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EFFECTS OF A ROBOTIC CAT ON AGITATION AND QUALITY OF LIFE IN INDIVIDUALS WITH DEMENTIA IN A LONG-TERM CARE FACILITY

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ABSTRACT

Study Objective: The purpose of this study is to determine whether introducing a robotic companion cat into a long term care facility may improve affect and, subsequently, increase participation for residents with dementia, and to determine potential benefits for caregiver roles and relationships with individuals with dementia.

Background: The number of people with dementia is growing, and the behavioral and psychological side effects are negatively affecting the quality of life for these people as well as their caregivers. Additional research is needed to help develop and confirm the use of nonpharmacological treatment for dementia with therapeutic robots.

Study Subjects: Research was conducted at Bridgewater Retirement Community in the complete-care nursing households. We recruited 11 participants, ages 81-95, and all data was collected within each resident's household and common area. All participants had a diagnosis of dementia, resided in a long-term care facility, and relied on assistance from caregivers for some or all activities of daily living.

Methods: Data was collected using a mixed-methods design that combined both quantitative and qualitative measures. Quantitative measures included a pre and post Cohen-Mansfield Agitation Inventory (CMAI) (Appendix A), completed by the household coordinators, as well as weekly behavior log and physiological indexes (heart rate and oxygen saturation) (Appendix B), used to objectively document our observations and interactions with the cat. These measures were used to determine the efficacy of a robotic companion on agitation. Qualitative measures included weekly observational data and staff reports as well as a final questionnaire for the household coordinators to summarize their overall impression of our study on the participants. These measures were used to determine the perceived quality of life of individuals with dementia and their caregivers. Use of psychotropic and pain medication was determined by review of the Medication Dispensing Record after the data was collected .

Results: We found a statistically significant reduction in agitation scores from the beginning of our study to the end, along with a statistically significant increase in oxygen saturation throughout the course of the study. There were no significant changes in heart rate from pre-intervention to post-intervention (Table 1). Qualitative data collected throughout the course of the study were sorted into categories and analyzed for emerging themes. The data for each participant for each interaction over the course of the study is displayed in Figure 1. Overall

themes over the course of the study are displayed in Figure 2. We did not find any significant reduction in the use of psychotropic medications over the course of the study. The household coordinator's responses to the final questionnaire were overwhelmingly positive and described the impact that the robotic companion cats had made on their residents and their caregivers.

Conclusion: The use of robotic companion cats enhances the well-being and quality of life of individuals with dementia living in a long-term care facility by providing companionship and interaction with their environment which helps to reduce anxiety and agitation. Robotic companion cats also reduce the burden placed on caregivers by providing a nonpharmacological intervention for agitation and loneliness. Due to our small sample size, it is still difficult to draw any major conclusions about the use of nonpharmacological therapy as an adjunct to pharmacological therapy in the long term treatment of dementia. Though these effects were not seen across all participants, the researchers believe that the impact these companion cats have had on a few individuals is significant enough to prompt future research and continue exploring other non-pharmacological options for improving the day to day life of an individual with dementia.

INTRODUCTION

Approximately 47.5 million people have dementia with 7.7 million new cases occurring each year. With these projections, the number of people with dementia is expected to nearly triple by 2050, affecting 135.5 million people worldwide.[1] Behavioral and psychological problems affect many individuals who have dementia at some point during the progression of the disorder, which adds to the cost and burden of care.[2] Identified symptoms of dementia include agitation, wandering, and aggression. Common psychological symptoms include depression, anxiety, social isolation, and loneliness.[3] There is a tendency for decreased participation in daily activities and meaningful occupations of people living with dementia. The lack of participation can be attributed to declining abilities, age, and restricted support.[4] Occupational justice for individuals residing in long-term care facilities is a topic which needs closer attention.[5] Health care providers need to be aware and advocate for treatment plans and activities that increase an

individual's well-being, realizing that the activities may not be directly related to performance of an occupation.[6] Staff in long-term care facilities need additional strategies to encourage continued engagement in activities, which may increase the quality of life and well-being for residents.[7] Another benefit of innovative therapies is to potentially improve relationships between patients and caregivers. Society is not properly equipped to deal with the growing dementia population and there is a strong need to develop cost-effective, nonpharmacological intervention strategies that can benefit both individuals and caregivers.[8]

