

Influence of an Equine-Assisted Activities Program on Dementia-Specific Quality of Life

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Abstract

Institutional facilities face challenges providing experiences to residents with dementia that promote participation in meaningful activities. Guided by the Lived Environment Life Quality Model, this study investigated associations between 9 different activity situations—one an equine-assisted activities program (EAAP)—and positive, negative, and neutral behavioral indicators of quality of life (QoL) in 6 residents with dementia who expressed an interest in horses. Direct observational data were collected for 4 hours twice weekly over 8 weeks. Using χ^2 tests, differences across activity situations were tested. More positive patterns of time use (conversation; $\chi^2 = 44.3$, $P < .001$) and emotional well-being (pleasure; $\chi^2 = 21.8$, $P = .001$) were found in EAAP compared to other activity situations. Further, EAAP was the only activity situation associated with all positive QoL indicators. These findings add to our understanding the importance of providing meaningful activities that promote use of abilities and provide environmental support, for enhancing QoL, especially for institutionalized people with dementia.

Keywords

dementia, equine interactions, activity situation, quality of life, long-term care, lived environment life quality model

Introduction

To help shape an individual's last chapter of their biography in meaningful and positive ways,^{1,2} recent health-care efforts have recognized the importance of not only providing quality care for residents of long-term care (LTC) facilities but also striving to optimize their quality of life (QoL).³⁻⁵ In response to this shift in health care, a variety of nonpharmacological approaches have evolved. Nonpharmacological, environment-based approaches that incorporate animals are referred to as *animal-assisted interactions* (AAIs). Animal-assisted interactions are often structured time periods that incorporate animals to promote a person's mental, physical, social, and emotional functioning.⁶

A recent systematic mapping review found that animal-assisted therapies in LTC facilities may help to enhance the QoL of older adults with Alzheimer's disease and other dementias, referred to simply as "dementia" in this article.⁷ Although not without methodological weaknesses, the 10 studies included in this review offered evidence that therapies that incorporate dogs may help LTC residents with dementia occupy time in diverse ways, use their existing capacities in meaningful activities, and experience heightened emotional well-being. This article reports on a study of an equine-assisted activities program (EAAP) that was guided by the same conceptual model that directed the mapping review, the Lived Environment Life Quality (LELQ) Model.⁸

The LELQ Model was derived from and based upon a wide body of research pertaining to environmental influences on dementia-specific elements of QoL. One primary domain of the model, the lived environment, contains the subdomains of the *caregiving microsystem*, *the person with dementia*, and *an environmental press*.

The caregiving microsystem is understood to consist of the amount and quality of opportunities for engagement that are provided to LTC residents with dementia and the physical and social environmental supports of their engagement in those opportunities. This subdomain draws attention to the concept of *activity situations*. Defined, activity situations are "bouts of time that are readily recognizable because they routinely happen at designated times of a day in specific facilities."⁹

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Staff and administrators of facilities determine the time frames, the purpose, and the format of these activity situations. Examples of activity situations may include meal or snack times in large dining rooms, television times, activity groups such as music and news time, and even a community-based, EAAP.

Although people with dementia experience declines in cognitive and other functional abilities, their innate needs for engagement in meaningful activities remain.¹⁰ The person with dementia subdomain captures an individual's *occupational profile*. Humans "derive meaning in their lives through what they do."¹¹ The ability to "do" is shaped by an individual's preferences, needs and desires, habits, retained capacities—whether physical, cognitive, sensory, perceptual, or social—as well as by the surroundings in which the individual is exposed. Thus, an occupational profile refers to all characteristics that can influence the residents' motivations to engage in some activities over others.¹²

These 2 lived environment subdomains are operationalized in a transactional manner. That is, the daily experiences of residents with dementia are presumed to be influenced by the fit of the systems of care experienced by LTC residents with dementia (caregiving microsystem) and who those residents are as occupational beings (the person with dementia)—a function of an environmental press. The term, environmental press, refers to the interaction of any context, physical, social, and interpersonal environmental stimuli¹³ that "serves to elicit or press toward the expression of some behaviors and suppression of others."¹ The environmental press of the interaction between the resident with dementia and specific activity situations can be observed based on the 3 QoL subdomains of the model: (1) *time use* or how people with dementia occupy their time, (2) *ability to function* or the quality of a person's functioning attuned to the dementia stage, and (3) *relative being* or the person's emotional experiences. Altogether, the LELQ Model suggests that environmental presses of activity situations may have immediate influences on QoL. Furthermore, the environmental presses may range from occupationally enlivening to occupationally deadening experiences; in other words, residents who are surrounded by an environment that understands and is responsive to their needs, wants, and desires, will undoubtedly use their time more effectively by maintaining engagement in desired activities. However, residents who are in unreceptive environments in which caregivers or staff do not value their preferences, needs or existing capacities, may experience, an occupationally deadening environmental press.

