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Disparities in Physical and Psychological Symptoms in Hospitalized African American and White Persons with Dementia

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Abstract

Objectives: This study examined differences in physical function, delirium, depressive symptoms, and behavioral and psychological symptoms of dementia (BPSD) in hospitalized African American and white older adults with dementia.

Methods: This secondary data analysis using baseline data from an ongoing trial testing family-centered function-focused care included African American (n = 159) and white persons (n =135) with dementia.

Results: A multivariate analysis of covariance showed that controlling for relevant demographic and health characteristics, African Americans with dementia had lower physical function, more delirium, and more depressive symptoms upon admission than white participants. There were no significant differences in BPSD between African American and white persons.

Discussion: To our knowledge, this is the first study to examine racial differences in admission symptoms of hospitalized persons with dementia. While the findings are preliminary, they can be used to inform the design of future research, including identifying the causes of disparities.

Keywords

African Americans; race; hospitalization; disparities; dementia

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Introduction

The largest ever population of older adults in America is becoming more ethnically and racially diverse. In 2014, 9% (approximately 4 million) of older adults were African American and this number is expected to increase to 12% by 2060 (Administration on Aging, 2015). African American older adults experience life-long, race-related stressors that negatively impact their physical and mental health (Graham et al., 2016). The cumulative exposure to racism is associated with limited access to resources such as education, employment, housing, culturally competent health and aging services, and political participation, contributing to health disparities and increased rates of mental health disorders such as depression, anxiety, and dementia (Barajas et al., 2019). As compared to other racial cohorts, African American individuals have the highest risk of Alzheimer's and related dementias (ADRD)—beginning at age of 65 years, an estimated 38% over a 25-year period (Alzheimer's Association, 2013). They are twice as likely to develop ADRD when compared to white persons (Alzheimer's Association, 2013; Mayeda et al., 2016).

Factors associated with an increased risk for ADRD include living in rural areas, a lower education level, exposure to environmental hazards, and having a lower income level (Barnes & Bennett, 2014; Hall et al., 2000; Shadlen et al., 2006). The increased risk for ADRD is attributed at least in part to a higher risk of health conditions in African Americans, including diabetes, hypertension, coronary artery disease, and stroke (Barnes & Bennett, 2014; Howard et al., 2016; Mayeda et al., 2014; National Institute on Aging, 2015). Indeed, a recent study, examining health disparities among six minority groups, found that African American participants had the highest prevalence of comorbidities, at 79.7% (Husaini et al., 2015).

Dementia-related racial disparities also exist in terms of healthcare utilization. African American individuals with dementia have higher rates of hospitalization (African Americans Against Alzheimer's, 2013; Alzheimer's Association, 2020; Joynt et al., 2011) and although African American persons make up only 13.6% of the US population, they shoulder a third of ADRD costs (Alzheimer's Association, 2020). Costs incurred by African American older adults are related to more frequent hospitalizations, greater severity of illness, and longer lengths of stay and higher readmission rates in African American persons (African Americans Against Alzheimer's, 2013; Joynt et al., 2011).

Persons with ADRD in general, have two to three times the number of hospitalizations as compared to similar-aged individuals without ADRD (Alzheimer's Association, 2020; Feng et al., 2014; Phelan et al., 2012). Hospital-associated conditions, including functional decline, delirium, depression, and behavioral and psychological symptoms of dementia, contribute to increased morbidity, mortality, and financial cost (Dewing & Dijk, 2016; Feng et al., 2014). Baseline vulnerabilities that contribute to these conditions include intrinsic characteristics such as age, comorbidity, baseline and admission functional status, and cognition. The prevention and management of hospital-associated conditions should begin upon admission to the hospital, necessitating prompt evaluation of both baseline status and admitting symptoms (Inouye, 2020).

