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A Correlational Study Exploring Nurse Work Anxiety and Animal-Assisted Therapy

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OBJECTIVE: The aim of this study was to perform a correlational study to explore nurse work anxiety.
BACKGROUND: Nurses experience work anxiety with chronic stressful situations, high-acuity assignments, and rigorous patient care standards. The purpose of this study was to determine whether animal-assisted therapy during active worked hours would reduce nurse work-related anxiety.
METHODS: Animal-assisted therapy interventions were performed for both day and night shifts. Beck's Anxiety Inventory (BAI) tool was used pre and post intervention. Each nurse interacted with the therapy dog for at least 10 minutes.
RESULTS: Pet-assisted therapy as an intervention for nurses during work reduced work-related anxiety ($t = 5.878$, $P < 0.05$). A Pearson's correlational study displayed a strong positive correlation between the animal-assisted therapy and reduction in BAI scores ($r = 0.7717$, $R^2 = 0.5955$).
CONCLUSION: This prospective study has shown that nurse work anxiety significantly decreased during worked hours of active bedside care when the nurses actively engaged with a therapy dog.

Stress, burnout, and anxiety are common complaints among nurses causing job dissatisfaction, emotional exhaustion, physical exhaustion, and mental depletion.[1] Chronic stress and anxiety impact nurses' ability to remain engaged, nonreactive, and constructive, which may affect the ability to stay in the profession.[2] Given the well-documented nursing shortage, nurse retention through stress reduction activities should be transitioned into routine practice for nursing administration.[3] Nurses often have poor health outcomes, including high rates of depression, anxiety, and obesity, which are associated with stressful work environments.[4] There is substantial evidence that supports the use and practice of animal-assisted therapies (AATs) among student nurses and is shown to be beneficial in decreasing anxiety.[5] Despite strong evidence, AAT for nurses' work anxiety is not implemented as a standardized practice within acute care and more specifically on nursing units. Nurse leaders have a great responsibility to implement measures that cultivate a culture where nurses' potential stress, burnout, and anxiety are being prioritized while conserving limited resources including time.

Animal-assisted therapy also known as animal-facilitated therapy or pet-assisted therapy is the use of trained animals for therapeutic benefit. Animal-assisted therapy with trained certified therapy dogs involves a personalized and structured visit by a volunteer (dog's handler) and the volunteer's trained certified therapy dog. A visit by a therapy dog typically lasts approximately 10 to 15 minutes, with the subject interacting with the therapy dog while the dog is supervised by the handler.[6] Evidence supports physiologic effects of AAT include reduction in heart rate, cortisol level, improvements in blood pressure control, and decrease in immunoglobulin A level.[7] Animal-assisted therapy can be included in the treatment of depression, anxiety, and other psychological diseases by helping with the experience of joy, sense of relief, and relaxation.[7] Animal-assisted therapy is seen to be beneficial for

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healthcare workers in the work setting. In 1 study, emergency healthcare providers (nurses, residents, and emergency physicians) had lower end-of-shift salivary cortisol and anxiety with therapy dog exposure compared with control subjects.[8] These findings suggested that therapy dogs can reduce cognitive and physiological stress experienced by emergency care providers while on duty in the emergency department.

Nurses encounter stressors that can have a negative impact on their psychological well-being. Nurses are at the forefront of patient care, and heavy workloads can leave them overworked and stressed.[9] The demanding nature of the occupation exposes nurses to a higher risk of developing negative mental states such as depression, anxiety, and stress.[8] Nurses often experience a variety of work-related stressors such as long work hours, patient time constraints, inability to meet patient needs, irregular schedules, and lack of professional support. The ongoing strain faced by nurses could have a severe impact on their mental health and personal quality of life.[9] Globally, nursing is one of the most stressful occupations. The mental health management of this profession warrants more attention to identify possible ways to cope with stress, anxiety, and professional pressures. There is a need for theoretically based empirically supported interventions that will create a therapeutic professional nursing environment that decreases work-related anxiety and improves nursing work experiences. Pet therapy is a low-tech, low-cost therapy that improves mood and is meaningful[10] and, when incorporated in nursing units and acute care, can decrease work-related anxiety in nurses. The purpose of this correlational investigative study is to determine whether AAT as an intervention improves work-related anxiety outcomes in RNs in a tertiary healthcare setting and actively working on an inpatient care unit as a patient care provider.