To experience occupationally enlivening environmental presses, adults with dementia may benefit from interacting in activity situations that they find value and meaning in.¹¹ Evidence also suggests that traveling off site to other therapeutic contexts to engage with animals may promote positive QoL experiences.^{7,14} Thus, the purpose of our study was to investigate associations between positive, neutral, and negative indicators of QoL expressed by LTC residents with dementia

during different activity situations, one of which was an EAAP. The following research question was asked:

- What associations, if any, exist among an EAAP and positive QoL experiences in comparison to other activity situations in a LTC facility?

Methods

Research Approach

Findings reported in this article were based on a mixed method, case study design. Yin¹⁵ described the case study as a design that can include both quantitative and qualitative methods to deliberately "focus on a single phenomenon while understanding its real-world, dynamic context." The case consisted of a small group of residents with dementia from an LTC facility that expressed interest in participating in the EAAP. To address the research question, this article reports quantitative findings from the larger mixed methods study.

Selection and Description of Study Sites

This study occurred at 2 study sites located in Northern Colorado. A for-profit LTC facility that provides full memory care services to residents with dementia was selected. This facility resembles a home-like community that emphasizes residents' preferences by offering a variety of daily activity opportunities. In addition, a nonprofit therapeutic riding center that established the EAAP in 2011 to help promote physical and psychosocial benefits for older adults with dementia was chosen. This therapeutic riding center was chosen as a site for the study based on its established dementia-specific program and accreditation as a PATH Intl. Premier Accredited Center, the highest level of accreditation possible for therapeutic riding centers. This accreditation ensures that centers are abiding by industry standards in administration, safety, and equine-assisted interactions (see PATH Intl. website for details on standards and accreditation process).

Participants

After approvals from the study sites and by the institutional review board were obtained, a convenience sample of 8 residents from the LTC facility participated in the study. Residents were identified through a 2-stage screening process. A brief in-person meeting with an administrator from the LTC facility identified residents who met the following inclusion criteria: (1) age of 45 years or older, (2) ability to ambulate with minimal assistance from a caregiver (by walking or wheelchair), (3) stable regimen of medications (including psychotropic medications), (4) diagnosed with mild-moderate stage dementia, (5) resident at the facility for 4 weeks or longer prior to the study, (6) not allergic to horses, and (7) English speaking. The second stage was a critical step in the study in that it allowed the researchers to understand what activities mattered most to

the previously identified residents. For this study, researchers were particularly interested in exploring resident interactions during an EAAP in comparison to other activity situations in the LTC facility. Therefore, the administrator from the LTC facility identified residents who had an interest in or experience with horses.

During this study, LTC staff invited the 8 identified residents to a variety of activity situations, including the EAAP. Of note, resident involvement in every activity situation was voluntary. Residents and proxy (primary caregiver) consents were obtained. Participation in the study was voluntary and the residents could withdraw from the study at any time.

Equine-Assisted Activities Program (EAAP) Description

Staff from the LTC assisted each resident onto the facility's bus to attend the EAAP 1 time each week for a total of 8 weeks. Residents were accompanied to each session by 1 or 2 LTC staff members. Once the bus arrived at the therapeutic riding center, staff and volunteers from the therapeutic riding center helped residents off the bus and guided them into the covered arena to sit in chairs until activities started.

Therapeutic riding center staff partnered with 3 trained horses and 1 pony to provide the EAAP. A 14-year-old and 18-year-old mare provided riding activities. A 21-year-old mare was designated for grooming activities and a 15-year-old mare pony interacted with residents sitting in chairs to provide a petting opportunity.