It is well known that traditional animal assisted therapy is effective in reducing and mediating the effects of behavioral problems that affect people with dementia.[9,10,11] Despite knowing the benefits, long-term care facilities are often concerned about negative side effects of animal assisted therapy such as allergic reactions, infections, pet hair, food contamination, biting, scratching, or fear of the animal involved.[12] Interactive therapeutic robots provide a promising alternative to traditional pet therapy and have been shown to have similar benefits. One interactive therapeutic robot named PARO, was designed by a leading Japanese industrial automation pioneer named AIST as a plush robotic harp seal and has been shown to decrease stress and anxiety in treatment groups, resulting in the reduction of psychoactive and pain medication use in elderly clients with dementia.[13] Studies have found that care staff preferred PARO to a non-robotic plush toy and perceived PARO to improve quality of life in individuals with dementia.[14] A similar study involving PARO determined symptoms of agitation and depression decreased in a robot-assisted intervention group and increased in a control group using traditional group therapy.[15] Outcomes of another study involving a therapeutic robotic cat, the JustoCat, suggests the interactive robot appeared to increase well-being, quality of life, and interaction for some individuals with dementia and improved communication with caregivers and relatives.[3]

Hasbro Company developed a similar robotic companion animal called the Joy for All Companion Cat. This interactive robot has built-in sensors that respond to motion and touch. It has realistic, soft fur that looks and feels like a real cat and has cat-like movements and sounds. It is equipped with VibraPurr technology that sounds and feels like real purring.[16] The environment of long-term care facilities could restrict occupational performance or participation for residents. Introducing a robotic companion animal into the environment may improve affect and increase occupational participation or performance for residents with dementia. Therapeutic robots may

offer a cost effective, non-pharmacological intervention to supplement care for the growing population with dementia and their caregivers. A literature review by Mordoch, Osterreicher, et. al, in 2013 identified social commitment robots as a potentially useful therapeutic intervention tool for people with dementia and found a lack of clinical trials and need for additional research.[8]

Therefore, the purpose of this study is twofold: to determine whether introducing a robotic companion cat into a long-term care facility may improve affect and, subsequently, increase participation for residents with dementia, and to determine potential benefits for caregiver roles and relationships with individuals with dementia. We hypothesize that robotic companion cats will enhance well-being and quality of life for individuals with dementia by decreasing symptoms of agitation, and a possibly reducing the burden placed on caregivers. Research questions include the following:

1. Do symptoms of agitation decrease in the presence of a robotic companion cat?
2. Is there a change in heart rate or oxygen saturation with the use of a robotic companion cat?
3. Do caregivers perceive that a robotic companion cat mediates the effects of agitation and anxiety in individuals with dementia?
4. Is the need for psychotropic or pain medication impacted by the use of a robotic companion cat?

METHODS

Participants in the study were individuals with dementia who resided in a long-term care facility and relied on caregivers for some or most activities of daily living. We obtained site permission from Bridgewater Retirement Community (BRC) to conduct this study. We met with the Institutional Review Board at JMU and received approval for our study (IRB Protocol 17-0522, April 20, 2017).

We enlisted the help of the caregiving staff from BRC to provide word-of-mouth information about the study and provided family members with a participation interest sheet. Household coordinators screened for agitation and determined if the resident would benefit from a robotic companion cat. Consent forms were obtained from each participant's Medical Power of Attorney and household coordinator prior to the start of the study. Inclusion and exclusion criteria are detailed in Table 1.

Table 1. Study inclusion and exclusion criteria for participant selection

Inclusion	Exclusion
● Diagnosis of dementia ● Living in a long-term care facility ● Screened by Household coordinator ● Interest/history with cats	● Required skilled nursing ● Advanced dementia affecting ability to interact ● Did not like cats

Potential risks of this study were minimal and the introduction of a companion cat did not pose any physical threat to the participants. There was a possibility that the cat could have brought about unknown psychological effects to the participant's, including depression, anxiety, or agitation. Although we did not intentionally mislead any of the participants as to the mechanical nature of the robotic cat, some participants did perceive it to be a live animal.

