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## Gender Differences in Disease, Function and Behavioral Symptoms in Nursing Home Residents with Dementia

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### Abstract

The purpose of this study was to consider gender differences in depressive symptoms, agitation, resistiveness to care, physical function and use of psychotropic medications in older adults with moderate to severe dementia in nursing homes. Sixty-seven nursing homes and 889 residents from two states were included. The majority of the participants were female ( $n = 640, 72\%$ ) and white ( $n = 618, 70\%$ ) with a mean age of 86.58 ( $SD=10.31$ ). Differences by gender with regard to age, physical function, depressive symptoms, agitation/aggression, and resistiveness to care were tested using multivariate analysis of variance. Older females with moderate to severe dementia present with more depressive symptoms (anxiety, sadness, somatic complaints) than males. Males present with more aggressive behavior and are more likely to receive anticonvulsants. Caregivers should focus on preventing and managing depressive symptoms including anxiety, sadness and somatic complaints among older females and aggressive behavior in older males with dementia.

### Keywords

Mental health < Clinical focus; Anxiety/stress < Health behavior/symptom focus; Cognitive impairment < Health behavior/symptom focus; Depression < Health behavior/symptom focus; Nursing home < Location of care; Gerontology < Population focus

While it has repeatedly been noted that there tend to be more females living in nursing homes than males, the number of males has increased over the years such that approximately two-thirds of the residents are females and one-third are males (Howley, 2019). For several decades gender differences in nursing home residents have been considered with regard to demographic and descriptive characteristics such as age, marital status, education, chronic illnesses, and cognitive status (Alarcao et al., 2018; Buchanan et al., 2004; Burgio et al., 2004). In addition multiple studies (Alarcao et al., 2018; Fog et al., 2019; Mulders et al., 2016, 2019; Nijk et al., 2009) have considered differences in behavioral symptoms, use of medications, use of health care resources, physical function, physical activity and frailty between females and males. Generally female nursing home residents are more likely to be older and married when compared to male counterparts (Buchanan et al., 2004; Drageset et al., 2011). With regard to physical function, older females tend to have more mobility disability than their male counterparts (Ahmed et al., 2016; Leveille et al., 2000). While studies showed no differences in rates of dementia between males and females in nursing home settings (Buchanan et al., 2004) overall dementia tends to be more prevalent in females (Alzheimer's Association, 2019).

Throughout the lifespan males, based on sex (which addresses the biological factors associated with anatomy and secondary sex characteristics) and gender (social and cultural roles creating a gender identity), tend to exhibit more physically aggressive behavior and females tend to present with more indirect aggression such as verbal abuse or gossip (Bjorkqvist, 2018; Fortuna, 2014; World Health Organization, 2020). Females across the lifespan tend to present with more anxiety and depression than their male counterparts (World Health Organization, 2020; Christiansen, 2015; Parker & Brotchie, 2004).

Regarding older adults with dementia, females generally present more often with depressive symptoms, agitation, and apathy than males (Columbo et al., 2018; Helvik et al., 2016; Lee et al., 2017; Tao et al., 2018). Conversely, males with dementia generally demonstrate more physical aggression than females (Isaksson et al., 2011). When present, behavioral symptoms are more often treated with pharmacologic interventions in males (Colombo et al., 2018; Isaksson et al., 2011).

## Reasons for Differences

Biological and social factors have been noted to explain the reasons for aggressive behavior among males and females. Biologically male aggression has been associated with hormonal status and higher levels of testosterone and the fact that males tend to be larger, have denser and heavier bones, quicker reaction time, better visual acuity, higher muscle/fat ratio, bulkier hearts, higher hemoglobin levels, thicker skin, and larger lung capacity (Sell et al., 2012). Socially, boys and girls have traditionally been exposed to different cultural aspects of gender such as learning that it is more appropriate for boys to fight than girls and boys are more often given toy guns while girls are provided with dolls. With the onset of the woman's movement and more equality between genders, these culturally established practices have decreased. However, there has not been a change in presentation of aggression in males versus females (Fortuna, 2014). Prior findings suggest that older adults maintain social roles and gender differences into old age (Bracke et al., 2020).