Two-certified therapeutic riding instructors provided the EAAP. Therapeutic riding instructors are trained to conduct safe and basic equestrian lessons to people with disabilities.¹⁶ There was typically a 3:1 staff and volunteer to resident ratio. Before interacting with the horses, volunteers and staff helped the residents put on helmets for safety. Residents were then approached individually and given the choice to ride, groom and pet a horse, or stay seated and observe others' involvement in activities. Residents who expressed interest in riding were escorted by volunteers up a handicap accessible ramp. The therapeutic riding instructors then provided tactile and verbal cueing to help the resident mount the horse. While on the horse, residents were accompanied by 2 volunteers who served as side walkers for safety, and the therapeutic riding instructor directed activities at a walk such as riding over ground poles or through cones. Riding lasted approximately 15 minutes to avoid fatigue and overstimulation. Residents who completed groundwork activities such as petting and grooming were also guided by at least 1 volunteer. The entire session lasted an hour in the morning, approximately 10 to 11 am. After the session, each resident was escorted back to the facility's bus parked outside of the arena to travel back to the LTC facility with their staff.

Data Gathering

Data were collected using a modified version of the *Activity in Context and Time* (ACT) Table 1). This computer-assisted, real-time, direct observational instrument was developed and

Table 1. Modified Activity in Context and Time.

Domains	Subdomains		
ENV: Activity situations	Downtime		
	Television		
	Meals and snacks		
	Physical therapy		
	Games		
	Joke and riddle time		
	Bus ride (to and from EAAP)		
	EAAP		
	TU: Gaze	Engaged gaze	
		Single engaged gaze	Gaze directed at 1 person, animal, or object
Multiple engaged gaze ^a		Gaze directed at more than 1 person, animal, or object	
Eyes closed			
Unengaged gaze			
TU: Position and movement	Walking/standing ^a		
	Lying/sitting		
TU: Conversation	No conversation		
	Conversation ^a		
TU: Participation	No participation		
	Participation		
	Simple participation	One behavior observed	
EW: Agitation	Complex Participation ^a	Multiple behaviors observed concurrently	
	Evidence of agitation/distress		
EW: Apparent affect	No evidence of agitation or behavioral distress ^a		
	No affective expression is apparent		
	Anger		
	Anxiety/fear		
	Sadness/depression		
	Interest ^a		
	Pleasure ^a		

^a Optimal or positive QoL indicators.

Abbreviations: EAAP, equine-assisted activities program; EW, emotional well-being; ENV, environment; TU, time use; QoL, quality of life.

has been described by Wood.¹⁷ The ACT includes a domain of routine activity situations that represent environmental correlates of QoL, in addition to 2 domains related to QoL: time use and apparent affect. Nine activity situations were observed during this study: downtime, television, meals/snacks, games, jokes and riddles, music group, bus time, physical therapy, and EAAP. Measures of time use as QoL indicators specifically relate to gaze, position and movement, conversation, and participation in activity. Two time use subdomains, gaze and participation, contained modifier groups or factors that described the observed behaviors in more detail. For gaze, the direction of the gaze, if observed, was coded as either single (eg, engaged gaze with horse) or multiple (eg, engaged gaze with horse and person). For participation, details of what the residents were doing were coded as either simple (eg, groom horse) or complex (eg, groom and pet horse).

Measures of apparent affect, or more broadly, emotional well-being as QoL indicators specifically relate to agitation and

Table 2. Major Findings.

ACT Domains and QoL Indicators		Frequency of Observations (% Observations)						Total Observations	Statistic	P Value
Time use subdomains and QoL indicators										
Gaze	All other LTC activity situations	^a Engaged 481 (94%)		Unengaged 5 (<1%)	Eyes closed 25 (5%)			590	$\chi^2 = 3.0$.227
	EAAP	78 (99%)		0 (0%)	1 (<1%)					
Position and movement	All other LTC activity situations	^a Walking 45 (8%)		Standing 18 (3%)	Lying/sitting 449 (87%)			596	$\chi^2 = 4.1$.246
	EAAP	13 (15%)		2 (2%)	69 (82%)					
Conversation	All other LTC activity situations	^a Yes conversation 124 (24%)			No conversation 388 (75%)			591	$\chi^2 = 44.3$.000
	EAAP	48 (60%)			31 (39%)					
Participation	All other LTC activity situations	^a Yes participation 199 (38%)			No participation 313 (61%)			596	$\chi^2 = 15.5$.000
	EAAP	14 (16%)			70 (83%)					
Emotional well-being subdomains and QoL indicators										
Apparent affect	All other LTC activity situations	^a Pleasure 134 (26%)	Interest 319 (62%)	Fear 25 (4%)	No affect 22 (4%)	Anger 6 (1%)	Sad 6 (1%)	591	$\chi^2 = 21.8$.001
	EAAP	39 (49%)	39 (49%)	0 (0%)	1 (1%)	0 (0%)	0 (0%)			
Agitation	All other LTC activity situations	^a No agitation 496 (97%)				Agitation 15 (2%)		590	$\chi^2 = 2.4$.123
	EAAP	79 (100%)				0 (0%)				

