WILL ANIMAL ASSISTED THERAPY RESULT IN SHORTER LENGTH OF STAY FOR HOSPITALIZED PATIENTS AND IMPROVE BASIC NEEDS STATUS AND PHYSICAL OUTCOMES SUCH AS BLOOD PRESSURE, HEART RATE, AND PAIN?

By

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Abstract

Animal Assisted Therapy (AAT) has been thought to have a therapeutic effect upon humans, especially those individuals who are confined due to age or illness. Human-animal contact encourages socialization for the lonely; it promotes movement in the relatively immobile, and may serve as a memory prompt for the elderly and just plain talking for nearly everyone. An animal visit can offer entertainment or a welcome distraction from pain and illness. People often talk to the animals, and share with them their thoughts, feelings and memories. Animal visits provide something to look forward to. Petting encourages use of hands and arms, stretching and turning. Animals have a comforting, reassuring effect on people that has been shown to lower blood pressure, reduce stress, decrease anxiety and depression, lessen the feelings of loneliness and isolation, aid in socialization and acceptance between people. Animals pay little attention to a person's age, physical appearance or mental ability, but offer their love and acceptance unconditionally. Results are small miracles in the forms of smiles where there were frowns; in sounds where there was silence; in movement where there was weariness; in comfort where there was pain. The purposes of this research study was to assess if AAT would result in shorter length of stay for hospitalized patients and improve basic need status and physical outcomes such as blood pressure, heart rate, pain.

The Basic Need Satisfaction Inventory Tool (BNSI) created by Nancy Klein Leidy, PhD (Leidy, 1994) using Maslow's Theory provided the theoretical framework for this study. Maslow's theory contends that as humans meet basic needs, they seek to satisfy successively higher needs that occupy a hierarchy. Dr. Leidy created a twenty-seven item questionnaire using a Likert scale. This tool was divided into five subscales

each addressing physical needs, safety, belonging, self-esteem and self-actualization needs (Leidy, 1994). The non-random sample in this study consisted of forty-five patients (n=30 experimental group and n=15 control group), seeking medical care in a community hospital for recently diagnosed cancer. Participants completed two pencil and paper questionnaires, consent for study and release of responsibility waiver to the hospital. Data analyses included descriptive statistics and independent-sample t-tests. Patients in the experimental group showed significantly better results ($p<0.5$) with blood pressure, pain, and belonging needs being met. Findings from this study suggest that there is a substantial need for further studies to determine benefit not only to patients but staff as well. The findings can be useful for the medical community and nurse practitioners as we learn more about AAT.

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Chapter I

Introduction

There is increasing evidence that suggests that those who keep pets are likely to benefit from various improvements in health (Fine, 2000). In spite of founders of nursing such as Florence Nightingale advocating the importance of animals within the health care environment, their incorporation into hospitals and other health care settings has been slow. Nurses can assume a proactive role in advocating animals in their wards and animal assisted therapy visiting schedules.

The acceptance of animal assisted therapy (AAT) as a therapeutic activity may be restricted by the belief that patient safety could be compromised by an increase in the risk of infection acquired from animals, allergic responses and bites. However, in a controlled health care environment and with dependable human behavior, the potential benefits of sharing our lives with pets at home and in the hospital can far outweigh the risks.

Many patients experience loneliness, isolation, depression, lack of emotional support, discomfort and dissatisfaction despite acceptable medical outcome. AAT visitation is one way to address these problems of patients.

Advanced practice nurses are met with the ongoing challenges of using interventions and practices that are evidence based in the care of their patients. Such practices include traditional as well as complementary and alternative therapies. AAT is an alternative therapeutic modality that can be used to enhance quality of life and result in positive health benefits. Knowledge

regarding AAT may help design and advocate the use of Robotic pets and Humanoids in a better effort to steward resources, particularly in situations where a live animal may prove problematic (Kahn, Friedman, & Hagman, 2002). There has been a movement to create technological substitutes for pets, such as the Tamagotchi, Furby, Tama, AIB and ASIMO.

Purpose

The purposes of this research study was to assess if AAT would result in shorter length of stay for hospitalized patients and improve basic need satisfaction status along with improvement in physical status such as blood pressure, heart rate, pain.

Significance to Nursing

Healthy People 2010 objectives include goals to eliminate health disparities among individuals and to promote healthy behavior patterns in the nation. Nursing values these objectives and continues to promote their use in community and hospital settings. Exercise may be one of the most effective and worthwhile complementary therapies to initiate in care of the adult (USDHHS, 2000). Benefits of exercise with AAT during hospitalization may include; improved sleep, decreased depressive symptoms, decreased hospitalization and reduced mortality (Miller & Ingram, 2000).

There is a widespread use of complementary and alternative medical techniques among patients. Being hospitalized represents a great source of stress. Hospitalized patients are not only deprived of their familiar and comforting world, but they must also face difficult and often painful treatments. Patients must quickly adapt to new people and to an environment that is very different from their home. They have greater safety needs and it is important to offer concrete ways to better adapt to the stresses of hospitalization (Eisenberg, 1998).

In the past 40 years pet therapy has been transformed from humble beginnings that were ridiculed to a successful, research based therapy. Nursing has been the leading force behind moving pets into health care institutions. By basing treatment rationale on evidence-based research, health care professionals have given AAT the legitimacy needed. Research health care professionals can support the use of AAT and further legitimize its role in patient care. It is important that nurses and other health care professionals are aware of the role that AAT can play in achieving optimal health.

Chapter II

Review of the Literature

Animals have been a very important part of many people's lives and are a source of companionship and social support for centuries. AAT is a complementary therapy that can have a tremendous impact on the quality of care and on the lives of patients (NCCAM, 2004). Animal visitations can significantly reduce feelings of loneliness, particularly in individuals who have a life history of emotional intimacy with pets. In addition, AAT can provide motivational, recreational, socialization benefits and decrease adverse behavior in older adults with dementia. Instead of allowing the older adult to simply hold or pet animals, having them walk or play catch with a dog promotes physical activity and exercise (Banks, 2002). Over the past decade, the use of complementary therapies has had resurgence due to limited health care resources and potential for large benefits. There has been a significant increase in the use of complementary therapies since 1990, and nearly 40% of older adults have used some form of complementary therapy involving animals (Eisenberg, 1998).

