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Gender Differences in Presentation and Management of Behavioral and Psychological Symptoms Associated with Dementia Among Nursing Home Residents with Moderate to Severe Dementia

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Abstract

Lack of identification and management of behavioral and psychological symptoms of dementia (BPSD) can negatively impact female residents. The purpose of this secondary data analysis was to explore gender differences in presentation and management of BPSD and quality of interactions between residents and staff. A total of 553 residents from 55 nursing homes were included. Males

exhibited more apathy and sexually inappropriate behavior and females exhibited more anxiety and sadness. Anxiety and sexually inappropriate behavior were more likely to be addressed in care plans for males than females. There was no difference in how staff interacted with males or females.

An estimated 5.7 million Americans are living with Alzheimer's disease or related dementias (ADRD).¹ Behavioral and psychological symptoms of dementia (BPSD) are commonly experienced by these individuals² and include aggression, agitation, depression, anxiety, apathy, sexually inappropriate behaviors, repetitive vocalizations, and psychosis (hallucinations or delusions). These symptoms are exhibited by up to 90% of nursing facility residents with ADRD.³⁻⁵

BPSD result in negative health outcomes,^{6,7} a decline in physical functioning,^{6,7} contribute to feelings of distress and discomfort, and have been associated with lower quality of life.⁸⁻¹¹ In addition, BPSD put residents at risk for inappropriate use of antipsychotic drugs, restraining interventions that reduce function,¹² social isolation,⁷ and increase the risk of physical abuse.^{13,14} lastly, the presentation of BPSD creates excessive burden for formal and informal caregivers, contributes to the high cost of care and the need for institutionalization.¹⁵⁻¹⁷

Gender Differences in ADRD and BPSD

ADRD is known to be more prevalent in women with two thirds of individuals with ADRD being female.¹ The underlying cause and reasons for this are unclear. Theoretically, the higher prevalence of ADRD in women is because women tend to live longer than men thus increasing the likelihood of having ADRD. Other theories have included the impact of hormones, inflammation and metabolism, genetics and epigenetics, social roles and opportunities, and the interactions of all of these factors.¹⁸

It is not clear if there are gender differences in the presentation of BPSD. Findings to date comparing males and females with regard to presentation of BPSD are inconsistent. Some studies show that females display more depression and negative emotion than males¹⁹⁻²⁷ while others show a lower severity of affective symptoms and more severe agitation in females than males.²⁸⁻³² Women have tended to show higher frequency of delusions, hallucinations, anxiety, apathy, repetitive vocalizations and aberrant motor behavior than men.^{20,32}

Men with ADRD have been noted to present with more physically aggressive symptoms and violent behavior than women.³³⁻³⁹ Specifically, almost twice as many males versus females (46% of males versus 26% of females) presented with physically violent behavior with the majority of the violent episodes occurring during care related activities (e.g., bathing, dressing and toileting).³³ Conversely, other studies have found depression to be more prevalent in males.⁴⁰

Despite differences in presentation, BPSD in males is more likely to be identified and managed. These behaviors in males, particularly physical aggression and sexually

inappropriate behavior, tend to be more distressing to staff.^{33,41} When females are aggressive it tends to be verbal versus physical and thus the females are less likely to be perceived as threatening and frightening for the staff.^{34,42,43} Prior research exploring aggression in females has shown that when provoked during care interactions (e.g., bathing, dressing), females are more likely to demonstrate aggression.^{32,42,44} this aggressive behavior in females is more often accepted by staff. The staff respond by ignoring or avoiding the female resident rather than evaluating the underlying cause of the behavior and developing an appropriate treatment plan.⁴⁵ Lack of identification and management of BPSD in females by staff can result in females not getting the type of care that is needed to manage these symptoms, decrease positive interactions with staff, and lead to diminished quality of life.^{46–49}