Data Collection

Research was conducted at BRC in 5 complete-care nursing households. Each household contained approximately 20 residents, with ages ranging from 81-95 years. We recruited 11 participants, and all data was collected within each resident's household and common area. Ten of the participants were female and one was male. After participants were selected, they were assigned pseudonyms to de-identify personal information. Data was continuously collected over the course of 6 weeks by staff, along with visits twice weekly by the researchers.

The data was collected using a mixed-methods design. Quantitative measures included a pre and post Cohen-Mansfield Agitation Inventory (CMAI) (Appendix A) that was completed by the household coordinators, as well as a researcher-assembled weekly behavior log, which was evaluated for intraobserver reliability prior to beginning the study, and physiological indexes (heart rate and oxygen saturation), to objectively document observations and interactions with the cat (Appendix B). These measures were used to determine the efficacy of a robotic companion on agitation. Our qualitative measures included weekly observational data and staff reports as well as a final questionnaire for the household coordinators to summarize their overall impression of our study on the participants. The qualitative measures were used to determine the perceived quality of life of individuals with dementia and their caregivers.

Use of psychotropic and pain medication was determined by review of the Medication Dispensing Record (MDR) as reported by nursing support staff. After completion of data collection, the MDR was reviewed.

Data Analysis

Pre and post-test measures were analyzed using parametric t-tests, and Wilcoxon Signed Rank tests to determine relationships between physiological measures and clinical observations using the Statistical Package for the Social Sciences, version 24. The qualitative data from the weekly behavior logs were analyzed using NVivo computer program with a phenomenological design to sort comments into pre-determined thematic categories, and a constant reevaluation of data to determine any additional emerging themes. The themes recognized included: interaction, acknowledgment, companionship, compliment, sentiment, need for prompting, no interaction, and aggression (Table 2). The researchers also conducted a semi-structured interview of support staff and included questions regarding perceived benefits, risks, and observations of interactions with the Companion Cat. Table 3 outlines the our assessments conducted throughout the course of the study.

Table 2. Examples of themes that emerged upon analysis of observational data collected during each interaction using weekly behavior logs.

Emerging Themes	Example
Interaction	Give-and-take conversation Responding when the cat meows Petting the cat
Acknowledgement	"Hi kitty!" "That's my kitty" Reaction when cat is presented
Companionship	Sitting with cat on lap Stating the cat is good company
Compliment	"You're a pretty kitty" "She is so sweet!"
Sentiment	Naming the cat "Hello my baby!"
Need for prompting	Need for orientation to the cat for interaction
No interaction	No interest in the cat Too tired to interact "That's not my cat"
Aggression	Threatening or trying to harm the cat

Table 3: Overview of assessments throughout the course of the study.

Type of Assessment	Pre-Test	Mid-Test (2x)	Post-Test
Clinical Assessments	ID: Physiological Measures & Clinical Observation	ID: Physiological Measures & Clinical Observation	ID: Physiological Measures & Clinical Observation
Behavioral Assessments & Questionnaires	SS: CMAI ID: Weekly behavior log	ID: Weekly behavior log	SS: CMAI, Interviews ID: Weekly behavior log
Chart Review			Review of Medication dispensing record

Key: ID = Individuals with Dementia, SS = Support Staff, CMAI= Cohen-Mansfield Agitation Inventory

RESULTS

Quantitative

Agitation Data, CMAI:

Researchers evaluated the data list for normative data using a histogram and boxplot. No outliers were found, and the histogram fit into a normal curve. A paired sample t-test was used to analyze the data and significance was found: $t(10) = 5.791$, $*p < 0.05$ (Table 4).

Heart Rate:

Researchers evaluated the data list for normative data using a histogram and boxplot. No outliers were found, and the histogram fit into a normal curve. A paired sample t-test was used to analyze the data and no significance was found: $t(10) = 0.277$, $p > 0.05$ (Table 4).

