Implementation of Robotic Pet Therapy in Hospitalized Older Adults on the ACE Unit

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PICO Question

- **P**—In hospitalized, older adults
- **I**—is the utilization of robotic pet therapy more effective than
- **C**—conventional nursing care
- **O**—in the prevention of delirium and its associated behavioral symptoms

Purpose

- To determine if the utilization of robotic pet therapy (RPT) sessions prevent delirium and its associated sequelae, such as agitated behavior, administration of psychotropic medications, and falls in the hospitalized older adult population

- A secondary aim is to measure staff satisfaction with the RPT

What is a Robotic Pet?

- Toy animals that have life-like qualities, including sound and movement

- Most are powered by batteries

- They have sensors that respond to movement and touch

- The pet may blink, move its head and mouth, and produce life-like sounds

- User can adjust the level of response by using an on/off/mute button
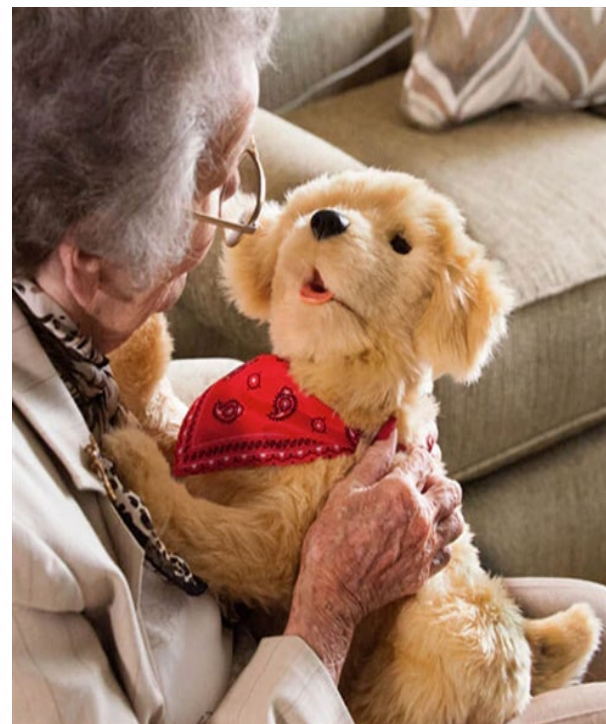
Background

- Delirium is a common problem in hospitalized older adults
  - 1/3 of general medical patients 70yrs or older have delirium
  - Delirium is often present in ½ of these pts on admit and develops during hospitalization in the other half
- Delirium is a significant risk factor for the following complications:
  - Agitation & behavioral problems
  - Increased use of anti-psychotic meds
  - Increased length of stay
  - Discharge to post-acute nursing facilities
  - Staff stress and burnout

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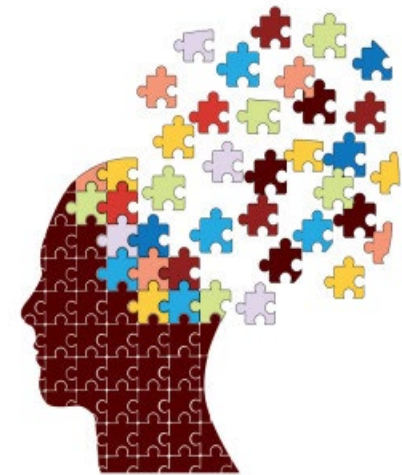
Review of the Literature

- A systematic review of qualitative and quantitative evidence, which included 19 studies concluded that for those patients that engaged with RPT, robotic pets have the potential to minimize loneliness and agitation, increase social interactions, and provide comfort and pleasure.

- Staff and family members frequently reported reductions in anxiety, agitation, and vocalization.

- Several studies reported positive reactions of staff toward the robotic pets.

- Many staff referred to robotic pets as a "tool" for communication, stimulation, and entertainment, and described robotic pets as being part of a "therapeutic toolbox."

(Abbott et al., 2019)

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Review of the Literature

- Hung et al included 29 papers in a review on the use of robot PARO in care settings. Content analysis identified numerous benefits. Main benefits included the following: reduction in behavioral symptoms and negative emotion, improved social engagement, and promotion of positive mood, and quality care experience.