The purpose of this secondary data analysis was to build off prior research and clinical experience and: (1) evaluate differences between male and female nursing home residents with regard to evidence of anxiety, sadness, apathy, verbal, physical and other types of aggressive behaviors (e.g., sexually inappropriate behavior) and repetitive vocalizations; (2) evaluate gender differences in the management of these behaviors; and (3) evaluate gender differences in the quality of interactions with staff. Specifically it was hypothesized that: (1) females would have more anxiety, sadness, apathy, verbal aggression and repetitive vocalizations and males would have more physical aggression and more other types of aggressive behavior (sexually inappropriate behavior, intentional falling, eating inappropriate substances, or hurting self or others with inappropriate substances); (2) BPSD, when present based on assessments done by evaluators, would be addressed in the care plan more often in males than in females; and (3) females would have more neutral or negative and fewer positive care interactions with staff than males.

Methods

This was a secondary data analysis using baseline data from the Evidence Integration Triangle for Behavioral and Psychological Symptoms of Dementia (EIT-4-BPSD) implementation study. The study was approved by a University based Institutional Review Board. Details of the protocol for this study have been published elsewhere.⁵⁰ The purpose of the parent study was to test the use of the Evidence Integration Triangle (EIT)⁵¹ to support implementation of person centered behavioral approaches to management of BPSD among nursing home residents.

Sample

The parent study consisted of a convenience sample of 55 nursing homes from two states. Invitations to participate in the study were sent to eligible settings within Maryland and Pennsylvania followed by telephone calls and site visits if requested by the setting. Invitations to participate were also posted on relevant websites such as state based long-term care organizations. The settings had to: (1) agree to actively partner with the research team on an initiative to change practice; (2) have at least 100 beds or at least 50 beds if the facility had a dedicated dementia care unit; (3) identify a staff member to be an Internal Champion

and work with the research team in the implementation process; and (4) be able to access email and websites via a phone, tablet, or computer.

Residents were eligible to participate if they: (1) were living in a participating nursing home; (2) were 55 years of age or older; (3) had cognitive impairment as determined by a score of 0–12 on the Brief Interview of Mental Status (BIMS);⁵² (4) were not enrolled in Hospice; or (5) were not admitted for short-stay rehabilitation care. Potentially eligible residents were evaluated to determine if they were able to self-consent using the Evaluation to Sign Consent (ESC).⁵³ To obtain our sample equally across all sites we recruited 12–13 residents from each setting. If the resident was not able to independently sign consent, assent was obtained from the resident and the legally authorized representative (LAR) was approached to complete the consent process. A total of 1100 residents were approached and 590 were consented. Of those approached, 38 were non-communicative, did not understand English, or died before they could be consented, 156 refused to assent or consent to participate, 221 LARs were unavailable, and 90 LARs refused to consent. Of those that consented, 37 residents were not eligible: 19 had a BIMS score greater than 12, 7 were under the age of 55, and 11 were on Hospice services. There were 553 residents enrolled into the study.

Procedure

Resident assessments were done by research evaluators based on direct observation of the resident or input from the nursing assistant providing care to the resident on the day of testing. All of these measures have been used with older adults in nursing home settings and have prior evidence of reliability and validity. Inter-rater reliability in this study ranged from .98 to 1.00 in all observed measures.

Measures

Descriptive information about residents included age, race, gender, cognitive status, function and comorbidities. Comorbidities were calculated using the Cumulative Illness Rating Scale (CIRS).⁵⁴ Scoring was done by summing the 14 categories of identified illnesses including heart, vascular, hematopoietic, respiratory, ears/nose/throat, upper gastrointestinal, lower gastrointestinal, liver, renal, genitourinary, musculoskeletal, neurologic, endocrine, and psychiatric. Cognitive status was evaluated using the BIMS.⁵² BIMS scores range from 0 to 15 with scores 13 to 15 indicative of no impairment, scores 8 to 12 indicative of moderate cognitive impairment, and scores 0 to 7 indicative of severe cognitive impairment. The Barthel Index⁵⁵ was used to evaluate resident function. The Barthel Index is a 10-item measure of activities of daily living (e.g., bathing, dressing). Items are weighted to account for the amount of assistance required. A score of 100 indicates complete independence.⁵⁵ Verbal report of function was obtained from the direct care worker providing care to the resident on the day of testing.

