difference in heart rate, blood pressure, and self-reported depressive symptoms with use of pet therapy as an alternative treatment for LTC residents 65 years of age and older.

Research Questions and Hypotheses

The three research questions developed from the purpose statement include:

1. Is there a difference in heart rate before and after pet therapy in residents 65 years of age and older residing in a LTC facility?

    H0: There is no significant difference in heart rate before and after pet therapy in LTC residents 65 years of age and older

    H1: There is a significant decrease in heart rate before and after pet therapy in LTC residents 65 year of age and older.

2. Is there a difference in blood pressure before and after pet therapy in residents 65 years of age and older residing in a LTC facility?

    H0: There is no significant difference in blood pressure before and after pet therapy in LTC residents 65 years of age and older

    H1: There is a significant decrease in blood pressure before and after pet therapy in LTC residents 65 year of age and older.

3. Is there a difference in self-reported depressive symptoms before and after pet therapy in residents 65 years of age and older residing in a LTC facility?

    H0: There is no significant difference in self-reported depressive symptoms before and after pet therapy in LTC residents 65 years of age and older

    H1: There is a significant difference in self-reported depressive symptoms before and after pet therapy in LTC residents 65 year of age and older.

Definition of Terms

The following list consists of conceptual definitions of the significant terms used in this study.

1. *Heart rate* is defined as "measure of cardiac activity usually expressed as number of beats per minute" ("Heart rate," 2014, p.1).
2. *Blood pressure* is defined as "the pressure that is exerted by the blood upon the walls of the blood vessels and especially arteries and that varies with the muscular efficiency of the heart, the blood volume and viscosity, the age and health of the individual, and the state of the vascular wall" ("Blood pressure," 2014, p.1).
3. *Depression* is defined as "a serious medical condition in which a person feels very sad, hopeless, and unimportant and often is unable to live in a normal way" ("Depression," 2014, p.1).
4. *Pet therapy* is defined as "…a guided interaction between an individual and a trained animal. It also involves the animal's handler. The purpose of pet therapy is to help a patient recover from or cope with a health problem or a mental disorder" (Giorgi, 2013, p.1).
5. *Long term care facility* is defined as "A facility that provides rehabilitative, restorative, and/or ongoing skilled nursing care to patients or residents in need of assistance with activities of daily living. Long-term care facilities include nursing homes, rehabilitation facilities, inpatient behavioral health facilities, and long-term chronic care hospitals" ("Long term care facility," 2012, p.1).

6. *Hypertension* is defined as high blood pressure, when your blood pressure is 140/90 mmHg or above most of the time ("High blood pressure, 2015).

Need for the Study

Pet therapy can aid in social interaction and discussion with other residents in LTC facilities (Le Roux& Kemp, 2009). According to Reynolds (2012), two research studies were performed by students within an assisted living and long term care home, as well as in a daycare center. The first study (Taylor, as cited in Reynolds, 2012) was completed with 27 participants based on a 10 minute visit with a volunteer and a dog. Questionnaires were filled out before and after the session using Profile of Mood States (POMS) to measure mood, and The Hospital and Depression Scale (HADS) to measure anxiety and depression. The control team consisted of 25 participants who filled out the questionnaires at the same time intervals but did not have a visit. The moods were significantly improved in those with the visit in comparison to the control group.

The second study (Dyke, as cited in Reynolds, 2012) explored if prior dog ownership was associated with an increase in mood following a visit with the dog and volunteer. There were 21 participants in which 14 had previously owned at least one dog. Two questionnaires were again used, POMS and the General Health Questionnaire, before and after visit from the dog and volunteer. In addition, there was a questionnaire about previous dog ownership. Again, participants had improvement in mood and wellbeing with or without a history of owning a dog (Dyke as cited in Reynolds, 2012). Therefore, these two studies showed there is a considerable difference in the participant's mood and wellbeing when visiting a dog and volunteer.

Depression causes both physical and psychological changes. Physical changes include: lack of appetite, bowel change, unkempt appearance, sleep disturbances, headaches, and palpitations (Hardy, 2011). Psychological changes include: feeling sad, low, flat, or fed up, indecisive, preoccupied, loss of interest in daily life, talking negative, poor concentration, and morbid thoughts (Hardy, 2011). Both the physical and psychological changes that occur with depression can be detrimental to residents and families.

In addition as previously discussed, depression and the cardiac system can be detrimental to one another. Elevated blood pressure is a risk factor for kidney damage, stroke, and myocardial infarction (Sirkin & Rosner, 2009). According to Dusek (2008), many antihypertensive medications have displeasing side effects which may cause patients to stop taking them. The polypharmacy risk increases by approximately 40% in the elderly who take more than 5 medications daily. Primary care providers, including nurse practitioners, take part in putting elderly patients at this risk. A substitute is to prescribe or suggest alternative therapies like pet therapy to reduce stress, anxiety, social isolation, depression, hypertension, and therefore leading to a decrease in heart rate as well. Alternative approaches to treat hypertension are important to health promotion (Dusek , 2008). Patients can be viewed and treated holistically and have less adverse effects from polypharmacy when considering alternative treatments such as pet therapy in their plan of care.

Significance of the Problem

According to Volpe and Tocci (2013), hypertension is most common in those 65 years and older and two thirds of people over the age of 65 are diagnosed with

hypertension. Hypertension becomes more of a challenge to treat in the elderly due the variety of other chronic medical diagnoses and medication treatments being used (Volpe & Tocci, 2013).

According to Anderson, Buckwalter, Buchanan, Maas, and Imhof (2003), nearly 15% of the elderly population who still reside at home have depression and the prevalence jumps to around 20% of those who live in a nursing home. Juk Hyun (2013) states, "By 2030 about 70 million people will be between the ages of 65-84 while 5 million people will be 85 years or older, and elders are predominantly using nursing homes in United States" (p. 133). Kariniemi-Ormala and Vehviläinen-Julkunen (2012) explain that isolation, dementia, chronic pain, disability, and medication side effects can all cause depression. Many extended care residents face several of these comorbidities therefore leading them to symptoms of depression. Adams-Fryatt (2012) explains that depression affects nursing home residents socially, medically, and alters their quality of life. Resident's quality of life is based on their feeling of their current life situation (Juk Hyun, 2013). According to Adams-Fryatt (2012), mortality is increased in those who suffer from depressive symptoms compared to those who do not.

Hypertension and depression are two of the most common disorders found in the elderly. Research has started to show promise that pet therapy can help improve these disorders; however, more research is needed to determine the amount of effectiveness.

Assumptions

For the purpose of this study the following assumptions were made:

1. Staff at the long term care facilities will assist in determining patients with signs and symptoms of depression. It is assumed that they are providing accurate information on the residents for the study.
2. Resident participants read and understood English.
3. Residents answered the survey questions honestly.
4. Residents were amenable to pet therapy.

Summary of the Problem

The incidence of tachycardia, hypertension, and depression continue to grow for a variety of reasons. Elderly living in a LTC facility are at higher risk of developing depressive symptoms, increased heart rate and increase blood pressure. Introducing alternative therapies, such as pet therapy, may be beneficial in reducing depressive symptoms, heart rate, and blood pressure in this group of patients.

Chapter 2

Review of Related Literature

Chapter two is a review of the current literature. The chapter is divided into five sections. The first section is a review of pet therapy. The next three sections will review heart rate, blood pressure, and depression. The final section of the chapter provides a detailed summary of Kolcaba's (1994) comfort theory, which functions as the conceptual framework of this study.

Introduction to Pet Therapy

Pet therapy started with pets as part of the family. There are a variety of pets that are part of the family, most commonly being dogs. Dogs have been recognized over the years as companions and loyal to their owners, just as their owners are to them (Walsh, 2009).

Pets are seen in a variety of settings such as homes, hospitals, long term care (LTC) facilities, psychiatric settings, and with children. Pets have been deemed the best listeners at home (Durand, 2009). According to Reynolds (2012), it is documented that animals were used in Belgium for therapy in the 9th century and in England as far back as 1792. Florence Nightingale mentioned the use of small pets for companions for the sick in the 1860s (Reynolds, 2012). Animal therapy was also used as far back as the late 1700's in psychiatric institutions (Williams, 2008). There also have been studies that show therapy dogs used with children with autism have fostered the development of more awareness of their environment with a therapy dog present (Berry et al., 2013). Pet therapy also helps "children overcome shyness, anxiety, learning difficulties, and classroom embarrassment" (Walsh, 2009, p. 474). There have been various articles found

on pet therapy in the elderly with dementia but little exists on pet therapy in the elderly living in a LTC facility and the effects on decreasing symptoms of depression, heart rate and blood pressure.