- A three-month study was conducted assessing the effectiveness of the PARO robot in treating patients with dementia-related symptoms. The study concluded that the patients treated with the PARO robot had decreased stress and anxiety, which resulted in a reduction of psychoactive medication and pain medication in older patients with dementia. Researchers found that the intervention with the PARO robot provided a viable alternative for controlling symptoms of anxiety and depression in patients with dementia, often in lieu of using pharmacological modalities.

(Hung et al., 2019; Petersen et al., 2017)

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Methods

- IRB was approved by Nebraska Methodist Hospital prior to data collection and initiation of the study

- Nursing staff was provided education on RPT

- Patients were selected based upon specified criteria

- Consent was obtained from patients for study participation

- Patient received a handout on delirium prevention & RPT information

- RPT sessions were scheduled at approximately the same time each day and lasted for approximately 30 minutes

- Upon completion of RPT, the robotic pet was placed back in its box and left in the patient's room

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Design and Procedures

- Staff caring for the patient who received RPT completed the Agitation Behavior Scale (ABS) pre-intervention and within 1-2 hours post-intervention

- Upon study completion, the following data was collected and analyzed by the investigators:

  - Number of call lights prior to, during, and post- RPT sessions
  - NuDESC score from each shift
  - ABS score pre and post-intervention
  - Number of new prn anti-psychotic meds administered
  - Age/Gender of study participants
  - Type of robotic pet utilized
  - Falls
  - Staff satisfaction/comments obtained via survey monkey

- The robotic pet was single use and was sent home with the patient upon discharge

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Criteria for Patient Inclusion in Study

- Patient must be 65 years or older
- Anticipated length of stay for patient to be a minimum of 3 days
- Patient's NuDESC score must be a one
  - Patient cannot have a negative or positive NuDESC score
- Patient must consent to participation in study
- Patient must be located on the Methodist Hospital ACE Unit

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Population Sample

- 88% of study participants were women

- Ages ranged from 74 to 92 years of age

- Average age of study participants was 81.9

- 65% of patients had a history of dementia

- 1 patient had "mild delirium resolved" noted on discharge summary

- 1 patient was non verbal and 1 was Spanish speaking

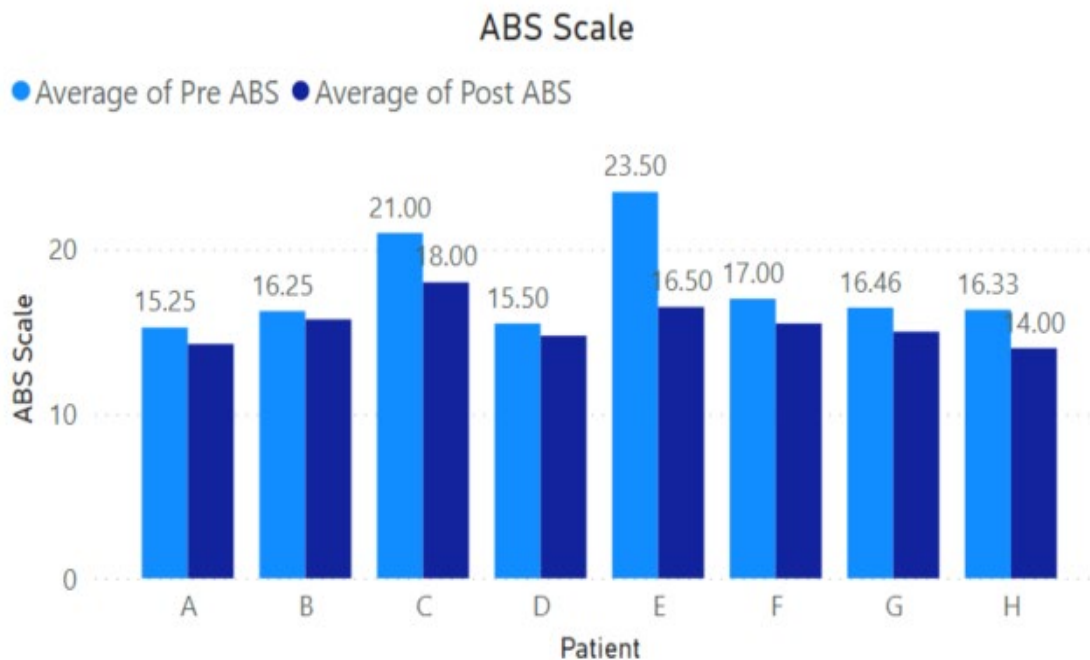- Average number of intervention days was 4.9