Measures to Evaluate Evidence of BPSD

Three items from the Cornell Scale for Depression in Dementia (CSDD)^{56,57} were used to address three common behaviors associated with dementia: (1) anxiety (item 1 on the

CSDD); (2) sadness (item 2 on the CSDD) which was used to reflect depression; and (3) retardation (item 6 on the CSDD) which was used to be indicative of apathy. Scoring of each item ranged from 0 to 2 (0 means the behavior is absent, 1 means it is mild/intermittent, and 2 means it is severe) with higher scores indicating greater frequency and severity of the behavior.

Verbal, physical and other types of aggression were measured using items from the 14-item Cohen-Mansfield Agitation Inventory (CMAI)⁵⁸. Verbal aggression (item 1 on the CMAI) evaluated if the resident exhibited cursing or verbal aggression. Physical aggression (item 2 on the CMAI) was based on evidence of hitting (including self), kicking, pushing, biting, scratching or aggressive spitting (including at meals). Other aggressive behaviors (item 4 on the CMAI), was based on evidence of intentional falling, making verbal or physical sexual advances, eating/drinking/chewing inappropriate substances, or hurting self or others with inappropriate substances. Scores on these items ranged from 1 (never) to 5 (a few times per hour) with higher scores indicating more frequency of any of the behaviors.

Repetitive vocalizations were based on a composite score that included items 9, 10, 12, and 14 on the CMAI. Specifically repetitive vocalizations included evidence of: (1) constant requests for attention or help; (2) repetitive sentences, calls, questions or words; (3) strange noises (weird laughter or crying); and (4) screaming. Responses to these items were summed and ranged from 4 to 20 such that higher scores were indicative of more repetitive vocalizations.

Measures for Management of BPSD

Management of apathy, anxiety, aggressive behaviors (verbal and physical), inappropriate or repetitive vocalizations, and sexually inappropriate behaviors was based on the Checklist for Evidence of Person-Centered Approaches for BPSD in Care Plans.⁵⁹ Either there was evidence that the behavior (score of 1) was being managed within the care plan using person-centered approaches⁵⁹ or there was no evidence of the behavior being addressed using person-centered approaches (score of 0). Descriptions of acceptable person-centered approaches were provided for the evaluators for each item and these focused on non-pharmacological ways in which to manage BPSD.

Measurement of the Quality of Care Interactions

Lastly, the quality of interactions between residents and staff was based on the Quality of Interaction Survey (QuIS).⁶⁰ To complete this measure staff-resident interactions are observed for approximately a 15 minute period for evidence of: (1) 'positive social' care which involves good, constructive beneficial conversation and companionship; (2) 'positive care' which includes interactions that result in providing appropriate care and are generally task focused; (3) 'neutral' interactions which include those that are brief and indifferent; (4) 'negative protective' which are interactions that focus on keeping the resident safe or removing dangers but in a restrictive way; and (5) 'negative restrictive' interactions which are those that oppose or resist residents freedom of action without a good reason. Either the resident received the specific care interaction from staff or he or she did not.

Data Analysis

Descriptive analyses were done using baseline data to describe the sample and independent sample t tests or chi-square analyses were done to determine if there were differences in the descriptive variables based on gender. A multivariate analysis of covariance, controlling for age, race, cognitive status, comorbidities and function was done to consider the association between gender and evidence of anxiety, sadness or apathy (based on single items from the CSDD), verbal, physical and other types of aggression (based on single items from the CMAI), and repetitive vocalizations (based on a composite score of four items from the CMAI). We did not control for site as there was no difference in outcomes related to setting. The Pillai-Bartlett Trace was used to determine multivariate significance. Levene's test of equality of error variances was used to establish that the error variance of the dependent variable was equal across groups. Chi-square analyses were used to determine if there were gender differences noted between having a specific behavior (e.g., anxiety, verbal aggression) and the behavior being addressed in the individual's care plan and evidence of differences between how staff interacted with male versus female residents. A significance level of $p < .05$ was used for all analyses.