O2 Saturation:

Researchers evaluated the data list for normative data using a histogram and boxplot. No outliers were found, and the histogram fit into a normal curve. Researchers analyzed the data using a paired sample t-test that was not significant. Due to missing data in the set, the assumptions of a paired sample t-test were broken. Researchers ran a non-parametric Wilcoxon Signed Rank Test. Results of the Wilcoxon Signed Rank Test was significant for oxygen saturation, $z(10) = -2.049$, $*p < 0.05$ (Table 4). Due to inadequate data collection, one participant was not included in our statistical analysis.

Table 4. Statistical analysis of the effects of robotic companion cat on agitation, O2 saturation, and heart rate.

Variable	Statistical Test	DC Points	Statistic	p-value
Agitation	Paired t-tests	Pre, Post	t= 5.791	*< 0.05
O2 Saturation	Wilcoxon Signed Rank Test	Pre, Mid, Post	z = -2.049	*< 0.05
	Paired t-tests		t = -2.095	>0.05
Heart Rate	Paired t-tests	Pre, Mid, Post	t= -0.277	>0.05

DC = data collection

Qualitative

Qualitative data collected throughout the course of the study were sorted into categories and analyzed for emerging themes. These themes include: interaction, acknowledgment, companionship, compliment, sentiment, need for prompting, no interaction, and aggression. The data for each participant for each interaction over the course of the study is displayed in Figure 1 and Table 5. Overall themes over the course of the study are displayed in Figure 2 and Table 5.
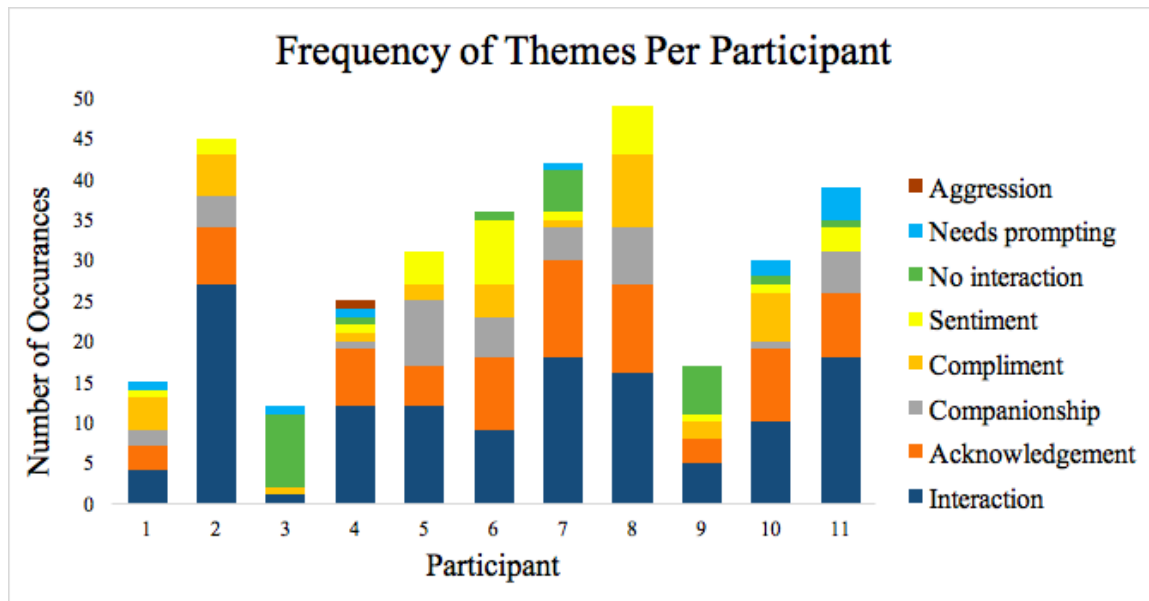

Figure 1. Frequency of themes recorded from qualitative data over the course of the study per participant

Table 5. Frequency of themes per participant and total values.