For other behavioral symptoms such as agitation and depression, although sex may contribute to differences, the major contributors to gender differences are believed to be socialization processes (Christiansen, 2015; Parker & Brotchie, 2004). Males, for example, tend to physically confront feared objects while females do not and become anxious instead. Females are also more likely and willing to acknowledge and report anxiety and depressive symptoms than males and are also more likely to have been exposed to past trauma (e.g., sexual trauma or domestic abuse) that contributed to these symptoms (Bekker & van Mens-Verhulst, 2007; Christiansen, 2015; Parker & Brotchie, 2004).

In long term care settings, behaviors in males are more likely to be identified and reported by staff as they can be frightening and upsetting and staff perceive that behavioral symptoms in males are generally more difficult to manage (Denson et al., 2018; Isaksson et al., 2011; Van Duinen-van den Ijssel et al., 2018). Conversely, behavioral symptoms commonly noted in females such as resistiveness to care during bathing, dressing and oral care are often just accepted by staff as common behaviors of residents in nursing home settings.

The cohort of older adults with dementia has been strongly influenced by social aspects of gender identity as described by social role theory (Eagly et al., 2000). Social role theory suggests that gender differences are due to learned behavior. Based on social role theory females are anticipated to act more in the interest of the group and less based on personal interests. Males and females are socialized to act in certain ways depending on the social situation and accepted cultural norms. For example, a female may act differently in her home versus work setting. Traditionally certain behaviors are expected in males versus females. For example, it has been socially more acceptable for males to present with aggression and violent behavior versus when females demonstrate these same behaviors (Eagly et al., 2000).

## Purpose

The research question driving this study was to evaluate if there were gender differences in depressive symptoms, agitation, resistiveness to care, physical function and use of psychotropic medications in a large sample of older adults living with moderate to severe dementia in nursing homes settings. To obtain additional information, gender differences were tested between the specific symptoms that present related to each behavior such as sadness for depression, aggression for agitation, and hitting for resistiveness to care. Our primary hypothesis was that there would be a difference in gender such that females compared to males would be older, have more impaired physical function, more depressive symptoms, and more resistiveness to care, more agitation, less aggression and have fewer psychotropic medications prescribed for them. Confirming if these differences persist will help determine if gender specific interventions are needed to help address these clinical symptoms and improve resident outcomes. For example, it may be most important for staff to motivate and increase the active engagement of female residents with dementia in their own care when optimizing physical function and implementing interventions to address resistiveness to care.

## Methods

### Design

This was a secondary data analysis using baseline data from two studies: Testing the Implementation of the Evidence Integration Triangle for Behavioral and Psychological Symptoms Associated with Dementia (Resnick et al., 2018) (EIT-4-BPSD) and the study Testing the Impact of Function and Behavior Focused Care for Nursing Home Residents with Dementia (Galik et al., 2021) (FBFC). Table 1 provides a description of the settings in which the studies were done and eligibility criteria for both studies and recruitment numbers. Both studies approached residents randomly based on a list provided by the facilities of potentially eligible participants. For recruitment in both studies the relevant study was explained to potential participants and they were given the Evaluation to Sign Consent (Resnick et al., 2007). If the resident failed the Evaluation to Sign Consent, verbal or written assent was obtained from the resident and the legally authorized representative was approached to complete the consent process. The studies were approved by a University based Institutional Review Board and registered on [Clinicaltrials.gov](https://clinicaltrials.gov) as required and were conducted from 2014 to 2020.

A total of 67 nursing homes from two states were included in the studies and 889 residents were recruited. The majority of the participants were female (n = 640, 72%) and white (n = 618, 70%). The mean age of the participants was 86.58 (SD=10.31).

### Measures

In both studies trained research evaluators completed the measures based on direct observation of the resident or interview with direct caregivers providing care to the resident on the day of testing. In addition to age, race, and gender, comorbidities were calculated using the Cumulative Illness Rating Scale (CIRS) (Linn et al., 1968) which has the option to rate comorbidity and severity. For the purposes of these studies, residents were evaluated only on number of comorbidities which was based on 14 organs or systems and a psychiatric/behavioral rating. The comorbidities were summed and could range from 0 to 14. Physical function was assessed based on the Barthel Index (F. Mahoney & Barthel, 1965). The Barthel Index is a 10-item measure that considers the participant's ability to complete basic activities of daily living such as bathing, dressing, and ambulating. Scores range from 0 to 100 with 80–100 being indicative of independence, 60–79 minimally dependent, 40–59 partially dependent, 20–39 very dependent, and less than 20 totally dependent (F. Mahoney & Barthel, 1965).