Age Breakdown

- 70-75
- 76-80
- 81-85
- 86-90
- 91+

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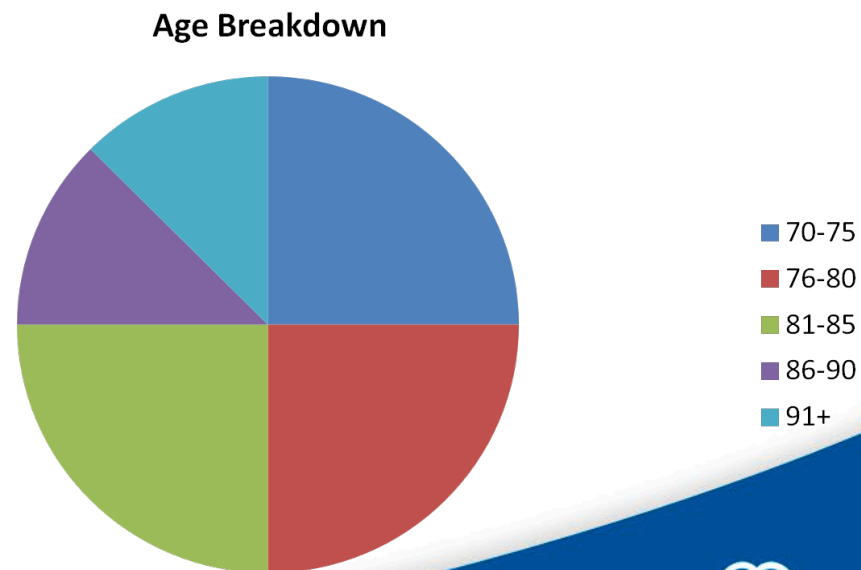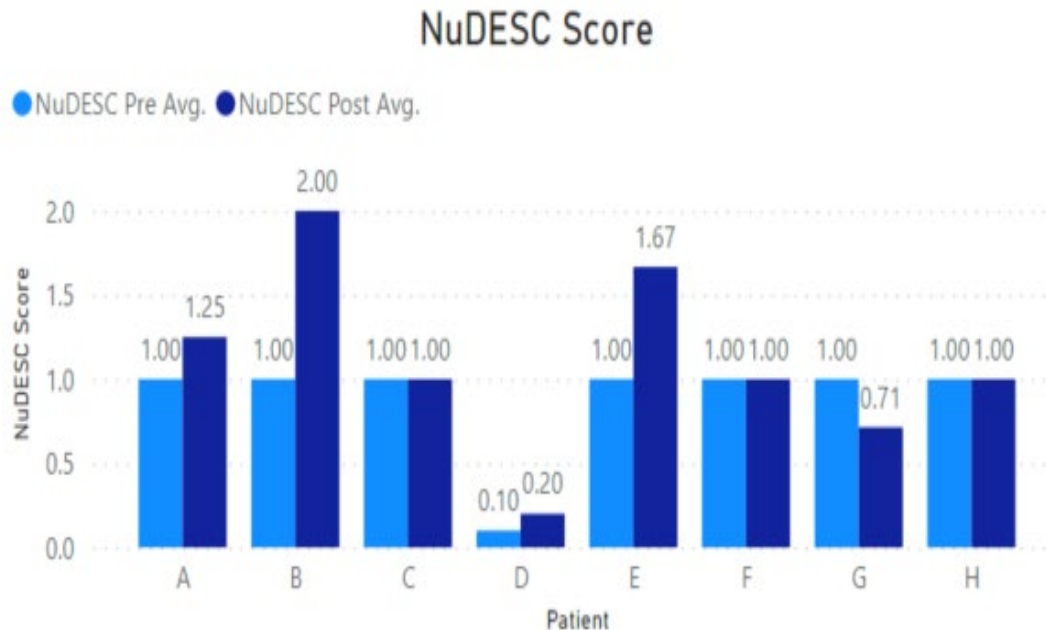
NuDESC Score