Hospital-Acquired Conditions and Race

Physical Function

Functional activities for older adults such as bathing, dressing, and walking, referred to basic activities of daily living (ADLs), are important components of overall physical activity that impact an older adult's health and quality of life and are influenced in part by physical capability (Resnick & Boltz, 2016). Although there is paucity of research comparing ADL function in race cohorts, there are some studies that have examined some aspects of physical activity and physical capability in studies of community-dwelling older adults. Minority women (i.e., African Americans and Hispanics) have demonstrated lower levels of leisure time physical activity than whites (Pandey et al., 2017) and moderate to vigorous physical activity was lowest for African Americans compared to Hispanics and whites (Evenson et al., 2012) with whites showing the lowest time in sedentary activity compared to other racial groups (Hooker et al., 2016). Among all minority groups, Asians were the least likely to meet recommended physical activity guidelines, followed by African Americans (Katzmarzyk et al., 2017). Additionally, a study used data from the Health and Retirement Study to compare physical performance measures, which are necessary to support ADL function. US-born African Americans performed worse than US-born white persons on physical performance measures (peak expiratory flow, grip strength, and gait speed), even after adjusting for childhood and adult health, education, and socioeconomic status. The well-known disadvantages of African American individuals due to segregation, discrimination, and community characteristics were not examined (Haas et al., 2012).

Hospitalized persons with ADRD typically have poorer scores related to ADL with functional decline often beginning within the 2 weeks prior to admission and persisting in the post-acute period (Boltz, Lee et al., 2018; Kiely et al., 2006). Baseline ADL function (the ability to conduct ADL prior to the onset of the acute illness), as well ADL function upon admission to the hospital, are important predictors of functional decline (Covinsky et al., 2015). Thus, it is important to consider ADL function at both time points, in order to establish treatment plans for functional recovery.

Delirium

The presence of dementia increases the risk of delirium prior to or during the hospitalization which is often associated with protracted cognitive and functional decline (Oh et al., 2017). Findings are inconsistent with regard to the association between race and delirium. In a sample of older adults in critical care, race did not confer any additional risk for developing incident or prevalent delirium (Khan et al., 2016). In samples of older adults who had undergone hip surgery, African American patients demonstrated lower odds of developing postoperative delirium (Arshi et al., 2018; Malik et al., 2019). These studies, however, were not specific to patients with dementia. Dementia has a higher prevalence rate in African Americans and therefore may increase the risk for delirium.

Behavioral and Psychological Symptoms of Dementia

Three-quarters of hospitalized persons with ADRD display behavioral and psychological symptoms of dementia (BPSD), including agitation, aggression, affective disorder, and sleep

disturbance (Sampson et al., 2014). These symptoms cause significant distress to family and professional caregivers and are associated with accelerated and lasting functional and cognitive impairment, increased resource consumption, institutionalization, premature death, and care dependency (Hessler et al., 2018; Sampson et al., 2014; White et al., 2017). A scoping review of the determinants of BPSD identified that Chinese American ethnicity was associated with depressive symptoms in persons with ADRD; no other race-related associations were found with BPSD (Kolanowski et al., 2017). The prevalence and presentation of BPSD in hospitalized African American patients is not known.

Depression

The prevalence of depressive symptoms is as high as 50% among hospitalized older adults (Ciro et al., 2012). Depression is associated with preadmission functional decline, often overlaps with delirium (Givens et al., 2009), and is associated with significant risk of functional decline, institutionalization, and death (Dunham & Sager, 1994). Multiple studies have demonstrated that African American older adults have higher or equivalent prevalence of depression than white Americans in general (Pickett et al., 2013). Research also suggests that older African Americans with multiple medical problems and decreased ADLs are at an increased risk of depression (Pickett et al., 2013).

In summary, the function, cognition, behavior, and mood of hospitalized persons with ADRD demand close attention as they are predominant factors influencing hospitalization outcomes. Racial differences have been found in other clinical presentations during hospitalization. For example, African Americans have demonstrated a higher prevalence of sepsis than whites (Barnato et al., 2008), higher rates of cardiac arrest (Ehlenbach et al., 2009), noncardiogenic acute respiratory failure (Cooke et al., 2012), and venous thromboembolism (Heit et al., 2010). This study was guided by the life course cumulative disadvantage theory, which links the correlation of aging and health to the trajectories of societal inequality. The theory posits that a systematic accumulation of disadvantages incurred across an individual’s life span can yield inequality on health-related as well as resource characteristics (Dannefer, 2003).