According to the National Center for Complementary and Alternative Medicine (NCCAM), complementary therapies are used in combination with conventional medicine to promote wellness and reduce symptoms associated with illness and disease (NCCAM, 2004). Research has shown that after being hospitalized, heart attack victims who have pets live longer. Even watching tropical fish may lower blood pressure temporarily (Schoen, 1996). Patients in hospitals and nursing homes who have regular visits from pets – whether their own or those brought in from various agencies – are more receptive to medical treatment and nourishment. Animals give the patients the will to live. Animals have a calming effect on humans and benefit mental well being, especially with children and the elderly (Schoen, 1996). What experts know

is that animals allow humans to focus, even for a short period of time, on something other than themselves. AAT can help start a conversation, and help one who is struggling against unusual difficulties in learning to speak after speech impairment such as a stroke. People often talk to animals, and share with them their thoughts, feelings and memories. Patients become more active and responsive both during and after visiting with animals. The hospice setting is another place where the use of animals was suggested to assist in patient and staff interactions. One study found that the therapy pet did assist in easing strain and stress. It was noted that patients and visitors often associated the therapy pet to previously owned pets (Chinner & Dalziel, 1991).

American child psychologist Boris Levinson coined the phrase "pet therapy" in 1964, after he had observed that when his dog worked with him during therapy sessions, children were more receptive to treatment (Levinson, 1964). With the animal present, Levinson could join in, establish a rapport, and begin therapy. The pet makes it easier for two strangers to talk. It gives people a common interest and provides a focus for conversation. Interest in the subject dates back to the early twentieth century, but he was the first to write seriously and extensively about it. Health care professionals have since put Levinson's theories into practice in scores of therapeutic settings and their results consistently showed animals can improve morale and communication, bolster self-esteem, and increase quality of life. Pet facilitated therapy, or animal assisted therapy, has been described as an applied science, using animals to solve human problems (Gammonley, 1991). It involves the introduction of an animal into an individual's or group's immediate surroundings, with therapeutic intent. Such a therapeutic intervention can be an interdisciplinary initiative, with nurses playing a key central facilitative role.

Researchers have documented the physiological effect pets can have on humans with animal assisted therapy. In a study conducted at the University Of Pennsylvania School Of

Veterinary Medicine, subjects had their blood pressure taken when they spoke to a researcher (Beck & Katcher, 1999). Then a dog was introduced into the room. The subjects' blood pressure dropped when they petted or spoke to the animal as they spoke with the researcher. In another study of 92 men by Katcher (as cited in Beck & Katcher, 1999), pets were found to better the men's chances of survival. The men were tracked during the first year after a heart attack. One-third fewer men who owned pets died than those who did not own pets. Additional studies involved cardiovascular patients to determine the benefits of AAT. Friedman and Thomas (1995) returned to their one-year survival studies for myocardial infarction patients and studied those enrolled in the Cardiac Arrhythmia Suppression Trial. Dog ownership was a significant contributor to survival status, although overall pet ownership was not. Allen and coworkers (2001) considered pet ownership in relation to stress-induced hypertension in hypertensive patients. Those with pets had a significant decrease in stress blood pressure levels compared with those without pets. All patients in the study were taking angiotensin-converting enzyme (ACE) inhibitors as primary treatment (Allen, Shykoff & Izzo 2001).

A study was implemented with preoperative patients and findings demonstrated reduced stress, positive attitudes, increased postoperative activity and reduced need for pain medication (Miller & Ingram, 2000). The benefit of pet therapy in waiting rooms comforted family members of patients undergoing surgery. It helped distract families who are distressed by their loved one's diagnosis and the stress compounded by the long procedure time. Another special benefit noted was cheerful staff members. Benefits were related to decreased stress and to increased moments of distraction from the tension of their jobs by interacting with the animals. Anecdotal accounts currently continue for using AAT in the critical care and perioperative settings. Cited outcomes were patient joy at being with the animal, increased participation in

activity with the animal present, improved patient mood after pet visitation, and decreased anxiety in the family and patient (Giuliano, Bloniasz, & Bell, 1999).

Family emotional systems often include nonrelatives and pets as significant family members. Cain noted that "people status" is often given to pets as family members. Pets can provide the emotional devotion that persons may be seeking from others. Many family members believe their pets are attuned to the members' feelings. Persons often become strongly attached to their pets through a need for emotional devotion that cannot always be fulfilled by relationships with other humans. Pets tend to be nonconditional and nonjudgmental in their loyalty to their owners (Cain, 1985).

Siegel (1993) tested the hypothesis that pet owners would report fewer doctor contacts than non-pet owners during times of stress. Medicare enrollees (N=938) were studied for a year. It was found that health status, income and pet ownership were major determinants related to contact with the doctor, but pet owners made fewer visits to the doctor.

Several theoretical approaches can be related to AAT. One is the "biophilia hypothesis". E. O. Wilson suggested the biophilia hypothesis (as cited in Kellert & Wilson, 1993). There position was that, throughout most of the human evolutionary development fitness was increased by an ability to hunt animals and locate sources of vegetable food. Man paid attention to animals and the stimulus properties of the environment. The theory does not imply that we have an inborn tendency to maximize the welfare of animals because our survival for many years was dependent on catching animals and killing them for food.

Another theoretical approach that can be related to AAT is social support. The "social support" theory has large volumes of research describing the positive health effects of human social companionship (Lynch, 2000). Animals are a source of social support as indicated by the

number of people who say that the pet is a member of the family or talk to their pet as they would a person, or consider their pet a confidant (Cain, 1985).