Pet Therapy and Healthcare

Cole, Gawlinski, Steers, and Kotlerman (2007) conducted a longitudinal analysis to determine if a therapy dog would improve hemodynamic measures, decrease neuro-hormone levels, and decrease anxiety in patients with heart failure. Cole et al. (2007) based their review of the literature on the bond between humans and animals both physically and psychosocially. In addition the authors reviewed the effect of heart failure on the body physiologically and psychologically. Lastly they reviewed any effects of pets as a source of stress and potential hazard.

Cole et al. (2007) used 3 groups, volunteer-dog, volunteer, and the control group. They studied 10 dependent variables including: blood pressure, heart rate, pulmonary artery pressure, pulmonary capillary wedge pressure, right atrial pressure, cardiac index, systemic vascular resistance, epinephrine level, norepinephrine level, and anxiety. There were 76 participants (mean age 57 years; 75% males) randomized into 1 of the 3 groups which had to meet a specific criteria including a specific list of exclusions. During the intervention participants in the dog-volunteer group had a 12 minute visit with the dog. The volunteer introduced themselves and the dog. The dog stayed on the bed 2 feet away from the participant's head on a clean sheet and the participant petted and talked to the dog and volunteer. There was no control over the conversation during the visit. In the volunteer group, the volunteer conversed with the participant for 12 minutes sitting about 4 feet from the participant's head. The conversation was not controlled. The control

group rested in silence unless having a specific need for the 12 minutes. Data were collected immediately prior to the start of the intervention, 8 minutes into the session, and 4 minutes after completion with the exception of anxiety which was not measured during the session. In the dog-volunteer group, there were no significant findings with the dependent variables except for systolic pulmonary artery pressure (p = .001), pulmonary capillary wedge pressure (p = .003), and anxiety (p = <.001).The study did have several limitations. First, the data were collected during a very short period of time which could have limited the change in the cardiac index and systemic vascular resistance. In addition, there was no medication changes 1 hour before and during the sessions, however there was continuous drug infusions during that time which could have contributed to the decrease in pulmonary artery pressure and pulmonary capillary wedge pressure and affected the neuro-hormones. Despite the limitations, the statistically significant results show that there is some benefit physiologically and psychologically to pet therapy, although further studies are needed to explore long-term effects, effects on depression, morbidity, mortality, and quality of life.

Johnson, Meadows, Haubner, and Sevedge (2008) conducted a longitudinal, pretest/post-test study to observe the degree of effects on mood, self-perceived health, and sense of coherence an animal assisted visit would make in patients undergoing radiation therapy. Johnson et al. (2008) based their review of the literature on complementary therapy, animal-assisted activity, mood, self-perceived health, and sense of coherence. Lastly they concluded that although there are positive effects seen in the literature with animal assisted activities, there is little research among cancer patients and chronic conditions.

Johnson et al. (2008) used 3 groups, dog visits, human visits, and quiet reading. There were 30 participants (28 Caucasian and 2 African American) randomized into 1 of the 3 groups. The mean age of the participants was 61 years for dog visits, 59 years for human visits, and 58 years in the reading group; with 70% of the participants' being female. The instruments included a demographic questionnaire, Profile of Mood States (POMS), a self-perceived health questionnaire, Orientation to Life Questionnaire (OTLQ) which measures sense of coherence, and the exit questionnaire which was 5 closed and open-ended questions. Data collection and intervention occurred just prior to radiation treatments in rooms that were comfortably furnished with treatments occurring at the same time each day. During the intervention participants in the dog visit group had a 15 minute visit 3 times per week for 4 weeks with 1 or 2 dogs and their handlers. The dog(s) sat on a sofa with the participant during the session with the handler introducing the dog at the first session and then avoiding conversation for the duration of the sessions. The human visit and quiet reading session were also 15 minutes, 3 times per weeks for 4 weeks. The human visits consisted of superficial talk not including personal or treatment discussion. For the reading group, magazines unrelated to the study or patient health were placed in the room and the participant could choose from those magazines provided. The scores were obtained by subtracting pretest from post-test scores. There was no statistically significant difference between groups in relation to age, gender, race, education, or cancer site. No statistically significant differences were found in relation to mood or sense of coherence. The difference in pre and post depression was not statistically significant (p = .82) in the dog visit group; however the dog visit group had the lowest pretest scores for depression when compared to the other two groups. Self-

perceived health was not statistically significant. Fifty percent of the participants felt the session was helpful with the dog visits, while 90% felt the human visit were helpful and 70% would recommend dog visits to another participant where 80% would recommend the human visits. More research is needed with a larger sample size to determine the benefit.

Marcus et al. (2013) studied the effects of dog therapy visits on pain control in patients with fibromyalgia in an outpatient pain clinic setting. Participants were randomly assigned to a therapy dog group versus a control group. The therapy dog intervention was made available to patients for a couple of hours one to two days per week and were planned to coincide with days that fibromyalgia patients were more likely to be scheduled. Participants were asked to complete a survey before the intervention asking questions regarding symptoms of depression, anxiety, fatigue, pain, and stress level. Participants then were able to interact with a therapy dog until they were called back for their appointment. After the appointment, the participants were asked to complete the survey a second time. The control group was asked to fill out the survey and wait in the waiting room as usual until they were called back for their appointment. The control group participants were also asked to fill out the second survey after their appointment. A total number of 133 patients participated in the study, 84 whom met with a therapy dog and 49 in the control group. The results showed significant improvements in all numeric ratings in the dog therapy group (p = <.001) versus no significant change in the control group (average of p = .367). The data obtained in this study support that therapy dog visits may provide valuable complementary treatment to fibromyalgia outpatients with significant reductions in pain and distress (Marcus et al., 2013)

A review of literature was organized by Cipriani et al. (2013) to assess if animal assisted therapy (AAT) improved the quality of life in residents who reside in a long term care facility compared to others who did not participate in the studies. Nineteen articles were included for the final review of this study. The review focused on the outcomes of quality of life. Quality of life was assessed by activities of daily living, communication, emotional stability, socialization, motor skills, and sensory perception. Cipriani et al. (2013) discovered that 12 of the articles reviewed showed evidence (p-value ≤ 0.05) of improved quality of life for the residents receiving animal assisted therapy and two other articles showed significant results. The other articles did show positive results with the use of dog therapy, but the evidence could not obtain a p-value of ≤ 0.05 demonstrating a statistical significance (Cipriani et al., 2013). In conclusion, Cipriani et al. (2013) found that AAT showed statistical evidence of improvements to the quality of life of residents in LTC facilities across the studies reviewed.

Pet Therapy and Heart Rate

Heart rate is a measure of the number of times the heart actually beats per minute. There are various interventions that can lower heart rate including medications, exercise, and stress reduction. There has been limited research on the effects of heart rate and blood pressure with pet therapy. The following paragraph reviews the only current study found that explores the effect of pet therapy on heart rate.

As discussed previously, Cole et al., (2007) studied animal assisted therapy and the effects on physiologic and psychological health in patients with hypertension and heart failure. Unfortunately in this study heart rate did not significantly change. In the dog-volunteer group, the adjusted mean difference of heart rate was -1.44 (SD 1.49 and *p*

= .34). Further research is needed as changes in other hemodynamic measures that are associated with heart rate were statistically significant in this study.

Pet Therapy and Blood Pressure

Hypertension, also known as high blood pressure is the actual force of blood pushed against the walls of the arteries. The more force the blood pushes on the artery walls the higher the blood pressure will be (Medical Dictionary, 2014). There are various interventions that can lower blood pressure including medications, exercise, and stress reduction. In the following paragraphs 3 studies will be reviewed.

