THE ASSOCIATION BETWEEN ENGAGEMENT IN ACTIVITIES OF DAILY LIVING AND CARE INTERACTIONS FOR RESIDENTS LIVING WITH DEMENTIA

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INTRODUCTION

Currently there are over one million older adults (65 and older) living in U.S. nursing homes (NH). [1] In terms of functional ability of residents, NH residents have consistently had many ADL impairments (i.e., difficulty in engaging in activities such as bathing, dressing, or walking), [1,2] and currently 69% of NH residents have difficulty with three or more ADLs. [3] During the past three decades, the percentage of NH residents requiring ADL assistance has increased. [2,3] Due to this significant increase in functional impairments, NH residents are dependent on staff to get care needs met. Dependence on staff requires intimate and frequent care interactions between caregivers and residents. Thus, the quality of these care interactions and staff-resident relationships are critically important to promoting quality of life and psychological well-being among residents. [4–9]

Staff-resident care interactions are defined as verbal and nonverbal exchanges between staff and residents, and can vary in length, tone, speech, body language, and quality. [10,11] In addition to the high percentage of ADL impairments in NH settings, 47% of NH residents are living with dementia, [1] and an estimated 61% of NH residents have moderate or severe dementia. [3] Behavioral and psychological symptoms of dementia (BPSD) (e.g., agitation, depression, aggression, sexually inappropriate behavior) among NH residents living with dementia may create complications in providing care to these residents (e.g., a staff not positively engaging with a resident because the resident is displaying agitation). These cognitive changes further impact staff-resident care interactions due to communication challenges as well as other factors.

Overview of Staff-Resident Care Interactions

Regarding the quality of staff-resident interactions, there can be positive, neutral, or negative care interactions. [10,13] As delineated in Table 1, positive interactions provide beneficial companionship or appropriate conversation during care tasks. In contrast, neutral interactions are brief and do not contain pleasant verbal and nonverbal communication, and negative care interactions are restrictive to residents' freedoms or inappropriately controlling due to resident safety concerns. [10]

Receiving neutral or negative care interaction is associated with increased resistiveness to care, [14–17], anxiety, [18,19] depression, [18,19] lower psychological well-being, [5] and apathy [18] among residents living with dementia. Prior research has shown that residents living with dementia receive limited care interactions overall, and the interactions that do occur are neutral, task-oriented, and rushed. [7,9,17] In contrast, there are several beneficial outcomes for residents receiving positive care interactions. Positive staff-resident interactions contribute to psychological well-being [8] and decreased depression among residents living with dementia. [19] Specifically, positive social interactions contribute to thriving, [20] meaning in life, [21,22] decreased resistiveness to care, [23] and decreased loneliness [24] among NH residents.

Factors Associated with Care Interactions

Residents' Function, Comorbidities, Cognition, and Gender

Prior literature has identified multiple resident characteristics that are related to care interactions. Residents with poor functional status experience significantly less social touch from caregivers [25] and negative care interactions. [12] This may be due to the increased amount of time that is required to care for residents with ADL impairments, which creates staff distress and results in negative, rushed care interactions. Similarly, residents with a greater number of chronic

conditions or comorbidities typically experience more negative care interactions. [12,25,26] Comorbidities create complexity in care needs and can in turn influence quality of care. [26] Prior research has also found that residents with greater cognitive impairment are more likely to experience more negative care interactions, [12,27] such as interactions that are task-focused, [7] lack social touch, [12] and lack staff-resident social banter. [12] Resident gender can also influence caregiver behavior during interactions, as female caregivers tend to avoid physical touch when interacting with male residents [25] and older men with dementia tend to verbally interact more with staff compared to older women with dementia. [10]

Residents' Engagement in Care

Residents can engage actively or passively during care interactions with staff. [10] Active engagement occurs when the resident has an attentive attitude toward the interaction, while passive engagement occurs when the resident does not display interest in the interaction or displays detached demeanor (e.g., avoids eye contact, has a distant gaze). Prior research has found that most NH residents are passively engaged in care interactions with staff rather than actively engaged. [28] NH residents living with dementia may be particularly less likely to be actively engaged in interactions due to their inability to understand commands, or the aphasia (impaired language ability) or agnosia (impaired perception of people or objects) that can be associated with dementia. [28,29] Prior research has suggested that residents may become passive during negative care interactions. [30,31]

Study Purpose

Limited research has described characteristics of staff-resident care interactions among nursing home residents with dementia, as the majority of the work to date on care interactions has been with all facility residents regardless of cognitive status, [10,32] or acute care patients

regardless of cognitive status. [33–37] Additionally, limited research has examined the relationship between resident engagement and quality of care interaction among nursing home residents with dementia. This knowledge can help inform future interventions to assure that staff provide more positive interactions while reducing negative and neutral interactions with residents, particularly those living with dementia in nursing homes.