Results

As shown in Table 1, the sample included 155 (28%) males and 398 females (72%) and the majority (76%) were white with a slightly greater percentage of the females (76%) versus males (63%) being white ($\chi^2 = 13.75$, $p = .001$). The mean age of the participants was 83.88 (SD=10.45) with males [mean age 79.11 (SD=11.02)] being significantly younger than females [mean age 85.70 (SD=9.60), $t = -6.86$, $p = .001$]. The mean BIMS was 4.31 (SD=3.50) indicating severe dementia with a significant difference such that the males had a slightly higher score (mean was 4.89, SD=3.67) compared to females (mean=4.08, SD=3.47, $t = 2.38$, $p = .02$). The participants had a mean number of 7.10 (SD=2.16) comorbidities with no difference between males (mean 6.97, SD=2.23) and females (mean 7.15, SD=2.16, $t = -.86$, $p = .39$). Participants were functionally dependent with a mean score on the BI of 38.98 (SD=30.03) and no difference between males (mean = 39.06, SD=29.76) and females (mean=38.90, SD=31.29, $t = .05$, $p = .95$) in terms of functional ability.

Among all participants there was little evidence of behavioral symptoms. Other types of aggressive behavior were the least likely to be present with a mean score of 1.19 (SD=.68) and 11% of the participants demonstrating infrequent to frequent other aggressive behavior. There was little evidence of apathy with a mean score of .20 (SD=.47) and 17% of the sample demonstrating evidence of apathy. There was little evidence of sadness with a mean score of .31 (SD=.56) and 21% exhibiting mild/intermittent sadness and 5% exhibiting severe sadness. Physical aggression was also not very prevalent with a mean score of 1.54 (SD=1.01) and 27% demonstrating infrequent to frequent physical aggression. With regard to anxiety the mean score was .54 (SD = .68) and 35% of the participants exhibited mild to severe anxiety. Verbal aggression was more prevalent with a mean score of 2.00 (SD=1.26) and 44% of residents demonstrating infrequent (less than once a week) to frequent (a few times an hour) evidence of verbal aggression. Repetitive vocalization was the

most common behavioral symptom with a mean of 6.27(SD=3.41) and 47% of the sample expressing some repetitive type of vocalization.

Table 2 provides the results of the multivariate analyses for differences between males and females in terms of evidence of BPSD. The Levene's test was non-significant for two of the outcomes and significant in four of the outcomes. Given the large sample size it was assumed that the MANOVA was robust.⁶¹ Controlling for comorbidities, cognition, age, race and function there was a significant difference between the genders in terms of anxiety, sadness, apathy, and other aggressive behavior (Pillai's Trace was 3.37, $p=.002$). Compared to males, females had more anxiety [mean .58 (SD=.69) for females versus a mean of .42(SD=.65) for males, $F=5.90$, $p=.02$] and more sadness [mean=.34 (SD=.59) for females and mean=.21 (SD=.44) for males, $F=5.33$, $p=.02$]. Males had more apathy [mean for males =.28(SD=.53) and females mean =.17(SD=.44), $F= 5.71$, $p=.02$] and more other aggressive behavior [mean for males = 1.33 (SD=.90), and females = 1.13 (SD=.56), $F=4.07$, $p=.04$] than females. There was no difference in evidence of physical aggression, verbal aggression, or repetitive vocalizations between males and females.