Recognizing that the social significance of race is not only associated with disease prevalence but also the clinical manifestations of health, an examination of the influence of race upon common symptoms associated with hospitalization in older adults with ADRD is warranted. This is based upon the assumption that the higher risk for ADRD in African Americans may also yield higher symptom burden. Thus, the purpose of this analysis of baseline data from the family-centered function-focused care (Fam-FFC) study was to evaluate differences between African American and white hospitalized older adults with ADRD with regard to physical function, preadmission change in function, delirium, BPSD, and depressive symptoms. Specifically, it was hypothesized that after controlling for age, gender, educational level, comorbidities, cognition, and baseline function, African American older adults with dementia would have (1) poorer admission physical function, (2) more functional decline prior to admission, (3) worse delirium severity, (4) more behavioral and psychological symptoms of dementia, and (5) more depressive symptoms. An understanding

of race-based differences is necessary to support the development of interventions to reduce racial disparities, a primary objective of the National Alzheimer's Plan.

Methods

This study employed baseline data from an ongoing cluster randomized clinical trial (ClinicalTrials.gov identifier: NCT03046121). The purpose of the parent study is to examine the efficacy of Fam-FFC, a nurse–family caregiver (FCG) partnership model, that aims to improve (1) the physical and cognitive recovery in hospitalized persons living with ADRD during hospitalization and the 60-day post-acute period and (2) FCG preparedness and experiences. The protocol has received institutional review board approval and has been published (Boltz, Kuzmik, et al., 2018).

Sample

Baseline data for 294 patients from six medical units in three hospitals (two units per hospital) were included, including one large academic medical center, a medium-sized teaching hospital, and a small community hospital, all located in Pennsylvania. Family caregivers were also enrolled as study partners in the intervention. Patients were eligible to participate if they were of age ≥65 years, spoke English or Spanish, lived in the community prior to admission to the hospital, screened positive for dementia with an AD8 score ≥2 (Galvin et al., 2006), and a Montreal Cognitive Assessment (MoCA) score ≥25 (Nasreddine et al., 2005) with demonstrated functional impairment assessed with the Pfeffer Functional Activities Questionnaire to discriminate Mild Cognitive Impairment (MCI) from dementia (Pfeffer et al., 1982). Eligibility also included a diagnosis of very mild to moderate stage dementia as confirmed by a score of .5–2.0 on the Clinical Dementia Rating (CDR) Scale (Morris, 1997) and having a FCG as the designated study partner for the duration of the study. Patients were excluded from the study if they had mild cognitive impairment (CDR = .5 without functional or ADL impairments), severe dementia (CDR = 3), any significant neurological condition associated with cognitive impairment other than dementia (e.g., brain tumor), a major acute psychiatric disorder, had no FCG to participate, were enrolled in a hospice, were not fluent in either English or Spanish, or were admitted from a nursing home. After consent and screening for eligibility, participants were assessed by trained research staff blind to treatment condition.

Procedures

Demographic and descriptive information was extracted from the electronic health record. Physical function at baseline as well as upon admission was obtained from the report of the FCG. Observational measures of delirium, depressive symptoms, and BPSD were taken within 48 hours of admission, by research staff trained and experienced in acute care research, prior to the implementation of the Fam-FFC intervention.

Measures

Descriptive measures.—Data about patients included age, ethnicity (Hispanic/Latino or not), gender, educational level (high school graduate or higher), cognition, admitting diagnoses, and comorbidities. Comorbid conditions were classified with the *Charlson*

Comorbidity Index, a valid and reliable measure of disease burden (Van Doorn et al., 2001). The Charlson Comorbidity Index is a weighted index that takes into account both the number and seriousness of different comorbid diseases. Cognition was evaluated with the MoCA which measures executive function, orientation, memory, abstract thinking, and attention and demonstrates excellent sensitivity and specificity, differentiating between mild cognitive impairment, no dementia, and dementia. The MoCA has been validated in differing educational levels and culturally diverse populations (Nasreddine et al., 2005).

The covariates included age, gender, educational level, comorbidities, cognition, and baseline function, based upon their known relationships with the dependent variables (Cohen et al., 1992; Narain et al., 1988).

Independent variable.—The independent variable, self-reported race extracted from the hospital record, was dichotomized as African American and white.

