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Disparities in the Prevalence of Unmet Needs and Their Consequences Among Black and White Older Adults

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Abstract

Objective—We document differential prevalence of need for assistance with personal, instrumental, and mobility tasks and adverse consequences of unmet needs, nursing home relocation, and mortality among Black and White older adults.

Method—Data are from the National Health and Aging Trends Study. Using logistic and multinomial logistic regression, we determine whether race is predictive of reporting need or adverse consequence and test the role of race as a moderator of the relationship between baseline need and three 1-year outcomes.

Results—Black older adults are more likely to experience a consequence of unmet need (35.33% vs. 29.97%, $p = .028$) in unadjusted models. In adjusted models, we find no moderating effect of race on baseline need on nursing home placement (0.00, 95% confidence interval [CI] = [−2.43, 2.42], $p = .991$), mortality (0.73, 95% = [−1.58, 0.11], $p = .089$), or a Round 2 consequence of unmet (−0.51, 95% CI = [−1.15, 0.14], $p = .121$).

Discussion—This work highlights the complex relationship between race, need, unmet need, mortality, and nursing home entry.

Keywords

adverse consequences; racial disparities; unmet need; long-term care

In the United States, over 2 million community-dwelling Medicare beneficiaries experience an adverse consequence due to insufficient support with needed personal or household tasks

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Author Contributions

Clara Berridge performed all analyses and wrote the paper. Vincent Mor planned the study, supervised the data analysis, and contributed writing and revision.

Declaration of Conflicting Interests

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each year, such as soiling oneself, or going without a warm meal (Allen, Piette, & Mor, 2014). Prior research has demonstrated that community-dwelling adults with need for personal assistance are at risk of having those needs go unmet (LaPlante, Kaye, Kang, & Harrington, 2004). Unmet need for assistance increases risks for other adverse consequences, including but not limited to institutionalization and death, as well as worsened health status and disability that may in turn increase risk for institutionalization and death (Chenier, 1997; LaPlante et al., 2004; Zhen, Feng, & Gu, 2015). Older adults reporting unmet needs are more likely than those reporting no need to be hospitalized and to enter nursing homes within a year or two (Komisar, Feder, & Kasper, 2005; Long, Liu, Black, O'Keefe, & Molony, 2005; Sands et al., 2006).

Previous studies have found that Black older adults are at higher risk of having unmet or undermet need than are White older adults. A 2001 analysis of the Adult Disability Follow-Back Survey found that Black participants were almost twice as likely as White participants to report an unmet or under-met need (Kennedy, 2001). Lima and Allen (2001) also report a significantly higher risk for Black compared with White participants of receiving no help at all in meeting their daily needs. They also found that greater levels of unmet need were associated with race, among other factors. Newcomer and colleagues (2005) report that White respondents are at significantly lower risk of having an unmet need for bathing and dressing assistance. Recent research demonstrates that those who are dually eligible for Medicare and Medicaid are about twice as likely to experience all forms of unmet need, and older adults of color are about 3 times more likely to be dual eligible than are White older adults (Allen et al., 2014). Using the National Health and Aging Trends Study (NHATS) Round 1 sample of community- and supportive-residential-dwelling respondents that included assisted living and other supportive residential housing, Freedman and Spillman (2014) report that Black older adults are more likely to have any adverse consequence relative to White older adults in unadjusted models.

What has not been explored is whether, when adjusting for other factors, Black and White individuals with need experience different related adverse outcomes over any period of time. Certainly, the consequences of unmet needs are most apparent among dual eligible and Black Medicare beneficiaries since when they enter nursing homes, these tend to be of worse quality, and, if seeking postacute care, are much more likely to become permanent residents, other things being equal (Rahman, Gozalo, et al., 2014; Rahman, Grabowski, Gozalo, Thomas, & Mor, 2014), but the question remains if and how the race of individuals with need influences their risk of experiencing such consequences of unmet needs. We examine whether the following consequences differ between Black and White elders who report need: mortality, relocation to a nursing home, and persistent report of any of 11 unmet need consequences.