The Cornell Scale for Depression in Dementia (CSDD) (Alexopoulos et al., 1988) is a 9-item measure that is used to evaluate depressive symptoms among individuals with dementia. Scores can range from 0 to 38 and scores  $\geq 12$  are indicative of depression. Agitation, which is operationally defined as inappropriate verbal, vocal or motor activity that is not judged by an outside observer to result directly from the needs or confusion of the agitated individual (Cohen-Mansfield, 1986), was measured using the short 14-item Cohen-Mansfield Agitation Inventory (CMAI) (Cohen-Mansfield, 1988). The response format includes a 5-point Likert scale addressing the frequency of behavioral symptoms with higher

scores indicative of more agitation. Scores can range from 14 to 60. In addition, aggression was separately evaluated based on three items from the CMAI that focus on physical aggression. These include: (1) hitting; (2) grabbing onto people and throwing things; and (3) other aggressive behavior such as sexually aggressive behavior. Scores for these three items can range from 3 to 15 with higher scores indicative of more aggressive behavior.

Resistiveness to care was evaluated based on the Resistiveness to Care Scale (E. K. Mahoney et al., 1999). The Resistiveness to Care Scale includes 13 behaviors that suggest that the resident may be resisting care. Observed behaviors include such things as hitting, kicking, or clenching teeth during care. Observations were done for 15 to 30 minutes during daytime care interactions such as bathing, dressing, mealtimes or toileting and the number of resistive behaviors observed were summed.

All the measures used in these studies had prior evidence of reliability and validity when used with older adults (Alexopoulos et al., 1986; Cohen-Mansfield, 1986; E. K. Mahoney et al., 1999; F. Mahoney & Barthel, 1975). In the current studies we evaluated inter-rater reliability which was >90% across all the measures.

The use of psychotropic medications was obtained using medical records. The following data were collected: Routine use of antidepressants, anxiolytics, sedative-hypnotics, anticonvulsants, and antipsychotics. Although in some situations participants may have received multiple drugs within the same group, drug use was determined to be positive if at least one drug per group was noted.

## Data Analysis

Descriptive statistics were done to describe the sample. Controlling for race and comorbidities, differences by gender regarding age, physical function, depressive symptoms, agitation/aggression, and resistiveness to care were tested using multivariate analysis of variance. The Pillai-Bartlett trace was used to determine multivariate significance. This test was used as it is considered to be the most powerful and robust statistic especially when there is a violation to the assumption of homogeneity of variance-covariance (Adeleke et al., 2015). In the current study the Box's M was 14.64 ( $F=2.40$ ,  $p=.05$ ) indicating that the variance-covariance matrices were equal and the assumption of homogeneity of variance-covariance was not met. Using the same multivariate approach, we evaluated differences in gender on each item included within the behaviors measured. This included the symptoms of depression based on the items in the CSDD, the signs and symptoms of agitation based on items in the CMAI, and resistiveness to care as measured by the items in the Resistiveness to Care Scale. This was done to consider specifically what the differences were in specific symptoms regarding the behavior. Chi-square was used to test for differences in use of drugs across each drug group between males and females. A  $p .05$  level of significance was used for all analyses.

## Results

As shown in Table 2, the mean age of the participants was 86.58( $SD = 10.31$ ), 70% were white, 72% were female, and 3% were Hispanic. The participants had 5.39( $SD = 3.06$ )

comorbidities and were functionally impaired with a mean on the Barthel Index of 41.79(SD = 29.82), indicative of being dependent in personal care activities. There was little evidence of depressive symptoms with a mean of 4.25(SD = 4.35), agitation with a mean of 20.66(SD = 7.67), aggression 4.05(1.98), or resistiveness to care with a mean of .36(SD = .96). There was no difference between males and females in physical function ( $F=.59$ ,  $p=.44$ ), agitation ( $F=1.18$ ,  $p=.28$ ), aggression ( $F=1.14$ ,  $p=.29$ ) or resistiveness to care ( $F=3.46$ ,  $p=.06$ ). There was a difference in age ( $F=70.54$ ,  $p=.001$ ) such that those who were female were older with a mean of 88.33(SD=10.31) years than males with a mean age of 81.95(SD=10.67). Likewise, females had more depressive symptoms with a mean of 4.45(SD=4.45) compared to a mean among males of 3.73(SD=4.03),  $F=4.76$ ,  $p=.03$ .