Outcome measures.—Outcomes included admission function, preadmission change in function, delirium, BPSD, and depressive symptoms.

Admission function.—The admission function was evaluated using the *Barthel Index* (BI), a ten-item measure of ADL (Mahoney & Barthel, 1965), as reported by the FCG upon admission, describing ADL performed that day. The Barthel Index has established reliability and validity when used with diverse older adults, individuals with progressive neurological conditions (Resnick & Daly, 1998), and when proxy respondents were utilized to report the functional abilities of persons with dementia (Ranhoff, 1997). Items are evaluated based upon the degree of assistance required. Scores range from 0 (total dependence in all ADLs) to 100 (total independence). The Cronbach alpha for the Barthel Index in this study was .86.

Preadmission functional decline.—Preadmission functional decline was evaluated by calculating the difference between baseline function and admission function. Because older adults often decline in function because of an acute illness before admission, asking about the patient's ADL function on admission often does not provide accurate information on baseline function (Covinsky et al., 2015). Thus, baseline physical function was evaluated using the report from the FCG on items of the Barthel Index of the participant's function 2 weeks prior to admission as this is the standard time frame used to determine baseline physical function in hospitalized older adults (Cohen et al., 1992; Covinsky et al., 1997; Narain et al., 1988). Retrospective reports of ADL function have demonstrated face and predictive validity (Covinsky et al., 2015).

Delirium severity.—Delirium severity was measured with an additive score for the four items of the *Confusion Assessment Method Severity* (CAM-S) Short Form (Inouye et al., 2014). Acute onset and fluctuating course is scored as no (0) or yes (1). Inattention and disorganized thinking are each scored as "absent" (0 points), present in mild form (1 point), or present in severe form (2 points). The fourth item, altered level of consciousness, is scored as alert or normal (0 points), vigilant or lethargic (1 point), and stupor or coma (2 points). Scores range from 0 to 7, with a higher score indicating greater severity of delirium. The CAM-S Short Form has demonstrated strong psychometric properties and associations

with important clinical outcomes, including length of stay, functional decline, nursing home placement, and death (Inouye et al., 2014). The Cronbach alpha for the CAM-S Short Form was .75 in this study.

BPSD was assessed using the *Neuropsychiatric Inventory Questionnaire* (NPI-Q), a 12-item, valid, and reliable informant-based assessment of delusions, hallucinations, agitation/aggression, dysphoria/depression, anxiety, euphoria/elation, apathy/indifference, disinhibition, irritability/lability, aberrant motor behaviors, nighttime behavioral disturbances, and appetite/eating disturbances (Kaufer et al., 2000). BPSD is assessed in terms of severity on a three-point scale (1: mild, 2: moderate, and 3: severe). The total NPI-Q severity score represents the sum of individual symptom scores and ranges from 0 to 36. The Cronbach alpha for the NPI-Q was .76 in this study.

Depressive symptoms were evaluated with the *Cornell Scale for Depression in Dementia* (CSDD), a 19-item survey designed to assess depressive symptoms in individuals with dementia scores includes 0 for absent, 1 for mild or intermittent, and 2 for severe symptoms. A total score of 10 indicate probable major depression and greater than 18 indicate definite major depression. There is sufficient evidence of reliability and validity for the CSDD (Alexopoulos et al., 1988). The Cronbach alpha for the CSSD was .83 in this study.

Data Analysis

The sample was described using baseline data, and an independent samples T-test or chi-square analyses examined differences in the descriptive variables, including admitting diagnoses, based on race. A multivariate analysis of covariance (MANCOVA), controlling for age, gender, educational level, comorbidities, cognition, and baseline function, was conducted to examine the association between race and admission function, preadmission functional decline, delirium severity, BPSD, and depressive symptoms. The MANCOVA also examined the association between race and each behavioral and psychological symptom. Wilk's lambda was used to determine multivariate significance, and Box's M test examined the equality of multiple variance–covariance matrices. Levene's test was used to evaluate if the error variance of the dependent variable was equal across groups. A significance level of $p < .05$ was used for all analyses.