Conceptual Framework

Cumulative disadvantage theory describes a process of accumulated disadvantage in areas of health, education, and economics that lie beyond the individual domain (Crystal, Shea, & Reyes, 2016; Dannefer, 2003) and may help explain health-related inequalities in old age such as the experience of adverse consequences of unmet need for help. Life course

disadvantages may accumulate to negatively affect quality of needed support and related outcomes. If socially and economically disadvantaged groups are more vulnerable to illness and injury that lead to health, disability, and well-being disparities (World Health Organization, 2010), it would follow that Black older adults experience a higher need for personal assistance than do White older adults. Our analyses are motivated by the theory of cumulative disadvantage and the body of research that has linked health outcomes to characteristics that are associated with discrimination and exclusion (Department of Health and Human Services, 2011; WHO, 2010). We examine race as a contextual variable with implications that accumulate over time, not to imply biological import but to describe and begin to understand the basis of inequalities in these important late-life health outcomes (Jones, 2001).

There are multiple ways to examine the influence of race on these unmet need outcomes. With an understanding of race as a complex, contextual variable, we turn to the growing literature on differential vulnerability. This body of work suggests that White individuals may actually be more vulnerable to the effects of certain social and psychological risk factors than are Black individuals (see, for example, Assari & Lankarani, 2016; Assari, Moazen-Zadeh, Lankarani, & Micol-Foster, 2016). Following this lead, we use a differential effects hypothesis rather than differential exposure hypothesis because race correlates with many constructs, both measurable and unmeasured that may be reflected in the residual effect of race if treated as a main effect. We present a moderation analysis that tests the interaction between race and our risk factor of interest, reported need, to learn if Black or White older adults are more vulnerable to the effects of need on nursing home placement, mortality, and reporting a consequence of an unmet need (Baron & Kenny, 1986).

This study uses NHATS Round 1 (2011) and Round 2 (2012) data to examine racial disparities in three domains of need and associated adverse consequences of not receiving sufficient help cross-sectionally, as well as racial differences in the effects of need on 1-year risk of the three outcomes. Our conceptual model (Figure 1) depicts four causal paths that feed into the outcome variables of interest. These include the impact of need (predictor), race (moderator), the interaction of race and need (the moderator effect), and a set of sociodemographic and health variables. Our moderator hypothesis is supported if the interaction path is statistically significant (Baron & Kenny, 1986). We first examine the prevalence and correlates of need and adverse consequences of unmet need for Activities of Daily Living (ADL), Instrumental Activities of Daily Living (IADL), and mobility assistance among White and Black community-dwelling Medicare beneficiaries and then ask if race affects the zero-order correlation between need and our three outcomes.

Unmet need is an established, widespread problem among older adults. The aim of this analysis is to better understand its relationship to Black–White disparities in the experience of key health outcomes. We expect, based on the theory of cumulative disadvantage, that Black participants reporting need will be at greater risk for our three outcomes than their White counterparts. By examining the potential variations in the associations, we also allow for the possibility of different pathways to nursing home placement, mortality, and persistent unmet need consequences. Sorting out these relationships will be critical to our ability to intervene in racial inequities that manifest in late life.

Data and Method

Data

Data are from NHATS first (2011) and second round (2012) public use files. The national sample was drawn from the Medicare enrollment database in the contiguous United States with roughly equal-sized groups per Census region, yielding a nationally representative sample of individuals ages 65 and older. The annual interviews were conducted in person (DeMatteis, Freedman, & Kasper, 2016). The 2011 response rate was 71% ($N = 8,245$), and the 2012 response rate was 85.3% (conditional on Round 1 response). Black non-Hispanic persons and persons in older age groups were oversampled (Montaguila, Freedman, Spillman, & Kasper, 2012).