Abbreviations: EAAP, equine-assisted activities program; QoL, quality of life.

^aIndicates optimal quality of life indicator.

apparent affect. Agitation refers to problem behaviors such as agitation, behavioral distress, and resistance to care. Measures of apparent affect as QoL indicators were derived from Lawton et al's Apparent Affect Rating Scale.¹⁸ See Appendix A for coding guide and definitions. Because the ACT's measures were established based on "grounding the ACT in credible and relevant scholarship," the instrument demonstrates content and construct validity.¹⁷ Its 2 QoL domains contain optimal codes or codes that suggest more favorable QoL in the moment (Table 1). For instance, specifically related to gaze, an engaged gaze, wherein the participant is visually oriented to an object, person, or event, is considered optimal in comparison to eyes closed or unengaged gaze wherein participants stare blankly into space.

Using Noldus, an observer software system,¹⁹ hand-held computers were programmed with each of the exhaustive and mutually exclusive ACT subdomains and an instantaneous sampling strategy. An instantaneous sampling strategy was chosen to capture the sequence of direct observations at regular intervals of time. One complete observation was collected on each resident and their involvement in chosen activity situations every 10 minutes over 4 hours, from 9 AM to 1 PM. An example of one observation completed between 9:00 and 9:10 AM of a man having breakfast at LTC facility could be as

follows: activity situation, meals and snacks; gaze-engaged gaze; position and movement sitting; conversation, no participation in conversation; activity, participation in eating and drinking; and apparent affect, no affective expression is apparent. Observations were captured on 2 different days: on Thursdays, residents were observed during a range of activity situations at the LTC facility and on Fridays, residents were observed at the LTC facility and the therapeutic riding center.

Two researchers underwent extensive training in the use of the ACT to ensure interobserver reliability. Approximately 8 days consisting of 32 hours of preliminary behavioral observations of the residents with dementia at the therapeutic riding center were recorded. These field experiences allowed the researchers to record observations of the included residents in this study, compare each other's results, and discuss disagreements to better understand each other's use of the tool. After these field experiences were completed, researchers checked their precision and consistency of applying the ACT using the reliability function in Noldus. Weighted κ coefficients for interobserver reliability across all domains of the ACT were calculated and ranged from .92 to .96, indicating substantial agreement. Once trained, the 2 researchers collected observations for the final 4 weeks of EAAP. During observations, researchers did not engage with residents.

Data Analysis

All data were uploaded into Noldus and then exported into SPSS Version 22.0 for statistical analysis. The overall objective of this study was to investigate whether the activity situations (ie, all other LTC activity situations or EAAP) were related to the QoL indicators. Descriptive statistics included frequencies and proportions. Frequencies represent the number of times a value for a QoL subdomain was observed. Proportions represent the share of one value for each QoL subdomain response in relation to the subdomain whole. In addition to these descriptive statistics, χ^2 test was selected to discern which activity situation induced a significant response in terms of resident's behavior. Routine activity situations were dichotomized as (1) all other LTC activity situations and (2) EAAP. The 6 ACT subdomains were nominal or dichotomous. Raw data were checked for outliers and missing values. Missing values were imputed using a listwise deletion. Once all missing values were imputed, the data set resulted in 3554 active cases, which is a "large-scale sample" in any statistical exercise. Results were considered statistically significant at $P < .05$.

Post hoc analyses were also investigated for the 2 subdomains that contained modifier groups, gaze and participation. These data were summarized as proportions using the pivot table tool function in Microsoft Excel.

