



# Pilot Study of Animal Assisted Therapy Provided in a Student Run Pro Bono Clinic

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## Abstract

**Background:** Animal assisted therapy (AAT) is therapeutic intervention designed to help patients engage in meaningful life activities.<sup>1</sup> Therapy dogs are used in healthcare settings to engage patients in motion, self-care, mental health, motivation, social responses, pain management, and fine motor skills.<sup>2</sup> While there is research on the benefits of AAT with children and adults in inpatient settings, there is a lack of information on the benefits and satisfaction of AAT in student-run free clinics (SRFC).

**Methods:** Occupational therapy (OT) students, volunteer clinicians, trained therapy dog teams, and patients receiving OT services at the Community Aid, Relief, Education & Support (CARES) SRFC participated in a pilot AAT program. All participants completed a specially designed survey via REDcap immediately following AAT sessions. Surveys focused on the patient's pain and stress levels, benefits of AAT, and patient satisfaction.

**Results:** Ten patients participated in the AAT pilot program alongside thirty-seven students and 4 therapy dog teams. 100% of patients responded therapy dogs helped them reach their goals, 93.8% of handlers and clinicians agreed the dog was a valuable addition to therapy sessions, and 100% of OT students agreed AAT is an important tool for therapists to use in clinical settings. 67.6% of patients reported a decrease in stress and 41.2% of patients who were experiencing pain reported a decrease in symptoms. Students, handlers, and clinicians reported benefits with AAT including range of motion (79.7%), fine motor skills (68.1%), and motivation (68.1%).

**Conclusion:** AAT was successfully integrated into CARES SRFC based on feedback and data collected from participants. AAT had a visible impact on patients, students, handlers, and clinicians. Future research on the use of AAT in a SRFC should include a larger sample size and consider how to better define the specific impact of AAT on populations and conditions commonly seen in a SRFC.

## Introduction

The Medical University of South Carolina (MUSC) Community Aid, Relief, Education & Support (CARES) clinic provides free occupational (OT), physical therapy (PT), and speech-language pathology (SLP) serviced patients with neurologic and musculoskeletal conditions. The CARES clinic is run by the OT, PT, SLP, and Master of Health Administration (MHA) students.

Student-run free clinics (SRFC) have been around for many years and have grown to encompass many disciplines such as OT, PT, SLP, medicine, pharmacy, etc.<sup>3</sup> A systematic review performed by Broman et. al suggests positive patient outcomes associated with SRFC's.<sup>4</sup> Students and patients benefit from the experience in SRFCs.<sup>3,4</sup> Patients in the CARES clinic, who are generally uninsured or underinsured, are able to receive quality care while students obtain

valuable mentored hands-on experience. This makes the students better as healthcare professionals.<sup>5</sup>

Animal assisted therapy (AAT) includes animals in planned, goal-directed, and measurable interventions designed to help a patient improve in their activities of daily living (ADLs) which translate into goal areas.<sup>1</sup> The therapist creates patient-centered goals which are created based on the measurements and observations from the initial evaluation. They use these goals and establish milestones to determine if the patient is making progress throughout their duration in therapy. The therapist creates treatment sessions based on the goals created with the patient and documents the session in the patient's daily note.<sup>2</sup> AAT has been shown to increase a patient's overall satisfaction with treatment and lead to a decrease in perception of pain. AAT also provides a positive stimulus for the patient that breaks up the monotony or fear of upcoming medical visits or procedures.<sup>6,7</sup> In order to achieve these benefits, the therapist must first ensure the patient does not have any allergies, fears, or cultural differences that would become a barrier to successful treatment sessions.<sup>1,2</sup> While studies have shown that AAT can impact the health of children and adults in various healthcare settings, there are no studies on the use of AAT in an outpatient SRFC. The aim of this pilot study was to determine if AAT could be successfully integrated into a SRFC and to review patient, student, and therapist satisfaction with the program.

## Methods

### *Design*

This was a prospective pilot study with a convenience sample of OT students and clients who participated in the AAT program at the CARES student run free therapy clinic. This project was reviewed by the Medical University of South Carolina's Institutional Review Board and was approved as a quality improvement project.