Results

As shown in Table 1, the sample included 159 (54%) African American and 135 (46%) white participants. The majority (62%) of participants were female with a slightly greater percentage of African American (68%) versus white individuals (55%) being female [χ^2 (1293) =5.32, $p = .014$]. The mean age of the participants was 82.23 ($SD = 9.70$) with little difference in age based on race [t (1293) =.07, $p = .795$]. The African American participants had lower educational levels; 71% ($n = 113$) had a high school education or higher as compared to 93% ($n = 126$) white participants [χ^2 (1293) = 45.41, $p < .000$].

The mean MoCA was 10.53 ($SD = 7.00$) indicative of significant dementia with a difference such that the African American participants had lower scores ($M = 8.52$ $SD = 6.13$) than white participants [$M = 12.91$, $SD = 7.21$, t (1293) = 5.73, $p < .0001$]. The participants had a

mean Charlson comorbidity score of 3.89 (SD = 2.35) with no significant difference between African American (mean: 4.00, SD = 2.44 and white participants [M= 3.77, SD = 2.24 t (1293) = —.846, p = .398]. Participants were functionally dependent at baseline with a mean score on the BI of 74.54 (SD = 25.46) with African American participants (M = 70.59, SD = 21.19) demonstrating overall significantly lower baseline physical function as compared to white participants [M = 79.78, SD = 21.29, t (1293) =3.17, p = .002].

Among all participants, the mean Barthel Index upon admission was 56.0 (SD = 28.5), demonstrating moderate functional impairment. The participants on average had mild delirium (M = 1.50, SD = 1.75) and mild BPSD per NPI (M = 9.71, SD = 5.99) and some evidence of symptoms of depression (M = 9.90 SD = 6.42) assessed by the Cornell Scale. On average, participants' ADL score (function) declined 13.8 points (SD = 19.0), from prehospitalization to admission on the Barthel Index. The most common reason for admission, in both African Americans and white participants, was acute change in mental status, and falls/syncope was reported more in African Americans. Table 2 reports the admitting diagnoses.

The results of the multivariate analyses for differences between African American and white participants are shown in Table 3. Controlling for age, gender, educational level, cognition, comorbidities, and baseline function, there was a significant difference between the racial cohorts in terms of admission function, preadmission change in physical function, delirium severity, and depressive symptoms but not behavioral and psychological symptoms of dementia, Wilks' Λ = .900, F (5258) = 5.75, p < .001, partial η^2 = .122.

African American participants had worse admission function [M = 59.35, SD = 28.37] as compared to white patients [M = 61.64, SD = 27.21, F (1262) = 9.95, p = .002]; however, white participants had more preadmission functional loss [M = −17.08, SD = 18.90] than African American patients [M = −11.09, SD = 18.72 F (1262) =5.25, p = .023]. African American participants had more depressive symptoms [M = 11.65, SD = 6.66] than white participants [M = 8.96, SD = 5.24, F (1262) = 6.55, p = .011] and more delirium [$M_{\text{African American}}$ = 1.99, SD = 1.90, and M_{white} = 1.06, SD = 1.51, F (1262) = 6.11, p = .014]. There was no difference in the BPSD composite score, nor each individual score between African American and white participants (p = .260).

Discussion

Functional decline, delirium, BPSD, and depressive symptoms are common symptoms in hospitalized persons with dementia and represent salient predictors of hospital outcomes as well as future health and quality of life. However, the relationship between race and these symptoms has not been well defined. We sought to determine whether African American race is associated with the presentations of these symptoms upon hospital admission compared with white participants. Our hypothesis was partially supported in that controlling for age, gender, ethnicity, educational level, cognitive status, and comorbidities, African American participants had worse admission function scores, more delirium, and more depressive symptoms than white individuals. Our assumption that African American patients

with ADRD would have more preadmission functional decline and more BPSD was not supported.