Results

Eight residents were deemed potentially eligible for the study through the screening process. Of those, 2 did not participate due to exclusion for nonattendance. Two residents failed to attend the EAAP for more than 2 consecutive weeks: 1 resident experienced health problems not associated with the EAAP and staff at the LTC considered the other resident unsafe to partake in the program due to his lack of safety awareness. The mean age of residents was 83.3 years, range of 71 to 95 years. The 6 residents who participated in all 8 sessions of EAAP were Caucasian, 4 were female, and 5 were characterized as being in the moderate stage of dementia. All residents had had previous experience with horses, therapeutic horseback riding, or both.

There were no significant differences observed between the EAAP and all other LTC activity situations in the subdomains of gaze ($\chi^2 = 3.0$, $P = .227$), position and movement ($\chi^2 = 4.1$; $P = .246$), and agitation ($\chi^2 = 2.4$, $P = .123$). Statistically significant associations were found between the EAAP in comparison to all other LTC activity situations in 2 QoL subdomains, conversation ($\chi^2 = 44.3$, $P < .001$) and apparent affect ($\chi^2 = 21.8$, $P = .001$) (Table 2).

Time Use Domain

In the time use subdomain, *gaze*, higher proportions of the optimal QoL indicator of engaged gaze were observed during EAAP (99%) compared to all other activity situations combined (94%). Post hoc analysis revealed that a multiple

engaged gaze was greater (23%) in EAAP compared to all other LTC activity situations. Of these multiple engaged gaze observations, 74% recognized attention to a person and a horse. In the time use subdomain, *position and movement*, higher proportions of the optimal QoL indicator of walking were observed during EAAP (15%) compared to all other activity situations combined (8%). Thus, a trend toward higher levels of general alertness and a greater proclivity to use the physical capacities necessary for walking during EAAP was observed. However, these differences were not statistically significant.

In the time use subdomain, *conversation*, higher proportions of the optimal QoL indicator, yes-conversation, were observed during EAAP (60%) compared to all other activity situations (24%). Thus EAAP, which included a rich social environment involving multiple residents, volunteers, and therapeutic riding instructors, as well as horses, was significantly associated with the highest frequencies of social interaction and communication.

In the time use subdomain, *participation*, higher proportions of the optimal QoL indicator, yes-participation, were observed in all other activity situations (38%) compared to EAAP (16%). However, post hoc analysis revealed that the highest proportion of complex participation was observed in EAAP. Half (50%) of all observations of yes-participation during EAAP were complex (eg, riding a horse while singing a song) in comparison to the activity situations with the second and third highest frequencies of complex participation: music groups wherein 45% of all yes-participation observations were complex, and bus rides wherein 5% of all yes-participation observations were complex. Hence, in addition to being attentive to the environment, walking or talking, multiple activity-related behaviors were most often concurrently observed during EAAP, suggesting that this activity situation may have prompted participants' use of a variety of functional abilities.

Emotional Well-being Domain

In the emotional well-being subdomain, *agitation*, higher proportions of the optimal QoL indicator of no agitation were observed during EAAP compared to all other LTC activity situations, yet these differences were not statistically significant. In the emotional well-being subdomain, *apparent affect*, however, the optimal QoL indicator of pleasure was significantly more frequently observed during the EAAP compared to all other activity situations. These findings suggest that both the EAAP did not elicit undue stress or upset in participants and the experience of the program was comparatively enjoyable to them.

Discussion

Residents in this study were observed to be able to converse, maintain an engaged gaze, walk, participate in relatively complex activities, and evidence pleasure, all positive dementia-specific indicators of QoL. When compared with other routine activity situations in their LTC facility, these optimal QoL

indicators were most frequently observed during EAAP. The EAAP appeared to offer an occupationally enlivening environmental press as described in the LELQ Model. Altogether, findings suggest that the EAAP may be an effective nonpharmacological approach for eliciting favorable QoL experiences for institutionalized adults with dementia with an interest in or experience with horses or therapeutic riding contexts. Next, aspects of the EAAP are related to the caregiving microsystem and person with dementia subdomains of the LELQ Model to illuminate active ingredients that may have contributed to the good fit or match between the resident's adaptive behavior, affect, and the environmental context of the EAAP.