As discussed in Pet Therapy and Healthcare, Cole et al., (2007) studied the relationship between animal assisted therapy and physiologic effects on the participants. The results of this study did not show statistically significant effects on systolic or diastolic blood pressure, or mean arterial pressure. Systolic blood pressure had an adjusted mean difference of -3.35 (SD 2.46, p = .18), diastolic blood pressure, -4.28 (SD 2.53, p = .09), and mean arterial pressure -3.36 (SD 2.25, p = .14) (Cole et al., 2007). Although not statistically significant, there was a decrease in blood pressure in both hypertensive and normotensive participants. The blood pressure for this study ranged from a systolic (or top number) of 116 to 182 and diastolic (or bottom number) of 81 to 120. The authors of this attributed this to possible preexisting cardiac dysfunction and the uncontrolled timing of medications and the body's response to them (Cole et al., 2007). Further studies are needed where there is control over medications to show the true physiologic response of the body to pet therapy.

A review of the literature conducted by Halm (2008) looked at the effects and outcomes of animal assisted therapy (AAT) on hospitalized patients. The review

evaluated a total of nine adult and children studies and one mixed study. In the final review of literature, ten articles were included in the study. Participants included in the review were all hospitalized individuals admitted with different cardiac disease processes. Halm (2008) reported that all of the studies reviewed had a positive impact on the patients participating in AAT. Significant findings included improved circulation in heart failure patients, decreased blood pressure, decreased respiratory rate, decreased neuro-hormone levels, and a reduction in pain. In conclusion, Halm's (2008) review of literature found that AAT aided healing and promoted a holistic approach to treat cardiac disease patients.

Pet Therapy and Depression

It is known that the prevalence of depression in people over 65 years of age with a long term illness that also reside in a long term care facility is 39% (Hardy, 2011). Just entering a LTC facility alone may cause depression (Le Roux & Kemp, 2009). The studies reviewed below are related to emotional health.

Cole et al. (2007) studied the effects of anxiety with animal assisted therapy on their participants. Anxiety had a statistically significant reduction in those participants in the dog-volunteer group as opposed to the control group. The adjusted mean difference was -9.13 (SD 2.10, p = <.001. This shows that animal assisted therapy is helpful in reducing anxiety, probably by providing social support and providing a barrier to psychological stressors. Animals can be seen as soothing and safe to provide a more peaceful environment. Cole et al., (2007) showed how animal assisted therapy can reduce anxiety, it is hypothesized that this would be the case for depression as well; however, this needs to be studied.

A pre/posttest study by Johnson, Meadows, Haubner, and Sevedge (2008) evaluated how pet therapy affected mood, sense of heath, and sense of reason in patients receiving radiation therapy. The study included 30 adults receiving radiation therapy in a radiation oncology unit in two hospitals in a Midwestern city. The study used demographic questionnaires, Profile of Mood States (POMS), self-perceived health questionnaire, Orientation to Life Questionnaire (OTLQ), and an exit questionnaire. The participants were divided into three groups. The first group had 15 minute sessions with a dog and handler three times a week for four weeks. The second group read magazines three times a week for 15 minutes over four weeks. The third group had three 15 minute sessions each week with a human visits over four weeks. Average age for each group was 59.5 years of age. Stages in disease progression were not measured and therefore provided a limitation for the study. Scores of the POMS did show a significant decrease in tension and fatigue in those who engaged in the dog visits. The participants in the dog group had improved emotional status whereas the participants in the human and reading groups had decreased emotional health. The findings were not statistically significant and a larger sample size was suggested for further research (Johnson, Meadows, Haubner, & Sevedge, 2008). This study did not specifically address depression, but actually viewed the associated emotional variables.

Johnson et al., (2008) as previously discussed studied the extent of effects of animal-assisted activities on mood, self-perceived health, and sense of coherence with patients receiving radiation therapy. Unfortunately there were no statistically significant data from this study which was limited in size. Measurements were obtained via pretest and post-test with POMS to evaluate for depression. An improvement of depression was

found from pre to post, however not at a significant level (p = .82). More research is needed with a larger sample size to determine if there is a statistical significance with animal assisted therapy.

LeRoux and Kemp (2008) stated that dogs alone can make a positive difference to the physiological health of humans and therefore can play a role in the psychological health by reducing levels of stress, anxiety, depression, and loneliness. Most elderly individuals entering a long term care facility become depressed and feel alone (LeRoux & Kemp, 2008). Many of them had pets of their own and having contact with an animal could bring back fond memories and provide an opportunity for social interaction. LeRoux and Kemp's study (2008) was aimed to explore the effect of a companion dog on the depression and anxiety levels of residents in a long term care facility. This study was a purposive sample of randomly assigned residents of an old age home. There were 16 residents 65 years and older who were selected, 8 women and 8 men. They were randomly assigned to a control group or an Animal Assisted Activity group (AAA). The AAA group met once a week at the same time and day of the week for 6 weeks and had pet visitation for 30 minutes. The Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI) were used pre and post intervention. The results indicated no significant differences between the pre and post BDI and BAI mean scores in the control group but there were significant differences between the pre and post BDI mean scores for the AAA group (z = -2.385, p = .017) (Le Roux & Kemp, 2009). The results of the study confirmed that AAA visits can make a difference in the depression levels of residents in long term care facilities (Le Roux & Kemp, 2009).

As previously discussed, Halm (2008) reviewed literature examining the outcomes of animal assisted therapy (AAT) on hospitalized patients. Halm's (2008) review also included studies involving children showing an increase in happiness and increased relaxation with AAT. Two of the articles reviewed by Halm (2008) concluded that the most common emotional response to the AAT for children and adults was distraction or relief from the pain associated with their disease. Other articles reviewed showed an increase in patient reported calmness and relaxation in children.

Moretti et al. (2011) conducted a pre and posttest questionnaire to evaluate how pet therapy affects cognitive function, mood, and quality of life on elderly patients with dementia, depression, and psychosis. The study had 2 groups, the pet therapy group (consisting of 10 participants) and the control group (consisting of 11 participants). There were 21 participants (mean age of 84.7 years) with the majority of participants being female (95.2%). There was a specific criterion for inclusion and exclusion of the study, most importantly including being institutionalized for at least 2 months and having a mental illness diagnosis. The most common mental illness was dementia (47.6%) followed by psychotic disorders (33.3%) and then depression (19.0%). Initially the Mini-Mental State Examination and the 15-items Geriatric Depression Scale (GDS) were used to assess cognitive function and depressive state and a brief questionnaire assessing the last 2 weeks of self-perceived quality of life were administered to the participants. This was then repeated after the pet therapy intervention was complete. During the intervention, which occurred for 90 minutes, once a week, for 6 weeks, the participants would be in direct contact with the dogs holding, stroking, walking, talking with, and playing. For safety, there was a dog educator present. The control group would see the

dogs enter the facility but did not have any interaction with them. GDS showed an improvement with mood disorder in both groups, scores of those in the pet group decreased from 5.9±4.7 to 2.7± 3.1, (p = .013). In addition, the improvement in cognitive function measured by the MMSE increased the mean score by 4.5 (p = .06). When comparing the groups, the pet therapy group showed a positive effect based on GDS (p = .070). Ninety percent of patients felt the dogs had a calming effect and 80% wanted to continue with pet therapy. There were several limitations. The study was not randomized or double blinded with a small sample size. Second, there were short term evaluations and it is unknown the effects over a long period of time. Third, information on behavioral disturbances was not collected. Lastly, the benefit of the interaction with the dog cannot completely exclude the handler having an effect on the participant as well. This study supports pet therapy aiding in helping with cognitive disturbances, however larger studies differentiating the different cognitive and psychiatric disorders need conducted for further support and evidence of its true success.

It is clear that the prevalence of depression in the elderly population is increased when life altering events have taken place. The multiple studies just reviewed are all evidence of the many types of life altering situations that older people experience in their lives. There is a continued need for research as there were no studies found linking pet therapy and depression.

Theoretical Framework

The framework for this study was Katharine Kolcaba's comfort theory. This theory identifies the need for comfort to be brought back in to healthcare to meet the continued patient's needs that are part of nursing (Kolcaba, 1994). There are 3 forms of

comfort (a) relief, (b) ease, and (c) transcendence (Kolcaba, 2010). Relief occurs when a specific need is met. Ease occurs when there is a sense of contentment. Transcendence is reached when patients can rise above challenges because of the state of comfort (Comfort theory, 2011). In addition, comfort can occur in 4 contexts (a) physical, (b) psychospiritual, (c) environmental, and (d) sociocultural (Kolcaba, 2010). The physical environment consists of the body itself and sensations associated with it. Pyschospiritual is the awareness internally of oneself which could include things like self-esteem. Environment is what is occurring in the background of the human such as light and sound. Lastly, sociocultural is related to the interpersonal, family routines/practices, and societal relationships such as finances (Kolcaba, 1994).