FINDINGS

- **Pre** NuDESC Average: 1.00
- **Post** NuDESC Average: 1.19
- **Paired T-test**
  - The NuDESC scores resulted a P-value of 0.597104 which is not statistically significant.
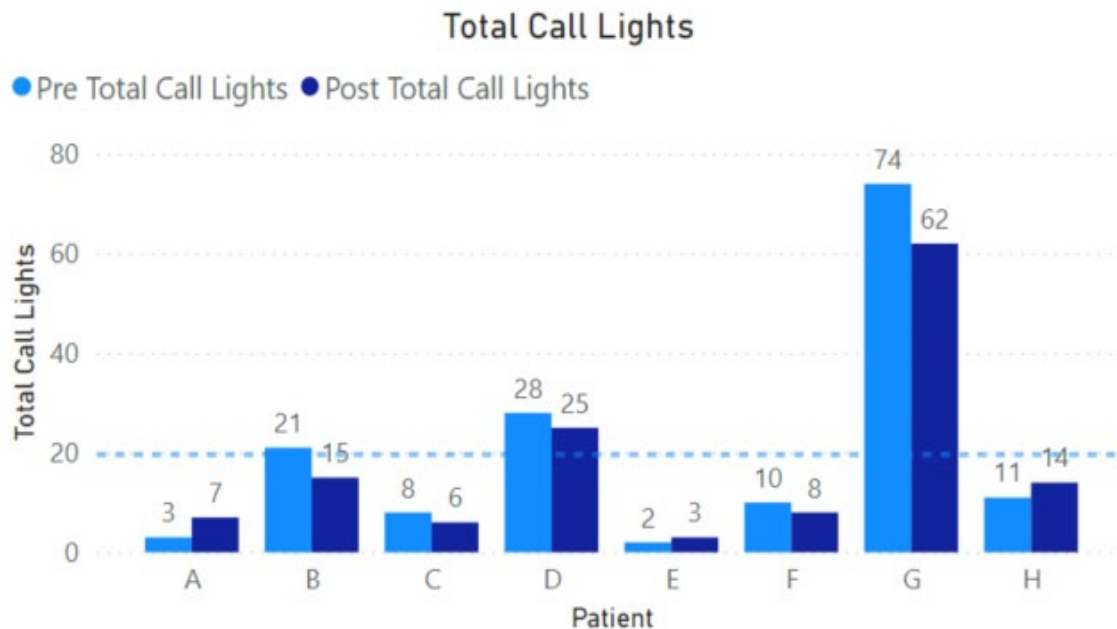
Agitated Behavior Scale (ABS)

FINDINGS

- Average Post ABS score decreased for all patients.

- **Paired T-test**
  - ABS scores resulted a P-value of 0.00028, which is statistically significant.

Total Call Lights- All Alarm Types


Total Call Lights

● Pre Total Call Lights ● Post Total Call Lights

FINDINGS

- The total average of all alarm types pre compared to post intervention decreased from 4.13 to 3.68, but the decrease was not statistically significant (P value = 0.42).

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Patient Initiated Call Lights (Normal Call Type)

