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Racial/ethnic predictors of falls among older adults: The Health and Retirement Study

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Abstract

OBJECTIVES—Examine racial/ethnic differences in the probability and frequency of falls among adults aged 65 and older.

METHODS—Using data from the Health and Retirement Study (HRS) from 2000-2010, the authors conducted random-intercept logistic and Poisson regression analyses to examine if race/ethnicity predicted the likelihood of a fall event and the frequency of falls.

RESULTS—The analytic sample included 10,484 older adults. Baseline analyses showed no significant racial/ethnic differences in the probability or number of falls. However, in the longitudinal random-intercept models, African Americans had significantly lower odds (0.65) of experiencing at least one fall compared to non-Hispanic whites. Among fallers, African Americans had significantly fewer falls (24%) than non-Hispanic whites, controlling for health and socio-demographic covariates (all $p<0.05$). Latinos did not differ from non-Hispanic whites in the likelihood or number of falls.

DISCUSSION—African Americans are less likely to experience initial or recurrent falls than non-Hispanic whites.

Keywords

Falls; fall rates; fall risk; ethnicity; older adults

Introduction

Falls are the leading cause of fatal and nonfatal injuries among adults aged 65 and older (CDC, 2006; Kung, Hoyert, Xu, & Murphy, 2008). Older adults who fall once are 2-3 times more likely to fall again within one year (Ganz, Bao, Shekelle, & Rubenstein, 2007). Interventions—such as physical activity promotion, home modifications, and multifactorial approaches—can prevent incident and recurrent falls (Stevens & Sogolow, 2008; Chang et al. 2004). Research suggests that intervention programs can reduce the rate of falls by

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approximately 30-40% (Stevens & Sogolow, 2008; Chang et al. 2004). Falls prevention programs are most effective when targeting high-risk groups. Identifying and incorporating risk profiles improves the efficiency and effectiveness of falls prevention programs and is critical for geriatric evaluation. Research on the correlates and risk factors of falls will assist in the development of specific interventions and prevention strategies to target those at higher risk.

Previous research identifies several principal predictors of falls among community-dwelling older adults. For example, older adults with certain chronic illnesses, functional impairments, and geriatric conditions are at particular risk for recurrent falls (AGS, 2001; Hanlon, Landerman, Fillenbaum, & Studenski, 2002; Mertz, Lee, Sui, Powell, & Blair, 2010; Schiller, Kramarow, & Dey, 2007). While a number of prospective studies develop risk profiles of fallers, racial/ethnic predictors are notably absent. According to profiles considering other risk factors, such as the Comprehensive Falls Risk Screening Instrument (Fabre et al. 2010), African Americans are at heightened risk of falling compared to non-Hispanic whites (Ellis et al. 2013).

Although risk profiles suggest African Americans are vulnerable to falling, research suggests that African Americans are not more likely to fall than non-Hispanic whites. While some studies find that non-Hispanic whites and African Americans are equally likely to experience a fall (Studenski et al. 1994; Faulkner et al. 2005), prevalence data from the Behavioral Risk Factor Surveillance System (BRFSS) and the National Health Interview Survey (NHIS) suggest that African Americans are 30-36% less likely than non-Hispanic whites to have a recent fall (Stevens, Mack, Paulozzi, & Ballesteros, 2008; Schiller et al. 2007). This is supported by additional epidemiological studies concluding that non-Hispanic whites are 23-40% more likely to fall than African Americans (Hanlon et al. 2002; de Rekeneire et al. 2003). Studies finding that non-Hispanic whites are more likely to experience an initial fall have not, however, found racial/ethnic differences in the number of falls over time (Tinetti, Speechley, Ginter, 1988; Hanlon et al. 2002).