African American older adults are disproportionately affected by disease conditions necessitating admission to the hospital, including respiratory problems (Mina et al., 2012), diabetes, hypertension, coronary artery disease, and stroke (Barnes & Bennett, 2014; Howard et al., 2016; Mayeda et al., 2016; National Institute on Aging, 2015). These conditions, which can negatively impact physical activity and function, may explain in part African American participants' lower baseline physical function and lower physical function upon admission to the hospital. The higher rate of preadmission functional decline in white participants may be explained by the nature of the admitting diagnoses. For example, African Americans had a higher percentage of respiratory conditions and falls/syncope (consistent with other research reporting increased fall occurrence in African Americans with functional limitations; Nicklett et al., 2017). Such acute problems often prompt an immediate transfer to the hospital as opposed to other conditions such as infection which tend to be more insidious and gradual in presentation in older adults, with functional loss often present for several days before acute symptoms and hospitalization occur. In previous work, FCG strain was a factor contributing to preadmission functional decline (Boltz, Lee, et al., 2018). Additionally, family attitudes toward promoting physical activity and function have been shown to influence the older adults' engagement in mobility and self-care (Boltz et al., 2014). This study, due to data limitations, did not examine caregiver factors, including strain and attitudes, which may have impacted the degree of preadmission functional loss, and may be influenced by race and other social factors.

Delirium severity was higher in African American participants. This finding was not consistent with studies conducted in critical care (which found no race effect) (Khan et al., 2016), and surgical units (which found being African American was a protective factor; Malik et al., 2019) has not been the focus of delirium research in medical patients. African Americans tend to disproportionately demonstrate higher illness severity when hospitalized (Katzmarzyk et al., 2017). This combined with the higher prevalence of vascular dementia and mixed dementia in African American persons (Alzheimer's Association, 2013) may have increased the delirium burden and may explain this result. We did not have access to data on the type of dementia and illness acuity of participants. These data could have provided more explanatory information on the other influences upon delirium in African American individuals with ADRD and should be included in future studies.

There was no significant difference between levels of BPSD in African American and white cohorts as a composite as well as each individual behavior. BPSD in general is under investigated in the acute care setting, despite the negative consequences for patients and both formal and informal caregivers, so it is difficult to draw a comparison with previous work. There is evidence that BPSD in the hospital setting stems from patient factors (e.g., pain, anxiety, and toileting need), hospital caregiver factors (stress, lack of dementia knowledge, and communication issues), and environmental factors (lack of activity and structure) (Hessler et al., 2018; Sampson et al., 2014; White et al., 2017). Although our sample did not demonstrate high levels of BPSD, there is a need to further examine the contribution of race

and any related factors contributing to BPSD in order to develop culturally appropriate interventions.

The association between depression and African American race noted in this study was consistent with prior research (Pickett et al., 2013). Perceived discrimination among African American older adults is associated with lower memory levels via depressive symptoms; thus, depression is a critical symptom (Zahodne et al., 2019). Unfortunately, lower rates of recognition of depression and treatment have also been shown in African American persons (Pickett et al., 2013). Hospitalization presents an opportunity to assess for depression and initiate treatment in older adults, and results suggest the particular importance of doing so in African American persons with ADRD.

Cumulative as well as present day, race-related stressors negatively impact the physical and mental health of African American older adults. Participants in this study were aging in place in their communities before admission to the hospital. Studies have shown that African American families living in urban areas experience challenges in accessing supportive services related to dementia which may explain our findings of worse dementia-related outcomes at admission compared to their white counterparts (Abramsohn et al., 2019; Epps et al., 2018). Accessing culturally competent community-based health care can also be challenging (Clark et al., 2018). Understanding what happened prior to hospitalization, including the access to and quality of health care provided, may shed light on disparities in dementia-related outcomes at hospital admission.

Study Limitations

We were limited, due to extant data, in our ability to examine variables that may potentially influence outcomes. For example, in the current study, we did not capture data about the socioeconomic status, neighborhood, and access to past health care of participants but would recommend that future research consider social determinants of health when examining racial differences in symptoms in hospitalized persons with ADRD. The retrospective reports of preadmission function may be considered another limitation. Finally, this was a cross-sectional study and we did not measure changes in symptoms over time.

