Animal-Facilitated Therapy Program

Outcomes from Caring Canines, a program for patients and staff on an inpatient surgical oncology unit

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BACKGROUND: Animal-facilitated therapy (AFT) is a complementary medicine intervention. To the authors’ knowledge, no study has investigated the benefits of an AFT program in an adult surgical oncology setting.

OBJECTIVES: The purpose of this study is to assess the effects of an AFT program on patients and staff on a surgical oncology unit.

METHODS: A quasiexperimental design was used for the patient group, and a pre-/post-test design was used for the staff group. The intervention involved the AFT program being fully integrated on a surgical inpatient unit. Outcomes included patient-reported symptoms and quality-of-life (QOL) outcomes for patients, as well as professional QOL for staff.

FINDINGS: QOL indicators improved for all patients, and the level of energy at follow-up was significantly higher in the AFT group after adjusting for baseline. For staff, compassion satisfaction was high and burnout was low.

KEYWORDS
animal-facilitated therapy; professional quality of life; patient outcomes

DIGITAL OBJECT IDENTIFIER
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Animal-Facilitated Therapy (AFT) is the use of trained animals for the therapeutic, motivational, or educational benefit of patients. AFT with dogs involves a visit by a volunteer (called the dog’s handler) and the volunteer’s dog that has been trained and tested for temperament and obedience. A visit by a therapy dog typically lasts about 10–15 minutes, with the patient interacting with the therapy dog while the dog is supervised by the handler.

AFT has been associated with positive effects in many studies (Palley, O’Rourke, & Niemi, 2010; Phung et al., 2017). Comprehensive literature reviews and a meta-analysis found treatment effects in symptoms for patients with autism and medical and behavioral disorders and patients with depression (Matuszek, 2010; Nimer & Lundahl, 2007; Souter & Miller, 2007). AFT has been documented to produce objective and subjective health changes in patients (Barker, Knisely, McCain, & Best, 2005; Charnetski, Riggers, & Brennan, 2004; Marcus et al., 2013).

Psychological variables are often the primary outcome of AFT studies. Pain, fatigue, stress, and mood were studied in patients with chronic pain who received AFT compared with a control group of similar patients who did not receive a visit. Each symptom significantly improved in the AFT group but not in the control group (Marcus et al., 2012). A study of patients hospitalized on an inpatient mental health unit by Nepps, Stewart, and Bruckno (2014) identified significant decreases in depression, anxiety, pain, and pulse after an AFT program, compared to patients in a more traditional stress management group. A study at a large Midwestern hospital identified that patients reported decreased pain, anxiety, and fatigue scores across nine adult inpatient departments following AFT (Phung et al., 2017).

A study of infection rates before and after an AFT program on an inpatient unit found no change in infections, microorganisms, or contagious diseases with the introduction of dogs to a hospital setting (Caprilli & Messeri, 2006). Hospital policies regarding screening and medical clearance for volunteer dogs minimize risks. Although the risks of AFT are minimal, it is important to recognize that not all patients are suitable for this therapy.

A growing body of evidence supports the use of AFT as a complement to cancer treatment. AFT has been beneficial in reducing anxiety and
improving a patient’s perceived view of his or her overall health (Johnson, Meadows, Haubner, & Sevedge, 2008; Muschel, 1984). Patients in a hospice center with an AFT program reported decreased fear, anxiety, isolation, and loneliness (Muschel, 1984); they also reported that interacting with a pet filled needs that were not being met by the human staff. AFT has been shown to be beneficial for patients undergoing chemotherapy in an outpatient setting. Orlandi et al. (2007) compared a group of patients who received AFT with a group who did not receive AFT. In the AFT group, depression improved compared to the control group. Other symptoms (pain, dyspnea, asthenia, and nausea/vomiting) did not change in the AFT group but worsened in the control group (Orlandi et al., 2007). In most studies to date, benefits were assessed immediately before and after a pet therapy visit.

AFT is geared toward patients, but this program showed that staff also may benefit. Research has focused on perceptions of staff toward AFT and found them to be generally positive (Crowley-Robinson & Blackshaw, 1998; Moody, King, & O’Rourke, 2002; Winkler, Fairnie, Gericevich, & Long, 1989). Bibbo (2013) examined the perceptions of staff members toward an AFT program in an outpatient regional cancer center and found that the staff members were generally accepting of the AFT program. To date, no study has assessed the outcomes of an AFT program on staff members in an oncology inpatient setting.

Objectives
The specific aim for the patient group was to assess the effects of an AFT program on psychological (anxiety and depression) variables. The specific aim for the staff group was to assess the effects of an AFT program on work satisfaction in nursing and ancillary staff. A secondary aim for both groups was to gather descriptive responses to assist in understanding the perceived benefits of an AFT program.