Table 3 provides differences by gender in management of behaviors based on care plans among individuals who exhibited any of the behaviors evaluated. Overall 34% of those with evidence of anxiety had this addressed in their care plans, 31% of individuals with evidence of apathy had apathy addressed in their care plan, 33% of those with evidence of verbally aggressive behavior had verbal aggression addressed in their care plans, 38% of those with evidence of physically aggressive behavior had physical aggression addressed in their care plans, and 14% of those with evidence of sexually inappropriate behavior had this addressed in their care plans. Lastly, 34% of those with evidence of repetitive vocalizations had this addressed in their care plans. There were differences by gender between management of BPSD based on care plans such that males (47%) were more likely than females (31%) to have anxiety addressed ($\chi^2 = 4.29$, $p=.04$) and males (32%) were more likely than females (0%) to have sexually inappropriate behaviors addressed ($\chi^2 = 8.47$, $p=.01$). There were no differences in management between males and females with regard to apathy, verbal or physical aggression or repetitive vocalizations.

As shown in Table 4 there were no significant differences between male and female participants with regard to the type of care interactions they experienced. The majority (58% to 70%) of the males and females were exposed to positive social and positive care interactions, $\leq 25\%$ of males and females were exposed to neutral care interactions, over 90% of the males and females were exposed to negative protective care interactions, and $\leq 5\%$ were exposed to negative restrictive care interactions.

Discussion

The first hypothesis stating that females would have more anxiety, sadness, apathy, verbal aggression and repetitive vocalizations and males would have more physical aggression and more other aggressive behaviors was partially supported in this study. As has been shown in prior research, the female participants in this study had more anxiety and sadness than their male counterparts.¹⁹⁻²⁷ Female participants did not, however, demonstrate more apathy

than the males. Males had more apathy than females in this sample. In this study, apathy was based on the single item from the CSDD that asks about evidence of psychomotor retardation or slow movements, slow speech and slow reaction. While these may be signs of apathy, this single item may not be a true reflection of apathy. Further, prior research reporting more apathy in females was done with women who had mild dementia.²⁰ The participants in this study all had severe dementia and it is possible that the transition from mild to severe dementia alters behavior and results in changes among males and females with regard to evidence of apathy. Females, for example, as they become more impaired may lose some of the ingrained social and routine personal care behaviors that protect them from appearing apathetic such as the ability to bath, dress, and interact with others socially.

There was no difference between males and females in our sample with regard to presentation or management of verbal or physical aggression or repetitive vocalizations. These findings may be because our sample included only those with severe dementia. Prior research reported gender differences in these behaviors among cognitively impaired individuals with more mild to moderate versus severe dementia^{19–27}. Further, although we controlled for age, race, function, comorbidities, and cognition, we did not consider some factors that may have also influenced aggressive behavior in males such as pain or medications.³⁹ Lastly, we did not specifically evaluate when behaviors were occurring (e.g., during care interactions, when resident was alone). For example, males have been described as being more aggressive during care interactions.³³ Future research should explore not only differences in verbal and physical aggression between males and females but also what might influence those differences.

There was a difference in our sample noting that males had more other aggressive behaviors. We anticipate that the majority of this behavior was sexually inappropriate behavior as the other behaviors included within this item on the CMAI such as intentional falling or eating inappropriate substances are much less common. Prior research has likewise shown that males tend to have more sexually inappropriate behavior. This is usually physically inappropriate behavior. Conversely, when present in females sexually inappropriate behavior tends to be more verbally inappropriate.^{34,42,43,62,63} Inappropriate sexual behavior is due to hormonal changes and/or changes in the brain, particularly the hypothalamus, amygdaloid nuclei, inferior frontal cortex, and medial striatal/septal regions of the brain.⁶⁴ Different types of dementia as well as severity of the dementia may influence this behavior. Regardless of the cause of inappropriate sexual behavior, males who exhibit this behavior are more concerning for staff.^{33,41}

The second hypothesis in this study suggesting that when BPSD is present it was more likely to be addressed in care plans for males versus females was likewise partially supported. Specifically, anxiety was more commonly addressed in males, as was sexually inappropriate behavior. Other studies have also noted that when BPSD are present in females staff tend to ignore or avoid the resident.⁴⁵ Conversely, when noted in men the behaviors are more concerning and tend to get addressed.^{33,41} This raises concerns that these behaviors are not getting addressed in females and consequently female residents will continue to experience the behavior and be at risk for decreased interactions with staff and decreased quality of

life. In this study, for example, anxiety was more prevalent in females yet addressed more in males.