Building off prior research, the purpose of the present study was to: (1) describe the characteristics and quality of staff-resident care interactions among NH residents living with dementia in terms of the quality of the interaction, interaction location, role of staff in interaction, and interpersonal distance during interaction; and (2) to test whether the quality of staff-resident care interactions varied by resident level of engagement in the interaction. Specifically, it was hypothesized that after controlling for age, gender, comorbidities, cognition, and function, residents with active engagement in their care would have more positive care interactions and fewer neutral and negative care interactions with staff compared to residents with passive engagement.

METHODS

Design

This study was a secondary data analysis utilizing baseline data from all three cohorts of the Evidence Integration Triangle for Behavioral and Psychological Symptoms of Dementia (EIT-4-BPSD) implementation study. [38] The EIT-4-BPSD study was a pragmatic trial focused on incorporating person-centered care and non-pharmacological approaches to manage behavioral and psychological symptoms of dementia among NH residents. This study was approved by a university institutional review board, and the protocol has been published. [38] The sample for the parent study was drawn from a convenience sample of 55 NHs in Maryland and Pennsylvania.

About 10 to 20 residents were recruited from each participating facility. The participating NHs were randomized to intervention or education only. The eligibility for facilities to participate was as follows: (a) agreed to actively partner with the research team on an initiative to change practice; (b) had at least 100 beds or at least 50 beds if the facility had a dedicated dementia care unit; (c) identified a staff member to be an Internal Champion and work with the research team in the implementation process; and (d) had access to email and websites via smartphone, tablet, or computer.

Sample

Eligibility for resident recruitment was as follows: residing at the facility at the time of recruitment, aged $\geq$ 55 years, exhibiting at least one BPSD in the past 1 month, and having evidence of cognitive impairment as indicated by the Brief Interview of Mental Status (BIMS). [39] Residents were excluded from participation if they were enrolled in hospice or residing in the facility for short-term rehabilitation care. A total of 535 residents were enrolled into the parent study. Of the parent study sample, 532 residents had complete data on the variables of interest. Therefore, the sample for the present study was 532 residents.

Measures

Demographics

Resident demographic and descriptive data were obtained from electronic medical records including age, race, gender, and marital status. Age was recorded as years of age. Race was categorized as White, Black, or more than one race. Gender was categorized as male or female. Marital status was recorded as married, never married, widowed, separated, divorced, or refused/do not know.

Cognition

Cognition was measured using the BIMS, [39] which ranges from 0 to 15 points. The range goes from severe cognitive impairment (0 to 7), moderate cognitive impairment (8 to 12), and intact cognition (13 to 15). Previous psychometric testing of the BIMS has indicated this measure has evidence of reliability and validity, such that it has internal consistency with a Cronbach's alpha of 0.77, predictive utility with a sensitivity of 0.66, and specificity of 0.88 based on a correlation with standard measures of cognition. [40]

Comorbidities

The Cumulative Illness Rating Scale for Geriatrics (CIRS) was used to measure residents' comorbidities. The CIRS is a comorbidity index based on research evaluator ratings of the presence of comorbidities across the following organ systems: heart, vascular, hematopoietic, respiratory, ears/nose/throat, upper gastrointestinal, lower gastrointestinal, liver, renal, genitourinary, musculoskeletal, neurologic, endocrine, and psychiatric. [41] The total number of comorbidities is summed with the final score ranging from 0 to 13, such that higher scores indicate more comorbidities. [41]

Function

Function was measured using the Barthel Index, which is a 10-item measure that assess ability to complete ADLs such as bathing, dressing, and walking. [42] The final score ranges from 0 to 100, indicating either independence (score between 80 to 100), minimal dependence (score between 60 to 79), partial dependence (score between 40 to 59), very dependent (score between 20 to 39), or total dependence (score less than 20).