**Methods**
This was a prospective pre-/post-test study with two groups of participants: patients following surgery and staff working on an inpatient surgical oncology unit (see Figure 1). Institutional review board approval was obtained, and all patients and staff provided written informed consent.

Patients were eligible for the current study if they were aged older than 21 years, admitted to the surgical inpatient oncology unit, and able to speak and read English. Patients were excluded if they reported an allergy to dogs, required an isolation room, or had a medical need to be in a protective environment room.

Although active within the hospital, the AFT program (hereafter referred to as the Caring Canines program) was not yet implemented on the surgical unit where the study was conducted. The unit is a surgical inpatient unit with patients recovering from abdominal or limb surgery. An initial cohort of consecutive patients admitted to the unit formed the usual care control group of the study. Once the usual care group was completed, the Caring Canines program participants started on the unit and the AFT group began accrual. This sequential group design was deemed the most appropriate means of testing the effects of the intervention, given the practical and ethical constraints involved. A randomized control group design was considered infeasible and inappropriate in that patients are treated in multiple-bed rooms.

For the staff portion, a pre-/post-test design was used. Staff were eligible if they were aged older than age 21 years, worked at least one day shift per week, and were able to speak and read English. Staff were excluded from the study if they reported an allergy to dogs.

**Intervention**
The therapy dogs that are part of the Caring Canines program are all highly trained and carefully selected. Although a dog must be well-trained, temperament is also important. A therapy dog must be outgoing and friendly, actively wanting to interact with all kinds of people. The dog must be confident and able to handle crowds, noises, and hospital-related equipment. The handler

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**FIGURE 1.**
**PROTOCOL FLOW**

**PHASE 1**
- Control group accrual
- Staff baseline assessment completed.

**PHASE 2**
- Caring Canines program starts on the unit.
- Intervention group accrual
- Staff have exposure to the Caring Canines program.

**PHASE 3**
- Intervention group accrual closes.
- Staff follow-up assessment completed.

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“Animal-facilitated therapy is geared toward patients, but this program showed that staff also may benefit.”
works with the patient to assess the level of involvement he or she would like with the dog.

Volunteers and dogs from the Caring Canines program visited the surgical unit four days a week during the study period. Patients in the AFT group received one Caring Canine visit daily. If patients were off the floor for a test, an effort was made to visit the patient later. Regardless of the study arm, patients completed paper-and-pencil measures at the time of consent (one day post-surgery) and at or near the time of discharge.

The intervention for staff was the Caring Canines program being fully integrated on the unit and having repeated exposure to the dogs during a routine workday. Caring Canine visits were planned for Tuesday to Friday weekly, and staff had the opportunity to interact with the dogs either directly (spending some time with them when they were on the unit) or indirectly (seeing them visit with patients even if they did not have direct contact with them). Staff members were assessed at baseline prior to the Caring Canine program being implemented and after the program had been fully functional on the unit for at least six weeks.

Instruments

All patients (AFT and control group) completed an identical baseline questionnaire that included self-report of symptoms, motivation to walk, sense of well-being, and the Patient Health Questionnaire–4 (PHQ-4). The PHQ-4 is a widely used measure of depression and anxiety first developed by Spitzer in 1999 (Kroenke, Spitzer, Williams, & Löwe, 2009). The PHQ-4 is an ultra-brief self-report questionnaire that consists of a two-item depression scale and a two-item anxiety scale. The PHQ-4 has been validated as a brief measure of depression and anxiety in a general population (Löwe et al., 2010). Several descriptive open-ended questions were included on the discharge questionnaire for the AFT group related to perceptions and benefits of the program.

Data Analysis

For patients, differences between baseline and follow-up PHQ-4 scores were evaluated with the paired t tests within each arm. To quantify the effect of the intervention, the differences between the change in PHQ-4 scores (from baseline to follow-up) in the control arm and the change in PHQ-4 scores (from baseline to follow-up) in the AFT arm were evaluated with the two-sample t test. As a supplement to the two-sample t tests, analysis of covariance tests investigated whether the follow-up measures were significantly different between the two groups after adjusting for the baseline score. For staff, differences between the baseline and

**TABLE 1.**

**PHQ-4 SCORES FOR THE PATIENT GROUP (N = 100)**

<table>
<thead>
<tr>
<th>MEASURE</th>
<th>BASELINE</th>
<th>FOLLOW-UP</th>
<th>CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CONTROL</td>
<td>AFT</td>
<td>CONTROL</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
<td>X</td>
</tr>
<tr>
<td>PHQ-4</td>
<td>4</td>
<td>3</td>
<td>3.6</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2.7</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Depression</td>
<td>1.4</td>
<td>1.5</td>
<td>1.1</td>
</tr>
</tbody>
</table>

*Change from baseline to follow-up scores across all individuals in the group

AFT—animal-facilitated therapy; PHQ-4—Patient Health Questionnaire–4

Note. Possible total scores on the PHQ-4 range from 0–12 (0–2 is normal; 3–5 is mild, 6–8 is moderate, and 9–12 is severe anxiety or depression).
six-week follow-up ProQOL-5 subscales were evaluated with the paired t test to quantify the potential effect of the Caring Canine program.