Human needs approach is a theory associated with AAT. The goal is to meet a patient's needs by matching the animal best suited to that person (Poleshuck, 1997). Suggested nursing areas for using pet therapy include children and adolescents with disabilities, spinal cord injury patients, and orthopedic clients. In addition to cats and dogs, other therapy animals have been used or suggested, including birds, guinea pigs, fish, and dolphins. The Basic Need Satisfaction Inventory Tool (BNSI) created by Nancy Klein Leidy, PhD (Leidy, 1994) using Maslow's Theory provided the theoretical framework for this study. Maslow's theory contends that as humans meet basic needs, they seek to satisfy successively higher needs that occupy a hierarchy. Dr. Leidy created a twenty-seven item questionnaire using a Likert scale which is divided into 5 subscales addressing physical needs, safety, belonging, self-esteem and self-actualization needs (Leidy, 1994).

In general, research studies and other published material seem to indicate that human/pet animal interaction can have positive effects on human health. Improvements in physical health, reduced risk of cardiac problems, lowered blood pressure and general overall health has been seen. In addition, animals seem to improve social interactions and promote social happiness and harmony for the general population as well as for certain groups such as children with disabilities. Decreased loneliness, improved morale and increased social interaction appear to result from interaction with animals. Psychological improvements have been noted amongst those interacting with animals and the conclusion can be drawn that the mere presence of animals can instigate higher levels of relaxation amongst their human companions. In general it may be justified to accept that those people who interact with pet animals may benefit from

improved physical, psychological and social well being and animals can provide specific benefits for special groups of patients.

Statement of Research Question and Null Hypothesis

Will AAT result in shorter length of stay for hospitalized patients; improve basic needs status and physical outcomes such as blood pressure, heart rate and pain?

The null hypothesis was: There will be no difference in physical or psychological outcomes of patients who receive AAT and those who do not receive AAT during their hospitalization.

Chapter III

Methods

Sample and Setting

A nonrandom convenience sampling was utilized for this research study with a quantitative self-reporting tool. This nonprobability method is often used during preliminary research efforts to get a gross estimate of the results, without incurring the cost or time required to select a random sample (Polit & Beck, 2004). Convenience sampling, of n=30 for the experimental group, was done on an Oncology Unit in one Eastern Michigan Community Hospital. Control group sampling, of n=15 was also taken from the same Oncology Unit in the same Eastern Michigan Community Hospital but did not have any animal contact.

Subjects were adult patients recently diagnosed with cancer within the last 12 months. Inclusion criteria included subjects who were immunocompetent, had no allergies to dogs, no fear of dogs, no recent surgery, or no isolation precaution. They were currently on the Oncology Unit at the Hospital. Subject selection encompassed those individuals who were in private rooms eliminating interference from/to other patients. Patient census list was obtained from the charge nurse to determine how potential subjects would be selected.

Permission to conduct the study was granted by the researcher's university Human Subjects review Committee (see Appendix A), and at the Eastern Michigan Hospital (see Appendix B). Potential subjects were informed that participation in the study was voluntary and that confidentiality would be maintained at all times. No names or identifying codes were used. Potential subjects were informed that there was no anticipated health risk that would be imposed upon them as a result of participating in this study. Subjects were informed that they may withdraw from this study at any time without penalty.

Instruments/Measures

Paper and pencil survey questionnaire was used entitled Basic Need Satisfaction Inventory (BNSI) (Appendix C). The 27-item BNSI asked subjects to rate on a scale of 1 (terrible) to 7 (delighted) how they felt about different items pertaining to their lives. Subjective data in the BNSI tool will be expressed by a mean subscale value. The internal consistency reliability for the total scale was .92 for Cronbach's coefficient α (Leidy, 1994). Cronbach's coefficient $\alpha = .917$ for the total scale in this study.

Demographic Data/Pet History Questionnaire

Demographic data/pet history (Appendix D) and vital sign data (Appendix E) were collected. The Demographic Data/Pet History Questionnaire (see Appendix D) was developed by the investigator to collect health and pet history relevant to the study. The tool consisted of seven demographic questions and two questions related to pet history.

Consent/Release from Responsibility Waiver

Experimental Group participants were requested to sign consent for participation in the AAT study (see Appendix F). In addition, the Experimental Group participants were requested to sign a release from responsibility waiver for the AAT study (see Appendix H). The Control Group participants were also requested to sign consent for participation in the AAT study (see Appendix G).

Procedure/Study Protocol

Data were collected through survey questionnaires and vital sign collection. The survey was distributed to the participants by the investigator on the Oncology Unit in an Eastern Michigan Hospital. The data were collected over a six-month period, March 2005 through August 2005.

The investigator, who verbally explained the purpose of the study to each individual, asked participants if they were willing to participate in this research study. A standardized verbal greeting and explanation was utilized for the experimental group:

Hi. My name is Mary Lynn Zaremba. I am an employee here and I am doing a research study for completion of my Masters Degree in nursing at the University Of Michigan-Flint Campus in the Nurse Practitioner Program. I am doing a study on AAT and patient outcome.

There are multiple parts to this study. First, there is a demographic and pet history form (Appendix D) to be completed, which will take about 5 minutes. Next, your blood pressure will be taken in one arm; pain rating and heart rate will be checked before visitation with the AAT Dog, again approximately 10 minutes during the session and immediately at the end of the session. So, in total your blood pressure, pain rating and heart rate will be checked three times. If there are medical reasons for taking your blood pressure in a certain arm, we will make a note of this and only take your blood pressure in the arm you designate. You are encouraged to participate with the AAT Dog and Trainer. The time spent with the AAT Dog will be no more than 30 minutes. The trainer will do documentation of this encounter. You may ask any questions you like during the session. Finally, there will be a questionnaire consisting of 27 questions, which need to be rated from 1 to 7. Of course, there will be the need for you to sign consent before the session is started. Do you have any questions? Are you interested in participating in this study?