The goal of utilizing this theory is assure holistic comfort is provided. The comfort theory will be explored for the purpose of this study with emphasis on relief and ease in the physical and psychospiritual aspects. A few studies have successfully utilized this theory. Krinsky, Murillo, and Johnson (2014) utilized the comfort theory to help with relief for patients with side effects of cardiac disease. Another study by Koehn (2000) demonstrated how the comfort theory aided women during childbirth to have a more holistic experience.

Application of Framework to Study

Although all of the components of Kolcaba's comfort theory are important, this study focuses on two forms of comfort: relief and ease, and two contexts: physical and psychospiritual.

Kolcaba (1994) felt that relief is reached when a specific need is met. Many residents in LTC facilities have a sense of loneliness and isolation. There are many other

negative psychospiritual feelings felt throughout the day, including various depressive symptoms (Le Roux & Kemp, 2009). Often these feelings of loneliness and isolation can heighten blood pressure and heart rate. The use of pet therapy can fill these voids, potentially reducing heart rate and blood pressure, and providing patients with a sense of relief. Not all patients may feel 100% relief of their negative feelings and thoughts but may reach a sense of ease. Ease is met when the residents feel a sense of satisfaction ("Comfort theory," 2011). Interaction with the therapy pet can provide comfort and companionship for the residents. The therapy pet can be a source of support and warmth for the resident when faced with a stressful or troubling situation thus helping to reduce elevated blood pressure, heart rate, and depression symptoms. For this study, the use of a depression scale will show the effects of pet therapy on an individual's depression. This will show which patients have relief of their depression versus those who reach a comfortable level of depression, ease, that does not interfere with activities of daily living.

The two areas of context explored, physical and psychospiritual, have different criteria for what level or type of comfort is classified as appropriate for a particular patient. Some residents may meet comfort in one context versus another. Physically, a decrease in blood pressure and heart rate would be a sign of comfort. Psycho-spiritually, one finding a meaning to their life and feeling more confidence and esteem would be a sign that contentment and comfort has been reached (Kolcaba, 1994). Depression and the associated symptoms can become evident in individuals when they feel like they have no purpose or direction in life. Helping to give direction and purpose with the use of pet

therapy can reduce depression symptoms and this can be seen based on the results of the depression scale survey.

Figure 1 below is used to show how comfort can be enhanced. In this study the independent variable and intervention is pet therapy. The dependent variables and outcomes are the changes in heart rate, blood pressure, and depressive symptoms. A decrease in depressive symptoms, blood pressure, and heart rate after pet therapy, indicates an ease, which is a state that is calmer and content (Kolcaba, 2010). A complete relief of depressive symptoms and a normalization of heart rate and blood pressure would indicate relief or meeting the comfort need that was previously not met (Kolcaba, 2010). Pet therapy can be used to enhance the feeling of comfort in an individual's life both physically and psycho-spiritually.

	RELIEF	EASE
PHYSICAL	Normalization of: blood pressure heart rate	Decrease in: blood pressure heart rate
PSYCHOSPIRITUAL	Dissipation of: depressive symptoms	Decrease in depressive symptoms

*Figure 1:*Taxonomic Structure of Comfort for Comfort Theory (Kolcaba, 2010) as applied to this research.

Summary of the Review of Related Literature

Pet therapy, as an alternative therapy, has been understudied. There are many research studies that have shown small areas of success, however further research is needed. The studies produced thus far have inconclusive data as to the importance and usefulness of pet therapy related to blood pressure and heart rate. Further studies are needed with larger sample sizes as well as careful consideration in timing of heart and blood pressure medications to determine the fullest potential and effectiveness of pet therapy as an alternative treatment. This is true for measuring depression as well. Although the majority of the studies found do show an improvement, there was a lack of consideration in timing of medications and small sample sizes. To determine the fullest effectiveness, larger studies are needed. Katharine Kolcaba's comfort theory shows how physical and psychospiritual changes can indicate ease and relief which ultimately lead to comfort. In this study, the goal is show a decrease or relief in depressive symptoms and a decrease or normalization of heart rate and blood pressure.

Chapter 3

Methodology

This study examined whether pet therapy changes heart rate, blood pressure, and self-reported depressive symptoms in the elderly in long term care (LTC) facilities. The purpose of this chapter is to describe the research design, setting, sample, instrumentation, data collection, and data analysis.

Research Design

This study used a cross-sectional, non-experimental, pre/post test design to investigate the difference between heart rate, blood pressure, and self-reported depressive symptoms before and after pet therapy in elderly residents residing in a LTC facility.

Setting

The settings used were two LTC facilities in Pennsylvania, one in Cambria County and the other in Jefferson County. Residents included in the study were those who were voluntarily willing to participate. The pet therapy session was done with one individual at a time and the therapy dog.

Sample

The target population for this study included residents 65 years of age and older who live in two LTC facilities: one in Cambria County and one in Jefferson County Pennsylvania with depressive symptoms. Participants who had depressive symptoms and were 65 years of age and older were identified with the assistance of the LTC facility staff. Residents who met the inclusion criteria were then be asked to participate in this study and both written and verbal consent were obtained (see Appendix A for written consent).

Participants included were oriented, voluntarily agreed to participate, were 65 years of age and older, were assessed by nursing staff as having signs of depressive symptoms, and had resided in a LTC facility. Participants were excluded if they were confused, had auditory impairment that was not corrected by hearing aids, had visual impairment that was not corrected by corrective lenses, were unable to make their own decisions, were unable to read, or had an allergy to dogs.

Ethical Considerations

According to the policies and procedures of Edinboro University of Pennsylvania, the research study was reviewed and determined exempt by the Edinboro University Institutional Review Board (IRB) (see Appendix B for Edinboro University IRB approval). The researchers successfully completed the CITI (Collaborative Institutional Training Institute) Research Ethics training which was required per university guidelines (see Appendix C for certificates). Data obtained by the facility staff and patient questionnaires contained no identifiers.

Participants were informed that they are not obligated to participate in the questionnaire and pet therapy session and may elect to stop participation at any point during the session (see Appendix A for consent). Additionally, participants were not asked to provide any personal identifying information. Questions were broad in scope and nature to prevent any ethical or moral conflicts the respondents may be faced with when completing the questionnaire. This study posed no ethical threats, nor did it harm participants or manipulate participants in any way.

Instrumentation

Instrumentation for this study included a demographic questionnaire to provide data to describe the participants. Heart rate and blood pressure measurements were conducted by competent individuals with reliable equipment to ensure accuracy. The Patient Health Questionnaire, PHQ-9, was used to measure self-reported depressive symptoms.

Demographics. Specific demographics used for this study include age, gender, medical diagnosis, length of residency at the LTC facility, and previous pet ownership (see Appendix E for Demographics). The LTC facility staff provided the medical diagnosis and length of residency at the LTC facility for each participant (see Appendix F for Facility Staff). The LTC facility staff was responsible for identifying those residents who have a diagnosis or signs and symptoms of depression. Each qualifying participant then self-reported their age, gender, marital status, and previous pet ownership.

Heart rate. Heart rate (HR) was measured apically for 30 seconds and multiplied by 2 to determine beats per minute. One of the researchers, who is a trained health care professional, assessed the measurement of heart rate for the participants. To maintain reliability and validity, the assessment of HR before and after pet therapy was done by the same researcher using the same stethoscope for each participant

Blood pressure. Blood pressure (BP) was measured by use of a sphygmomanometer and stethoscope. The same researcher who is a trained health care professional using the same sphygmomanometer and stethoscope with the knowledge and skills to take a blood pressure, measured the blood pressure before and after the pet therapy to maintain reliability.