Methodological limitations could challenge previous research findings. Very few studies examine racial/ethnic differences in falls prospectively or over time (e.g., Faulkner et al. 2005). Most studies are cross-sectional or have very short follow-up periods (e.g., de Rekeneire et al. 2003, Hanlon et al. 2002; Stevens et al. 2008) or examine only one geographic region (Faulkner et al 2005; Nevitt et al. 1989). With few exceptions (e.g., Hanlon et al. 2002), the majority of comparative studies lack sufficiently large subsamples of African Americans and other racial/ethnic minority populations (Faulkner et al. 2005; Tinetti et al. 1988; Nevitt et al. 1989; Studenski et al. 1994). Finally, few studies consider the dynamic nature of competing risks. Racial/ethnic health disparities appear to narrow in later life because of differential mortality (Kelley-Moore & Ferraro, 2004). Most previous studies on racial/ethnic differences in falls risk have not considered differential mortality, which could also underlie these inconsistent findings. Cross-sectional studies cannot consider the roles of other contributing factors over time to differential falls risk, such as age, chronic illness comorbidity, or functional ability. Inconsistent findings in prior literature on racial/ethnic differences could be due to such methodological shortcomings,

particularly non-representative sample sizes and the inability to consider potential synergistic risk factors associated with both race/ethnicity and falls.

Research examining racial/ethnic differences in falls therefore has several limitations. To our knowledge, no population-based prospective cohort study has examined differences in the likelihood and frequency of falls among non-Hispanic whites, African Americans, and Hispanics/Latinos. Further, studies have not adequately considered mortality or changes in functional status, age, and chronic illness comorbidities as alternative explanations of different fall rates by race/ethnicity. Our study examines whether or not race/ethnicity predicts the risk and frequency of falls over a decade-long follow-up period. We examine fall patterns of a population-based, geographically diverse sample of African American, Latino, and non-Hispanic white older adults.

Methods

We analyze data from the 2000-2010 biennial panels of the Health and Retirement Study (HRS). The HRS is a national, longitudinal, population-based study that has tracked older individuals since the early 1990s. In 1992, the HRS interviewed community-dwelling adults aged 51 and older and obtained detailed self-reported data in multiple domains, including physical health, mental health, and financial status. Participants continue to be surveyed by telephone or face-to-face according to study protocols. African Americans and Hispanic/Latino groups were oversampled at baseline. The HRS has maintained high response rates—ranging from 85-93% across rounds among living respondents (HRS 2011). The HRS is sponsored by the National Institute on Aging and was approved by the Health Sciences Institutional Review Board at the University of Michigan (Heeringa & Connor, 1995; HRS 2011). Further details of the sampling design and the study methods of the HRS have been published elsewhere (Heeringa & Connor, 1995; HRS 2011).

The analytic subsample of the present study is limited to community-dwelling respondents aged 65 and older in the 2000 HRS survey round. Of the 12,297 eligible participants who completed the 2000 HRS round, 1,813 are excluded because of missing data on key characteristics (e.g., fall at baseline and covariates). All included variables have item non-response below 10 percent. Subsequent analyses using multiple imputation were conducted to ensure similar results. Approximately 45% of participants died during follow-up (2000-2010). Our sample consists of participants aged 65 years or older identifying as either non-Hispanic white, non-Hispanic Black, or Latino/Hispanic and who participated in the 2000 HRS panel. The unweighted analytic sample size is 10,484 participants. Participants in this study were 65 to 102 years of age at baseline. Sampling weights (constructed by the Health and Retirement Study) adjust for attrition and sampling error to generate unbiased estimates for 2000 HRS survey respondents.

Variables and Measurement

Key Measures—The independent variable is racial/ethnic group (non-Hispanic white, non-Hispanic Black, or Latino/Hispanic). The dependent variable for fall incidence is the dichotomous measure of whether or not the respondent reported having fallen in the past 2 years. The dependent variable for fall frequency is the number of falls experienced in the

past 2 years. The event and number of falls are assessed through self-report (e.g., de Rekeneire et al. 2003; Hanlon et al. 2002). For the purpose of longitudinal analyses, this measure is repeated every two years from 2000-2010. Analyzing the dynamic nature of falls events over time is important because one of the strongest predictors of a fall is having fallen previously, challenging the assumption of independence over time (Ganz et al. 2007).