### *Participants*

Data was collected from three groups of participants: 1) patients with a variety of musculoskeletal and neurological illnesses or injuries who were scheduled for weekly therapy sessions at the CARES clinic; 2) first- and second-year OT

students who were scheduled to treat in the CARES clinic during the eight-week AAT pilot program; and 3) licensed OTs who supervise and mentor OT students as well as the therapy dog handlers.

### *Assessments*

Data was gathered via surveys created by authors in REDCap (v11.0.3, Vanderbilt, Nashville, TN). REDCap (Research Electronic Data Capture) is a secure, web-based software platform designed to support data capture for research studies, providing 1) an intuitive interface for validated data capture; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for data integration and interoperability with external sources.<sup>8</sup> The REDCap surveys used 5-point Likert scale questions from strongly agree = 5 to strongly disagree = 1. These questions focused on satisfaction on the program, willingness to participate in treatments with the therapy dog, perceptions about patient goal attainment, and change in perceived knowledge about AAT (online appendix A). The REDCap survey also included open-ended questions to gain an understanding of the students' and clients' overall impressions of the AAT program. Data was also collected through video reflections from students, and video and photos of encounters between patients and the therapy dogs. The patients were also asked to rate their perceived pain and stress before and after AAT sessions using a scale of 0 to 10 (0= no pain; 10=severe pain) (online appendix A). Photos and videos were also taken during the sessions to add to the information gained from this study. All patients who participated in the AAT program signed waivers to allow video and photos. The patients also signed waivers consenting to working with a therapy dog during their treatment session to reduce any potential liability (online appendix B).

### *Therapy Dogs and Handlers*

The AAT handlers and dogs are a part of MUSC's Pet Therapy program, which has 96 teams of handlers and dogs. There is a rigorous certification process prior to being selected to participate in the Pet Therapy program and each

**Figure 1.** Modified jacket worn by dog during animal assisted therapy sessions



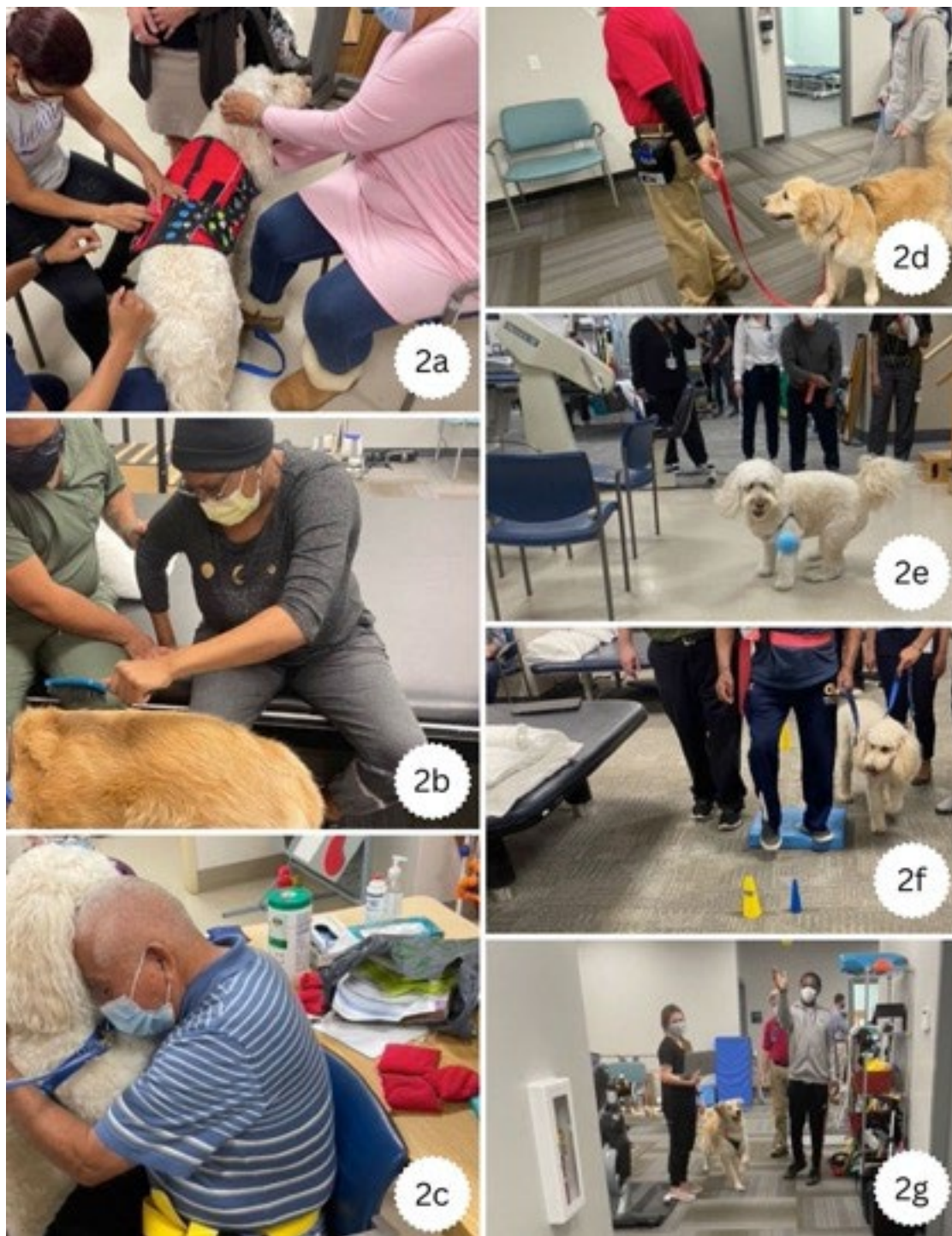
**Table 1.** Treatment activities to support client goals