Depressive symptoms. The Patient Health Questionnaire, PHQ-9 (see Appendix D) was used to measure self-reported depressive symptoms both before and after pet therapy. The PHQ-9 is a practical screening for efficient completion and scoring. The questionnaire consists of 10 questions, 9 of the questions are on a rating scale from 0 to 3. This tool asks participants to rate certain statements pertaining to how they have felt over the past two weeks. For this study, the PHQ-9 was adjusted to measure how the participants are feeling at the current moment. On the rating scale, 0 is expressing that the patient/resident is not experiencing a particular feeling at this time and a rating of 1 indicates that they felt this way at present (Pfizer Inc., 1999). On the scale, 2 expresses that the resident felt this way more than half of the days and 3 is correlating that they feel this way every day (Pfizer Inc., 1999). Question number 10 pertains to self care and how difficult the participant finds it (Pfizer Inc., 1999). The PHQ-9 scores range from 0-20. A score of 5-9 shows minimal symptoms and a score between 10-14 shows minor depression (Pfizer Inc., 1999). A score ranging from 15-19 shows major depression and a score of 20 indicates severe major depression (Pfizer Inc., 1999). This has support that it is both valid and reliable with a sensitivity of 88% and specificity of 88% for major depression (Pressler et al., 2011). In two samples the Cronbach was <0.85 and 0.89 (Pressler et al., 2011). It was recently found to be valid and reliable in the primary care setting as a diagnostic tool with a sensitivity of .77 and specificity of .94 (Kelin, Ciotoli, & Chung, 2011).

Pets

Each participating facility had their own agreement with the therapist dogs and their owners. These agreements were previously obtained by each facility during their

approval process for the pet therapy programs. At one LTC facility, the dogs had their Canine Good Citizenship Certification and at both facilities the dogs were certified by Therapy Dog International.

Data Collection

Initial data collection was done one day prior to the pet therapy session. This included the demographic questionnaire, the PHQ-9, heart rate, and blood pressure. The follow-up data collection included the PHQ-9, heart rate, and blood pressure one hour after the pet therapy session. The participants from the first LTC facility were assigned their room number for each questionnaire to be sure the data matches pre and post pet therapy and maintains confidentiality. The participants from the second LTC facility were assigned a number starting at one to be sure the data matches pre and post pet therapy. Participant approval was requested to report any score over 10 on the PHQ to the facility.

Data Analysis

After the completion of the questionnaire, responses were reviewed. Demographics, such as age, gender, diagnosis or signs and symptoms of depression, and previous pet ownership were analyzed using the descriptive statistics. The PHQ-9, heart rate and blood pressure were evaluated based upon the research questions and hypotheses with a paired sample *t*-test.

Research question 1: Is there a difference in heart rate before and after pet therapy in residents 65 years of age and older residing in a LTC facility?

H0: There is no significant difference in heart rate before and after pet therapy in LTC residents 65 years of age and older

H1: There is a significant difference in heart rate before and after pet therapy in LTC residents 65 year of age and older.

The dependent variable, heart rate, is operationalized by the number of beats of the heart per minute. The independent variable, pet therapy, is operationalized by the interactions of residents with a specially trained dog for therapy purposes. LTC facility is operationalized by a facility where residents reside for care over long periods.

Data was analyzed based on the change in heart rate from before to after the pet therapy session. This analysis was done with a *t*-test with a significance level of ≤0.05

Research Question 2: Is there a difference in blood pressure before and after pet therapy in residents 65 years of age and older residing in a LTC facility?

H0: There is no significant difference in blood pressure before and after pet therapy in LTC residents 65 years of age and older

H1: There is a significant difference in blood pressure before and after pet therapy in LTC residents 65 year of age and older.

The dependent variable, blood pressure, is operationalized by the actual numerical value of the systolic over the diastolic pressure obtained by use of a stethoscope and sphygmomanometer on the participant's arm. The independent variable, pet therapy, is operationalized by the interactions of residents with a specially trained dog for therapy purposes. LTC facility is operationalized by a facility where residents reside for care over long periods.

Data was analyzed based on the change in blood pressure from before to after the pet therapy session. This analysis was done with a *t*-test with a significance level of ≤0.05

Research Question 3: Is there a difference in self-reported depressive symptoms before and after pet therapy in residents 65 years of age and older residing in a LTC facility?

H0: There is no significant difference in self-reported depressive symptoms before and after pet therapy in LTC residents 65 years of age and older

H1: There is a significant difference in self-reported depressive symptoms before and after pet therapy in LTC residents 65 year of age and older.

The dependent variable, depression, is operationalized by the score on the PHQ-9. The independent variable, pet therapy, is operationalized by the interactions of residents with a specially trained dog for therapy purposes. LTC facility is operationalized by a facility where residents reside for care over long periods.

Data was analyzed based on the change in PHQ-9 scores from before to after the pet therapy session. This analysis was done with a *t*-test with a significance level of ≤ 0.05

Summary of Methodology

This chapter provided a synopsis of the methodology for this cross-sectional, non-experimental, pre/post test design study. The settings were two long term care facilities. The chapter also included an explanation of the research tools used for data collection. Actual blood pressure and heart rate were obtained and Patient Health Questionnaire, PHQ-9, was used to measure self-reported depressive symptoms of the participants. This information was used to determine if pet therapy, as an alternative therapy, is an effective treatment to lower blood pressure, heart rate, and self-reported depressive symptoms. There is an explanation of the data collection process provided. The statistical analysis *t*-

test will be used with a significant level of $p < .05$ for heart rate, blood pressure, and self-reported depressive symptoms.

Chapter 4

Results and Discussion

Chapter 4 organizes the results of the research conducted at each skilled nursing facility. The purpose of this cross-sectional descriptive correlational study was to determine if there is a difference in heart rate, blood pressure, and self-reported depressive symptoms with use of pet therapy as an alternative treatment for LTC residents 65 years of age and older. This was measured through obtaining a manual blood pressure and heart rate, and the Patient Health Questionnaire (PHQ-9).

Sample Characteristics

The initial sample for this study was 32; 2 participants did not complete the second phase of the study. The final sample was 30 participants.

Out of the 30 participants 13.3% were 75-80 years old, 30% were 80-85, 30% were 85-90, and 26.7% were over the age of 90. As shown in Figure 2, females made up 80% (n = 24) and 20% (n=6) males. Ninety percent (n = 27) owned a pet currently or in the past.

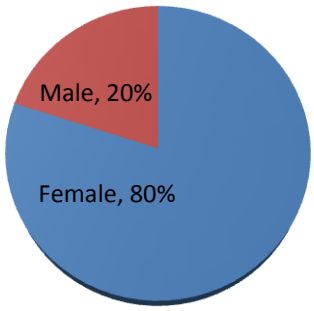

Figure 2: Percentage of females and males included in the study.

The primary medical diagnosis and length of stay in the LTC for study participants can be seen in Tables 1 and 2.

Table 1:

Primary Medical Diagnosis of Participants

Medical Diagnosis	Percentage
Cardiac	26.6%
Musculoskeletal	26.6%
Neurological	20%
Genitourinary	10%
Pulmonary	6.6%
Other	6.6%
Gastrointestinal	3.3%

Table 2:

Length of Stay of Participants

Length of Stay	Percentage
1 week or less	3.3%
1-4 weeks	6.7%
2-4 weeks	6.7%
12-18 months	10%
18-24 months	3.3%
2-4 years	43.3%
5-10 years	23.3%
10-15 years	3.3%

Discussion of Research Questions/Results

Research question 1: Is there a difference in heart rate before and after pet therapy in residents 65 years of age and older residing in a LTC facility?

H0: There is no significant difference in heart rate before and after pet therapy in LTC residents 65 years of age and older

H1: There is a significant difference in heart rate before and after pet therapy in LTC residents 65 year of age and older.

A paired sample *t*-test was completed to determine if the difference between heart rates measured before and after pet therapy was significant ($p \leq .05$). A statistically significant difference was found between the heart rate before and after the pet therapy session ($t(29) = 2.868$, $p = .008$), as seen in Table 3. The null hypothesis was rejected and the alternative hypothesis that there is a statistical difference in heart rate before and after pet therapy in LTC residents 65 years of age and older was accepted.

Research Question 2: Is there a difference in blood pressure before and after pet therapy in residents 65 years of age and older residing in a LTC facility?

H0: There is no significant difference in blood pressure before and after pet therapy in LTC residents 65 years of age and older

H1: There is a significant difference in blood pressure before and after pet therapy in LTC residents 65 year of age and older.