At completion of filling in all of the questionnaires it was stated: "Thank you for your participation and hope that it was a pleasant experience for you."

A standardized greeting was also used for the control group and consisted of:

Hi. My name is Mary Lynn Zaremba. I am an employee here and I am doing a research study for completion of my Masters Degree in nursing at the University Of Michigan-Flint Campus in the Nurse Practitioner Program.

I am doing a study on AAT and patient outcome. I would like to invite you to be in the comparison group of my study. This group is very important to the study because without it the study does not have a way to determine the effectiveness of AAT. There are two groups in the study: the AAT group and the comparison group who do not get the AAT. Both groups are equally important to the study and without both groups the study is considered a much weaker study. Your blood pressure will be taken in one arm; pain rating and heart rate will be checked before completing the questionnaires, again approximately 10 minutes during the time you are completing the forms and immediately when you have completed the forms. So, in total your blood pressure, pain rating and heart rate will be checked three times. If there are medical reasons for taking your blood pressure in a certain arm, we will make a note of this and only take your blood pressure in the arm you designate.

There will be a questionnaire consisting of 27 questions, which need to be rated from 1 to 7. There also is a demographic and pet history form (Appendix D) to be completed, which will take about 5 minutes. Of course, there will be the need for you to sign consent before the session is started. Do you have any questions? Are you interested in participating in this study?

The potential control subjects were asked to complete consent form (see Appendix G). Once, the consent form was completed the control subjects received copies of Appendix C and D to be completed. At completion of filling in all the questionnaires it was stated: "Thank you for your participation and hope that it was a pleasant experience for you."

In addition, Appendix I (animal assisted research study health certificate) was completed by the animal handler before the dog was brought into the Hospital to protect patients, other medical center guests, personnel and the animal.

At a mutually agreed upon time, the AAT Dog visit was arranged with the subjects. A trained volunteer handler for the dog visited each subject's room who gave consent.

Prior to the dog and handler's (experimental group) arrival blood pressure and heart rate were measured electronically in designated arm by a designated assistant and documented (Appendix E). Equipment was up to date on calibration and is maintained every six months by the Biomedical Team within this Eastern Michigan Community Hospital. Pain rating was also collected utilizing a numeric scale of 1-10. Subject's blood pressure, heart rate and pain rating were taken again after the dog had been in the room for approximately10 minutes and again just after the dog had left the room. Total time for dog/subject was not to exceed 30 minutes and was not to be less than 10 minutes. Petting the dog was encouraged. At conclusion of the dog/subject interaction, The Basic Need Satisfaction Inventory tool developed by N. Kline Liedy (1994) was administered (Appendix C).

If subjects had any questions or concerns they could contact this researcher. Name and contact numbers were left. Some subjects had questions and were answered immediately. It was explained, as part of the questionnaire that if this study displays usefulness, AAT might be here when they visit with their family/friends on their next hospital stay.

Data Analysis

Data were entered and analyzed using SPSS for Windows versions 6.0 and 11.0. Excel 2000 was also used for data entry. Descriptive statistics were used to summarize demographic

and pet history reported by the subjects for both the experimental and control groups. Percentages were used to report descriptive data.

Demographic data collected consisted of educational status, marital status, age, gender, racial background and employment status (Appendix D). Blood Pressure, heart rate and pain rating were also collected (Appendix E). Data were analyzed using parametric tests. Independent-sample t-tests (2-tailed) and z-scores were used to determine if there were significant differences in mean scores for the AAT and the control groups. The alpha was set at a level of .05 to determine statistical significance.

Chapter IV

Results

Description of the Sample

There were 51 individuals approached to participate in the study. One refused because of allergy to dogs, two refused because of fear to dogs and three refused just before beginning because of not feeling well enough at the time. Of the 51 individuals approached, 45 individuals (88.2%) met the study inclusion criteria and comprised the sample.

Age of individuals participating ranged from 29-91 and the average was 59.5 years of age. Caucasians (n=42) compiled 93.3% of the participants. A little more than half, 51.1% were retired (n=23). In regards to marital status 62.2% were married (n=28). Distributions for gender displayed 44.4% were male (n=20) and 55.6% were female (n=25). In respect to education 33.3% were high school graduates (n=15). Most owned a pet 62.2% (n=28) and more of these pet owners owned a dog 35.6% (n=16) (see Table 1). All participants, 100% (N=45) were admitted for newly diagnosed cancer in the last twelve months and met the inclusion criteria.

Table 1

Demographic Data/Pet History

Characteristics	Percent
Education	
Less than High School (n=7)	15.6
High School (n=15)	33.3
Some College (n=6)	13.3
Associates Degree (n=9)	20.0
Bachelors Degree (n=4)	8.9
Other-Trade School (n=2)	4.4
Masters Degree (n=2)	4.4
Total (n=45)	100
Marital status	
Single (n=2)	4.4
Married (n=28)	62.2
Divorced (n=5)	11.1
Separated (n=1)	2.2
Widowed (n=8)	17.8
Single, living with another (n=1)	2.2
Total (n=45)	100
Gender	
Male (n=20)	44.4
Female (n=25)	55.6
Total (n=45)	100
Racial Background	
White (n=42)	93.3
Black (n=1)	2.2
Hispanic (n=1)	2.2
Indian (n=0)	0
Asian (n=0)	0
Other (1)	2.2
Total (n=45)	100
Employment Status	
Full time (n=13)	28.9
Part time (n=3)	6.7
Unemployed (n=2)	4.4
Retired (n=23)	51.1
Disabled (n=2)	4.4
Not in the Labor Force (n=0)	0
Other (n=2)	4.4
Total (n=45)	100

Table 1 – Continued
Demographic Data/Pet History

Characteristics	Percent
Do you own a pet?	
Yes (n=28)	62.2
No (n=17)	37.8
Total (n=45)	100
What type of pet do you own?	
Dog (n=16)	35.6
Cat (n=8)	17.8
Bird (n=2)	4.4
No pet (n=19)	42.2
Total (n=45)	100