For these analyses, Taylor linearization weights were used for all estimates using the strata and cluster variables provided by NHATS. This takes the survey design, sampling procedures, and differential probabilities of non-response into consideration for the calculation of the point estimate and standard errors. Using the subpop option in Stata14 to conduct subgroup analyses, we restricted the analytic sample to participants who lived in the community in the first round ($n = 7,197$), excluding 636 participants living in supportive residential or nursing home settings. We further restricted our sample to those who identified as either White non-Hispanic (4,861) or Black non-Hispanic (1,598), thus excluding 738 community dwellers identifying as Hispanic (445), American Indian/Asian/Native Hawaiian (209), or multiple categories, don't know, or refused to answer ($n = 84$). The final analytic sample consisted of 6,459 Black and White community-dwelling respondents age 65 and older. In Round 1, 413 of these had proxy respondents, and in Round 2, 603 relied upon proxies. For our analyses of a 1-year change between Round 1 and Round 2, 965 Round 1 community-dwelling Black and White respondents did not have a response for residential status in Round 2, a loss of 14.8% of potential cases.

Measures

Need for assistance in Round 1—We examined a total of 11 activities: four categories for ADL activities (eating, showering/taking a bath/washing up, getting to or using the toilet, and dressing), four IADL activities (laundry, shopping for groceries or personal items, meal preparation, keeping track of medication), and three mobility activities (going outside the home, getting around inside the home, and getting out of bed). For each of these activities, respondents were asked if they performed it without assistance, and if so, how difficult it was to do the activity alone. Respondents were considered to have need for assistance if they reported that they had assistance with an ADL or mobility task, or for IADLs if assistance was received for health or functioning reasons, or they reported that they performed an activity themselves with difficulty. Four indicators were created for having at least one need within each of the three ADL, IADL, and mobility categories, and for having any need across categories.

Adverse consequences of unmet need in Round 1—Respondents were considered to have an adverse consequence of unmet need for assistance when they both needed assistance with an activity and reported a corresponding adverse consequence because no

one was available to assist with the activity in question or because it was too difficult to perform the activity alone. Respondents reported adverse consequences when, within the last month, they went without eating, went without showering/taking a bath/washing up, wet or soiled clothes, went without getting dressed, went without clean laundry, went without groceries or personal items, went without a hot meal, make a mistake in taking prescribed medication, had to remain inside, did not move around inside the home, and had to stay in bed. The denominators for each dichotomous variable indicating consequence (yes/no) were the respondents who also reported having a need for the associated activity. Four summary indicators were created for having at least one consequence in each of the ADL, IADL, and mobility categories, and for having any consequence in any category.

Round 1 health and sociodemographics—Our measure of comorbidity is based on the number of reported medically diagnosed chronic health conditions, including heart disease, hypertension, cancer, lung disease, osteoporosis, arthritis, diabetes, and stroke (three or more or less than three). We used a validated score of self-reported physical capacity difficulties ranging 0 to 12, with a higher score reflecting a greater number of physical capacity limitations (e.g., unable to walk six blocks, unable to grasp a small object; Freedman et al., 2011). We included a dichotomous indicator for whether the person had been hospitalized in the past 12 months.

Previous research indicates that activity limitations are positively associated with older age, being female, cognitively impaired, unmarried, living alone, and lower education (Freedman, Martin, Schoeni, & Cornman, 2008; Latham, 2012). We used dichotomous indicators for dementia status (probable dementia or possible and no dementia), classifications based on a combination of cognitive test results and proxy reports (Kasper, Freedman, & Spillman, 2013). We included age (85+ or 65–84), gender (female or male), marital status (married or unmarried), living arrangement (alone or with others), Medicaid or Medicare only, and education (less than high school, high school, or more than high school). We chose to use Medicaid status and not income because the difference between estimated income and wealth can be considerable for the nonworking population and because previous research that compared unmet need consequences among Medicaid and Medicare-only eligible older adults found differential rates (Allen et al., 2014).

Round 2 outcome measures—Respondents' residential status was assessed in Round 1 and again in Round 2. We captured both death between Round 1 and Round 2 and relocation to a nursing home. We also assessed whether respondents who reported a need for assistance in Round 1 and remained living in the community in Round 2 experienced an adverse consequence of having any need go unmet in Round 2, indicating persistent need of some kind. The same questions regarding need and consequences were asked in both rounds and these Round 2 need and consequence variables were created in the same way as described above for analysis of the Round 1 need and consequences.