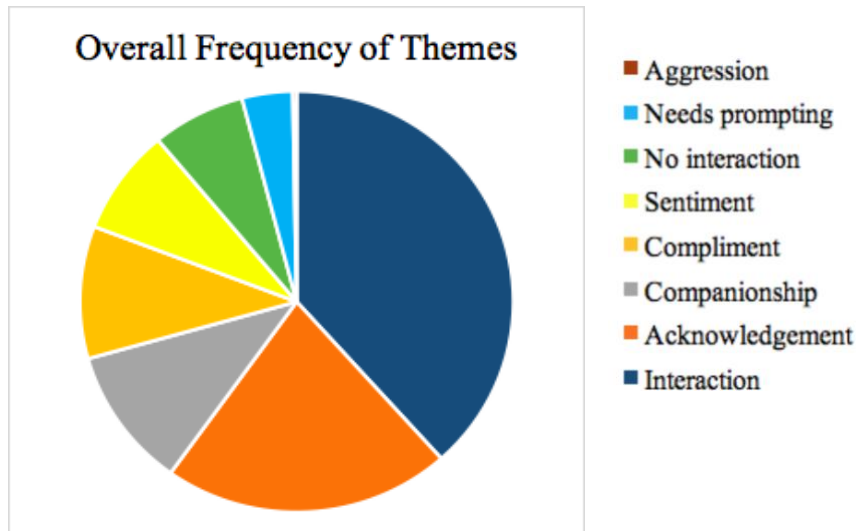| THEMES	RESIDENTS											Total
	1	2	3	4	5	6	7	8	9	10	11	
Interaction	4	27	1	12	12	9	18	16	5	10	18	132
Acknowledgement	3	7	0	7	5	9	12	11	3	9	8	74
Companionship	2	4	0	1	8	5	4	7	0	1	5	37
Compliment	4	5	1	1	2	4	1	9	2	6	0	35
Sentiment	1	2	0	1	4	8	1	6	1	1	3	28
No interaction	0	0	9	1	0	1	5	0	6	1	1	24
Needs prompting	1	0	1	1	0	0	1	0	0	2	4	13
Aggression	0	0	0	1	0	0	0	0	0	0	0	1

Figure 2. Overall frequency of themes recorded for all participants.

Household Coordinator's Overall Impressions

The household coordinator's responses to the final questionnaire were overwhelmingly positive and described the impact that the robotic companion cats had made on their residents and their caregivers (Table 6).

Table 6. Quotes from the Household Coordinators about the Overall Impact of the Study

Quotes
"I have noticed decreased burden on the staff because of the cats. For example, Resident 6 used to call out all of the time saying "help, help, help," and now that I am thinking about it, I have not heard her say that for a long time now. The cat calms her when she has it."
"Resident 1 usually takes longer to eat than some of her peers and is often the only one at the dining room table. We gave her the cat during that time and it has helped her not to feel so lonely. It truly acts as a companion for her."
"The benefits that I have seen for Resident 5 is that she seems to be more comfortable and hasn't been getting as lonely. It's even like she feels like a mother again. She is so nurturing of the cat."
"When Resident 11 is agitated, we can help get her to the chair and give her the cat and she calms right down."
"I tell you, I think the reason we have had such a decrease in behaviors and problems with Resident 2 is because of the cat. She used to be very agitated when she was in a skilled nursing facility, and I think that this cat has helped her transition to long-term care."
"On one instance we gave Resident 5 the cat because she wanted her children to come pick her up so that she could go home. She was sad that we weren't allowing her to leave. She was given the cat and instantly started smiling and wanted to show everyone her pet."
"I was concerned that the residents and staff may get tired of the cats, but it hasn't happened yet! The study went even better than expected."

DISCUSSION

"Sweet baby, everybody loves you." "Oh, my kitty!" "She is a lot of company." "We love each other." These are a few examples of commonly heard statements noted in our weekly behavior logs. Overall, we found that the majority of residents interacted and bonded with their robotic companion cat over the course of the study. The use of a robotic companion cat significantly affected the quality of life and mediated the effects of agitation and anxiety on the majority of individuals with dementia who participated in this study.