Descriptive Statistic for Age (Years)

	N	Minimum	Maximum	Mean	Std. Deviation
Age	45	29	91	59.51	16.056

Table 2

Mean and Standard Deviations for Demographic Variables

		N	Mean	SD
Education	Experimental	30	2.30	2.00
	Control	15	1.67	1.05
Age	Experimental	30	61.43	14.58
	Control	15	55.67	18.61
Employment	Experimental	30	3.80	.99
	Control	15	3.13	.92

Table 3

Levene's Test for Equality of Variance and t-test for Equality of Means Independent Sample Test for Experimental and Control Groups

	F	Sig.	t	df	Sig.(2-tailed)
Education Equal variances assumed	7.23	.010	1.145	43	.259
Equal variances not assumed			1.393	42.8	.171
Age Equal variances assumed	.954	.334	1.140	43	.261
Equal variances not assumed			1.050	22.9	.305
Employment Equal variances assumed	.004	.950	2.171	43	.035
Equal variances not assumed			2.235	30.4	.033

Education was statistically significant using Levene's test for equality of variance (F statistic) and Independent Sample t-tests. The two groups are not different in demographic factors except for employment status.

Table 4

LOS for t-Test: Two-Sample Assuming Unequal Variances		
	Variable 1	*Variable 2*
Mean	6.07	6.73
Variance	9.70	6.80
Observations	30	15
df	33	
t Stat	-0.75076	
P(T<=t) two-tail	0.958367	
t Critical two-tail	2.018082	

Comparing Variable 1 (experimental) and Variable 2 (control) mean values shows the p value as being greater than .05. Differences for length of stay (LOS) are not statistically significant. Findings demonstrated LOS was similar for the AAT and control groups.

Table 5

Group Statistics between Experimental and Control Group series of Blood Pressures

	Group	N	Mean	Std. Deviation
SBP1	Experimental	30	134.23	26.523
	Control	15	142.53	23.546
DBP1	Experimental	30	70.03	11.955
	Control	15	73.93	13.499
SBP2	Experimental	30	125.60	25.109
	Control	15	145.20	25.892
DBP2	Experimental	30	69.23	12.724
	Control	15	75.60	13.729
SBP3	Experimental	30	125.00	33.716
	Control	15	144.67	24.636
DBP3	Experimental	30	70.60	13.268
	Control	15	79.00	11.339

SBP1/DBP1 = Before AAT, SBP2/DBP2 = During AAT, SBP3/DBP3 = After AAT

SBP = Systolic Blood Pressure, DBP = Diastolic Blood Pressure

Table 6

Independent Samples Test Using Levene's Test for Equality of Variances and t-test for Equality of Means Blood Pressure for Experimental and Control Groups

		F	Sig.	t	df	Sig. (2-tailed)
SBP1	Equal variances assumed	.394	.533	-1.026	43	.311
	Equal variances not assumed			-1.068	31	.294
DBP 1	Equal variances assumed	.312	.579	-.988	43	.329
	Equal variances not assumed			-.948	25	.352
SBP 2	Equal variances assumed	.100	.754	-2.122	38	.040
	Equal variances not assumed			-2.089	15	.054
DBP 2	Equal variances assumed	.001	.970	-1.344	38	.187
	Equal variances not assumed			-1.293	14	.216
SBP 3	Equal variances assumed	.747	.392	-2.003	43	.052
	Equal variances not assumed			-2.222	36	.033
DBP 3	Equal variances assumed	1.212	.277	-2.096	43	.042
	Equal variances not assumed			-2.211	32	.034

SBP1/DBP1 = Before AAT, SBP2/DBP2 = During AAT, SBP3/DBP3 = After AAT

SBP = Systolic Blood Pressure DBP = Diastolic Blood Pressure

During the AAT the control group had a statistically significant higher SBP than the experimental group. After the AAT the control group had a statistically significant higher SBP (Table 6) and DBP (Table 5) than the experimental group.

Table 7

Blood Pressures, Heart Rate, and Pain Comparison for Experimental and Control Groups

	SBP1	DBP1	HR1	P1	SBP2	DBP2	HR2	P2	SBP3	DBP3	HR3	P3
Z	-1.07	-1.05	-.57	-.97	-1.99	-1.39	.000	-1.6	-2.08	-2.14	-.30	-2.4
Sig.	.284	.294	.571	.333	.046	.164	MD	.112	.037	.032	.763	.016

SBP1/DBP1 = Before AAT, SBP2/DBP2 = During AAT, SBP3/DBP3 = After AAT
HR1 = Before AAT, HR2 = During AAT, HR3 = After AAT
P1 = Before AAT, P2 = During AAT, P3 = After AAT
SBP = Systolic Blood Pressure, DBP = Diastolic Blood Pressure, HR = Heart Rate, P = Pain
MD = Missing Data

During the AAT the control group had a statistically significant higher SBP than the experimental group. After the AAT the control group had a statistically significant higher SBP (Table 6) and DBP (Table 5) than the experimental group. The control group had a statistically significant higher pain rating at P3 than the experimental group. Findings demonstrated heart rates were similar for the AAT and control groups.

Table 8 Basic Need Satisfaction Inventory

Five Subscales from the BNSI for Experimental and Control Groups

	Physical	Safety	Belonging	Self-Esteem	Self Act.
Z	-1.664	-1.775	-2.190	-1.758	-1.135
Sig. (2-tailed)	.096	.076	.029	.079	.257
Mean n = 30	4.3222	5.0667	5.5067	5.1333	4.7389
Mean n = 15	3.8556	4.6222	4.8933	4.8000	4.5000
St. Dev. n= 30	1.12779	1.17003	1.03688	1.17579	1.33311
St. Dev. n = 15	.76081	.96458	.98812	.98289	.89753

Experimental Group, n = 30 Control Group, n=15

The experimental group had a statistically significant higher mean score than the control group for belonging needs. Improvements in the AAT group were supported for belonging basic needs, SBP2, SBP3, DBP3 and P3.