Review of Literature

An electronic search using PubMed and ProQuest databases was conducted to identify peer-reviewed literature published between 2017 and 2021, full text, English, and available online for all searches. For the 1st search, the search terms used include "hospital-based nurses" OR "inpatient nurses" OR "acute care nurses" AND "pet therapy" OR "pet assisted therapy" OR "animal assisted therapy" AND "anxiety" OR "stress" OR "burnout." This initial search led to too many results, but there were many results that used the phrase "pet therapy" and "anxiety reduction." The search was refined and specific regarding the intervention, not necessarily the population. There was also consideration for how to refine the search regarding evaluation measures and added terms related to subjective data collection. The final search yielded 10 results that all seemed to be heavily relate to the intervention, assessment tool, and outcomes. There were few documented level 1 studies reflecting direct care nursing as the population or work-related setting with AAT as the intervention. There were two level 2 studies supporting nursing and the working environment. Those supporting articles focused on animal therapy in patients, but little is available regarding staff perceptions and feelings of anxiety that lessened from working with animals on the nursing unit. The review uncovered few studies that targeted the relationship of nurses working and AAT factors, as defined previously. Furthermore, the evidence available showed inconsistencies in study findings. The review of literature uncovered gaps in literature and evidence related to pet therapy, AAT, canine-assisted therapy, and nurse work anxiety. For the articles that were located and semirelevant, research appraisal was completed using John Hopkins Evidence Level and Quality Guide.[11]

A level IIB cross-sectional research pilot study surveyed staff members working on a cardiovascular step-down unit in an inpatient hospital setting or at a medical clinic located on a university campus and included a representation of the organization's workforce.[10] Outcomes were significant in many of the tested hypotheses, including "visiting dogs will take staff members minds off stress" ($P < 0.001$) and "visiting dogs will help staff members relax" ($P < 0.001$). The article addressed the positive attitudes of nurses and the perception of nurse well-being; it did not implement a pet therapy or AAT program.

A level IIB repeated cross-sectional study consisted of 2 questionnaires for staff members in a Swiss rehabilitation clinic that introduced an AAT program.[12] This study included more than just nursing in the work environment because it included healthcare providers and administrative staff members representing 24.5% of the staff at the clinic (35.9% nurses) in the 1st survey and 37.8% of total staff (16.4% nurses) in the 2nd survey. The positive impact analysis revealed that staff members had high positive attitudes before the implementation of AAT (mean [SD], 5.16 [0.67]), 97.0% stated that AAT enhances the value of the therapeutic concept, and 81.3% of those surveyed thought that the presence of the animals would enrich his/her job. Although this article supports AAT, it did not measure staff anxiety.

A level IA experimental study used a randomized controlled convenience sample of nursing students.[5] The study uses a pre-pre-post-post design, and the sample was divided into 2 groups with participants randomly assigned to an intervention group and a control group. The overall goal was to determine whether AAT reduced anxiety. A multivariate analysis of variance

was conducted and determined a statistically significant difference between the state and trait anxiety of the intervention (n = 45) and control (n = 44) groups, Wilk's $\wedge$ = 0.761, partial η^2 = 0.239, $F_{8,79}$ = 3.103, P < 0.01. A univariate 1-way analysis of variance was completed as well and determined a statistically significant difference for both state, $F_{1,86}$ = 14.031, P < 0.001, partial η^2 = 0.140, and trait, $F_{1,86}$ = 6.647, P = 0.012, anxiety between the intervention and control groups at the time of the posttest. This is one study that measured anxiety, but the population was nursing students, not RNs.

Research Question

The primary research question being investigated in this prospective study is, for nurses working at a Midwest tertiary care center located in Central Illinois, does the implementation of an AAT program reduce nurse work anxiety as measured by Beck's Anxiety Inventory (BAI) tool over a 30-day period?