Analytic Approach

In Table 1, we compare all analytic variable characteristics of Black and White respondents by ordinal level of reported needs (0, 1–2, >2) at Round 1. We use the dichotomous indicator

for need (any need vs. no need) described above for subsequent multivariate analyses to preserve power. We compare the Round 1 prevalence of Black and White respondents' reports of unmet need and consequences of unmet need (Table 2). In Table 3, we present Round 1 logistic regression results as odds ratios for ease of interpretation for our binary outcomes, any need and any consequence, for each of three domains: ADL, IADL, and mobility. Using logistic and multinomial logistic regression, we examine the possibility that race moderates the relation between report of any need at Round 1 and three future adverse events: death and relocation to a nursing home or reporting any consequence of having a need go unmet in Round 2 (Table 4). For these analyses, we present log-odds parameter estimates because interaction terms are not interpretable as odds ratios.

We explored nonresponse in Round 2 across the population and found that Black respondents who reported a Round 1 need were significantly less likely to be lost to Round 2 follow-up than were Black respondents who did not report a Round 1 need (14.52% vs. 18.87%, $p = .022$). There was no significant difference in Round 2 response rates for White respondents reporting a Round 1 need and no significant difference among Black or White older adults who reported a Round 1 consequence. Analyses were conducted in Stata 14.

Results

Table 1 displays the distributions of health and sociodemographic indicators for community-dwelling Black and White older adults by ordinal categories of need counts (no need; 1–2 needs; >2 needs) among the 11 activities (four ADLs, four IADLs, three mobility activities). Compared with White respondents, Black respondents across all three levels of need are significantly younger, more likely to have dementia, be unmarried, on Medicaid, have more physical capacity limitations, and less education. Among those without a reported need, Black respondents are more likely to live alone and to have been hospitalized in the past 12 months, and among those reporting more than two needs, they are more likely to be women than are White respondents.

A significantly greater proportion of our full sample (6,459) of Black respondents compared with White respondents report need for assistance in each of the three domains of ADL (30.6% vs. 21.6%), IADL (40.46% vs. 29.28%), and mobility activities (38.71% vs. 27.34%), as shown in Table 2 ($p < .001$). While there is no statistically significant difference by race in reported adverse consequences of unmet need for assistance among those with associated need in ADLs (25.92% vs. 21.69%, $n = 1,761$), IADLs (16.57% vs. 18.19%, $n = 2,339$), or mobility activities (31.44% vs. 27.43%, $n = 2,185$), all are in the direction of higher prevalence among Black respondents. On our summary measure of any consequence among those with any need, we find that Black respondents are more likely to report at least one corresponding consequence (35.3% vs. 29.9%, $p < .05$).

Using logistic regression, we examine the prevalence of need and separately the consequences of unmet need among those who report receipt of help or difficulty completing any of the 11 ADL, IADL, or mobility activities. The first three models shown in Table 3 predict report of a category of need regardless of whether or not it is met, while the last three models predict reports of experiencing a consequence of the same need going unmet. As

only those with a need in a given domain are included in the adverse consequence measures, the confidence limits in the latter tables are wide. Table 3 reveals that after controlling for sociodemographic and health factors, racial differences are not significant for any of the needs or consequences measures.

As shown in Table 3, the likelihood of having need for assistance across all three domains was strongly related to functional impairment, chronic conditions, dementia, and prior hospitalization. Being 85+ was only associated with greater IADL need ($p < .05$). The degree of functional impairment was also consistently related to reporting adverse consequences of unmet need. Probable dementia and three or more chronic conditions significantly predicted ADL consequences ($p < .05$) and having had a hospital stay predicted a mobility consequence ($p < .01$). Being female was negatively associated with having an ADL or mobility need and having an IADL consequence ($p < .05$). Those who live alone were less likely to report a mobility need but more likely to report an IADL consequence of unmet need. Being on Medicaid predicted ADL need only, and having the highest level of education (more than high school) predicted ADL and IADL needs as well as ADL and IADL consequences ($p < .01$).