A paired sample *t*-test was completed to determine if the difference between blood pressures measured before and after pet therapy was significant ($p \leq .05$). Findings indicated there was not a statistically significant difference between the blood pressure before and after the pet therapy session for both the systolic ($t(29) = 2.675$, $p = .012$) and

diastolic ($t(29) = 2.170$, p =.038) measurement, as seen in Table 3. The null hypothesis that there is no significant difference in blood pressure before and after pet therapy in LTC residents 65 years of age and older was accepted and the alternative hypothesis was rejected.

Research Question 3: Is there a difference in self-reported depressive symptoms before and after pet therapy in residents 65 years of age and older residing in a LTC facility?

H0: There is no significant difference in self-reported depressive symptoms before and after pet therapy in LTC residents 65 years of age and older

H1: There is a significant difference in self-reported depressive symptoms before and after pet therapy in LTC residents 65 year of age and older.

A paired sample *t*-test was completed to determine if the difference in depressive symptoms based on the PHQ-9 questionnaire measured before and after pet therapy was significant ($p \leq .05$). Findings indicated there was a statistically significant difference between the PHQ-9 scores indicating improvement in self-reported depressive symptoms before and after the pet therapy session ($t(29) = 6.338$, $p = .000$), as seen in Table 3. The null hypothesis was rejected and the alternative hypothesis that there is a significant difference in self-reported depressive symptoms before and after pet therapy in LTC residents 65 years of age and older was accepted ($p = .000$).

Table 3

Statistical results of pre and post pet therapy sessions for heart rate, blood pressure, and PHQ-9 questionnaire

Variable	*t*	df	Sig. (2-tailed)
Pre-systolic, post-systolic	2.675	29	.012
Pre-diastolic, post-diastolic	2.170	29	.038
Pre-HR, post-HR	2.868	29	.008
Pre-PHQ, post-PHQ	6.338	29	.000

*Significant at $p < .05$.

Limitations

For the purpose of this study, the following limitations include:

1. There was no control over medication administration time. Although pre and post assessment were timed as close as possible to similar times, there was no control over medications and their effects on heart rate, blood pressure, and depressive symptoms.
2. Many residents had previously participated in pet therapy. The establishments used already had a schedule for pet therapy.
3. The sample size was small due to a short time frame to conduct research and limited facilities that were agreeable to participate in the study.
4. There were a minimal number of facilities agreeable to participate.
5. Time to conduct the study was restricted within the facility due to previously scheduled activities throughout the day for the residents.

Discussion Related to Literature Review

The study conducted at two LTC facilities reinforced the limited amount of research available on pet therapy and its effects on heart rate, blood pressure, and self-reported depressive symptoms. Animals were used for therapy as far back as the 9th century in Belgium and 1792 in England (Reynolds, 2012). Research related to the benefit of animals for therapy was not started for numerous years later.

Cole et al. (2007) researched use of a therapy dog on improving hemodynamic measures, neuro-hormone levels, and anxiety in patients with heart failure. The study was fairly small with 76 participants divided in 3 groups. There was some significance to the Cole et al. (2007) study although heart rate and blood pressure were not statistically significant. In this study, heart rate was found to be statistically significant. In this study, the average heart rate before the pet therapy session was 73, whereas the average post pet therapy session heart rate was 66.5. This study showed significantly improved self-reported depressive symptoms after the pet therapy session where the Cole et al. (2007) study showed significant improvements to anxiety.

Johnston et al. (2008) explored the effects of animal assisted visits on mood, self-perceived health, and sense of coherence in patients undergoing radiation therapy. Again the study was small with 30 participants divided in 3 groups. The study conducted by Johnston et al. (2008) was inconclusive as there was not statistical significance that came from the study where in the study. In contrast, in this study, the self-perceived depressive symptoms improved after the therapy session, therefore improving mood.

Marcus et al. (2013) researched the effects of dog therapy on pain in fibromyalgia patients. These 133 participants divided in 2 groups were given a survey addressing

depression, anxiety, fatigue, pain, and stress which showed improvement in all groups with the therapy dog. Marcus et al. (2013) provides further support for the benefits of pet therapy on depression. In addition, Marcus et al. (2013) revealed positive results beyond depression, showing the benefit of pet therapy on other psychological symptoms.

Halm (2008) reviewed supportive evidence that animal assisted therapy creates positive emotional outcomes, as well as positive effects to blood pressure. Halm's (2008) review also explained that those who owned a pet have an increased survival rate as well as increased feelings of happiness. In this study, a significant improvement in blood pressure was not replicated however there was limitation in regards to medication control. Another study conducted by Luptak and Nuzzo (2004) presented evidence that showed a slight decrease in blood pressure and a significant decrease in heart rate in the majority of their participants after directly interacting with the therapy dogs. Luptak and Nuzzo (2004) explain that dogs that are familiar to the individuals have more effects on decreasing blood pressure and heart rate, but unfamiliar dogs still elicit a positive effect to some extent on these vital signs. These findings, in regards to heart rate, were reproduced with the current study.

LeRoux and Kemp (2008) researched 16 participants 65 years of age and older in a LTC facility for a difference in anxiety and depression with the Animal Assisted Activity (AAA) group. The results confirmed the results of this study that animal visits can make a significant improvement in the level of depression in residents in a LTC facility, 65 years of age and older.

The literature has a variety of results related to the effects of pet therapy on heart rate, blood pressure, and depression. Not all of the results found throughout the literature

are completely conclusive so the need for more controlled research studies is evident. However this current study confirms pet therapy is beneficial for improving heart rate, blood pressure, and depression.

Discussion Related to Conceptual Framework

Katharine Kolcaba's comfort theory (1994) provided the foundation and explanation for the need for comfort to be brought back in to healthcare to meet the continued patient's needs that are part of nursing. Psychospiritually, the current study showed that self-reported depressive symptoms were improved with the use of pet therapy. When evaluating the scores of the PHQ-9, many patients met relief (26.67%) with dissipation of self-reported depressive symptoms after the pet therapy session while the other participants had decreased numerical scores indicating ease or a decrease in depressive symptoms.

Physically, the research is mixed in the effectiveness of pet therapy. Heart rates were statistically improved and after reviewing the results of the heart rates, all were within normal limits which would indicate relief. Although the baseline heart rate or normal heart rate for any person may vary it could be posited that if the participants did not have relief, they at least met ease by having a decrease in heart rate. The blood pressure results before and after the pet therapy session were statistically significant therefore met relief (normalization) or ease (a decrease). Only 6.67% of participants were considered to have high blood pressure after the pet therapy session; however the systolic and diastolic blood pressure were both decreased from pre pet therapy session indicating ease.

Pet therapy was found to be a way to improve physical and psychological aspects of participants. This is important in providing holistic comfort.

Summary

Demographic data were analyzed using frequency. Results from the research were presented in this chapter as well. There was a statistically significant relationship found between pet therapy and heart rate, blood pressure, and self-reported depressive symptoms.

Chapter 5

Summary, Conclusions, and Recommendations

The purpose of this study was to determine if there is a difference in heart rate, blood pressure, and self-reported depressive symptoms with use of pet therapy as an alternative treatment for LTC residents 65 years of age and older. Katharine Kolcaba's comfort theory (1994) served as the conceptual framework for this study. Data analysis for the three research questions was conducted utilizing a *t*-test with a statistical significance of $p \leq 0.05$.

Summary of Findings

This study included 30 residents 65 years of age and older who live in two LTC facilities: one in Cambria County and one in Jefferson County Pennsylvania with depressive symptoms. Of these 30 participants, 80% (n=24) were female and 20% (n=6) males. Ninety percent (n=27) own or have owned a pet.

Heart rate, blood pressure, and self-reported depressive symptoms were measured before and after pet therapy in 30 participants living in a LTC facility. The differences between heart rate, blood pressure, and depressive symptoms before and after the pet therapy session were all found to be statistically significant, indicating rejection of the null hypotheses for each.

Implication for Nursing

Further research on the use of pet therapy would be valuable as the results from this study found pet therapy to be beneficial. Use of pet therapy in LTC facilities may be useful to decrease polypharmacy with close supervision in monitoring heart rate, blood pressure, and signs and/or symptoms of depression. Advanced practice nurses have the

ability to prescribe treatment for heart rate, blood pressure, and depressive symptoms. Alternative treatments such as pet therapy would be options for advance practice nurses to include as a treatment before prescribing medications. Further research and close monitoring could make this a more favorable option if results continue to be positive, as demonstrated in this study.