Table 3 provides the differences across the individual items of the behavioral measures to consider if any of the symptoms indicative of resistiveness to care, agitation, aggression, and depression were different between the genders. Based on items on the Resistiveness to Care scale the only difference was that woman were more likely to adduct their legs during caregiving when compared to males ( $F=4.05$ ,  $p=.04$ ). Based on items in the CSDD reflecting symptoms of depression females demonstrated more anxiety (mean=.55, SD=.68) versus males (mean=.36, SD=.61,  $p=.001$ ) and more sadness (female mean .34, SD=.60) versus males (mean .18, SD= .43,  $p=.001$ ). Females also expressed more physical complaints (mean for females =.28, SD = .60, and mean for males=.17, SD = .45,  $p = .01$ ). Regarding agitation and aggression, based on the items in the CMAI males had more “other aggressive behavior” which was defined as self-abuse including intentional falling, making verbal or physical sexual advances, eating/drinking/chewing inappropriate substances, or hurting self of other with inappropriate substance (male mean = 1.27, SD = .81, and female mean =1.12, SD =.53,  $p =.001$ ). Conversely females presented with more repetitive sentences or calling out (mean for females = 1.80, SD = 1.34, and mean for males 1.53, SD = 1.12,  $p = .01$ ) and made more strange noises or crying (mean for females=1.32, SD=.90, and mean for males=1.18, SD=.64,  $p=.02$ ).

Table 4 describes medication use by gender. There was no difference in use of anxiolytics with 19% of males and 20% of females receiving an anxiolytic ( $\chi^2 =.04$ ,  $p=.85$ ), no difference in use of antidepressants with 35% of males and 36% of females receiving an antidepressant ( $\chi^2 =.02$ ,  $p=.91$ ), no difference in antipsychotics with 19% of males and 21% of females receiving an antipsychotic ( $\chi^2 =.69$ ,  $p=.40$ ), and no difference in use of sedative hypnotics with .5% of both males and females receiving a sedative hypnotic ( $\chi^2 =.02$ ,  $p=.89$ ). There was a difference in the use of anticonvulsant medication with 24% of males and 18% of females receiving these drugs ( $\chi^2 =4.19$ ,  $p=.04$ ).

## Discussion

The stated hypothesis regarding differences between male and female residents with moderate to severe dementia was only partially supported in this study. As has been noted in previous research, females were significantly older than males and had more depressive symptoms (Buchanan et al., 2004; Colombo et al., 2018; Drageset et al., 2011; Lee et al., 2017). The differences in mean scores suggested that overall women experience one more symptom of depression when compared to men. This difference may not alter the diagnosis

of depression as per cut off scores for the CSDD, but it has the potential to impact quality of life of the individual.

Psychotropic medication use was no different between males and females except for use of anticonvulsants which were greater among males versus females. The clinical indication for use of these medications among the participants was not obtained. Treatment may have been appropriate for a known seizure disorder or use may have been used “off-label” for the management of behavioral symptoms, particularly stabilization of behaviors such as aggression and agitation (Ballard et al., 2009; Perkins, 2012). Aggressive behaviors, particularly those noted in the “other aggressive behavior” item in the Cohen-Mansfield Agitation are more likely to be noticed and reported by staff when exhibited in males and consequently treated pharmacologically. Male size and strength can be frightening for staff and residents and thus the behaviors are seen as potentially dangerous (van Duinen-van den IJssel et al., 2018). There is not clear evidence that anticonvulsants actually decrease these behaviors (Ballard et al., 2009) and further research is needed to explore their effectiveness with a focus on male residents.

With regard to depressive symptoms, anxiety, sadness, and multiple somatic complaints were the items that were significantly different with females experiencing these symptoms more than males. Increased sadness and crying have been noted to be higher in females versus males with depression and without depression (Curran et al., 2020; Hesdorffer et al., 2018; Palese et al., 2018). These differences may be due to learned behavior or socialization as described in social role theory (Johnson et al., 2017). They may, however, be due to variables other than or in addition to gender that were not considered in this analysis such as pain, clinical instability or fatigue (Palese et al., 2018).