Treatment activity areas	Activity description
Activities of daily living	Under the guidance of the student therapist and supervising OT, the patient will demonstrate repetitive steps with zippers, buttons, snaps, laces, ties, threading, Velcro straps, and a brush (Figure 2a).
Weight bearing	Weight-bearing can be added to various activities chosen by the student therapists. The patient weight-bears with their affected arm to provide proprioceptive input to facilitate functional movement and use their non-affected arm to participate in activities such as ADL's ball play, petting, or obedience commands (Figure 2b).
Motivation	To lower stress, the patient can sit with the dog for a few minutes in the beginning to pet and get used to the dog. This can be done while the student therapist asks questions about the person's week and current symptoms (Figure 2c).
Balance and walking	To assist a patient in working on their balance, the patient will hold the leash and walk with the dog around the therapy gym. It is important to note, the handler always had a second leash on the dog to remain in control (Figure 2d). The therapist may also set up a bowling activity for the patient for balance. The patient bowls the ball, the dog retrieves, and then the patient resets the bowling pins (Figure 2e).
Motor planning	An obstacle course may also be constructed. The therapist will set up an obstacle course for the patient. The patient can walk through the course while holding onto the leash of the dog, walking alongside the dog, or following the dog. More challenging obstacles can be created to increase the difficulty. Fine motor/dressing activities can also be incorporated into the obstacle course to increase tasks worked on (Figure 2f).
Aphasia	The therapist puts different targets on the floor and then shows the patient a picture of one of the targets. The patient then verbalizes what the photo is and throws the ball to the matching target on the floor. The therapy dog will retrieve the ball and bring it back to the handler (Figure 2g).

*Treatment activities created by the student therapists to support client specific goals during Animal Assisted Therapy sessions. Many of the treatment ideas created for the students were gathered from books by Francese Ristol and Eva Domenec<sup>9</sup> as well as Nancy Lind.<sup>10</sup>*

*OT: occupational therapy.*

**Figure 2.** Animal assisted therapy in action



Figures 2a: patient manipulating jacket on dog; 2b: patient weight bearing on affected arm while brushing with the other; 2c: patient hugging the dog before the session for calming purposes; 2d: patient practicing walking with the dog on a leash to simulate walking his dog at home safely; 2e: patient bowling with the therapy dog; 2f: patient navigating an obstacle course with the help of a therapy dog; 2g: patient tossing a ball towards a designated target.

dog has a national certification as a therapy dog. For this pilot study, there were four different therapy dogs and four handlers assigned to the

CARES clinic. Only one handler and therapy dog went to the clinic per day and participated in all therapy sessions during that evening clinic. The

dogs and handlers visited an average of 3-4 patients twice a week.