Lived Environment: Caregiving Microsystem

The LELQ Model suggests that aspects of the social and physical environment in a resident's lived environment may promote occupational opportunities that contribute to enlivening presses.⁸ Social environmental factors may have contributed to occupationally enlivening presses. Residents experience challenges with language and thus find it difficult to express themselves as dementia progresses. Studies have demonstrated that animals stimulate positive social interactions²⁰ and provide older adults a way to communicate their feelings.²¹ Another study reflected on the role of animals as "emotional mediators" and "catalysts" for positive interactions. The increased communication, multiple engagement, and pleasure during the EAAP suggest that residents were empowered to make connections with both people and horses involved in the activities.

Although our study did not assess the effects of contact with nature, physical environmental aspects of the therapeutic riding center may have positively shaped the residents' QoL experiences. For many people, connecting with nature contributes to their sense of QoL. This sense is robustly articulated through the biophilia hypothesis,²² which asserts an inherent human need to affiliate with nature. The direct contact with nature in this study may have evoked a mental and physical appreciation associated with the heightened engagement and complex participation. This affinity to nature may perhaps be linked with a sense of "being away."²³ Research studies have revealed that being outdoors, away from institutionalized and other urban type settings, has positively influenced affective states.²³ Duggan et al²⁴ exposed the connection between outdoor environments and health for people with dementia. Specifically, they found that people in the early stage of dementia valued being outdoors for exercise, fresh air, and emotional well-being. Likewise, Rappe et al²¹ shared the restorative effects of being in direct contact with nature for older adults with dementia residing in LTC; the more the people were presented opportunities to be outdoors, the stronger the associations were with positive self-rated health.

Lived Environment: Person With Dementia

The LELQ Model suggests that the care approach should take into consideration the retained capacities, preferences

and needs, and occupational history of the person with dementia to positively influence QoL experiences. Many studies support and emphasize that meaningful activity should pertain to one's life roles and interests as a means for fostering fulfillment and emotional well-being.^{8,10,25} Correspondingly, the *Continuity Theory of Aging*²⁶ suggests that defining personality characteristics become more prominent with age and those that maintain their preferred roles throughout life will experience a desirable QoL. In similar fashion, Albert and colleagues²⁷ highlighted the variability in activity and affect, that is, not all activities are going to "tap" into the same past memories for every person. Indeed, Chung¹⁰ found a significant association between well-being and participation in activities that were considered, from the participants in that study, as enjoyable. This study, which intentionally selected residents with an interest in horses or the therapeutic riding context, similarly found that these individuals demonstrated high levels of positive QoL indicators during the EAAP. These findings may reflect the integration of the residents' personal experiences of meaning and interconnections to past valued activities.

Implications for Practice

The routine activity situations that characterized the residents' daily life during this study may be key in understanding contributing factors of QoL. An important benefit of living in institutionalized settings such as a LTC setting is being able to participate in a variety of activity situations. Across all observations of activity situations, the greatest number of optimal QoL indicators was observed in the EAAP; when the LTC activity situations are viewed altogether, the residents' time use and emotional well-being express lower QoL experiences.

Similar to findings from Wood et al, the variations in environmental presses generated from the observed activity situations in this study specify further that, "simply surrounding residents with activities insure neither their meaningful time use nor their remaining functional capacities will be tapped or optimally maintained."⁹ Therefore, this study raises questions about organizing and giving shape to activity situations outside the institutional walls that attend to physical, social, and interpersonal determinants of dementia-specific QoL. Findings underscore the ability of an EAAP to provide activities that have potential for occupational engagement, performance, and emotional vitality. Namely, adequate support, both physical and social, and attention to individual residents were routinely observed; these strategies align with Kitwood's concept of being person centered²⁸ and Mezey's concept of abilities focused care,²⁹ 2 approaches highly valued in dementia care. To ensure that these 2 critical concepts are integrated into dementia care, findings from this study suggest that residents would benefit from facilities developing life-history forms to capture residents' previous occupations, preferred nickname, leisure interests, behavior and coping styles, and even past

experiences with animals and nature. By integrating these forms into practice, staff would be better equipped to provide more effective care and better understand the interactions between the residents and their surrounding environment.