As has been noted in prior research, somatization or expressing multiple physical complaints, was more common in females than male participants in this study (Cao et al., 2020; Evangelidou et al., 2020; Tan & Sahin, 2020). As with crying, gender differences may be due to social role theory and the more general acceptability for females to have physical complaints or for males to maintain a more macho profile and avoid such complaints. There are also other contributors to somatization including economic status, depressive disorders, post-traumatic stress and multiple traumas (Arts et al., 2019; Cheung et al., 2019; Hanssen et al., 2018). Clinically, given these differences, it may be helpful to focus prevention and management interventions on symptoms more likely to be expressed in women when working with women or in men when working with men.

In this study males were more likely to demonstrate “other” aggressive behaviors which were most commonly described as sexually inappropriate behavior. Prior research has shown that males are generally more likely to present with sexually inappropriate behavior, particularly physical sexually inappropriate behavior (Levitsky & Owens, 1999; Wick & Zanni, 2005). Disinhibition is believed to be due to frontal and temporal lobe dysfunction and frontotemporal dementia is the subtype of dementia more commonly associated with inappropriate sexual behavior (Mendez & Shapira, 2013). Inappropriate sexual behaviors, however, occur in 7 to 25% of individuals with dementia and are more prevalent in nursing home residents and those with more severe dementia (De Giorgi & Series, 2016). In the

current study, which was a secondary data analysis, diagnostic information as to the type of dementia was not obtained. Frontotemporal dementia occurs equally in males and females and sexually inappropriate behavior tends to be present in the early stages of this dementia due to lack of insight (Evrensel et al., 2015). Individuals with early-stage dementia were not included in the current study which involved only those with moderate to severe dementia. Future research could consider specific dementia diagnosis when observing for symptoms of agitation, particularly sexually inappropriate behavior. Awareness of this presentation of aggressive behavior in men suggests that clinicians should have a plan in place to manage sexually inappropriate behavior and other types of aggressive behavior among male residents. This includes environmental interventions such as avoiding exposure to sexually stimulating television or movies, behavioral approaches such as distraction, and/or medication management (De Giorgi & Series, 2016; [www.nursinghometoolkit.com](http://www.nursinghometoolkit.com)).

Despite using measures in this study that were developed and had prior evidence of reliability and validity there were significant measurement challenges noted. Little evidence of behavioral symptoms was noted overall in this sample which may be due to the significant level of dementia among participants (Lövheim et al., 2008). Behaviors may have been missed due to limited observation time and biased recall by staff. Behaviors that occurred during personal care interactions may have been considered normal responses to care interactions. An example of this is females hitting or lashing out at caregivers during care interactions. Likewise, as noted above, many of the items on the CSDD are reflective of physical disease or age changes such as appetite loss, weight loss, lack of energy, or difficulty sleeping (Alfini et al., 2020; Angioni et al., 2020). Alternative ways in which to optimally measure symptoms of depression and other behavioral symptoms among these individuals should be considered.

This study was limited by virtue of being a secondary data analysis and using data from two different studies and thus not specifically designed to answer the proposed research questions or hypotheses. Although approximately 30% of the sample was black and male, the majority were non-Hispanic and representative of no other cultures (e.g., Asian, Israeli, European) which may have influenced outcomes. Measures utilized had established evidence of reliability and validity, but observation periods may have been too short to detect behaviors and reports from staff may have been biased by their own beliefs about what was normal in this population. This was a secondary data analysis, and the prescribed medications were obtained based on chart review but the reason for use was not obtained from the prescriber. It is possible, for example, anti-seizure medication may have been used for pain management or seizure prevention versus mood stabilization. Despite these limitations the findings provide some additional support indicating that females tend to present with more depressive symptoms than males particularly regarding anxiety, sadness, and multiple somatic complaints. Conversely males tend to present with more aggressive behavior, which may be sexually inappropriate behavior or other types of aggressive behavior. Overall, there was no difference in resistiveness to care across the genders although in individual items females tended to adduct their legs more than male participants.



Clinically, caregivers should anticipate and focus on addressing depressive symptoms such as anxiety, sadness, and somatic complaints among older females with moderate to severe dementia and aggressive behavior in males. Future research needs to continue to address measurement challenges when evaluating older individuals with moderate to severe dementia with regard to symptoms of depression, agitation and resistiveness to care to better evaluate evidence of these behaviors across both males and females. Additional research regarding social role theory specifically among those with dementia is also needed to better understand gender differences in this population.