First and second-year OT students met with each of the handlers to explain their treatment ideas for using the dog during therapy sessions to address specific patient goals. To fully engage the patients, students and community therapists in the AAT program, the dogs were fitted with special modified jackets which could be used to address fine motor skills and tasks. (Figure 1). Each jacket had various attachments to encourage the client to use their hands for fine motor manipulation. In addition, balls, cones, a brush, hair clips, barrettes, hair ties, beads, buttons, and bandanas were also provided to student therapy teams. The AAT activities were provided for up to 20 minutes of each patient’s therapy session. Students were given example treatment ideas to assist in developing their own treatment activities with the therapy dog (Table 1). Photos and videos were obtained each week to represent student and patient interactions with the therapy dogs and handlers. In addition, students were also asked to record a brief reflection video talking about their time using the dog in treatment sessions and what they learned. For the video reflections, the students were asked to share a 1–2-minute reflection on what they observed during their session with the therapy dog and how they felt their patient benefitted from the interaction. The students submitted their reflections within 24 hours of completing their treatment session.

*Data Analysis*

The student and handler/clinician responses to open-ended questions were analyzed using a thematic analysis. The primary author examined the data from the survey open-ended questions to identify common and repeated themes, topics, ideas and patterns of meaning. The process included familiarization, coding, generating themes, reviewing themes, defining and naming themes, and confirming themes with a second author.<sup>9</sup> The pictures of the interactions are provided to highlight how the patients interacted with the dog and their emotions during the interactions. The results of Likert-scale questions were analyzed using descriptive statistics, frequencies, and percentages in Excel (2018, Microsoft Corporation, Redmond, WA). Patients were asked to

**Table 2.** Patient perceptions

Question	Patients who agreed, n (%)
The activities performed with the therapy dog are helping me reach my therapy goals.	37 (100.0)
The students incorporated the therapy dog well into my treatment session.	37 (100.0)
I enjoyed the addition of a therapy dog into my treatment session.	36 (97.3)
Both the students and the dog/handler facilitated a welcoming and stress-free environment.	37 (100.0)
I enjoyed the variety of the treatments provided for my session today.	37 (100.0)
I would be open to incorporating a therapy dog into my treatment sessions in the future.	36 (97.3)

*Patients’ perceptions of animal assisted therapy program (n=37 patient sessions)*

rate their pain and stress level before interacting with the therapy dog and then again after the session. Both data sets were recorded in the survey the patient filled out every time they interacted with the therapy dog. The changes in both levels were then calculated to see if any decrease was noted. The percentage of treatments sessions where there was a positive change in reported stress or pain was calculated.

**Results**

*Patient Satisfaction with AAT Program*

Ten patients, 8 males and 2 females, participated in the AAT program at CARES with a total of 37 therapy sessions with AAT interactions over 8 weeks of the program. The range of diagnoses included Parkinson’s, distal radius fracture, extensor tendon laceration, olecranon fracture, stroke and traumatic brain injury. Overall, the patients were highly satisfied with the program (Table 2) and levels of self-reported stress and pain were reduced in a high percentage of AAT therapy sessions (Table 3).

*Handler and Clinician Satisfaction with the AAT Program*

There were a total of 32 survey responses from handlers and clinicians: 13 were from handlers

**Table 3.** Changes in reported pain and stress levels

Averaged score for symptoms	Treatment sessions when patients reported stress or pain upon arrival	Treatment sessions when patients reported a decrease in stress or pain at the end of session	Percentage of patients with reported decrease in symptoms (%)
Stress	37	25	67.6
Perceived pain	17	7	41.2

Number of treatment sessions in which a patient reported changes in stress and pain before and after animal assisted therapy based on a 0-10 scale.