The 27 items from the BNSI were grouped into the following subscales:

- Physical needs: items 1, 2, 18, 19, 21, 25 (items, n=6, mean score)
- Safety needs: items 6, 14, 15, 22, 23, 24 (items, n=6, mean score)
- Belonging needs: items 3, 4, 10, 12, 17 (items, n=5, mean score)
- Self-esteem needs: items 7, 8, 9, 11 (items, n=4, mean score)
- Self-actualization needs: items 5, 13, 16, 20, 26, 27 (items, n=6, mean score)

Chapter V

Discussion

AAT was found to be therapeutic during this study for lowering the systolic blood pressure and diastolic blood pressure after the intervention and lowering the systolic blood pressure during the intervention. Individuals who received AAT reported less pain after the intervention. Oncology patients experience different types of pain and this intervention was documented to be therapeutic. It is possible when blood pressure and pain ratings are lowered this complementary intervention can promote comfort levels for Oncology patients. The results were not significant for shortening length of stay with AAT interventions nor were results significant for change in the heart rate. The lowering of blood pressure and pain rating may suggest enhanced comfort levels for oncology patients by this complimentary medical intervention.

An important finding included Oncology patients in the AAT group reported enhanced satisfaction of belonging needs. This is consistent with Cain (1985) who discusses the importance of family including satisfaction of belonging needs. The unconditional love, which our pets give to us, has been captured in this study. It is possible that Oncology patients felt this unconditional love by the animal regardless of their own physical appearance or other physical attributes such as hygiene or mannerisms. The theoretical approach using human needs helped to clarify the value of AAT. This study helps to continue building knowledge about the value of AAT that began many years ago.

In the past 40 years AAT has been transformed from humble beginnings that were ridiculed to a successful, research based therapy. Nursing has been the leading force behind moving pets into health care institutions. By basing treatment rationale on evidenced based

results, health care professionals have given AAT the legitimate need for acceptance and use. By continuing research we can further legitimize supporting the use of AAT as discreet complimentary health care intervention with responsible stewardship of our resources.

Some conflicting results have been produced, but in general research studies and other published material seem to indicate that human/pet animal interaction can have positive effects on human health. Improvements in physical health, lowered blood pressure and general overall health were seen. Decreased loneliness, improved morale and increased social interaction appear to result from interaction with animals. Psychological improvements have been noted amongst those interacting with animals and the conclusion can be drawn that the mere presence of animals can instigate higher levels of relaxation amongst their human companions. In general it may be justified to accept that those people who interact with AAT may benefit from improved physical, psychological and social well being and animals can also provide specific benefits for special groups in the hospitals.

Implications for Nursing Practice

Nurses have consistently been challenged to find ways of getting patients needs met. This study shows enhanced satisfaction for belonging needs can be met by AAT. The findings about basic needs and AAT are consistent with others who have reported it is important to meet a patient's needs through AAT (Lynch, 2000; Poleshuck, 1997). Staff members reported that it was easier to talk to patients during and after the animal visits. While, family members reported to the nursing staff that it was an especially relaxed and satisfying experience while visiting. Such a therapeutic intervention can be an interdisciplinary initiative, with nurses playing a key central facilitative role. Adult Nurse Practitioners should take a proactive role in advancing AAT in their health care settings.

Alternative Explanations for Findings

Alternative explanations of findings could be that participants were medicated for pain and/or blood pressure at various different times or not at all. They may have had some confusion about the questions asked or been unable to read due to various reasons: medication affecting eyesight, disease process, inability to read, no glasses with them or dementia to name a few. They may have had different co-morbidities that affected their responses. Subjects may have just received further bad news about their illness and may be worried about finances and who is going to take care of everything in their life and at home.

After, the study was completed the trainer became ill and the dog was diagnosed with malignant melanoma. Both are doing well now. It is uncertain if this would have played any effect.

It is possible that measuring tools such as mechanical devices may bias the study. Examples being the use of an automatic blood pressure monitor vs. manual blood pressure and different people collecting data; which would include placement of cuff.

The reliability of the instrument used to gauge the dependent variable or manipulate the independent variable may change in the course of an experiment. A change in the proficiency of a human observer or interviewer has the potential to interfere with reliability (Polit & Beck, 2004).

External validity refers to the degree to which the findings can be generalized to other groups or jurisdictions (Polit & Beck, 2004). There were five different effects that may have affected external validity consisting of:

- Expectancy effects – Patients/subjects may respond differently knowing they were being studied. It is possible there was an expectancy effect in this study.

- Novelty Effect – Because the treatment is new, more excitement may have been reflected in the study. It is possible there was a novelty effect in this study.
- Interaction of history and treatment effect - an external event may interfere with the results during the study. This threat did not occur as far as the researcher could determine.
- Experimenter Effect – The experimenter may unknowingly portray their expectations to the patient/subject or the treatment might have worked because of the person implementing it. It is possible that a different researcher may find the treatment might not work at all.
- Measurement effects – The study completed may not relate to another population of people unless they are exposed to the same type of data collection. Researchers in the future could decrease this effect by using the methods contained in the study.

Limitations

One limitation of this study was the small sample size. There was no power analysis to determine sample size for this study; therefore a type II error may be possible. A larger sample may reveal more statistically significant findings. The participants were a non-randomized, convenience sample done in an Eastern Michigan Hospital. In addition, this study consisted of primarily Caucasians. Other limitations that could be considered were time constraints, days of the week, time during the day, and number of participants to be seen.

This study also relied on self-reporting. The participants may have inadequate recall, thereby answering questions inappropriately. No attempt was made to verify accuracy of information obtained.