Socio-demographic Controls—Age and sex are included in the analysis to avoid confounding. Sex is assessed from baseline reports. Given the dynamic nature of age, it is measured as a continuous, time-varying covariate. Other socio-demographic covariates originally considered for analyses (household income, household assets, marital status, and education level) are excluded because they do not significantly predict fall risk or frequency in multivariate models.

Health-related Controls—We control for baseline health characteristics that could potentially explain racial/ethnic differences in the probability and frequency of falls, including functional limitations and comorbidities. Functional limitations are measured by the number of Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs). For ADLs, participants are asked whether or not they have "at least some difficulty" walking across a room, getting in and out of bed, dressing, bathing, and eating. For IADLs, participants are asked whether or not they have "at least some difficulty" using the phone, managing money, taking medication, shopping for groceries, and preparing hot meals. ADL and IADL difficulties are coded as the number of activities for which participants have least some difficulty, with a potential range of 0 (no difficulty with any of the activities) to 5 (difficulty with all five activities) for each variable. The number of comorbidities is determined according to the number of conditions the respondent reported ever having, including high blood pressure, diabetes, cancer of any kind, lung disease, heart condition, stroke, emotional/psychiatric problems, and arthritis, with a potential range of 0 to 8. Originally, analyses included self-rated health, depression, and self-rated vision as covariates, but these variables are excluded because they do not significantly predict the falls risk or frequency at baseline or longitudinally.

Single versus Repeated Measures—To establish temporal precedence, all baseline independent variables are obtained from the 1998 HRS panel. Baseline measures are carried forward for race/ethnicity and sex. Longitudinal analyses evaluate repeated measures for ADLs/IADLs, comorbidities, and age, due to the changing nature of these covariates over time.

Statistical Analyses

Means and percentages are used to describe the study population's weighted sample characteristics. We also examine whether or not the weighted means of sample characteristics differ between those who had and had not fallen at baseline. These comparisons are made using t-tests for continuous variables and chi-square tests for categorical variables. We examine whether or not race/ethnicity predicts the likelihood and frequency of falls through a series of weighted Poisson regression analyses. The multivariate analyses examine whether or not race/ethnicity predicts (1) the probability of falling and (2)

the frequency of falls longitudinally, controlling for potentially confounding characteristics over time.

The first analysis is a longitudinal (2000-2010), mixed-effects logistic regression model with a person-specific random intercept. This model regresses the odds of falling over time on race/ethnicity, controlling for age, sex, number of comorbidities, and number of functional limitations (measured by ADLs and IADLs). By using the mixed-effects, person-specific random intercept model, the assumption of independent observations across individuals over time is not violated. In addition, the model enables inclusion and analysis of repeated measures of covariates. To simplify interpretation, the coefficients are shown as odds ratios. The coefficient is interpreted as the increased or decreased probability of falling in an average 2-year period from 2000-2010, controlling for included covariates.

The second analysis is restricted to participants who experienced at least one fall. The number of falls is regressed on race/ethnicity, controlling for age, sex, number of comorbidities, and number of functional limitations. This analysis is a longitudinal (2000-2011) mixed-effects Poisson regression model with a person-specific random intercept. This analytic strategy avoids violation of the assumption of independence of observations (the number of falls in a given round is not assumed to be independent from the number of falls in prior or subsequent rounds). As with the previous model, changes in covariates are observed over follow-up. For this Poisson analysis, the coefficient is shown as Incidence Rate Ratio (IRR), or the relative frequency of falls associated with the examined characteristics. Additional tests were conducted to confirm normality and constant variance assumptions were met. We also explored potential mortality effects on our longitudinal findings by examining mortality patterns visually and descriptively. We examine differential mortality using t-tests for continuous model variables and chi-square tests for categorical model variables. Stata SE 13 (StataCorp) was used for data management and analysis. $P < .05$ was considered significant.