Overall, in this study less than 50% of those who exhibited behaviors based on study measures obtained by research evaluators during direct observations had these behaviors addressed in their care plans. It is possible that the direct care workers in these settings did not report behaviors such as hitting or kicking during bathing as they may assume the behavior is normal for residents with dementia.⁶⁵ Further the staff may avoid reporting these behaviors as reporting may initiate concerns at the time of a state survey.^{65,66} Alternatively, it is possible that the use of more standardized care plans decreases the personalized approached necessary for developing care plans that address BPSD among nursing home residents.⁵⁹

The third hypothesis related to the quality of care interactions experienced by males versus females was not supported. There was no difference in how staff interacted with male versus female residents. The interactions between staff and residents showed that for both genders approximately 60% of the interactions were either positive with regard to social aspects or positive with regard to care interactions. A large percentage, 90% or more, of the observed interactions were negative protective such as a telling a resident to “sit down they might fall”. While nursing staff likely do this as a way to protect the resident, it may have a negative impact on optimizing function and physical activity and may increase BPSD.

The interactions observed in this study were not focused on BPSD. Prior research⁶⁷ has shown that BPSD can positively and negatively influence the quality of care. Future assessments of care interactions should focus specifically on the impact of BPSD on care interactions and continue to establish if there are gender differences in these interactions particularly between male residents and male caregivers or male residents and female caregivers or vice versa.

Compared to prior reports of BPSD in long term care settings which have ranged from 10 to 90%,^{2-5,68,69} the incidence of BPSD were relatively low in this study ranging from only 8% to 35% of study participants. It is likely that this is due to sample selectivity in that study participants all had severe dementia.⁶⁵ Further, we only considered a small number of BPSD. In a prior study⁷⁰ exploring bothersome behaviors associated with dementia, staff described 59 behaviors including such things as wandering, rudeness, or shadowing staff or other residents. Future research could look at gender differences in these additional behaviors as they may likewise influence differential care interactions by gender. It is also possible that residents had multiple behaviors and there may be differences between males and females in terms of experiencing multiple behaviors.

Study Limitations and Conclusions

This study was limited in that it was a secondary data analysis and methodologically not developed to answer the hypothesized questions. The sample was selective, as noted, in that it included residents from two states all of whom had severe dementia and assented to participate in the study. The measures were single item reflections of the behaviors of

interest and may not have comprehensively addressed the behavior of interest (e.g., use of retardation to reflect apathy). We did not evaluate care plans for evidence of interventions for sadness. Further, only a few BPSD were evaluated. Lastly, we recognize that we focus on gender differences and appreciate that the differences may also be due to sex differences. The impact of sex as more biological and gender as more sociocultural has not been well studied with regard to Alzheimer's disease incidence and even less so with regard to the presentation of BPSD and progression of disease over time. Sex and gender differences are difficult to separate and actually may overlap. Continued research is needed in this area. In addition, there may be racial differences in outcomes that were also not addressed specifically in this study and would be important to consider in future research. Settings were not associated with differences in outcomes in this study but future work should continue to consider the impact of settings, and what aspects of the setting, might impact care outcomes.