Quality and Characteristics of Staff-Resident Interactions

The quality of interactions and interaction characteristics were measured using the Quality of Interactions Schedule (QuIS). [10] The QuIS is an observational measure in which

research evaluators measure the quality of both verbal and nonverbal interactions. Interactions were categorized as: positive social, positive care, neutral, negative protective, or negative restrictive as shown in Table 1. The interactions were observed by trained research evaluators and lasted approximately 15 minutes. The interaction location, role of staff interacting with the resident, interpersonal distance, and type of interaction situation were likewise recorded.

The QuIS was modified to quantify the quality of the interaction. [43] The scoring for the QuIS items are presented in Table 1. The total score for the quality of the care interaction ranges from 0 to 7, with higher scores indicating a better, more positive care interaction for the older adult recipient. Prior testing supports reliability and validity of the QuIS, including interrater reliability based on Cohen's kappa range from 0.53 to 0.96, [10,37,43,44] concurrent validity based on a significant relationship between QuIS findings and patient experiences (e.g., that positive interactions were associated with a measure of positive patient experiences), [34,37] and content validity based on an association between QuIS findings and negative patient experiences. [45]

Resident Engagement in Care Interaction

An item from the QuIS was used to measure resident engagement during interactions. The research evaluator determines whether the resident is actively (i.e., the resident is displaying attention or interest during the care interaction) or passively (i.e., a resident does not display attention or interest during staff interaction) engaged in the staff-resident care interaction. [10]

Data Analysis

Data were analyzed using SPSS version 28.0. Descriptive statistics (i.e., means, standard deviations, frequencies, and percentages) were used to report resident and interaction characteristics. A multiple linear regression analysis using hierarchal entry and listwise deletion was conducted to determine whether there were differences in the quality of interactions between

residents who were actively engaged in interactions versus those who were passively engaged while controlling age, gender, cognition, comorbidities, and function. A $p < .05$ level of significance was used for all analyses.

RESULTS

Description of Sample

Table 2 depicts the descriptive characteristics for the residents (N = 535). The majority the residents were White (n = 402, 75.5%), female (n = 383, 72%), and widowed, divorced, or separated (n = 316, 59%). The mean age of the residents was 83.9 years of age (*SD* = 10.4) and they had an average of 7 comorbidities (*SD* = 2.2). The mean BIMS score was 4.3 (*SD* = 3.5), indicating severe cognitive impairment.

Characteristics and Quality of Staff-Residents Interactions in Nursing Homes

A description of the staff-resident interactions is provided in Table 3. The majority of interactions occurred in the dining room (n = 213, 37%) or resident rooms (n = 202, 35%), and the remaining interactions occurred in the hallway, living room, nurse support station, bathroom, or other areas. The majority of interactions were care-related (n = 286, 72%) and largely occurred with nursing staff (n = 366, 67%). Most interactions were less than 18 inches apart in distance (n = 213, 40%) and the majority of residents were actively engaged in the interactions (n = 412, 77%). The majority of interactions were either positive social (n = 360, 42%) or positive care (n = 312, 37%), while only a limited number of interactions were neutral (n = 123, 14%), negative protective (n = 31, 4%), or negative restrictive (n = 23, 3%).

Relationship between Resident Engagement and Quality of Staff-Resident Interactions

Table 4 shows the resident engagement differences in the quality of interactions. Controlling for age, gender, comorbidities, cognition, and function resident engagement was

significantly associated with quality of care interactions ($b = 1.46$, $p < .001$) and explained an additional 12% of the variance in quality of care interactions ($\Delta R^2 = .12$, $F(6, 525) = 29.83$). Together all of the control variables and quality of care interaction variable explained 25% of the variance in care interactions ($R^2 = .25$, $p < .001$). The quality of care interactions was higher for residents with active engagement than residents with passive engagement.