**Table 4.** Handler and clinician survey results

Statement	Strongly Agree/Agree, n (%)	Neutral, n (%)	Disagree/Strongly Disagree, n (%)
The dog was a valuable addition to the treatment sessions tonight.	30 (93.8)	2 (6.3)	0 (0.0)
The students were prepared with treatment ideas incorporating the dog	31 (96.9)	0 (0.0)	1 (3.1)
The use of a therapy dog is a valuable resource in an outpatient physical rehabilitation setting	32 (100.0)	0 (0.0)	0 (0.0)
The addition of AAT is helping patients reach their therapy goals.	32 (100.0)	0 (0.0)	0 (0.0)
There were positive interactions between the patient and the dog	32 (100.0)	0 (0.0)	0 (0.0)

Handlers/clinician perceptions of animal assisted therapy program (n=32)  
AAT: animal assisted therapy.

**Table 5.** Themes from handler/clinician surveys

Theme	Quotes
Improved patient motivation	<p>“So much laughter and engagement!”</p> <p>“My patient was more excited to participate in the treatment session.”</p>
Improved patient attention to tasks	<p>“Students were attentive to positioning of patient for dog interaction.”</p> <p>“Patient handling buttons and snaps on the dog vest. They persisted until successful. Very focused attention.”</p>
Improved patient stress and reduced anxiety during sessions	<p>“CARES can be a stressful environment, but dogs help ease the tension.”</p> <p>“I believe tonight I witnessed the patient using the dog to reduce anxiety and/or improve overall mental health. The patient was sitting in the chair discussing his daily activities with the student clinician while holding onto the dog and petting him. He was not instructed to do so but engaged on his own which seemed to improve the way he was feeling.”</p>

Themes about animal assisted therapy program from handlers/clinicians (n=32) from open-ended questions.  
CARES: Community Aid, Relief, Education & Support.

and 19 were from clinicians. Overall, the handlers and clinicians were highly satisfied with the program (Table 4). Several themes emerged from the open-ended questions and both handlers and clinicians felt that the therapy dogs helped increase the patients focus, motivation, and attention during activities. In addition, it was noted that patients had reduced stress and anxiety

while engaging in tasks with the therapy dogs (Table 5).

*Student Satisfaction with the AAT Program*

There were a total of 37 student treatment sessions with the 10 clients who participated in the program. Thirty-seven survey responses were collected after 10 sessions performed by 2nd year OT

**Table 6.** Student survey results

Statement	Strongly Agree/Agree, n (%)	Neutral, n (%)	Disagree/Strongly Disagree, n (%)
I feel that Animal Assisted Therapy is an important tool for therapists to use in clinical settings.	37 (100.0)	0 (0.0)	0 (0.0)
Animal Assisted Therapy is an important addition to the CARES clinic.	35 (94.6)	2 (5.4)	0 (0.0)
My patient benefited from the treatment session with the therapy dog.	35 (94.6)	1 (2.7)	1 (2.7)
I would be interested in learning more on how to incorporate Animal Assisted Therapy into the field of OT.	35 (94.6)	2 (5.4)	0 (0.0)

Perceptions of animal assisted therapy program (n=37 student sessions)  
 CARES: Community Aid, Relief, Education & Support; OT: occupational therapy.

**Table 7.** Themes from student surveys

Theme	Quotes
Patient appeared more relaxed	<i>"I enjoyed watching the client's face light up when she saw the dog. It was obvious the benefit of the dog being here and how it helped her relax a little bit."</i>
Patients were more engaged	<i>"It motivated the patient to work harder to reach the dog."</i>
	<i>"I learned that treatment plans are unlimited, and you can maximize participation from clients by incorporating this unique intervention."</i>
Functional Change	<i>"It helps see functional changes for your client in a natural environment."</i>
	<i>"The dog allowed us to perform activities that would not be functional as functional normally in a clinic (like throwing a ball)"</i>
Breaking the Language Barrier*	<i>"The dog helps break the language barrier - helps with socialization without a translator."</i>
Endless Activities	<i>"Having a dog to interact with can be very meaningful to a patient, there's more you can do with a therapy dog than you would think!"</i>