Themes

Using the data and observations from the 6 week study, researchers found that interaction and acknowledgement of the robotic companion cat were the most prevalent themes that emerged. Most participants engaged in a give and take relationship with their robotic companion cats and were often found having conversations in response to the movements and sounds from their cat as well as acknowledging the companion cat. There were times when the researchers

would have to prompt the residents to pet the cat, since the cats were programmed to respond to physical touch only. The participants were unaware of this fact and would mention that the cat has not interacted with them in a while. Upon stimulation of the cat, the participant would have increased acknowledgement, interaction, and positive regard towards the cat.

The themes of expressing sentiment and compliments towards the cats were also commonly observed throughout interactions with the participants. Many of the participants named their companion cat and referred to them with terms of endearment. Most of the participants referred to their companion cats using positive descriptors and seemed to associate positive feelings towards their cats.

Loneliness and lack of companionship are common in long-term care facilities and contribute to a poor quality of life. The robotic companion cat provided evident companionship for the participants in the study. Researchers often arrived to the participants households finding the cats in their laps, and during the weekly behavior logs would often note comments stating how much company the cat was providing them. Staff would also report how much the participants loved their cats and described the strong bond that many of them had formed with their cats. When the cat was not already in the residents lap on arrival, introduction of the cat would prompt an overwhelmingly positive response welcoming the cat with a change in posture and affect.

For the "no interaction" theme, we found that the reason for the lack of interest varied from participant to participant. There were a few participants who consistently did not want to interact with the cat throughout the course of the study. This may be due to a participant's past experience with cats, and their previous opinions on cats. For example, one participant admitted to liking cats, but in her experience, she believed cats should be exclusively outdoors. In this case, she was not open to having a cat in her room or providing the cat with any attention or care. Other participants had no interaction due to their physical state at the time of data collection. For example, a few participants stated that they were "too tired" to interact with the cat at the moment, despite enjoying its company and interacting with it at previous visits.

The theme of aggression was rarely observed amongst participants, and only one incident was reported over the course of the study. When the support staff was asked about the incident, they stated that the participant attempted to harm the cat and they attributed this incident to a recent change in psychotropic medications due to the worsening of her disease process.

Introducing the cats in long-term care encouraged interaction amongst participants and caregivers and provided an opportunity to have meaningful interactions and improved participation in daily activities.

Agitation

Overall, there was a statistically significant decrease in agitation scores from the beginning of the study to the study completion. These scores were calculated based on the CMAI filled out by the household coordinators regarding each participant. Scores taken before the introduction of the intervention were compared to scores post-intervention to allow for insight into the overall effects of the robotic companion cat on overall agitation. These scores decreased in the majority of the participants and our findings were consistent with the household coordinator's overall impression, quotations seen in Table 6.

O2 Saturation and Heart Rate

There was a statistically significant increase in oxygen saturation over the course of the study (Table 4). We believe that the increase in oxygen saturation may be a result of the increased interaction with researchers and peers. When we would arrive at the facility to collect our weekly data, the residents would often be resting in a chair or sleeping, so the initial oxygen saturation would be lower. Many of the residents had lower baseline oxygen saturations ranging from 92-96%. As we interacted with the residents, they would often lean forward in their chair, laugh, and talk much more often causing them to take deeper breaths and breathe more often, thus raising their oxygen saturation.

We did not find any statistical significance in heart rate. We expected that heart rate would decrease with the presentation of the robotic companion cat and the participants would find the cat to be calming and a source of relaxation. Our hypothesis about heart rate may not have displayed itself statistically because the cat may have brought about excitation and happiness amongst participants or simply the interactions with the cats did not lead to any major variation in heart rate. Consideration was also taken regarding the possibility that medications may have contributed to the maintenance of heart rate throughout the course of the study, however, upon chart review, we did not find that any participants were on significant cardiovascular medications.

Psychotropic Medications

Upon the review of the participant's medical charts, we did not find any significant changes in the use of psychotropic medications over the course of the study. Many of the participants were not on any regularly scheduled psychotropic medications, and did not have a history of the need for medications to control agitation symptoms. We had one participant with a history requiring more frequent medications for agitation and anxiety, and since the introduction of the companion cat, the medication usage had greatly diminished. Though conclusions cannot be drawn based on one participant, this piece of data is still of importance and can guide future research. In future studies, we believe that it would be beneficial to review medical charts prior to the start of the study, and involve more participants who have a significant history of being administered medications as needed for agitation in order to determine if there is a reduction in medication use.