Normal Call Lights

● Pre Normal Call Lights ● Post Normal Call Lights
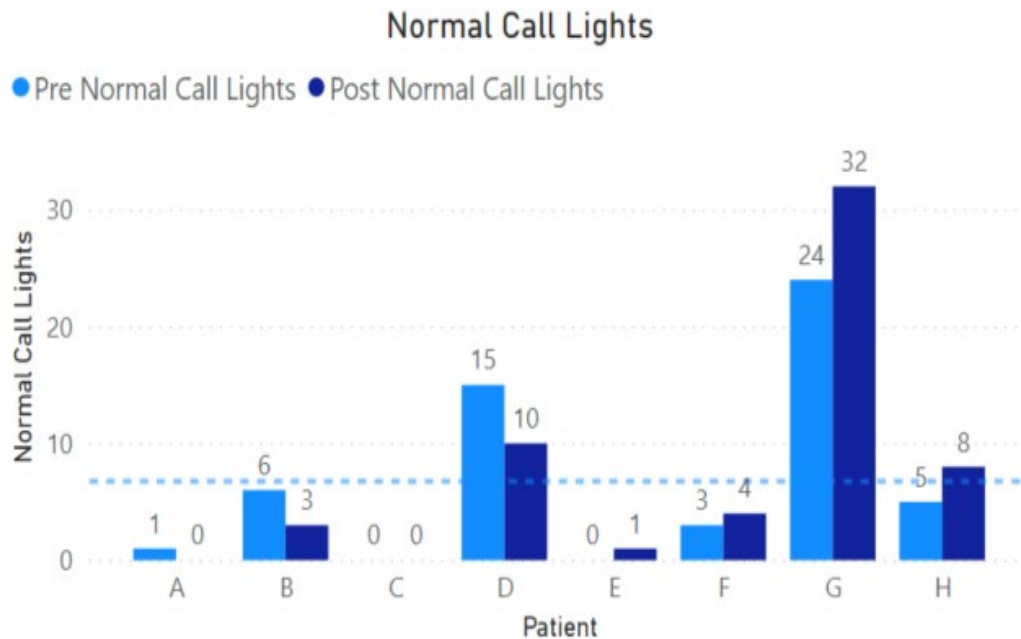
FINDINGS

- The average number of normal calls (patient initiated) pre compared to post intervention increased from 1.45 to 1.56. The difference was not statistically significant (P value = 0.74).

Chair Alarms

FINDINGS

- The average number of CHAIR alarms pre compared to post intervention decreased from 1.63 to 1.42 but the decrease was not statistically significant (P value = 0.49) .
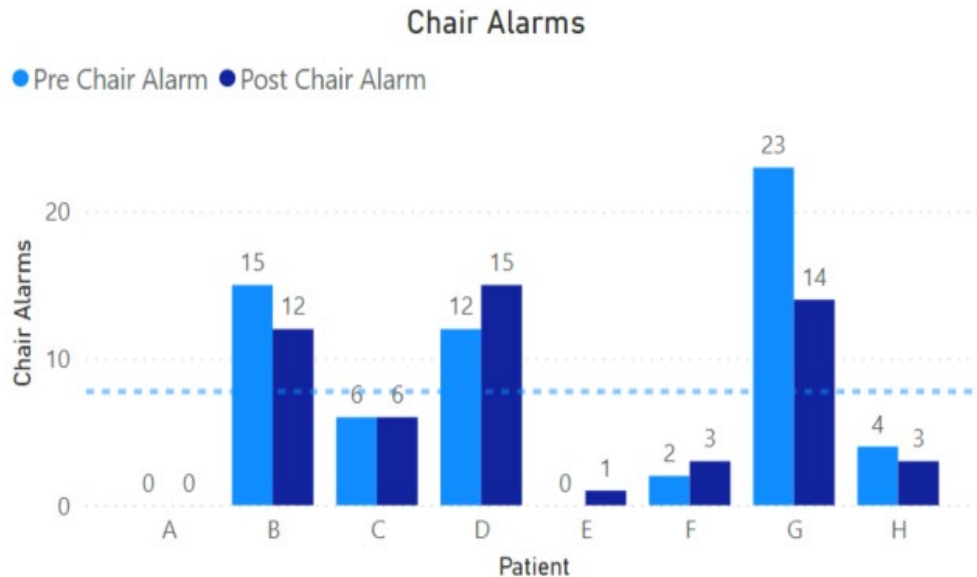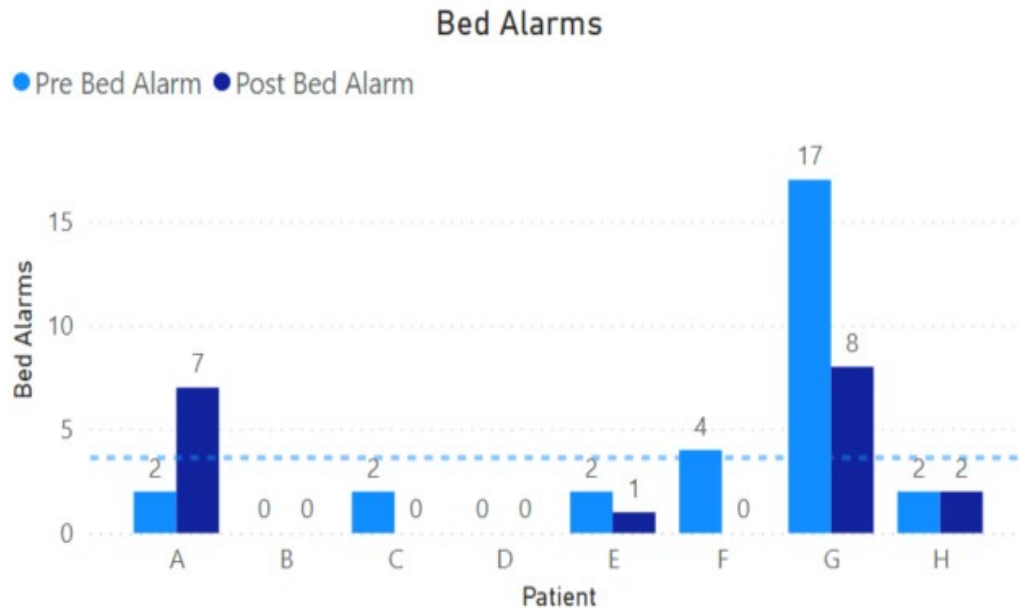
Bed Alarms