Before adjusting for health and sociodemographic indicators, we find no significant difference in the 1-year mortality rate of White and Black older adults, 3.84% (214) and 3.5% (64), respectively, but White older adults' risk of death compared with Black older adults' is significantly greater among those reporting a baseline need for assistance, 7.49% (176) versus 5.24% (55), $p = .024$. Among survivors, we find a modestly higher risk of nursing home entry for Black than for White respondents in the 1 year between baseline and follow-up (1.23% vs. 0.65%, $p = .064$, $n = 19$ vs. $n = 38$). However, there is no significant racial difference in nursing home entry among those who reported a Round 1 need (2.11% vs. 1.34%, $p = .176$, $n = 18$ vs. $n = 34$).

We fit a model using multinomial logistic regression that allowed for mortality and nursing home placement as Round 2 outcomes, as well as a logistic regression model for reported consequence of unmet need among those who remained living in the community. Table 4 shows the findings from both models for the three outcomes. After controlling for our Round 1 sociodemographic and health indicators, we find no moderating effect of race on need for nursing home placement (0.00, 95% confidence interval [CI] = $[-2.43, 2.42]$, $p = .991$), though, as reported above, our Round 2 nursing home numbers are small (19 Black and 38 White). The moderating effect of race on the relationship between reported need and mortality achieves significance at the .10 level: The log odds for Black mortality is 0.73 less than it is for their White counterparts (95% CI = $[-1.58, 0.11]$, $p = .089$). While 29.9% of Black and 26.6% of White community dwellers reported an adverse consequence of unmet need in Round 2 ($p = .089$), the third logistic regression model in Table 4 shows that race does not moderate the effect of a Round 1 need on report of a Round 2 consequence of unmet (-0.51 , 95% CI = $[-1.15, 0.14]$, $p = .121$).

Discussion

We have presented estimates of the prevalence and correlates of three domains of need for assistance and selected adverse consequences of unmet need among Black and White Medicare beneficiaries, and we compare their 1-year risk of experiencing an adverse consequence as well as relocation to a nursing home and death. First, based on the higher prevalence of need (52.9% vs. 41.52%) and consequences of unmet need (35.33% vs. 29.97%), we expected that Black older adults would experience worse outcomes related to unmet need. However, after adjusting for health and other sociodemographic factors, Black respondents are no more likely than White respondents to report a need or to have an adverse consequence of having that need go unmet. Clearly, controlling for medical need, health and functioning, marital status and living arrangement (limited measures of social support), insurance status, and education “adjusts away” the effect of race, *per se*.

Disentangling the effects of race from the components of what race measures, namely, social class, institutionalized, personally mediated, and internalized racism, culture, and phenotype (Jones, 2001), is particularly complex in work on outcomes for older adults when early life events shaped by overt discrimination in various societal institutions are not captured. As White older adults are much less likely to be Medicaid enrolled and more likely to have higher education than Black older adults, controlling for these factors, which are correlated with race, leaves unresolved the absolute differences in unmet needs and consequences that are apparent.

In our analyses of 1-year change between Rounds 1 and 2, we do not find racial differences in the effects of need beyond the effects of sociodemographic and health indicators on risk of our three adverse outcomes. It is possible that race modifies the role that our sociodemographic and health indicators play on the relationship between need and outcomes. Tables 1 and 3 highlight the ways in which race and need relate to sociodemographic and health covariates and suggest that effects may be mediated through those factors that are significant across levels of need (Table 1) and type of need (Table 3). Physical capacity limitations and dementia status appear to be the most consistent. We have not systematically established an association, but anticipate that these two variables have the greatest effect on predicted outcomes and may be more reflective of racial difference than the other sociodemographic and health indicators as they related to our outcomes, and thus are the biggest contributors to findings of no racial difference.

We do observe differential selective survival, with Black respondents reporting a Round 1 need at modestly lower risk for mortality than are White respondents reporting a Round 1 need. We find that Black survivors have a somewhat higher rate of nursing home entry overall, but while the numbers are small, this is not concentrated among those with need or unmet need. The complex interplay between unmet need, informal support resiliency, race, and the likelihood of becoming a permanent nursing home resident has not been adequately explored, particularly in the modern era in which Black older adults are more likely to reside in nursing homes and enter with lower levels of impairment than do White older adults (Feng, Fennell, Tyler, Clark, & Mor, 2011; Smith, Feng, Fennell, Zinn, & Mor, 2008). Below, we offer potential explanations that our findings indicate are in need of further

exploration, followed by a discussion of two selection issues that limit our confidence in findings of no difference.