Results

Descriptive statistics compare sample characteristics between those who did and did not fall at baseline (shown in Table 1). Of the 10,484 participants, 80.40% are white, 12.65% are African American, and 6.95% are Hispanic/Latino. Race/ethnicity is not significantly associated with 2-year falls incidence at baseline (at $p<0.05$). All health-related and socio-demographic covariates are significantly associated with 2-year falls incidence (at $p<0.05$); older age, female sex, greater functional limitations (ADLs and IADLs), and greater comorbidity characteristics are associated with higher probability of a fall at baseline. Descriptive statistics (shown in Table 2) evaluate relationships between sample characteristics and the number of falls reported at baseline (1998-2000). Among the 3,046 participants who reported a fall at baseline, 2,951 (96.88%) reported the number of falls. The average number of falls reported at baseline (1998-2000) is 2.42 and did not differ according to racial/ethnic group (at $p<0.05$). All of the included covariates are significantly associated with the number of falls at baseline (at $p<0.05$). Men report a greater number of falls at baseline than women. Age, greater functional limitations (ADLs and IADLs), and greater comorbidity are positively associated with the number of falls at baseline ($p<0.05$).

Table 3 shows the analysis of race/ethnicity on the probability of experiencing a fall longitudinally (2000-2011), controlling for socio-demographic and health characteristics. Compared to non-Hispanic whites, African Americans are 35% less likely to fall over follow-up (p=0.02). Older participants are more likely to experience a fall (each additional year over the age 65 predicted a 3% increase in the likelihood of reporting a fall; p=0.03). Functional limitations and comorbidity also significantly predict the odds of experiencing a fall; each additional ADL and IADL difficulty predicts 32% and 19% higher odds of experiencing a fall, respectively (p<.01 and p=.03). Finally, each additional comorbidity predicts 23% higher odds of experiencing a fall longitudinally (p=.03).

Table 4 examines racial/ethnic predictors of falls frequency over time. Compared to non-Hispanic whites, African Americans report 24% fewer falls over follow-up (p=0.01). Male participants report 28% more falls than female participants (p=0.049). Functional limitations also predict more frequent falls (an additional domain of ADL and IADL difficulty is associated with experiencing 12% more falls, at p=.02 and p=.01). Latino ethnicity, age and number of comorbidities are not associated with the frequency of falls in the multivariate longitudinal model.

To examine whether or not these racial/ethnic differences in falls are due to racial/ethnic differences in mortality, we conducted a series of bivariate analyses of mortality incidence and model predictors and covariates (not shown). With the exception of race/ethnicity, all model variables were significantly associated participant mortality from 2000-2010. Therefore, differential mortality does appear to explain black/white differences in falls found in this study.

Discussion

This study examines whether or not race/ethnicity is associated with the probability and frequency of falls among older adults in the United States. The findings of this study inform the current body of research through unique methodological strengths. First, we examine differences between African American, Hispanic/Latino, and non-Hispanic white populations, while most previous studies include relatively few non-white participants. Second, our sample is nationally representative, which strengthens our ability to generalize beyond a specific community or region. Third, we analyze fall risk and frequency over a decade-long period. We also analyze the role of competing explanations of racial/ethnic differences in falls by incorporating time-varying covariates and considering differential mortality risk by race/ethnicity. These considerations are important for determining whether differences in falls between African Americans and non-Hispanic whites are due to selection issues (i.e., the longer one lives, the more likely one is to experience a fall). As individuals age, falls-associated risks (such as age, functional limitations, and comorbidities) are also likely to change and each could potentially underlie racial/ethnic differences in the risk or frequency of falls.

We find that race/ethnicity is a strong predictor of the likelihood of falls at baseline and over follow-up, with older African Americans having lower prevalence and frequency of falls than their older non-Hispanic white counterparts. Our finding related to lower falls incidence

is consistent with some previous studies (Hanlon et al. 2002; de Rekeneire et al. 2003; Schiller et al. 2007), but differs from findings in other studies that whites and African Americans are at similar risk (Studenski et al. 1994; Faulkner et al. 2005). It is possible that studies including relatively few African American participants lack sufficient power or follow-up to detect significant differences over time (e.g., Studenski et al. 1994; Faulkner et al. 2005).