Methods

This was a prospective study using a convenience sample of direct patient care RNs and LPNs. The intervention was completed in the last quarter of 2021. Approval from the primary sponsoring organizational institutional review board was obtained, and the study protocol as well as participation consent was approved. Direct patient care RNs/LPNs had to be actively working within one of the inpatient units or within one of the medical group's outpatient clinics. Recruitment occurred via advertisement with unit-based flyers and emailing. A power analysis using an α of 0.05 and 95% CI suggested a sample size of 44 or greater would be needed to prevent a type 1 error. The intervention was completed during a 4-week continuous period with 1 daytime intervention and 1 nighttime intervention per week. There were 4 AAT day interventions that ran from 11 AM to 2 PM (3 hours), and there were 4 AAT night interventions that ran from 6 to 9 PM (3 hours). Variable control was accomplished by having the intervention in the same on-site neutral location for all participants and using the same therapy dogs for all participant interactions. The project oversight consisted of 3 nursing research committee members. All the members were Collaborative Institutional Training Initiative program trained and received certification in human subject studies. Cost of the study was minimal because all 3 of the participants volunteered to be present during all the assigned intervention times. The therapy dogs and handlers were also volunteers and assigned from the office of volunteer services.

The focus of this research was to explore the association between selected independent variables and nurse worked anxiety as measured by the BAI tool. Beck's Anxiety Inventory was used because of strong reliability (Cronbach's α = 0.92; test-retest reliability = 0.75),[13] and validity of the BAI was moderately correlated with the revised Hamilton Anxiety Rating Scale (0.51).[13] Descriptive statistics and assumptions were explored. Each is explained in the sections that follow. The statistical program SPSS version 25 (Armonk, New York) and Excel 2016 (Redmond, Washington) were used to conduct all analyses and produce tables.

Results

Descriptive Statistics

Descriptive statistics are provided in Table 1 for variables of interest. There were 45 participants enrolled in the study. The age of the RN ranged from 22 to 62 years, with a mean age of 36.73 years. Most participants were female (95.3%), with 9.97 years as a direct care nurse (range, 25-42 years). Of the participants, 53% were married, 38% were single, and 10% were divorced. Per protocol, each participant had to spend a minimum of 10 minutes with the therapy dog. Most of the participants spent the minimum time of 10 minutes, with the maximum time being 21 minutes, and the average time was 11.52 minutes.

Statistics of BAI Tool

Beck's Anxiety Inventory tool is a 21-item tool with a Likert scale of 0 to 3, with 0 representing "not at all" and 3 representing "severely—it bothered me a lot." A score range between 0 and 21 indicates low anxiety, 22 to 35 indicates moderate anxiety, and 36 and higher indicates potentially concerning levels. All 45 participants completed the survey pre and post intervention. The mean preintervention BAI score was 9.46, with a range of 40. The mean postintervention BAI score was 1.95, with a range of 23. A paired sample t test was completed to answer the primary research question: For nurses working at a Midwest tertiary care center located in Central Illinois, does the implementation of an AAT program reduce nurse work anxiety as measured by the BAI tool over a 30-day period? The full results are seen in Table 2. The outcome was significant for the set α of 0.05 with a 95% CI, t = 5.878, P < 0.05. The null hypothesis was rejected because there is a difference between means. Finally, a Pearson's correlational study was completed and displayed a strong positive correlation between the AAT and reduction in BAI scores (r = 0.7717, R^2 = 0.5955).

A 2nd question explored significance between the independent variables and work-related anxiety. The independent variables of interest were years of nursing,

Table 1. Descriptive Statistics

		Age	Years of Nursing	BAI Score Pre	BAI Score Post
N	Valid	42	43	45	45
	Missing	3	2	0	0
Mean		36.73	9.97	9.46	1.95
Median		31.50	6	8.00	1.00
Mode		27, 30[a]	6, 0.5[a]	8.00	0.000
SD		12.23	10.67	8.35	3.87
Skewness		0.651	1.56	1.75	4.05
Std. error of skewness		0.365	0.361	0.354	0.354
Kurtosis		–0.885	1.69	3.61	20.00
Std. error of kurtosis		0.717	0.709	0.695	0.695
Range		40.00	41.75	40.00	23.00

Abbreviation: Std, standard.