A descriptive analysis was used for the open-ended questions for patients and staff. Responses were reviewed by the research team, and descriptive themes that represent salient findings from the data were generated.

**Results**

**Patients**

One hundred patients enrolled in the study, 50 in the control group and 50 in the AFT group. The control group included 25 women and 25 men with an average age of 58 years. The AFT group included 27 women and 23 men with an average age of 55 years. Of all patients approached about the study, only 19 declined to participate. Reasons for not participating included allergy to dogs (n = 3), too tired or in pain (n = 9), “just not a dog person” (n = 4), or non-English speaking (n = 2); one patient’s roommate did not want a dog to visit in the room. Among those in the AFT group, the majority of patients (n = 26) received three or four visits with a Caring Canine; 20 received two visits.

The primary endpoint for the patient group was the change from baseline in the follow-up PHQ-4 (depression and anxiety subscores) among the control and AFT groups. Significant changes were identified from baseline to follow-up PHQ-4 scores within each group (control, p < 0.001; AFT, p = 0.0003), but the decreases from baseline to follow-up were not significantly different between groups (p = 0.3) (see Table 1). Depression scores were not significant from baseline to follow-up. Anxiety scores changed significantly from baseline to follow-up (control, p < 0.001; AFT, p < 0.001) but were not significantly different between groups (p = 0.9).

The paired t test (pre-/post-test) identified significant changes from baseline to follow-up in level of energy within each group (control, p = 0.003; AFT, p = 0.004), but the decreases were not significantly different between groups. Paired t tests for level of anxiety identified significant changes from baseline to follow-up only in the control group (Δ difference = −0.6, p = 0.003) with the AFT group changes not being significant (Δ difference = −0.1, p = 0.459). Change from baseline to follow-up in motivation to walk, happiness, hopefulness, level of stress, fatigue, pain, and overall sense of well-being were not significantly different between the AFT and control groups (see Table 2).

**Staff**

Forty-one staff members enrolled in the intervention. Staff included clinical and nonclinical personnel. Twenty-six staff members were nurses, with the remainder being ancillary staff (n = 9) and patient care technicians and unit assistants (n = 6). Staff scores on the ProQOL-5 compassion satisfaction and burnout scales were similar and were not significantly different from pre- to postintervention. Compassion satisfaction at baseline was 43 and at follow-up was 43.5 (p = 0.265). Burnout at baseline was 19.8 and at follow-up was 18.6 (p = 0.063).

### Table 2

**Patient-Reported Symptoms and Quality of Life from Baseline to Follow-Up (N = 94)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Control</th>
<th>AFT*</th>
<th>Control versus AFT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Δ X</td>
<td>SD</td>
<td>P1</td>
</tr>
<tr>
<td>Fatigue</td>
<td>−0.5</td>
<td>1.1</td>
<td>0.003</td>
</tr>
<tr>
<td>Happiness</td>
<td>0.4</td>
<td>0.8</td>
<td>0.003</td>
</tr>
<tr>
<td>Hopefulness</td>
<td>0.0</td>
<td>0.7</td>
<td>0.66</td>
</tr>
<tr>
<td>Level of anxiety</td>
<td>−0.6</td>
<td>1.1</td>
<td>0.003</td>
</tr>
<tr>
<td>Level of energy</td>
<td>0.4</td>
<td>0.9</td>
<td>0.003</td>
</tr>
<tr>
<td>Level of stress</td>
<td>−0.6</td>
<td>1.1</td>
<td>0.003</td>
</tr>
<tr>
<td>Motivation to walk</td>
<td>0.4</td>
<td>1</td>
<td>0.019</td>
</tr>
<tr>
<td>Sense of well-being</td>
<td>0.3</td>
<td>0.7</td>
<td>0.019</td>
</tr>
</tbody>
</table>

*Change from baseline to follow-up score across all individuals in the group

AFT—animal-facilitated therapy

Note. P1 is a paired t test of baseline and follow-up scores within each group. P2 is an analysis of covariance test comparing both arms after adjusting for baseline scores.