Strengths

The helpfulness of support staff in integrating the cats into the participant's daily life was one strength noted throughout this study. The staff also provided valuable interview information and weekly updates about the effectiveness and impressions of the robotic companion cat. Conducting the study in a long-term care facility allowed for consistency in the participant's daily schedule and made the staff interviews and results more reliable, since they were aware of the participants past behaviors. Visiting the participants twice weekly allowed for detailed observational data, and the researchers were able to draw out themes throughout each interaction with the robotic companion cat over the entire course of the study, and determine the most prominent themes observed.

Limitations

The main limitation of this study was the small sample size of 11 participants. When comparing this study's results to other similar research, there are numerous recurring themes and similar results, however, a larger sample size would be needed to further support these observations and results. It is also possible that the hope for the cats to provide a positive intervention could have biased the overall impressions of the staff at BRC.

An additional limitation of our study was the lack of control group and the inability to use blinding. In this setting, it was difficult to include a control group because we did not have many participants, nor did we have the resources available to obtain data from an additional group.

Because this study did not include a control group, we were unable to collect baseline data to compare our results. We were unable to blind the participants of the study conditions because the only intervention was the introduction of the robotic companion cat. It may have been beneficial to have controlled the situations when we would introduce the companion cats so that we could better measure their effects. Often times the residents were with the cats for more time than we expected while the researchers were absent, and we were therefore unable to control the length of each interaction. Ethically, we were unable to take the cats away when the participants were so clearly enjoying their company.

Some of the participants did not know how to interact with the cat, or that it required prompting, and would therefore require assistance to utilize it as an intervention for agitation. The overall observed effects of the robotic companion cat are limited to exposure that the participant received. For example, some participants were with their cat throughout most of their daily activities, whereas others were only given the cat in moments of agitation.

A few of the participants that were selected did not end up enjoying the companionship of a cat, whether it was due to past experience, certain expectations for their interactions, or being worried about the responsibility of caring for a cat. Due to the individual's progression of dementia, some participants did not realize the robotic companion cat was not living, and therefore did not want the responsibility of caring for a live animal.

Some issues with attachment were observed, which may be of concern if the robotic companion cat were to break, and result in emotional distress. There are also limitations to the use of the robotic companion cat in the setting of agitation. For example, in severe physical aggression, the cat may not have the capability to control a situation safely, and additional intervention would be necessary.

CONCLUSION

The use of robotic companion cats enhance the well-being and quality of life of individuals with dementia living in a long-term care facility by providing companionship and interaction with their environment, which helps to reduce anxiety and agitation. Robotic companion cats also reduce the burden placed on caregivers by providing a nonpharmacological intervention for agitation and loneliness.

A future improvement would be to provide robotic cats that do not require physical touch for sounds and movement, since many participants would talk with the cat and wonder why it was not responding. The results in this study were similar when compared to past research, but larger sample sizes, as well as a variety of locations and levels of care would be of benefit. Additionally, future studies may find it beneficial to utilize control groups, such as a non-robotic plush animal group, in order to evaluate if there is a significant benefit to having the companion animal be interactive. This study was also limited to participants who enjoyed the company of cats, so introducing other animals like dogs may produce similar results and provide an intervention for a wider range of people with dementia.

Although the addition of a robotic companion cat had many benefits, it is still difficult to draw any major conclusions about the use of nonpharmacological therapy as an adjunct to pharmacological therapy in the long term treatment of dementia. In our small sample, we did see the positive effects of a companion animal on quality of life and daily well-being in a portion of our participants. Though these effects were not seen across all participants, the researchers believe that the impact these companion cats have had on a few individuals is significant enough to prompt future research and continue exploring other non-pharmacological options for improving the day to day life of an individual with dementia. We have found that these companion cats have provided an opportunity for individuals to maintain some control over their lives, provide nurturing care, lead to a more purposeful day to day existence.