The finding that older African Americans experience fewer falls than older non-Hispanic whites challenges the findings of previous studies finding no racial/ethnic differences in the frequency of falls (Hanlon et al. 2002; Tinetti et al. 1988). The few studies that have included Latinos/Hispanics have also found that their fall-related patterns are similar to those of non-Hispanic whites (Schiller et al. 2007). Previous research suggests that it is more difficult to identify the risk profiles of fallers versus non-fallers than recurrent versus non-recurrent fallers (Nevitt et al. 1989), but the present study suggests that race/ethnicity should be included in risk profiles for both initial and recurrent falls.

As with other prospective cohort studies examining older adults, selective mortality could challenge these findings, as falls are associated with both race/ethnicity (Stevens et al. 2008; Hanlon et al. 2002; de Rekeneire et al. 2003; Nevitt et al. 1989; Schiller et al. 2007) and mortality (Kung et al. 2008). Our study concludes that African Americans are less likely to fall—and experience fewer falls—than non-Hispanic whites. An alternative explanation is that mortality rates are higher among African Americans, and those who remain in the study would continue to age, increasing the risk of falling. Consequently, the black-white difference in experiencing a fall could actually be a selective mortality effect (Kelley-Moore & Ferraro, 2004). Mortality over follow-up significantly varies by falls incidence, falls frequency, and model covariates. However, our bivariate analyses found that mortality did not differ significantly by race/ethnicity in our sample, which suggests that differential mortality does not underlie our key findings that African Americans are less likely to fall—and experience fewer falls—than non-Hispanic whites.

Previous research suggests that African American older adults do not perform as favorably as non-Hispanic whites on a number of geriatric conditions, many of which increase the risk of falls. Older African Americans tend to have less muscle strength, engage in less frequent physical activity, have higher disability levels, greater disease burden, and have poorer balance and mobility compared to non-Hispanic whites (Mendes de Leon, Barnes, Bienias, Skarupski, & Evans, 2005; Rosso, Taylor, Tabb, & Michael, 2013). Greater muscle strength, more frequent physical activity, better balance and mobility, and lower levels of disability and burden of disease contribute to lower risk profiles for falls (Andresen et al. 2006; Schiller et al. 2007; CDC 2006; AGS, 2001; Ganz et al. 2007; Mertz et al. 2010; Deandrea et al. 2010). In fact, with few exceptions (such taking fewer medications), African Americans fit a higher falls risk profile than whites (Ellis et al. 2013).

Why, then, are African Americans less likely to fall and experience fewer falls than their non-Hispanic white and Latino counterparts? Walking is the most common fall-related activity among older adults (Mertz et al. 2010; Tinetti et al. 1988; Berg, Alessio, Mills, Tong, 1997; Faulkner et al. 2005), but older adults are more likely to fall while hurrying,

working in the yard or garden, or carrying something heavy or bulky (Berg et al. 1997). Walking situations vary in purpose, rigor, and risk level. Older adults who engage in more leisure-time physical activity and who have fewer mobility limitations are more likely to fall outdoors, where there are a number of environmental factors that heighten the risk of falls, such as uneven surfaces along sidewalks, curbs, and streets (Mertz et al. 2010). These hazards intersect with other factors such as physical ability, risk-taking behaviors, impulsivity (Lord, Menz, & Sherrington, 2006; Li et al. 2006). Previous studies have found that African Americans are over-represented among those who fall indoors, while non-Hispanic whites and Hispanics/Latinos are over-represented among those who fall outdoors (Mertz et al. 2010; Faulkner et al. 2005). Non-Hispanic white fallers are also more likely to land on surfaces such as ice, snow, and dirt, while African American fallers are more likely to fall on wooden, linoleum, or carpeted floors (Faulkner et al. 2005). The relatively higher levels of mobility of non-Hispanic whites could result in more opportunities to fall and therefore an increased risk overall. Further, whites' higher levels of risk-taking behavior and impulsivity and more frequent engagement in outdoor chores and leisure activities could be mechanisms underlying racial/ethnic differences in falls observed in this study.