Conclusion

This study provides evidence of differences in symptoms between African American and white persons with ADRD during hospitalization. Both African American and white participants presented to the hospital with significant impairment in physical function, more so in African American patients, which began prior to admission, with more degree of preadmission decline in white persons with ADRD. African American patients had more severe delirium and more depressive symptoms, whereas there were no significant differences in the amount of BPSD between the race cohorts. As the US older adult population with ADRD continues to grow and to diversify, it becomes increasingly important to draw awareness to the disparities in the common clinical manifestations associated with ADRD during hospitalization between racial groups and examine the nature and causes of disparity. Future research should focus on understanding (1) differences in community level care in individuals at high risk for dementia-related hospitalization and (2)

the factors associated with differences not only on disease occurrence but also on the symptoms that have profound impact on functional recovery, health, and quality of life.

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Table 1.

Description of Sample by Race.

	Total (*N* = 294)	African American (*n* = 159)	White (*n* = 135)	
Variable	***n* (%)**	***n* (%)**	***n* (%)**	**χ^2 (df) (*p*)**
Female gender	182 (62)	108 (68)	74 (55)	5.32 (1293) (.014)
Male gender	112 (38)	51 (32)	61 (45)	
Hispanic or Latino	6 (2)	1 (.6)	5 (4)	3.49 (1293) (.062)
Education: High school and above	239 (81)	113 (71)	126 (93)	45.41 (1293) (.000)
	Mean (*SD*)	**Mean (*SD*)**	**Mean (*SD*)**	**t (df) *(p)***
Age	82.23 (9.70)	81.39 (9.02)	81.65 (10.48)	.07 (1293) (.795)
Comorbidities	3.89 (2.35)	4.00 (2.44)	3.77 (2.24)	−.846 (1293) (.398)
Montreal Cognitive Assessment	10.53 (7.00)	8.52 (6.13)	12.91 (7.21)	5.73 (1293) (.000)
Baseline function	74.54 (25.46)	70.59 (21.19)	79.78 (21.29)	3.17 (1293) (.002)

Table 2.

Patient Admitting Diagnoses.

Diagnosis/Condition	*N* = 294 *n* (%)	African American *n*= 159 *n* (%)	White *n*= 135 *n* (%)
Acute mental status change	47 (16.0)	25 (15.7)	22 (16.3)
Falls/syncope	29 (9.9)	20 (12.6)	9 (6.7)
Musculoskeletal	27 (9.2)	16 (10.1)	11 (8.1)
Infections other than Urinary Tract Infection and pneumonia	21 (7.1)	11 (6.9)	10 (7.4)
Respiratory conditions (excluding infections)	21 (7.1)	13 (8.2)	8 (5.9)
Urinary tract infections	19 (6.5)	9 (5.7)	10 (7.4)
Weakness and other	19 (6.5)	9 (5.7)	10 (7.4)
Acute neurological	17 (5.8)	7 (4.4)	10 (7.4)
Gastrointestinal	16 (5.4)	10 (6.3)	6 (4.4)
Sepsis	13(4.4)	6 (3.9)	7 (5.2)
Metabolic	12 (4.1)	7 (4.4)	5 (3.7)
Kidney disease	12 (4.1)	5 (3.1)	7 (5.2)
Heart failure	12 (4.1)	7 (4.4)	5 (3.7)
Pneumonia	11 (3.7)	5 (3.1)	6 (4.4)
Cardiac/vascular	9 (3.1)	5 (3.1)	4 (3.0)
Cancer	9 (3.1)	4 (2.5)	5 (3.7)

Table 3.

Multivariate Analysis of Variance: Differences Between African American and White Older Adults in Admission Function, Preadmission Functional Decline, Delirium, Behavioral and Psychological Symptoms of Dementia, and Depressive Symptoms.

	African American		White		
Variable (possible minimum–maximum)	**Adjusted mean**	***SD***	**Adjusted mean**	***SD***	***F* (df) (*p*)**
Admission function (0–100)	59.35	28.37	61.64	27.21	9.95 (1262) (.002)
Preadmission functional decline	11.09	18.72	17.08	18.90	5.25 (1262) (.023)
Delirium (0–7)	1.99	1.90	1.06	1.51	6.11 (1262) (.014)
Behavioral and psychological symptoms of dementia (0–36)	9.44	6.22	7.92	5.54	1.28 (1262) (.260)
Depressive symptoms (0–38)	11.65	6.66	8.96	5.24	6.55 (1262) (.011)