Recommendations

Repeating this study with a larger sample and possibly more diverse ethnic background would be beneficial. Changing the study using other surrogate live animals including robotic pets, humanoids and 3-D video simulations may also be a controlled way to introduce and study novel therapies based on insight gained during this study. This may help enhance overall health in vulnerable, fragile and immunocompromised individuals without the possible hazards associated with AAT. Possible hazards associated with AAT could result in bites, scratches and zoonotic infections. Most transmissions can be prevented with good hand washing (Giuliano, Bloniasz, & Bell, 1999). Be sure the dog is insured and vaccinated as appropriate and the next researcher might try different size dogs. The dog used in this study was a chocolate Labrador retriever, who was six-years old. He was very charismatic. People were continually drawn to him and wanted to interact with him while he was in the hospital but not participating in the study.

Be sure the dog handler is responsible for bathing the dog within 24 hours of planned visit, handling animal excrement and maintaining animal on leash at all times. Also, note it is important to be responsible for monitoring the dog's response to people and the environment.

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Appendices

Appendix A

University of Michigan-Flint

Human subjects Review

THE UNIVERSITY OF MICHIGAN-FLINT

OFFICE OF RESEARCH
530 DAVID M. FRENCH HALL
FLINT, MICHIGAN 48502-1950
TELEPHONE: (810) 762-3180
FAX: (810) 766-6791
WEBSITE: http://research.umflint.edu

UNIVERSITY OF MICHIGAN – FLINT
Human Subjects Review

January 25, 2005

To: Janet Barnfather
Nursing Department

From: Marianne McGrath, Chair, Human Subjects Committee

Re: Animal Assisted Therapy and Patient Outcome
(Approval #52/04)

This is to inform you that the human subject review requested for student project "Animal Assisted Therapy and Patient Outcome" has been approved by the Human Subjects Committee. Should you wish to make any changes in the use of human subjects which differ from the recent amendments or original approved proposal, you must inform this committee prior to making these changes. If you are seeking funding for this proposal, it is your responsibility to ensure that your proposed use of human subjects in your funding application is consistent with that approved by this memo.

This approval for your project is valid for a period of twelve months. If your project extends beyond this period (twelve months), please re-submit your proposal for consideration.

Appendix B

Hospital Human Subjects Review

University of Michigan
Flint, Michigan

October 15, 2004

Gentlemen and/ or Ladies:

Please be advised that one of our employees, Mary Lynn Zaremba, is currently enrolled in a course of study with you. Mary Lynn has requested that she be permitted to utilize our facility in conjunction with her thesis.

We have approved Mary Lynn Zaremba to pursue her study here at . with a thesis of Pet Therapy. We do not have any specific limitations which will be in effect regarding this. We have asked Mary Lynn to keep us informed about any special needs which she may have on the project.

Please feel free to contact me at if you have any questions. We look forward to Mary Lynn's efforts in this area and are happy to support her.

Sincerely yours,

Robert W. Gunn, Jr.
Vice President, Human Resources

Appendix C

Basic Need Satisfaction Inventory Tool and Consent for Use of Tool

Appendix C

Basic Need Satisfaction Inventory

Directions: Each person has his or her own way of viewing a situation. In order to help nurses and other health care providers better understand your views about various parts of your life, we would like you to answer the following questions. Please include the feelings you have now-taking into account what has happened in the last year and what you expect in the near future. Read each question and answer that question by writing one number on the line to the left. All of your answers will be kept confidential.

1	2	3	4	5	6	7
Terrible	Unhappy	Mostly Dissatisfied	Mixed	Mostly Satisfied	Pleased	Delighted

How do you feel about? . . . . .

_____1. The physical comfort of your home-heat, water, lighting, ventilation.

_____2. Your level of physical activity.

_____3. Your family life (your wife/husband/other/marriage/children).

_____4. The chance you have to know people with whom you can really feel comfortable with.

_____5. The extent to which you are developing yourself and broadening your life.

_____6. How secure you are from people who might steal or destroy your property.

_____7. The amount of respect you get from others.

_____8. Yourself.

_____9. The way you handle the problems that come up in your life.

_____10. How much you are accepted and included by others.

_____11. The way other people treat you.

_____12. Close adult relatives-people like parents, in-laws, siblings.

_____13. The chance you have to enjoy pleasant or beautiful things.

_____14. The reliability of the people you depend on.

_____15. Your safety.

_____16. How creative you can be.

_____17. The amount of friendship and love in your life.

_____18. Your sex life.

_____19. Your own health and physical condition.

_____20. The amount of fun and enjoyment you have.

_____21. The sleep you get.

Write on the line to the left of each question one of the following numbers.

1	2	3	4	5	6	7
Terrible	Unhappy	Mostly Dissatisfied	Mixed	Mostly Satisfied	Pleased	Delighted

_____22. How secure you are financially.

_____23. How dependable and responsible people around you are.

_____24. The extent to which your world seems consistent and understandable.

_____25. The extent to which your physical needs are met.

_____26. The way you spend your spare time, your non-working activities.

_____27. Your life as a whole.

MEDTAP

August 20, 2004

Mary Lynn Zaremba

RE: Basic Need Satisfaction Inventory

Dear Mary Lynn:

Thank you for your interest in the Basic Need Satisfaction Inventory. I have enclosed a copy of the instrument and you have my permission to use it in your research on Pet Therapy.

Thanks again for your interest, and please let me know if I can be of any further assistance.

Sincerely,

Nancy Kline Leidy

Nancy Kline Leidy, PhD, RN
President & CEO

Enclosure

7101 Wisconsin Avenue • Suite 600 • Bethesda, MD 20814 • Phone 301-654-9729 • Fax 301-654-9864

Appendix D

Demographic Data/Pet History

Appendix D

DEMOGRAPHIC DATA /PET HISTORY

Check all that apply.