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**Table 1**

**Settings of Studies and Recruitment of Participants**

Study Name*	Setting Eligibility	Participant Eligibility	Number of Settings	Number of Participants	Study Aims
EIT-4-BPSD	(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 setting 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 via a phone, tablet, or computer.	(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); (4) demonstrated a behavioral symptom over the past month; (5) were not enrolled in Hospice; and (6) were not admitted for short-stay rehabilitation. Residents were evaluated for the ability to self-consent using the Evaluation to Sign Consent measure.	55 Settings	A total of 1100 residents were approached and 572 were consented. Of those approached, 38 were non-communicative, did not understand English, or died before they could be consented, 156 refused to consent or consent to participate, 221 Legally Authorized Representatives (LARs) were unavailable, and 90 LARs refused to consent. Of those that consented, 19 had a BIMS score greater than 12 and thus were ineligible. There were 553 residents enrolled into the study.	The aims of these studies were to: (Study 1): Implement and test the implementation of EIT-4-BPSD using the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) criteria; (Study 2): Evaluate the feasibility, utility and cost of the EIT approach in EIT-4-BPSD Facilities.
FBFC	(1) Sites had to have at least 100 beds.	Residents were eligible to participate if they were 55 years of age or older, able to speak English, currently living in the nursing home, and scored 15 on the Mini Mental State Examination (MMSE)(Folstein et al., 1975). Residents were excluded from the study if they were receiving hospice or sub-acute rehabilitation.	12 Settings	A total of 1512 residents were screened for participation. Of these 1014 (67%) were potentially eligible based on initial screening and 498 (33%) were not eligible as they were in hospice, rehabilitation, in the hospital, or younger than 55 years of age. A total of 527 (52%) of the 1014 potentially eligible residents or their proxies refused to provide consent or the proxies were simply not reachable. A total of 487 (48%) of the residents (or their proxies) consented to participate and were randomized. Additional screening for cognition resulted in 146 (30%) of those consented being deemed ineligible due to scoring greater than 15 on the MMSE. In addition, 2 individuals withdrew from the study and 3 died following consent leaving a total of 336 participants enrolled.	The aims of this study were to: (1): Evaluate the effectiveness of FBFC-CI on behavioral symptoms (depression, resistance to care, agitation), psychotropic medication use, function (ADLs, performance), and physical activity (survey, actigraphy) of residents; (2): Evaluate the impact of FBFC-CI on adverse events (falls, emergency room admissions and hospitalizations); and (3): Demonstrate staff adoption and maintenance of use of FBFC approaches.

**Table 2**

Multivariate Analysis and Description of Outcomes by Gender (bolded outcomes significant at the p .05 level)

<b>Variable</b>	<b>Male Mean (SD)</b>	<b>Female Mean (SD)</b>	<b>Total</b>	<b>F</b>	<b>p</b>
Age	81.95(10.67)	88.33(9.61)	86.58(10.31)	70.54	.001
Function	40.51(28.93)	42.27(30.18)	41.79(29.82)	.59	.44
Depression	3.73(4.03)	4.45(4.45)	4.25(4.34)	4.76	.03
Agitation	20.20(7.53)	20.84(7.73)	20.66(7.67)	1.18	.28
Aggression	4.17(2.19)	4.01(1.90)	4.05(1.98)	1.14	.29
Resistiveness to Care	.26(.74)	.40(1.03)	.36(.96)	3.46	.06
Comorbidities	5.34(3.02)	5.40(3.09)	5.39(3.07)	.06	.81