FINDINGS

- The average number of BED alarms pre compared to post intervention decreased from 0.76 to 0.47 but the decrease was not statistically significant (P value = 0.25).

Medications

- 0% of study participants required use of new anti-psychotic meds

Falls

- 0% of study participants fell during the study

Staff Survey Results

- "Patients/families loved it. It would be a great addition to the floor."

- "Pet therapy brought calmness and joy to the patients. Great job!"

- "It can be difficult to find a patient with a NuDESC score of 1."

- "Really confused patient really liked it. It seem to calm her and give her something to focus on. Can be a companion buddy for anyone, not just confused patients."

- "On the patients who it "worked on," it was wonderful. For those that didn't care, it seemed like a waste. Recommend starting with a stuffed animal to reduce hospital spending."

Robotic Pet Therapy Survey

AND THE SURVEY SAYS...

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Staff Survey Results

- "It provides comfort and can be soothing to patients that are anxious, confused, or restless. "

- "Allows for patient to have more interaction time with pet versus live therapy animals."

- "It had a mood-lifting and calming effect for patients."

- "It keeps the patients a bit more engaged since the pets are somewhat interactive. Keep using them."

- "I think it is an amazing opportunity to fill a need and help some of our patients while they are hospitalized."

- "It's a good way to distract our patients from pain. A lot of our older population like pets."

- "I think it was a positive distraction for our patients, and I think it would be nice to expand their use to other dementia patients."

Patient/Family Comments on RPT

- Son of patient stated "It will give my mom company when I am not here. When the RPT session ended, the pt stated, "You be good," and the pt kissed the dog.

- Pt would ask her dog, "what do you think?" Her dog would bark, and the pt would respond "I love you."

- Pt named her dog "Happy." When her RPT session ended, pt stated, "he relaxes me. He almost put me to sleep. My puppy gives me warmth and also keeps me company. I love it." The pt was also observed "feeding" Happy some of her whipped cream.

- Patient would respond to her cat every time it meowed, stating, "I know. You want to add your two cents as well."

- Patient's face lit up when she saw the cat and said "It's just fabulous."

- Patient was very nauseated one day and stated, "severe nausea and dizziness ruined my kitty time."

Staff Comments & Observations

- 40% of study participants named their pet
- Physical therapist asked for a cat for a patient on 6n
- 8n RN asked for a pet for a long-term patient on her unit
- MD stated "This is a wonderful program."
- One of patients wanted to participate, but no pets were available.
- RN stated that her patient was very lonely and stated no one came to visit the patient. For two hours after RPT, the pt appeared calm and did not mention wanting to go home. Prior to RPT, pt was tearful and wanting to go home.
- A non-verbal patient actually spoke and named her dog "Abby."