DISCUSSION

This study examined the quality of staff-resident interactions among NH residents living with dementia and characteristics of the interactions. The staff-resident interactions were generally positive, care-related, and occurred most with nursing staff compared to other support staff. The hypothesis was supported, in that actively engaged residents had significantly more positive interactions compared to passively engaged residents after controlling for age, gender, comorbidities, cognition, and function. In general, when compared to residents without dementia in other studies, [46,47] residents living with dementia (particularly moderate to severe dementia) may have more difficulty in actively participating in interactions with staff [12] and may therefore be at greater risk for negative or neutral care interactions. Those with more cognitive impairment may need specific interventions to help them participate in care interactions to the best of their ability. One potential intervention is Function Focused Care, a philosophy of care that engages residents in care activities rather than the staff performing the activity for the resident. [48,49] Further details about ways for staff to provide function focused care have been published elsewhere [48] and resources are available at www.functionfocusedcare.org.

As noted in prior research, [50] the majority of the interactions in the present study were either positive social (42%) or positive care interactions (37%). The high percentage of positive interactions may be due to social desirability and staff engaging with residents more positively

than normal due to the presence of the research evaluator. [51] Additionally, the type of facility or unit may play a key role in the quality of interactions. A prior study found that the majority of interactions were neutral among residents with moderate to severe dementia in a memory care unit of a skilled nursing facility, [9] in contrast to nursing home facilities in the present study. Future research should consider various facility types and longer observation periods to see if interactions remain consistently positive.

Other Factors That May Influence Care Interactions

Only 25% of the variance was explained by the variables included in this model. Additional factors that may be associated with care interactions include staff burnout, staff stress, and dementia knowledge and beliefs about approaches to care (e.g., the use of elderspeak, the value of engaging residents in functional tasks). [12] Factors such as burnout and stress among staff may be particularly important to consider when working with residents with moderate to severe dementia due to communication difficulties, resistiveness to care and other behaviors associated with dementia. [52]

Staff may also alter their communication with residents as a result of age-related biases. The Communication Predicament of Aging Model posits that functional impairments or comorbidities can bias staff-resident communication in that the caregivers assume stereotypical views (e.g., dependence and limited competence) of older adults, and these biases create negative communication patterns (e.g., elderspeak). [30,31] Thus, future work should also examine if the quality of staff-resident interactions is related to resident factors not included in this study, such as functional impairment, race/ethnicity, and the interaction between staff and resident factors (e.g., race, gender). Lastly, consideration should be given to the association between community factors such as the size, profit status or star rating of the facility with care interactions.

Task-Focused Interactions

Most interactions were care-related (Table 3), which is also reflected in prior research in that staff primarily engage with residents strictly during care delivery and do not offer additional more informal interactions. [7,45,50] Understaffing is an issue in nursing home settings, and staff would have more time to provide informal or social interactions if there were greater numbers of staff available to assist residents. Assisting in ADLs or other care tasks is a major priority for staff and what is rewarded by administrators. This is in contrast to providing social interactions which can help to maintain the personhood of the residents living with dementia. [20] Incorporating social interactions during care delivery (e.g., complimenting the resident's hairstyle, asking "how is your day?") can help to increase positive social interactions, maintain personhood, and improve quality of life among residents living with dementia. [9]

STUDY LIMITATIONS AND CONCLUSIONS

The current study was limited in that it was only conducted in two states in one region of the country (Maryland and Pennsylvania) and came from facilities willing to be a part of a research trial. Thus, the findings may not be generalizable to all NH residents living with dementia. The sample was relatively homogeneous in that the majority of the participants were White and female residents, and had moderate to severe cognitive impairment. However, these sample characteristics are reflective of the general NH population. This study was conducted prior to COVID-19, therefore future research should assess the present characteristics of staff-resident interactions (e.g., interpersonal distance) in light of ongoing infection control practices.

Despite these limitations, the current study provides useful information on numerous characteristics of care interactions among NH residents living with dementia. There was a significant relationship between resident engagement and quality of interaction, such that those

who actively engaged had better quality care interactions than passively engaged residents. Thus, helping staff to focus on engaging residents in care-related activities may help improve interactions. Although most interactions were positive, several negative and neutral interactions occurred. Continued research and interventions are needed to reduce negative and neutral interactions and optimize the quality of care and quality of life among older adults living with dementia in NHs.