[a]Multiple modes exist; both are shown.

age of the nurse, and marital status. A paired *t* test was completed, and full outcomes are seen in Table 3. The 1st variable, years of nursing, was tested and was not significant for an α of 0.05 and 95% CI, $t = -0.149$, $P = 0.882$. The next 2 variables, age of the nurse and marital status, were tested, and both were significant for an α of 0.05 and 95% CI (age of the nurse: $t = -10.40562$, $P = 0.000$; marital status: $t = 6.085$, $P = 0.000$). The assumption was that younger aged nurses and nurses without companions have higher work-related anxiety, but the null was accepted because both populations were tested separately and failed to prove such assumptions.

Implications

This prospective study was to answer whether an AAT program could reduce nurse work anxiety. This study has shown that nurse work anxiety significantly decreased during worked hours of active bedside care when the nurses actively engaged with a therapy dog for at least 10 minutes during their shift. It can be stated with 95% confidence that there was a reduction in the BAI scores when compared pre and post intervention using a paired *t* test. Similarly, it can be stated, for the correlation between the intervention and BAI scores as seen with the Pearson's correlational study. Goodness-of-fit was accomplished with the R^2 being able to explain 59% of the variable variations.

Limitations and Future Studies

There were several limitations to this study that can be adjusted for future studies. First, the intervention took place in a neutral room off the patient care units, making it difficult for many nurses to participate. The recommendation would be to have the AAT intervention occur on the unit in the staff lounge or break room. The 2nd limitation was how many interventions occurred during the 30-day period. There was 1 day intervention (11 AM-2 PM) once a week for 4 weeks and 1 night intervention (6-9 PM) once a week for 4 weeks, making 8 interventions in all. The recommendation would be to randomize the times and have more interventional events to allow for further analysis of outcomes. Finally, the intervention only included active bedside nurses in direct patient care roles and excluded other nurses such as educators, leaders, and quality departments. The recommendation would be to include all nurses at all levels because stress and anxiety are not limited to the bedside nurse.

Summary

Animal-assisted therapy is becoming a common and familiar practice in both the academic student sector and within medical centers to help manage anxiety,

Table 2. Paired t Test

	Mean	SD	Std. Error of the Mean	95% Confidence Interval of the Difference Lower	Upper	*t*	*df*	Sig. (2-tailed)
Pair 1: BAI score pre and BAI score post	7.511	8.572	1.277	4.935	10.086	5.878	44	0.000

Abbreviations: Sig., significance; Std., standard.

Table 3. Paired t Test: Independent Variables and Work-Related Anxiety

	Mean	SD	Std. Error of the Mean	95% Confidence Interval of the Difference Lower	Upper	*t*	*df*	Sig. (2-tailed)
Pair 1: BAI score pre and years of nursing	−0.326	14.380	2.192	−4.752	4.098	−0.149	42	0.882
Pair 2: BAI score pre and marital status	7.813	8.421	1.284	5.222	10.405	6.085	42	0.000
Pair 3: BAI score pre and age	−26.857	16.717	2.579	−32.066	−21.647	−10.41	41	0.000

Abbreviations: Sig., significance; Std., standard.

depression, and fear in a wide variety of patient populations but is not often studied with frontline staff and direct patient caregivers. Frontline professionals are exposed to unprecedented levels of intensive existential threat requiring systematic, specialized psychological intervention and support.[14] A simple program such as AAT can be one such intervention. One study showed that 91.2% of nurses reported moderate and high levels of anxiety, depression, and fear during the recent pandemic,[15] and defective reflective coping and preventive coping were risk factors for anxiety and posttraumatic stress disorder (PTSD).[16] Animal-assisted therapy is now commonly used for PTSD with reported significant benefits[17] and should be used by organizations for frontline staff and direct patient caregivers during worked hours. Historical studies have shown that animals may serve to lower levels of stress and anxiety,[18] and in return, this would reduce burnout and, potentially, turnover rate. This study was able to explore and explain the relationships between work-related anxiety and AAT. The overassumptions were tested, and outcomes were significant and supportive of such interventions for nurses and direct frontline staff.

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