Differential Network Support Resiliency

The forces that influence individuals' entry into nursing homes and their likelihood of becoming permanent residents have been examined over decades and include the resilience and breadth of the informal support system. Indeed, among older adults with functional impairments, those with unmet needs generally have inadequate informal support and assistance (Allen & Mor, 1997). Marital status and living arrangement are the only variables included in our analyses that represent social support—We attempted to use a composite measure of social capital from questions about social activities (e.g., visited/by family or friend in the last month, attended religious services last month) but found no variation. Black participants reporting a Round 1 need were far less likely to be married than were White participants across multiple levels of need, yet those with any need were no less likely to live with others. That is, Black older adults who do not report need are significantly more likely to live alone than are White older adults who do not report a need; however, this difference in living status disappears among those who have 1 to 2 needs and >2 needs (Table 1).

It is possible that Black older adults have more ties to supportive community and familial networks that help mitigate their risk of experiencing negative outcomes of need or unmet need. Caregiver research over the past few decades has revealed differences between Black and White caregivers' size, makeup, coping strategies, and helpfulness (Dilworth-Anderson, Williams, & Gibson, 2002; Roff et al., 2004). Black caregivers of older adults are more likely than their White counterparts to rely on extended family and to have larger and more diverse support networks (Dilworth-Anderson et al., 2002). Studies have found differing appraisals of caregiving situations and coping strategies that lead to lower depression and expressed burden among Black caregivers as compared with White caregivers (Dilworth-Anderson et al., 2002). Recent research shows that Black caregivers for older adults are younger than are White caregivers and provide more hours of care and more intensive care with ADLs and IADLs (National Alliance for Caregiving [NAC] and American Association of Retired Persons [AARP], 2016). If Black older adults are receiving more care from family members and other "informal" caregivers that is protective against adverse outcomes, further study is needed on the well-being and financial toll paid by providers of that critical care, as well as the supports and resources that Black family caregivers need to provide multigenerational caregiving (Picot, 1995).

The Study's Contribution

These analyses show that race does not have a moderating effect on need as a predictor of nursing home relocation, death, and unmet need consequence when we control for sociodemographic and health indicators. The measures that account the most for the unadjusted effects of race appear to be physical capacity and dementia status, though they are not the only relevant factors. These findings underscore the downstream nature of racial disparities in need for support with ADLs, IADLs, and mobility tasks relative to these functional disparities as both sets of disparities relate to nursing home placement, mortality, and unmet need consequence. This preliminary work suggests that interventions that target

inequities that create disparities in physical and cognitive capacity may have greater direct impact on closing the racial disparities associated with these adverse consequences as compared with those that intervene downstream at the point of meeting ADL/IADL/mobility needs among older adults living in the community. However, if future research indicates that Black older adults' social networks are shouldering the financial and/or physical-emotional burden of these ADL/IADL/mobility need disparities and helping to sustain those who are experiencing serious difficulties, this may entrench intergenerational racial inequities. That is, we have tested the moderating effect of race on need and only three specific outcomes that are experienced by older adults. The current research suggests that the possibility of differential informal supports needs to be examined in relation to these outcomes.

Finally, potential disparities in need and unmet need consequences warrant attention to other racial groups. Prevalence of unmet need may be greater among populations that were not oversampled. For example, analyses of data from the Native Elder Care Study on unmet need reveal a much higher prevalence of reported unmet need with an ADL or IADL (47.8%; Schure, Conte, & Goins, 2015) compared with our data on Black and White older adults.