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**Table 3**

## Individual Items on Each Measure

Variable	Male Mean (SD)	Female Mean (SD)	Total	F	p
Resistiveness to Care					
Turn away	.01(.10)	.03(.18)	.03(.17)	3.47	.06
Pull away	.02(.14)	.03(.17)	.03(.16)	.56	.45
Push away	.01(.10)	.03(.16)	.02(.15)	2.13	.15
Push/pull	.01(.25)	.01(.11)	.01(.11)	.12	.73
Grab object	.01(.10)	.03(.18)	.03(.16)	3.12	.08
Grab person	.01(.10)	.03(.14)	.02(.14)	1.23	.27
Adduct	.01(.07)	.03(.17)	.02(.15)	4.05	.04
Hit/kick	.07(.26)	.09(.29)	.08(.29)	.78	.38
Say no	.07(.25)	.09(.29)	.08(.28)	1.06	.30
Cry	.02(.14)	.04(.19)	.03(.18)	1.79	.18
Threaten	.01(.06)	.01(.08)	.01(.08)	.35	.56
Scream/yell	.04(.19)	.05(.21)	.04(.21)	.45	.50
Clench mouth	.05(.22)	.04(.19)	.04(.20)	.15	.70
Cornell depression scale					
Anxiety	.36(.61)	.55(.68)	.49(.67)	13.75	.001
Sadness	.18(.43)	.34(.60)	.30(.56)	14.14	.001
Lack of reactivity to pleasant events	.16(.44)	.22(.52)	.20(.50)	2.44	.12
Irritability	.63(.72)	.59(.71)	.60(.71)	.58	.45
Agitation	.45(.68)	.46(.68)	.45(.68)	.01	.94
Retardation	.24(.50)	.18(.46)	.20(.47)	3.32	.07
Multiple physical complaints	.17(.45)	.28(.60)	.25(.54)	7.02	.01
Loss of interest	.20(.52)	.20(.51)	.20(.51)	.01	.91
Appetite loss	.17(.42)	.23(.50)	.22(.48)	3.50	.06
Weight loss	.07(.32)	.09(.32)	.08(.32)	.48	.50
Lack of energy	.27(.56)	.28(.55)	.28(.55)	.02	.88
Diurnal variation of mood	.20(.47)	.26(.54)	.24(.52)	1.56	.21
Difficulty falling asleep	.09(.37)	.14(.43)	.12(.42)	1.83	.18
Multiple awakenings during the night	.18(.49)	.20(.52)	.20(.51)	.30	.58
Early morning awakening	.14(.43)	.11(.36)	.12(.38)	1.12	.29
Suicide	.00(.07)	.01(.14)	.01(.13)	.89	.35
Poor self esteem	.04(.22)	.06(.27)	.05(.26)	.70	.40
Pessimism	.06(.27)	.10(.35)	.09(.33)	2.09	.15
Mood congruent delusions	.09(.31)	.11(.38)	.11(.36)	.99	.32
Cohen-Mansfield Agitation Inventory					
Cursing or verbal aggression	1.90(1.23)	1.93(1.22)	1.92(1.23)	.06	.81

Variable	Male Mean (SD)	Female Mean (SD)	Total	F	p
Hitting	1.52(.99)	1.52(.99)	1.52(.99)	.01	.99
Grabbing onto people, throwing things	1.36(.90)	1.36(.90)	1.36(.90)	.01	.96
Other aggressive behavior	1.27(.81)	1.12(.53)	1.16(.62)	10.34	.001
Pace, aimless wandering	1.62(1.25)	1.66(1.25)	1.65(1.25)	.17	.68
General restlessness	1.42(1.06)	1.45(1.08)	1.44(1.07)	.07	.80
Inappropriate dress or disrobing	1.25(.68)	1.19(.63)	1.21(.64)	.18	.67
Handling things inappropriately	1.16(.60)	1.18(.66)	1.18(.64)	.18	.67
Constant request for attention or help	1.51(1.13)	1.70(1.38)	1.65(1.68)	3.48	.06
Repetitive sentences, calls, or words	1.53(1.12)	1.80(1.34)	1.73(1.29)	7.42	.01
Complaining, negativism, refusal to follow instructions	1.74(1.18)	1.72(1.18)	1.73(1.18)	.036	.85
Strange noises (weird laughter or crying)	1.18(.64)	1.32(.90)	1.28(.84)	5.32	.02
Hiding or hoarding things	1.19(.91)	1.28(.86)	1.28(.86)	3.34	.07
Screaming	1.46(.99)	1.56(1.12)	1.53(1.09)	1.44	.23



**Table 4**

## Differences in Medication Use By Gender

<b>Medication</b>	<b>Male N(%)</b>	<b>Female N(%)</b>	<b><math>\chi^2</math></b>	<b>P*</b>
Anticonvulsant Medication			4.19	.04
Yes	59(24%)	113(18%)		
No	190(76%)	527(82%)		
Anxiolytics			.04	.85
Yes	48(19%)	27(20%)		
No	201(81%)	513(80%)		
Antidepressants			.02	.91
Yes	88(35%)	229(36%)		
No	161(65%)	411(64%)		
Antipsychotics			.69	.40
Yes	47(19%)	137(21%)		
No	202(81%)	503(79%)		
Sedative Hypnotics			.02	.89
Yes	1(.5%)	3(.5%)		
No	248(99.5%)	637(99.5%)		

\*  
p<.05

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