Robotic companion cats provide a cost effective, non-pharmacological intervention for people with dementia or those living in a long-term care facility, and their benefits are evident in this study.

ACKNOWLEDGEMENTS

APPENDIX

A.

Name:_____ Dates: From_____to _____

Cohen-Mansfield Agitation Inventory (CMAI)[1] – Short

Instructions: For each of the behaviours below, check the rating that indicates the average frequency of occurrence over the last 2 weeks.

	1 - Never	2 - Less than once a week	3 - Once or twice a week	4 - Several times a week	5 - Once or twice a day	6 - Several times a day	7 - Several times an hour
Physical / Aggressive							
1. Hitting (including self)	1	2	3	4	5	6	7
2. Kicking	1	2	3	4	5	6	7
3. Grabbing onto people	1	2	3	4	5	6	7
4. Pushing	1	2	3	4	5	6	7
5. Throwing things	1	2	3	4	5	6	7
6. Biting	1	2	3	4	5	6	7
7. Scratching	1	2	3	4	5	6	7
8. Spitting	1	2	3	4	5	6	7
9. Hurting self or others	1	2	3	4	5	6	7
10. Tearing things or destroying property	1	2	3	4	5	6	7
11. Making physical sexual advances	1	2	3	4	5	6	7
Physical / Non-Aggressive							
12. Pace, aimless wandering	1	2	3	4	5	6	7
13. Inappropriate dress or disrobing	1	2	3	4	5	6	7
14. Trying to get to a different place	1	2	3	4	5	6	7
15. Intentional falling	1	2	3	4	5	6	7
16. Eating / drinking inappropriate substance	1	2	3	4	5	6	7
17. Handling things inappropriately	1	2	3	4	5	6	7
18. Hiding things	1	2	3	4	5	6	7
19. Hoarding things	1	2	3	4	5	6	7
20. Performing repetitive mannerisms	1	2	3	4	5	6	7
21. General restlessness	1	2	3	4	5	6	7
Verbal / Aggressive							
22. Screaming	1	2	3	4	5	6	7
23. Making verbal sexual advances	1	2	3	4	5	6	7
24. Cursing or verbal aggression	1	2	3	4	5	6	7
Verbal / Non-aggressive							
25. Repetitive sentences or questions	1	2	3	4	5	6	7
26. Strange noises (weird laughter or crying)	1	2	3	4	5	6	7
27. Complaining	1	2	3	4	5	6	7
28. Negativism	1	2	3	4	5	6	7
29. Constant unwarranted request for attention or help	1	2	3	4	5	6	7

Signature:_____ Date: _____

[1] The use of this tool is strictly for clinical assessment and educational purposes only and is restricted from use in any for-profit activities.

Developed by and shared with permission of Interior Health

B.

Nonverbal behavior: Circle all that apply for 1 minute time sampling

	Minute 1	**Minute 5**	**Minute 10**
Body lean (BL)	F N B	F N B	F N B
Body position (BP)	Closed Open	Closed Open	Closed Open
Postural change	Yes No	Yes No	Yes No
Eye contact (EC)	Yes No	Yes No	Yes No
Facial expression (FE)	Blank Expressive	Blank Expressive	Blank Expressive
Affirmative gestures (AG)	Head nod/ tilt	Head nod/ tilt	Head nod/ tilt
Unpurposive movements (UM)	Frequent Few None	Frequent Few None	Frequent Few None
Hand gestures (HG)	Frequent Few None	Frequent Few None	Frequent Few None

F: Forward, N: Neutral, B: Backward

Comments:

KEY: R (Regards; smiles, speaks), N (Nurtures by stroking feeding, embracing), A (Aggressive toward cat or No interaction)

Minutes: 0-10: Draw a line to show continuity of behaviors.

0_____1/_____2/_____3/_____4/_____5/_____6
R
N
A

_____7/_____8/_____9/_____10/
R
N
A

Oxygen Saturation Pre: _____   Post: _____   **Heart Rate**   Pre: _____   Post: _____

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