Limitations and Future Research Directions

Residents were selected using a convenience sampling approach, which lends itself to a biased sample. Although using an instantaneous sampling approach provided a more manageable data set, the predetermined time intervals may have caused the researchers to miss some resident behaviors. As with most observational research, we did not attempt to control confounding variables that may have influenced the residents' behaviors such as changes in volunteers during the EAAP or outdoor temperatures. Observers were also not blinded to the study's hypothesis. Neither did this exploratory study establish cause and effect relationships between activity situations and indicators of QoL.

With these limitations noted, this study adds evidence to the sparse literature on AAIs for institutionalized adults with dementia. Owing to the early scientific development and complex nature of AAIs, in particular for the dementia population,⁷ findings from this study suggest that future research should focus on expanding, evaluating, and implementing EAAPs. The authors are developing a manuscript with the qualitative findings from this study to comprehensively describe each component of the EAAP. Further, to establish the empirical basis of complex approaches, Craig et al³⁰ suggests that researchers identify and develop theory. Accordingly, these quantitative and qualitative findings will be synthesized to inform the development of a logic model, which is warranted to guide program development for the dementia population.³¹ Once this foundational work has been established, future research should investigate comparison conditions that could include other community-based outings and specific EAAP elements such as mounted activities and groundwork.

Conclusion

LTC residents with dementia experience a challenging lifestyle. Not only do they struggle with a progressive condition, but environmental factors may further compromise their QoL. Many LTC facilities recognize the need to understand how their care efforts affect residents. This study offered evidence that a nonpharmacological approach, EAAP, provided safe and largely enjoyable opportunities to LTC residents with dementia. Furthermore, these opportunities appeared to help residents tap into and use a wide range of their existing capacities, interact intentionally with people and horses, and engage in more complex, multilayered activities than typical in their LTC facility. Researching the influence of activity situations on residents' QoL may provide health professionals with greater understandings of the needs and preferences of the residents and enable those professionals to provide more alternative nonpharmacological approaches. This study offers support that

EAAPs present as a fruitful opportunity to paint a more holistic picture that encompasses the transactional nature of environmental and personal factors in pursuit of positively influencing QoL for people with dementia residing in LTC.

Appendix A

ACT Code Guide and Definitions

ACT Domain	Code	Definition
Activity situations	Downtime	Default; any transition time between activities; time spent with family/visitors
	Television	Situated in area where television is on
	Meals and snacks	Breakfast, lunch, dinner, and snacks that are not part of activity group
	Activity groups	Organized activity at LTC facility or outing with LTC facility that is not EAAP
	Bus	Time when resident is approaching bus, on bus, or getting off bus
	EAAP	Organized EAAP session; time in the arena or on outdoor trail
Time use	Gaze: engaged	Evidence of attention to something in environment
	Position and movement: walk	Evidence of walking with/without AD or self-propel with w/c
	Conversation	Participation in conversation: any type of conversation; can be nonsensical-word salad; must be social in nature-cannot be just mumbling to self
	Participation	Any type of activity that the person is doing
Emotional well-being	Agitation	Restlessness, pacing, repetitious sentences, requests for attention, complaining, negativism, and cursing
	No apparent affect	No movement of eyes, face, or body
	Anger	Clenched teeth, grimace, shout, yell, curse, berate, push, physical aggression or implied aggression such as fist shaking, pursed lips, eyes narrowed, knit brow
	Anxiety/fear	Furrowed brow, motoric restlessness, repeated or agitated motion, facial expression of fear or worry, tremor, tight facial muscles, calls repetitively, hand wringing, legs jiggling, eyes wide
	Sadness/depression	Cry, tears, moan, sigh, mouth turned down at corners, eyes/head turned down and face expressionless, wiping eyes

(continued)

Appendix A. (continued)

ACT Domain	Code	Definition
	Interest	Eyes follow object, intent fixation on object or person, visual scanning, facial, motoric, or verbal feedback to other, eye contact maintained, body or vocal response to music, turn body or move toward person or object
	Pleasure	Smile, laugh, stroking, touching with approach manner, nodding, singing, arm or hand outreach, open-arm gesture, clapping; signs of warmth/affection

Abbreviations: AD, Alzheimer's disease; ACT, Activity in Context and Time; EAAP, equine-assisted activities program.

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