Recommendations for Further Research

Recommendations for further research include a larger sample size, more diverse participants, more control over medication administration times and research, more time to complete the study with pet participation, and fewer participants whom previously were involved with pet therapy. Finding a facility that would be willing to establish a pet therapy program may give more definitive results.

A larger sample size would further provide a comprehensive evaluation of the benefits of pet therapy. This would offer a larger data set which could be analyzed for significance. Using random sampling versus convenience sampling would be beneficial. Secondly, the study was specific to a unique population, those 65 years of age and older living in a LTC facility. There were a minimal number of facilities agreeable to participate, limiting diversity. To validate the benefit of pet therapy, a more diverse population needs studied. It would be essential to include a culturally diverse population over the lifespan. Utilization of a qualitative study to explore the meaning of pet therapy on a deeper, more personal level in future research would be valuable.

In addition, further research on medication administration times is needed to clarify if the benefits of pet therapy are related to the therapy session or are the effects of the medication(s) administered. Careful timing of medication administration, to be sure it

is not the peak time of effectiveness, would be helpful. Additionally, studying the pet interaction with the participant at variable time intervals would be essential in determining the most beneficial length of time needed for the most successful treatment. A careful statistical analysis of each time interval would be needed to show the most effective time needed for successful treatment.

Furthermore, fewer participants whom previously were involved with pet therapy are needed. A prior involvement in pet therapy could skew the results. A new participant and a previous participant in pet therapy may respond differently. A separate study with those new to pet therapy and those previously involved in pet therapy would be beneficial to compare results.

Lastly, this study suggests that there is some benefit of pet therapy as an alternative treatment to medicine. With careful monitoring, pet therapy may allow for a decrease in medication dosages and/or discontinue medications for heart rate, blood pressure, and depression. Using pet therapy as an alternative treatment may be beneficial in decreasing the amount and/or number of medications used. An opportunity exists to conduct a study with greater control over medications to evaluate more accurately the effectiveness of pet therapy.

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Appendix A—Consent Form for Participation in a Research Study
Edinboro University

Pet Therapy as an Alternative Therapy for Residents 65 Years and Older in Long Term Care Facilities to Decrease Signs and Symptoms of Depression, Blood pressure, and Heart Rate

Principal Investigator: Amy McClune, PhD, RN, Associate Professor, Edinboro
Co-Investigators: Tia Fenstermaker RN, BSN, MSN student
Amanda McKendree RN, BSN, PCCN, MSN student
Stephanie Swope RN, BSN, MSN student

Description of the research

We are asking you to participate in this study to explore how pet therapy affects signs and symptoms of depression, blood pressure, and heart rate. With the help of the staff at your facility, you are being asked by Clarion/Edinboro University Master of Science in Nursing students' Tia Fenstermaker, Amanda McKendree, and Stephanie Swope to participate in this research study. This study does involve research and this consent will describe your role as the participant.

Your Participation

Your participation will involve a brief demographic questionnaire and a depression survey, blood pressure check, and heart rate check before and after a pet therapy session.

Risks and discomforts

Risks of participation are minimal. There should be little to no known risk of any physical, social, or financial effects when participating. The possibility of emotional or psychological discomforts may be present when the therapy dogs have to leave. There is a risk of allergy symptoms if you are allergic to animal fur or dander and there is also risk of suffering from an animal bite. The risk of an animal bite is minimal due to the fact that the dogs participating are certified therapy dogs. Another risk is the potential for negative feelings and a high PHQ-9 score (>10). Participants will be asked to inform the researcher if such feelings occur. The researcher will then make the facility staff aware of the negative feelings from the participant and/or the high score.

Potential benefits

This research may help us to understand if pet therapy could be used over certain medications for treatment of depression, high blood pressure, and fast heart rates. In addition, you may benefit psychologically and emotionally from the therapy dog visit.

Protection of confidentiality

Your identity will not be revealed in any publication resulting from this study. You will remain anonymous throughout.

Voluntary participation

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

Contact information

If you have any questions about the research study you may contact Tia Fenstermaker at (814) 229-2343 Amanda McKendree at (814)410-2716, or Stephanie Swope at (814) 676-3373. If you have any questions about your rights as a research participant you may call the Edinboro University Institutional Review Board (814) 732-1052.

Consent

I have read this consent form and have been given the opportunity to ask questions. I give my verbal consent to participate in this study.

Signature _____
Date _____

Appendix B – Edinboro University IRB approval letter

This memo provides the notification concerning EUP's Institutional Review Board (IRB)

determination of the human subject's protocol:

This memo provides the notification concerning EUP's Institutional Review Board (IRB) determination of the human subjects protocol:

To: Dr. Amy McClune

From: Dr. Colleen Barrett, EUP Nursing IRB Exempt Screening Committee Chair

Protocol # NURS2015-006 **Date Approved 4-1-15**
Title: PET THERAPY AS AN ALTERNATIVE THERAPY FOR RESIDENTS 65 YEARS AND OLDER IN LONG TERM CARE FACILITIES TO DECREASE SIGNS AND SYMPTOMS OF DEPRESSION, BLOOD PRESSURE, AND HEART RATE

The EU IRB Chair has designated this committee as reviewer of the application listed above for exempt status. It has been determined that your protocol is categorized as **Exempt** under federal regulations 45 CFR 46.101(b), since the research design involves one or more of the following criteria:

___Research conducted in established or commonly accepted educational settings, involving
normal educational practices.
X Research using educational tests, surveys or interviews where respondents are not identified or are public officials.
___Research involving observation of public behavior.
_ Research involving collection, study, and use of existing data where subjects are not identified.

Exempt protocol means that as long as you continue your research as described in your protocol application, the research does not require any further review or oversight by the IRB. Should you change any procedure within your research, you are required to resubmit the protocol to the IRB for reconsideration and determination before you implement any change. All data must be retained and accessible for three (3) years after the completion of the project.

Designation as exempt signifies only that the proposal adequately qualifies under 45 CFR 46.101(b) for such status. It does not imply, directly or indirectly, any institutional support or permission to conduct the study.

Should you have any questions or concerns, please feel free to contact me at 814-732-1643

Dr. Colleen Barrett, DNP, CRNP, FNP-BC
Cc: Dr. Lisa Joyce, Chair EUP IR

Appendix C – Collaborative Institute Training Initiative Certificates

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COURSEWORK REQUIREMENTS REPORT*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Amanda McKendree (ID: 3952974)
- **Email:** a.ream@eagle.clarion.edu
- **Institution Affiliation:** Edinboro University of Pennsylvania (ID: 2228)
- **Institution Unit:** 8 Rose- CU

- **Curriculum Group:** RCR Course
- **Course Learner Group:** RCR FOR SOCIAL & BEHAVIORAL for Students
- **Stage:** Stage 1 - SB for Students

- **Report ID:** 12131436
- **Completion Date:** 01/25/2014
- **Expiration Date:** N/A
- **Minimum Passing:** 80
- **Reported Score*:** 100

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Plagiarism (RCR-Basic) (ID:15156)	01/20/14	5/5 (100%)
Introduction to the Responsible Conduct of Research Archived 1248 (ID:1248)	01/20/14	No Quiz
Research Misconduct (RCR-SBE) (ID:1495)	01/20/14	5/5 (100%)
Data Management (RCR-SBE) (ID:1523)	01/20/14	5/5 (100%)
Authorship (RCR-SBE) (ID:1518)	01/20/14	5/5 (100%)
Peer Review (RCR-SBE) (ID:1521)	01/20/14	5/5 (100%)
Mentoring (RCR-Interdisciplinary) (ID:1250)	01/22/14	5/5 (100%)
Using Animal Subjects in Research (RCR-Basic) (ID:13301)	01/22/14	5/5 (100%)
Conflicts of Interest (RCR-SBE) (ID:1462)	01/23/14	6/6 (100%)
Collaborative Research (RCR-SBE) (ID:1484)	01/25/14	5/5 (100%)
Research Involving Human Subjects (RCR-Basic) (ID:13566)	01/25/14	5/5 (100%)
Responsible Conduct of Research (RCR) Course Conclusion (ID:1043)	01/25/14	No Quiz
Case Study Plagiarism (RCR-SBE) (ID:1472)	01/25/14	2/2 (100%)
Data Acquisition And Management - AFRI (ID:1203)	01/25/14	No Quiz