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Table 1

Quality of Interaction Schedule Items and Descriptions [10, 43]

Item	Description and Examples	Score
Positive Social	Interactions that involve good, beneficial conversation and companionship for the resident. Examples include giving encouragement or comfort during care tasks; recognizing a resident's preferences; smiling and laughing with resident; demonstrating enthusiasm; offering choices for activities.	2 if present 0 if not present
Positive Care	Interactions that provide appropriate care and are typically task-focused. Examples include verbalizing brief explanations for care tasks; refraining from general conversation during care, but not being rude; informing the resident what will happen during care task without giving them a choice; prioritizing resident safety and giving explanation when doing so.	1 if present 0 if not present
Neutral	Interactions that are brief and indifferent. Examples include placing a drink down without verbal or nonverbal communication; overall absence of nonverbal cues; failing to address the resident by name.	0 if present 1 if not present
Negative Protective	Interactions that focus on keeping the resident safe or eliminating dangers but in a restrictive manner. Examples include providing care to the individual via protection but in an unfavorable way such as telling someone to wait for something without providing an explanation; speaking to the resident like a child; ignoring a resident's preferences; reprimanding a resident for engaging in behaviors deemed risky; feeding a resident in a rushed manner.	0 if present 1 if not present
Negative Restrictive	Interactions which are those that unjustifiably restrict residents' freedom of action without a good reason. Examples include moving a resident without warning; denying a resident something without offering a reason; and giving them commands during care tasks without providing them with assistance or an explanation.	0 if present 2 if not present

	n (%)	Range	*M*	*SD*
Race				
White	402 (75.5%)			
Black	130 (24.3%)			
Gender				
Male	149 (28%)			
Female	383 (72%)			
Marital Status				
Married	97 (17%)			
Never married	90 (18%)			
Widowed/divorced/separated	316 (59%)			
Refused/do not know	29 (6%)			
Age (in years)		56 – 105	83.94	10.45
BIMS		0 - 12	4.31	3.47
Comorbidities		2 – 12	7.10	2.17

Table 2

Descriptive Characteristics for Residents (N = 532)

Abbreviations: BIMS = Brief Interview of Mental Status, M = mean, SD = standard deviation

	n (%)
Interaction Quality	
Positive Social	360 (42)
Positive Care	312 (37)
Neutral	123 (14)
Negative Protective	31 (4)
Negative Restrictive	23 (3)
Interaction Location	
Dining Room	213 (37)
Resident Room	202 (35)
Hall	54 (9)
Living Room	35 (6)
Nurse Support Station	11 (2)
Bathroom/Tub/Shower Room	13 (2)
Type of Staff in Interaction	
Nursing Staff	366 (67)
Activity Staff	65 (12)
Support Staff	46 (8)
Other Staff	43 (8)
Other Resident	16 (3)
Other Vistor	4 (1)
Family	5 (1)
Interpersonal Distance During Interaction	
4+ feet	99 (18)
30-48 inches	63 (12)
18-30 inches	161 (30
Less than 18 inches	213 (40)
Interaction Situation	
Care-related	286 (72)
Family visit	3 (1)
One-on-one unstructured	72 (13)
Small structured (2-5 people)	14 (3)
Small structured group	5 (1)
Large unstructured group (6+ people)	26 (5)
Large structured group	29 (5)
Level of Resident Participation	
Active	412 (77)
Passive	124 (23)

Table 3

Characteristics of Staff-Resident Interactions in Nursing Homes

Table 4

Summary of Multiple Regression Using Hierarchal Entry: Relationship Between Resident Engagement and Quality of Care Interaction

	b	*β*	*t (p)*	R^2 Change (*p*)	*F* (*p*)
Step 1				.132 *	16.02*
Age	-.009	-.052	-1.22		
Gender	.018	.005	0.11		
Comorbidities	-.286	-.355	-8.58*		
Cognition	.024	.048	1.12		
Function	-.002	-.041	-0.99		
Step 2				.122 *	29.83*
Age	-.012	-.071	-1.73		
Gender	.024	.006	0.16		
Comorbidities	-.272	-.338	-8.77*		
Cognition	.003	.006	0.15		
Function	-.004	-.064	-1.67		
Resident engagement (*Ref* = passive engagement)	1.458	.353	9.27*		

Abbreviations: *Ref* = reference category

Note. N =532, R^2 = .254, *p < .001