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Results

- NuDESC scores overall, remained the same
  - Patient B scored a 5 on one day, which may skew the data
- Average Post ABS score decreased for all pts
- Overall, the number of chair & bed alarms decreased
- While the number of bed/chair alarms decreased, the normal call lights increased slightly
  - Patients may be more oriented and calling more appropriately
- Overall, patients called fewer times during RPT intervention days
  - 3 patients did not call at all during RPT
- For the majority of patients, the total number of all call lights decreased
- Staff satisfaction survey results stated 100% of staff saw benefits of using RPT on the ACE unit
  - 93.3% felt patients appeared more engaged during RPT
  - 93.3% noticed a positive impact on patient behaviors
  - 66.7% noticed a reduction in their personal stress during the RPT

Study Limitations

- Very small sample size

- Convenience sample

- Limited amount of pets (3 cats/5 dogs)

- Proposed time frame was difficult to adhere to

- Time when RN completed post ABS fluctuated at times

- Lack of inter-rater reliability or inconsistency of scoring because multiple RNs scored the patients' ABS and NuDESC. However, RNs were trained on how to score the patients

- Robotic pets were single use

- Finding patients that met the inclusion criteria was difficult

- Refusal by some patients to participate in study

- Two patients tested positive for COVID and were transferred off unit
    - These patients presented with increased confusion prior to transfer

- Lack of previous research studies on robotic pet therapy in a hospitalized setting

- Patients' length of stay on unit varied

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Implications for Practice

- Robotic pet therapy could be implemented health-system wide in an effort to prevent delirium and behaviors associated with it

- Robotic pet could remain at patient's bedside throughout patient's stay

- Continue to emphasize the benefits of RPT to existing and new staff members
  - Delirium prevention
  - Fall prevention
  - Decrease in patient loneliness
  - Companionship for patients
  - Increased patient engagement
  - Reduction/elimination of use of anti-psychotic meds
  - Potential reduction in amount of call lights
  - Potential decrease in agitation/aggression
  - Potential reduction of length of stay
  - Less staff burnout

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Conclusions/Future Recommendations

- RPT has had a positive impact on patient engagement, decrease in loneliness, improvement in mood, overall decrease in number of call lights, and prevention of delirium as shown by NuDESC scores, ABS scores, & staff/patient/family satisfaction

- Recommend utilization of RPT for patients with positive NuDESC scores

- Recommend additional research to determine if findings could be replicated on other types of acute care units, with a larger sample size

- More research needs to be done to see if robotic pets could be safely disinfected for multiple patient use

- Recommend checking with Joy for All, or like company, to see if purchasing robotic pets in larger quantities will result in reduction in overall cost

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Acknowledgements

Special thanks to the following people:

- Teri Bruening MSN RN-BC CNE
  Vice President, Patient Care Administration, CNO

- Deborah M. Conley, MSN, APRN-CNS, GCNS-BC, FNGNA
  Service Executive, Geriatrics

- Ginger Gifford, MSN, RN, SCRN
  Service Leader, Acute Care for Elders

- Jennifer Promes, MSN, APRN-CNS, GCNS-BC,
  Magnet Program Director, Methodist Hospital

References

- Abbott, R., Orr, N., McGill, P., Whear, R., Bethel, A., Garside, R., Stein, K., & Thompson-Coon, J. (2019). How do "robopets" impact the health and well-being of residents in care homes? A systematic review of qualitative and quantitative evidence. *International Journal of Older People Nursing, 14*(3), 1-42. https://onlinelibrary.wiley.com/doi/full/10.1111/opn.12239

- Hung, L., Liu, C., Woldum, E., Au-Yeung, A., Berndt, A., Wallsworth,   C., Horne, N., Gregorio, M., Mann, J., & Chaudhury, H. (2019). The benefits and barriers to using a social robot PARO in caresettings: a scoping review. *BMC Geriatrics, 19*(1), 232. https://doiorg.methodistlibrary.ide.oclc.org/10.1186/s12877-019-1244-6

- Petersen, S., Houston, S., Qin, H., Tague, C., & Sudley, J. (2017). The utilization of robotic pets in dementia care. *Journal of Alzheimer's Disease, 55*(2), 569-574. doi: 10.3233/JAD-160703