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

CITI Program
Email: citisupport@miami.edu
Phone: 305-243-7970
Web: https://www.citiprogram.org

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COURSEWORK REQUIREMENTS REPORT*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Amanda McKendree (ID: 3952974)
- **Email:** a.ream@eagle.clarion.edu
- **Institution Affiliation:** Edinboro University of Pennsylvania (ID: 2228)
- **Institution Unit:** 8 Rose- CU

- **Curriculum Group:** Human Subject Research
- **Course Learner Group:** Student researchers
- **Stage:** Stage 1 - Student researchers

- **Report ID:** 12131435
- **Completion Date:** 02/03/2014
- **Expiration Date:** 02/02/2017
- **Minimum Passing:** 80
- **Reported Score*:** 91

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Belmont Report and CITI Course Introduction (ID:1127)	02/03/14	3/3 (100%)
Edinboro University of Pennsylvania (ID:14589)	02/03/14	No Quiz
Students in Research (ID:1321)	02/03/14	10/10 (100%)
History and Ethical Principles - SBE (ID:490)	02/03/14	5/5 (100%)
Defining Research with Human Subjects - SBE (ID:491)	02/03/14	5/5 (100%)
Privacy and Confidentiality - SBE (ID:505)	02/03/14	2/5 (40%)
Informed Consent - SBE (ID:504)	02/03/14	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

CITI Program
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Phone: 305-243-7970
Web: https://www.citiprogram.org

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

RCR COURSE CURRICULUM COMPLETION REPORT

Printed on 04/24/2014

LEARNER	Stephanie Swope (ID: 4117472)
DEPARTMENT	Nursing
EMAIL	sswope@eagle.clarion.edu
INSTITUTION	Edinboro University of Pennsylvania
EXPIRATION DATE	

RCR FOR SOCIAL & BEHAVIORAL FOR STUDENTS

COURSE/STAGE:	SB for Students/1
PASSED ON:	04/24/2014
REFERENCE ID:	12793844

REQUIRED MODULES	DATE COMPLETED	SCORE
Plagiarism (RCR-Interdisciplinary)	04/13/14	4/5 (80%)
Introduction to the Responsible Conduct of Research	04/13/14	No Quiz
Research Misconduct (RCR-SBE)	04/14/14	5/5 (100%)
Data Management (RCR-SBE)	04/15/14	5/5 (100%)
Authorship (RCR-SBE)	04/16/14	4/5 (80%)
Peer Review (RCR-SBE)	04/16/14	5/5 (100%)
Mentoring (RCR-Interdisciplinary)	04/16/14	5/5 (100%)
Using Animal Subjects in Research (RCR-Interdisciplinary)	04/16/14	3/5 (60%)
Conflicts of Interest (RCR-SBE)	04/21/14	3/5 (60%)
Collaborative Research (RCR-SBE)	04/21/14	4/5 (80%)
Research Involving Human Subjects (RCR-Interdisciplinary)	04/24/14	4/5 (80%)
Responsible Conduct of Research (RCR) Course Conclusion	04/24/14	No Quiz
ELECTIVE MODULES	**DATE COMPLETED**	**SCORE**
Case Study - Truth or Consequences (RCR-Physical Sciences)	04/24/14	3/3 (100%)
Case Study - In the Field, No One Will Know (RCR-Humanities)	04/24/14	3/3 (100%)

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI Program participating institution or be a paid Independent Learner. Falsified information and unauthorized use of the CITI Progam course site is unethical, and may be considered research misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Program Course Coordinator

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

HUMAN SUBJECT RESEARCH CURRICULUM COMPLETION REPORT

Printed on 04/24/2014

LEARNER	Stephanie Swope (ID: 4117472)
DEPARTMENT	Nursing
EMAIL	sswope@eagle.clarion.edu
INSTITUTION	Edinboro University of Pennsylvania
EXPIRATION DATE	04/23/2017

STUDENT RESEARCHERS

COURSE/STAGE:	Student researchers/1
PASSED ON:	04/24/2014
REFERENCE ID:	12793843

REQUIRED MODULES	DATE COMPLETED	SCORE
Belmont Report and CITI Course Introduction	04/24/14	3/3 (100%)
Edinboro University of Pennsylvania	04/24/14	No Quiz
Students in Research	04/24/14	8/10 (80%)
History and Ethical Principles - SBE	04/24/14	4/5 (80%)
Defining Research with Human Subjects - SBE	04/24/14	4/5 (80%)
Privacy and Confidentiality - SBE	04/24/14	5/5 (100%)
ELECTIVE MODULES	**DATE COMPLETED**	**SCORE**
Informed Consent - SBE	04/24/14	3/5 (60%)

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI Program participating institution or be a paid Independent Learner. Falsified information and unauthorized use of the CITI Progam course site is unethical, and may be considered research misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Program Course Coordinator

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

HUMAN SUBJECT RESEARCH CURRICULUM COMPLETION REPORT

Printed on 04/25/2014

LEARNER	Tia Fenstermaker (ID: 4127682)
DEPARTMENT	Nursing
EMAIL	t.m.fenstermaker@eagle.clarion.edu
INSTITUTION	Edinboro University of Pennsylvania
EXPIRATION DATE	04/24/2017

STUDENT RESEARCHERS

COURSE/STAGE:	Student researchers/1
PASSED ON:	04/25/2014
REFERENCE ID:	12840398

REQUIRED MODULES	DATE COMPLETED	SCORE
Belmont Report and CITI Course Introduction	04/25/14	3/3 (100%)
Edinboro University of Pennsylvania	04/25/14	No Quiz
Students in Research	04/25/14	10/10 (100%)
History and Ethical Principles - SBE	04/25/14	4/5 (80%)
Defining Research with Human Subjects - SBE	04/25/14	4/5 (80%)
Privacy and Confidentiality - SBE	04/25/14	5/5 (100%)
ELECTIVE MODULES	**DATE COMPLETED**	**SCORE**
Informed Consent - SBE	04/25/14	2/5 (40%)

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI Program participating institution or be a paid Independent Learner. Falsified information and unauthorized use of the CITI Progam course site is unethical, and may be considered research misconduct by your institution.

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CITI Program Course Coordinator

Appendix D – PHQ-9 Questionnaire

Over the **last 24 hours** how often have you been bothered by any of the following problems? For each question, select the option that best describes the amount of time you feel that way.

In the last 24 hours…	Not at all	Less than half of the time	More than half the time	The majority of the time
	0	1	2	3
1. Little interest or pleasure in doing things				
2. Feeling down, depressed, or hopeless				
3. Trouble falling or staying asleep, or sleeping too much				
4. Feeling tired or having little energy				
5. Poor appetite or overeating				
6. Feeling bad about yourself- or that you are a failure or have let yourself or your family down				
7. Trouble Concentrating on things, such as reading the newspaper or watching television				
8. Moving or speaking so slowly that other people could have notice. Or the opposite- being so fidgety or restless that you have been moving around a lot more than usual				
9. Thoughts that you would be better off dead, or of hurting yourself in some way				
PHQ-9 SCORE				

Appendix E – Demographics

Please fill out the demographic questionnaire below. All questionnaire's will remain anonymous and your participation is strictly voluntary.

1. **I have read the information above and give my consent to participate in this study.**

   - □ **Yes**
   - □ **No**

2. **Which age category below do you fit in?**

   - □ **65-70 years**
   - □ **70-75 years**
   - □ **75-80 years**
   - □ **80-85 years**
   - □ **85-90 years**
   - □ **over 90 years**

3. **Please indicate your gender**

   - □ **Male**
   - □ **Female**

4. **Are you a current or have you previously owned a pet?**

   - □ **Yes**
   - □ **No**

This survey is complete. We want to thank you very much for your participation.

Appendix F – Facility Staff

Please complete questionnaire below regarding each resident who is voluntarily participating in this research study.

1. Medical Diagnosis _____

2. Length of residency at LTC facility

- □ 1 week or less
- □ 1-4 week
- □ 2-4 months
- □ 4-6 months
- □ 6-12 months
- □ 12-18 months
- □ 18-24 months
- □ 2-4 years
- □ 5-10 years
- □ 10-15 years
- □ over 15 years

This completes the questionnaire. Thank you very much for your help and participation.