1. Educational status:

Less than High School Graduate_____ High School Graduate_____

Some College _____ Associates Degree _____ Bachelors Degree _____

Graduate/Master Degree _____ PhD. _____ Other _____

2. Marital Status:

Single____ Married_____ Divorced_____ Separated_____ Widowed_____

Single, living with another_____

3. Your age_____

4. Sex:

Male_____ Female_____

5. Racial background:

White_____ Black_____ Hispanic_____ Indian_____ Asian_____

Other_____

6. Employment status:

Full time_____ Part time_____ Unemployed_____ Retired_____

Disabled_____ Not in the Labor Force _____ Other _____

7. Do you own a pet now? _____

8. What type of pet do you own? _____

9. Why are you hospitalized at this time? _____

Appendix E

Vital Sign Data

Appendix E

VITAL SIGN DATA

Initial Blood Pressure: Right Arm_____ Left Arm_____

Time: _____ Heart Rate_____

What is you pain Level on a scale from 1-10? With 1 being minimal pain to 10 being the worse pain you have ever had. _____

Second Blood Pressure: Right Arm_____ Left Arm_____

Time: _____ Heart Rate_____

(Note second blood pressure should be 10 minutes after dog has been in room)

What is you pain Level on a scale from 1-10? With 1 being minimal pain to 10 being the worse pain you have ever had. _____

Third Blood Pressure: Right Arm_____ Left Arm_____

Time: _____ Heart Rate_____

(Note third blood pressure should be immediately at end of dog/subject interaction)

What is you pain Level on a scale from 1-10? With 1 being minimal pain to 10 being the worse pain you have ever had. _____

Appendix F

Consent for Participation in the AAT Study

Appendix F

Intervention Group

CONSENT FOR PARTICIPATION IN THE ANIMAL ASSISTED RESEARCH STUDY

I, _____, the patient/legal guardian of _____ consent to my/his/her participation in The Animal Assisted Research Study being done by Mary Lynn Zaremba a Nurse Practitioner Student at the University of Michigan – Flint. I understand that this study is designed to allow interaction between a patient and a specially trained dog. I understand that the purpose of this study is to learn more about Basic Needs being met for patients. I have been informed that the dog will be screened according to health standards and temperament and will meet hospital policy guidelines.

I am aware that my participation in this study should not take more than one hour. As part of this study my blood pressure will be checked and recorded in one arm, including heart rate, and pain rating a total of three different times. I will also fill out two questionnaires. I understand that a prearranged time will be set for this session and that a Pet Therapy Dog, Trainer and Assistant will be present. I understand that my answers will be documented or tape recorded for later use.

I also have been informed that my participation is strictly voluntary and I may withdraw from this study at any time without penalty. Responses will be kept confidential and I understand that I will not be identified in any report based on this study.

I have informed _____ (Charge Nurse) that to my knowledge, I do not have allergies to dogs.

If you have any questions or concerns you may contact this researcher at mzaremba@umflint.edu or name and contact number that is provided below. If this study displays usefulness there is the potential for future animal assisted therapy when you visit with your family/friends on your next hospital stay.

My signature indicates that I have read the document and that I fully understand it.

_____ _____ _____

Signature Date and Time Witness

cc: participant

Mary Lynn Zaremba, BA, HT, RN, BSN
UM Flint Nursing Department
2180 WSW, Room 2180
Flint, MI 48502
(810) 762-3420

Appendix G

Consent for Participation in the AAT Study (No Dog)

Appendix G

Comparison Group

CONSENT FOR PARTICIPATION IN THE ANIMAL ASSISTED RESEARCH STUDY

I, _____, the patient/legal guardian of _____ consent to my/his/her participation in The Animal Assisted Research Study being done by Mary Lynn Zaremba a Nurse Practitioner Student at the University of Michigan – Flint. I understand that the purpose of this study is to learn more about Basic Needs being met for patients.

I am aware that my participation in this study should not take more than one hour. As part of this study my blood pressure will be checked and recorded in one arm, including heart rate, and pain rating a total of three different times. I will also fill out two questionnaires. I understand that my answers will be documented or tape-recorded for later use.

I also have been informed that my participation is strictly voluntary and I may withdraw from this study at any time without penalty. Responses will be kept confidential and I understand that I will not be identified in any report based on this study.

If you have any questions or concerns you may contact this researcher at mzaremba@umflint.edu or name and contact number that is provided below. If this study displays usefulness there is the potential for future animal assisted therapy when you visit with your family/friends on your next hospital stay.

My signature indicates that I have read the document and that I fully understand it.

_____ _____ _____

Signature Date and Time Witness

cc: participant

Mary Lynn Zaremba, BA, HT, RN, BSN
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2180 WSW, Room 2180
Flint, MI 48502
(810) 762-3420

Appendix H

Release from Responsibility Waiver for AAT Study

Appendix H

RELEASE FROM RESPONSIBILITY WAIVER FOR ANIMAL ASSISTED RESEARCH STUDY

I hereby absolve this facility _____and its personnel from any and all liability for any incidents that might injure me, a patient, visitor, or staff member as a result of participating in the animal assisted research study due to my negligence.

Signed: _____ Date: _____

Witness: _____

Appendix I

Animal Assisted Research Study Health Certificate

Appendix I

ANIMAL ASSISTED RESEARCH STUDY HEALTH CERTIFICATE

All animal handlers must turn in an up-to-date Health Certificate on the dog before the animal will be allowed into the building. This form must be completed by a veterinarian not more than six months ago and must indicate that all immunizations are current and that the dog is free of ecto and endo parasites. The Health Certificate is to be turned into the Charge Nurse.

_____ Hospital requires this Health Certificate to protect patient, other medical center guests, personnel and the animal.

This is to certify that _____, owned by _____, has been examined on _____ and was found to be free from disease, parasites, and is in good general health, temperament, is stable, and the animal is up-to-date on all recommended immunizations. Please list immunizations and dates below.

Veterinarian's Signature: _____

Address: _____

_____

Telephone Number: _____ Date: _____