Despite the noted study limitations, the findings provide some support for previously noted gender differences related to presentation and management of BPSD and raise some important questions for future research. Consistently there seems to be evidence that males exhibit more sexually inappropriate behavior while females seem to exhibit more anxiety and sadness. There may be no differences in how staff interact with males and females but ongoing research is needed to continue to explore those interactions and to consider the interactions between same and different genders with regard to management of BPSD. Regardless of gender, continued evaluation of negative protective care interactions particularly are needed as these may limit function and actually exacerbate BPSD. Lastly, increased awareness should be given to female residents exhibiting BPSD to assure that these behaviors are not ignored and that appropriate person centered interventions are established to address the behaviors and optimize quality of life.

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Table 1

Description of Sample by Gender

Variable	Males	Females	t/χ^2 (p)
	Mean (SD)	Mean (SD)	
Age	79.11(11.02)	85.70(9.63)	-6.86 (.001)
Brief Interview for Mental Status Exam	4.89(3.67)	4.08(3.41)	2.38 (.02)
Comorbidities	6.97 (2.23)	7.15(2.16)	-.86 (.39)
Barthel Index	39.06(29.76)	38.90(31.29)	.05(.95)
Race			13.75(.001)
White	98(63%)	321(76%)	
Black	57(37%)	133(24%)	

Table 2

Multivariate Analysis of Variance (Controlling for Age, Comorbidities, Race, Cognition and Function) For Gender Differences in Anxiety, Sadness, Apathy, Verbal, Physical and Other Aggression and Repetitive Vocalization

	Males		Females		
Model 1 Presence of Behavioral and Psychological Symptoms					
Variable	Mean	SD	Mean	SD	F(p)
Anxiety (item 1 from CSDD)	.42	.65	.58	.69	5.90 (.02)
Sadness (item 2 from CSDD)	.21	.44	.34	.59	5.33(.02)
Apathy (item 6 from CSDD)	.28	.53	.17	.44	5.71(.02)
Verbal aggression (item 1 from CMAI)	2.03	1.30	1.99	1.25	.28(.60)
Physical aggression (item 2 from CMAI)	1.49	.95	1.56	1.03	.005(.94)
Other Aggression (item 4 from the CMAI)	1.33	.90	1.13	.56	4.07(.04)
Repetitive vocalization (items 9,10, 12 and 14 from CMAI)	5.91	3.14	6.41	3.51	.94(.33)

Table 3

Differences By Gender in Care Plans for Those with Evidence of the Behavior Based on Assessments

	Males		Females			
	Males		Females		Total with the behavior	χ^2 (p)
Care Plan Item	Yes N(%)	No N(%)	Yes N(%)	No N(%)	N (%)	
Anxiety	22(47%)	25(53%)	54(31%)	122(69%)	76(34%)	4.29(.04)
Apathy	11(31%)	24(69%)	17(30%)	39(69%)	28(31%)	.01(.91)
Verbal aggression	24(38%)	39(62%)	52(30%)	119(70%)	76(33%)	1.24(.27)
Physical aggression	16(42%)	22(58%)	38(37%)	66(63%)	54(38%)	.37(.55)
Sexually inappropriate behavior	6(32%)	13(68%)	0(0%)	23(100%)	6(14%)	8.47(.01)
Repetitive vocalizations	25(42%)	36(58%)	58(32%)	126(68%)	83(34%)	1.83(.18)

Table 4

Differences by Gender in Care interactions

Care Interaction	Males		Females		$\chi^2(p)$
	Yes N(%)	No N(%)	Yes N(%)	No N(%)	
Positive Social Interactions	106(70%)	44(29%)	254(66%)	131(34%)	1.10(.30)
Positive Care Interactions	90(60%)	60(40%)	222(58%)	163(42%)	.97(.62)
Neutral Interaction	37(25%)	113(75%)	86(22%)	298(78%)	.70(.70)
Negative protective interactions	140(93%)	10(7%)	364(94%)	21(6%)	.29(.59)
Negative restrictive interactions	5(3%)	145(97%)	18(5%)	367(95%)	.47(.49)