The availability of support within one's household or community can also prevent older adults from engaging in risky activities that could lead to falling. According to Census data, African Americans aged 65 and over are more likely than whites to live in households with 3 people or 4 or more people (He, Sengupta, Velkoff, & DeBarros, 2005). Older African Americans are more likely to live in extended family households (Taylor et al., 1990), are more likely to co-reside with their adult children and grandchildren and are also more likely than non-Hispanic whites to agree that children should let their aging parents co-reside (Goldscheider & Lawton, 1998; Peek, Coward, & Peek, 2000). The role of co-resident relatives may be particularly important in preventing falls.

Although clinical and self-reported definitions of fall events are highly concordant (Nevitt et al. 1989), fall events are easily forgotten, particularly when they do not result in injury (Cummings et al. 1988; Peel, 2000). Participants report falls at each HRS survey round (every 2 years), which involves a longer recall than most studies (e.g. Faulkner et al. 2005; Tinetti et al. 1988; Hanlon et al. 2002; de Rekeneire et a. 2003). Another possible explanation for the racial differences found in this study is that African Americans are less likely to report falls than whites. While there could be racial/ethnic differences in how older adults appraise their health (Ferraro, 1993), prior studies suggest that race/ethnicity is not associated with interpretation or recollection of a fall event (Zecevic, Salmoni, Speechley, Vandervoort, 2006; Studenski et al. 1994).

Several limitations deserve consideration. First, our sample is restricted to adults aged 65 and older living in community settings. The extent to which the findings can be generalized to other populations is not known and warrants further attention. As with any epidemiological study, there is a concern regarding residual confounding in the multivariate models due to measurement error and incomplete characterization of variables in the models. Specifically, we do not consider balance and mobility, sensory and neuromuscular characteristics, psychological and medication characteristics, physical activity, or cognitive function. While these conditions typically are more severe for older adults residing in

institutional settings, cognitive impairment, medication use, and sensory/neuromuscular characteristics often cluster temporally, exponentially increasing the risk of falls among older adults. However, the results are not likely confounded by these concerns, as they disproportionately affect African Americans relative to whites, with the exception of medications (Ellis et al. 2013).

Environmental factors such as traffic, noise, crime, trash and litter, lighting, and public transportation could contribute to differential fall risk profiles (Balfour & Kaplan, 2002). However, we control for a number of risk factors identified in previous literature that could potentially confound the relationship between falls and race/ethnicity. We control for influential socio-demographic (age, sex) and health-related covariates (functional limitations, comorbidities) that could relate to both race/ethnicity and to the probability or number of falls (Stalenhoef, Diederiks, Knottnerus, Kester, & Crebolder, 2002; Gill, Taylor, & Pengelly, 2005; Deandrea et al. 2010).

Conclusions/Implications

African Americans are less likely to fall—and fell less frequently—than non-Hispanic whites. Based on these findings, particular attention is needed to reduce environmental risk factors and to promote targeted interventions for avoiding falls. Such interventions will result in more effective and efficient clinical practice, where limited resources are channeled to those most in need and with the greatest potential benefit. By focusing on high-risk individuals, clinicians can be more attentive and responsive to the predictors of falls risk among community-dwelling older adults.

Health professionals should consider a broader range of individual and environmental determinants of mobility—such as functional ability, socioeconomic resources, support, household composition, and community resources—when developing falls prevention programs. Early interventions are important as older adults become less physically active and more socially isolated to avoid situations that could lead to falls (Yardley & Smith, 2002).

Moreover, numerous barriers and hazards in the built environment threaten social and community engagement of older adults with diverse physical abilities and backgrounds (Rosenberg, Huang, Simonovich, & Belza, 2013). To promote community-based healthy aging and to prevent avoidable institutionalization, public health organizations should continue to invest in community walkability (Satariano et al. 2012). Such strategies could result in fewer injuries as well as greater opportunity to age in community—rather than institutional—settings. Well-designed interventions have the potential both to better reach and support high-risk individuals and to lead to broader dialogues to promote health of older adults.