Note. All characteristics are scored on a scale ranging from 0 (none) to 3 (high).
Descriptive Analysis of Open-Ended Questions

Patient responses to open-ended questions were grouped into three primary themes: a sense of happiness or hopefulness, that the Caring Canines provided a welcome distraction, and that a visit with a Caring Canine gave them motivation and energy they needed during recovery. Patients wrote that a visit with a Caring Canine was “uplifting,” “brought joy,” and “makes [me] full of hope.” They also spoke of how the “dogs are positive, and they helped me to be positive.” The Caring Canines also provided a welcome distraction (“nice break in my day,” “made me feel happy [and] broke up my day”). Patients also spoke of the motivating effect of the Caring Canines program, saying the following:

- “As soon as I heard about the program, I felt better. I wanted to be up in a chair to meet them.”
- “It was so uplifting. It really helped me get up and walking.”

When asked what the benefits of the program were, patients spoke of how much they enjoyed speaking with the volunteer handlers, how the Caring Canines gave them a “connection to home,” and how their family and visitors had benefited from the program.

Staff responses were grouped into three themes: a sense of calming and comfort that lowered stress, a sense of happiness and hopefulness, and that having the program on the unit was a good distraction. Staff mentioned the following:

- “[Caring Canines] was a very positive program for the patients and staff. Seeing the dogs on the unit has put a smile on everyone’s face, no matter the day [he or she is] having.”
- “They make a stressful day better.”

They mentioned that the program “makes me happy to look forward to seeing the dogs come up to our floor. . . . The dogs also give us happy feelings.” Staff also said the following about the program being a good distraction:

- “The [Caring Canines] program gives me something to look forward to.”
- “They bring a calm atmosphere to the nurses’ station.”

Discussion

The current study was the first, to the authors’ knowledge, that assessed the impact of AFT on patients following cancer surgery and on clinical and nonclinical staff who work on a surgical oncology unit. The patient-reported level of energy significantly improved in both groups from baseline to follow-up, and the level of anxiety significantly improved in the control group. Other quantitative findings were not significant for patients or staff. However, qualitative findings revealed that patients and staff viewed the AFT intervention positively. This contradiction between the quantitative and qualitative findings highlights a significant challenge in conducting research on AFT interventions. Although participants reported many positive benefits of the program, measuring those benefits proved difficult, which is consistent with past research on this type of intervention (Johnson et al., 2008).

Several factors may have led to the difficulty in measuring quantitative outcomes from AFT. Patients in the intervention and control groups were recovering from surgery and were getting better each day, making the chance of seeing a statistically significant difference between groups difficult. These challenges highlight the importance of including open-ended questions to measure outcomes. These open-ended questions may provide a more holistic description of the patient and staff experience with this type of intervention.

Two anecdotal findings arose during the study. One was that the authors had not anticipated the importance of the volunteer (the dog’s handler) during the visit. The volunteers were dedicated and experienced and had been involved in the Caring Canines program for several years or more. During the study visits with patients, the volunteers engaged the patients and families in discussion and were a positive presence that cannot be separated from the Caring Canines program. Previous AFT research identified that a dog visit was viewed as equally favorable as a visit with a human among patients with cancer (Johnson, Meadows, Haubner, & Sevedge, 2003).

The second anecdotal finding was the benefit of the Caring Canines program on family and visitors. Family members told the research staff how much they looked forward to the visits and how beneficial the visits were to them because they also were experiencing a stressful time. Several patients even took pictures of themselves with their Caring Canine to send to family and friends who were unable to visit (particularly minor children). This was mentioned by participants as an opportunity to alleviate stress their family was experiencing because they were unable to visit in person. Although these are anecdotal findings, the impact of the volunteer on patient outcomes and the benefits of AFT programs on caregivers warrant further attention.

No patients or staff reported negative feedback from the study; however, several patients declined to participate. It is important to keep in mind that this type of intervention may not appeal to all patients. At the current facility, patients are approached by a member of the volunteer services department and provide written consent to receive a visit from one of the Caring Canines.

The current study was also the first study to assess the benefits of AFT during a period of consecutive days. Past research has shown that patients benefit immediately after a session with a therapy dog (Nepps et al., 2014). Although the quantitative results did not identify improvement, patient and staff open-ended responses were overwhelmingly positive. As such, additional research in this area of support for patients and staff is important.
Implications for Nursing

AFT promotes a healing environment for patients that involves a holistic and humanistic perspective. Nursing’s first use of AFT can be dated back to Florence Nightingale. In her writings, she commented on the benefits of animals on patient care and recovery by stating that a pet “is often an excellent companion for the sick, for long chronic cases especially” (Nightingale & Salotti, 2004, p. 86). A healing environment has the potential to improve the patient experience during oncology treatment.

Conclusion

Staff and patient participants in the current study were overwhelmingly positive about their experience with AFT in an acute care setting. This type of program is most often coordinated by the volunteer services department in the hospital setting. Collaboration between volunteer services and nursing can enhance a healing environment that leads to improved patient outcomes. Future research should explore benefits of AFT with patients and staff in other oncology settings.

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