Themes and statements about animal assisted therapy program from student surveys (n=37 student sessions)  
 \*Due to extenuating circumstances, a translator may not always be available for every appointment.

students and 27 sessions performed by 1st year OT students. Overall, the students were very satisfied with incorporating the therapy dogs into the patient treatment sessions (Table 6). Several themes emerged from the open-ended responses and students felt patients were more relaxed and engaged. Students felt they had a better connection with their patient and learned a new valuable tool to use in future treatment sessions to help expand the treatment activities they did with the patient (Table 7). In both the student

and the handler/clinician surveys, the participants were asked to provide their perceptions of potential benefits of AAT by selecting or checking from a list of potential benefits which included physical and psychosocial client factors (Table 8). Improvements in client range of motion, increased fine motor skills, and increased motivation during therapy sessions received the highest frequency responses.

**Table 8.** Perceived benefits of animal assisted therapy

Benefit	n (%)
Range of motion	55 (79.7)
improved fine motor skills (picking up small objects, using buttons, zippers, pinching)	47 (68.1)
Increased motivation	47 (68.1)
Reduced anxiety/stress	39 (56.5)
Increased socialization	38 (55.1)
Improved overall mental health	37 (53.6)
Increased attention	36 (52.2)
Increased muscle strength	34 (49.3)
Improved self-care (brushing, dressing, etc.)	27 (39.1)
Reduction in perceived pain	10 (14.5)

*Perceptions of handlers, occupational therapy clinicians, and occupational therapy students on patient benefits due to animal assisted therapy (n=69)*

**Discussion**

The results of this pilot study reveal that AAT can be successfully integrated into the services provided at a SRFC and the program had a positive impact on patients, students, handlers, and community volunteers. Our findings highlight that AAT can impact many factors, such as patient’s reported perception of pain, benefits for patient physical and psychosocial health, benefits for patient and student motivation to participate for therapy sessions, and training students in a new treatment modality. Patients and students were able to work on goal areas in more diverse ways which enhanced treatment for both the patient and students.

The results of our study are similar to published studies on the impact of AAT in rehabilitation programs. One study examined the benefits of AAT in a hospital setting for patients who just underwent a total hip or total knee replacement. The study found those who had interactions with the therapy dogs had higher patient satisfaction and lower perceived pain levels.<sup>6</sup> A study by Dr. Marcus et. al 2012<sup>7</sup> also found that patients in an outpatient pain management clinic reported decreased pain and emotional distress after interacting with the therapy dogs at the facility. Both of these studies mirror our results with pain reduction, stress reduction, and higher satisfaction with treatment. Other studies have found patients have improvement in mental health

following engagement in AAT programs.<sup>12,13</sup> Our findings are similar and further show patients can meet therapy goals after engaging with therapy dogs during OT sessions.

There were a several limitations to note from this pilot study. The CARES clinic is open only two nights a week. Due to this schedule, many therapy dog teams who were interested in participating were unable to due to family obligations or because of their jobs. In addition, there was a small sample size of patients with only ten different patients making up thirty-seven treatment sessions. The authors did not include quantitative patient outcome data, which limits discussion of implementation concerns beyond "acceptability" of an AAT in a pro bono clinic. Lastly, a convenience sample of OT students was used for this pilot project and there was no control group to determine the impact of the AAT in comparison to usual or customary therapy sessions.

**Conclusion**

This pilot program provides preliminary evidence on the use of AAT in a SRFC. There are currently 152 SRFC across 31 US states and no current data on how many programs integrate AAT into the services provided at the clinic. Future research on the use of AAT in a SRFC should include a larger sample size and a control group with data collected for clients who do not receive AAT during therapy sessions. In addition, collection of the client should include the client’s performance on standardized outcome measures in order to strengthen claims that patients may have improvements in specific areas of function after participating in therapy which incorporates AAT. Studies should consider how to better define the specific impact of AAT on populations and conditions commonly seen in a SRFC.

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**Figure 3.** MUSC Therapy Dogs involved in the CARES program



CARES: Community Aid, Relief, Education & Support; MUSC: The Medical University of South Carolina.

### Disclosures

The authors have no conflicts of interest to disclose.

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