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Table 1

Unweighted sample characteristics and correlates of falls at baseline (1998-2000)

Variables	B, OS [a]	B, NF [b]	B, F [c]	Std. Err. [d]	CI [e]	P Value
Race/Ethnicity						
White (ref.)	80.40%	80.23%	80.79%	- -		- -
African American	12.65%	13.06%	11.65%	0.01	(−0.05, 0.00)	0.07
Latino	6.95%	6.71%	7.55%	0.02	(−0.01, 0.06)	0.18
Age [f]	75.63	74.83	77.58	0.00	(0.01, 0.01)	<0.01
Male	42.21%	44.57%	36.44%	0.01	(−0.09, −0.05)	<0.01
ADLs [g]	0.50	0.32	0.95	0.04	(0.09, 0.11)	<0.01
IADLs [h]	0.24	0.15	0.44	0.01	(0.12, 0.14)	<0.01
Comorbidities	2.05	1.90	2.41	0.00	(0.05, 0.06)	<0.01

Note. The reference group for the Race/Ethnicity rows is Non-Hispanic Whites.

[a] Baseline, Overall Sample; Mean or percentage.

[b] Baseline, Non-Faller; Mean or percentage.

[c] Baseline, Faller; Mean or percentage.

[d] Std. Err. = Standard Error.

[e] CI = Confidence Interval.

[f] Age was measured in 2000

[g] ADLs = Activities of Daily Living.

[h] IADLs = Instrumental Activities of Daily Living.

Table 2

Unweighted sample characteristics and number of falls at baseline (1998-2000)

Variable	Mean [a]	Std. Err. [b]	CI [c]	P Value
Race/Ethnicity				
White	2.44			
African American	2.32	0.15	(−0.39, 0.20)	0.54
Latino	2.37	0.18	(−0.43, 0.29)	0.70
Age [d]	-	0.01	(0.01, 0.03)	<0.01
Male	2.56	0.10	(0.02, 0.42)	0.03
ADLs [e]	-	0.03	(0.42, 0.55)	<0.01
IADLs [f]	-	0.05	(0.69, 0.90)	<0.01
Comorbidities	-	0.03	(0.25, 0.38)	<0.01

Note. The reference group for the Race/Ethnicity rows is Non-Hispanic Whites.

[a] Number of baseline falls.

[b] Std. Err = Standard Error.

[c] CI = Confidence Interval.

[d] Age was measured in 2000.

[e] ADLs = Activities of Daily Living.

[f] IADLs = Instrumental Activities of Daily Living.

Table 3

Race/ethnicity and weighted odds of experiencing a fall (2000-2010)

Variable	Odds Ratio	Std. Err. [a]	CI [b]	P Value
Race/Ethnicity				
White				
African American	0.65	0.01	(0.53, 0.80)	0.02
Latino	0.91	0.02	(0.69, 1.20)	0.15
Age [c]	1.03	0.00	(1.09, 1.40)	0.03
Male	0.82	0.01	(0.69, 0.98)	0.04
ADLs [d]	1.32	0.00	(1.32, 1.33)	<0.01
IADLs [e]	1.19	0.01	(1.06, 1.34)	0.03

Note. The reference group for the Race/Ethnicity rows is non-Hispanic Whites.

[a] Std. Err = Standard Error.

[b] CI = Confidence Interval.

[c] Age was measured in 2000.

[d] ADL = Activities of Daily Living.

[e] IADL = Instrumental Activities of Daily Living.

Table 4

Race/ethnicity and weighted number of falls (2000-2010)

Variable	Relative Risk	Std. Err. [a]	CI [b]	P Value
Race/Ethnicity				
White				
African American	0.76	0.00	(0.71, 0.82)	0.01
Latino	0.85	0.05	(0.42, 1.73)	0.21
Age [c]	1.00	0.00	(0.98, 1.01)	0.22
Male	1.28	0.02	(1.02, 1.63)	0.05
ADLs [d]	1.12	0.00	(1.06, 1.18)	0.02
IADLs [e]	1.12	0.00	(1.09, 1.15)	0.01
Comorbidities	1.08	0.02	(0.85, 1.38)	0.15

Note. The reference group for the Race/Ethnicity rows is non-Hispanic Whites.

[a] Std. Err = Standard Error.

[b] CI = Confidence Interval.

[c] Age was measured in 2000.

[d] ADL = Activities of Daily Living.

[e] IADL = Instrumental Activities of Daily Living.