Discussion of Limitations

Selection—The finding that needing assistance and reporting a consequence is a stronger predictor of White mortality is an unexpected finding because Black people ages 65+ experience higher all-cause mortality rates than do White older adults (Williams & Jackson, 2005). The time elapsed between Time 1 and Time 2 was only a year, which may not be enough time to capture effects of unmet needs. Alternatively, similar mechanisms may be at play as those that contribute to the Black–White mortality crossover paradox, which has been attributed to selective mortality (Yao & Robert, 2011). This is an effect of systematically greater mortality rates at younger ages for Black people, leaving a more robust population of Black older adults while mortality for White people accelerates at older ages (Sautter, Thomas, Dupre, & George, 2012). We considered this crossover paradox when we constructed our age categories and tested two alternative age categories (75+ and 70+) and found no difference from our categories of 65 to 84 and 85+. It is possible that our data do not begin with a young-enough cohort to fully account for the mortality crossover paradox. That is, those who had the greatest unmet needs may be excluded in our sample due to early mortality. The consequences of this selection limitation for our findings are not known but likely mean that racial differences are not fully accounted for.

We also note a related potential selection issue for nursing home placement. Among those we excluded from our study of community dwellers at baseline, 126 Black and 312 White participants were nursing home residents, a significantly higher proportion of Black participants (4.34% vs. 2.94%, $p < .001$). This is consistent with the literature documenting the higher rate of nursing home use among Black older adults over the last decade or more (Feng et al., 2011; Smith et al., 2008). We excluded those who were already living in nursing homes in Round 1 and cannot account for the possibility that their move to nursing homes was driven by unmet need in previous years. It is worth highlighting again that the percentage of missing observations in Round 2 (14.8%) was high, and the numbers of those

in our subsample who moved to a nursing home were small. We also note the use of proxy respondents as described in the section “Data,” which may potentially introduce inaccurate response, and we do not know how potential inaccuracies by proxies would differ by race.

The possibility that we are observing differential reporting of the consequences of unmet need among Black and White participants requires study. Underreporting unmet need may be associated with greater deprivation, or Black participants may perceive negative consequences of answering affirmatively to these sensitive questions (i.e., “I soiled myself”) and/or be more susceptible to social desirability bias or interviewer effects. Whether this interpretation is applicable to reporting the adverse consequences of unmet need is not known.

Conclusion

Black older adults are significantly more likely to report need across ADLs, IADLs, and mobility activities, and at least one adverse consequence of unmet need than are White older adults, without adjusting for the primary social and health effects of discrimination. To have an adverse consequence is to struggle with some combination of impairment and inadequate support. Our findings from this study of 1-year outcomes indicate that race, independent of sociodemographic and health measures, may not moderate the relationship between need and nursing home relocation, death, or unmet need consequences for Black and White older adults. Instead, these findings focus our attention on upstream measures that reflect racial difference in older adults’ health and health care. Our physical capacity and dementia status measures are significant across levels of need and type of need, and we expect that they contribute the most to our findings of no racial difference. These findings also lead us to recommend exploring informal support resiliency. Clarifying these relationships is critical where the distribution of quality nursing home care and rebalancing benefits mirror patterns of Black–White inequality.

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Figure 1.
Conceptual model: Race as moderator.

Table 1

Descriptive Statistics of Characteristics of Community Dwellers Stratified by Category of Number of Need in NHATS Round 1 (2011) by Race.

	No need Black (<i>n</i> = 2,612)		No need White (<i>n</i> = 689)		1–2 needs Black (<i>n</i> = 339)		1–2 needs White (<i>n</i> = 1,046)		>2 needs Black (<i>n</i> = 570)		>2 needs White (<i>n</i> = 1,203)	
	% (95% CI)		% (95% CI)		% (95% CI)		% (95% CI)		% (95% CI)		% (95% CI)	
Gender												
Female	50.6 [46, 55]		50.8 [48, 53]		61.9 [56, 67]		56.4 [53, 60]		72.5 [67, 77]		66.3 [63, 70] *	
Male	49.4 [45, 54]		49.2 [47, 51]		38.1 [33, 44]		43.6 [40, 47]		27.5 [23, 33]		33.7 [31, 37] *	
Age												
<85	95.0 [93, 96]		93.6 [93, 94] **		92.3 [89, 95]		87.2 [85, 89] **		81.3 [78, 84]		75.2 [73, 77] **	
85+	5.0 [3, 6]		6.4 [5, 7] **		7.7 [5, 10]		12.8 [11, 14] **		18.7 [16, 22]		24.8 [23, 27] **	
Physical capacity limitations (0–12), <i>M</i> (<i>SD</i>)	1.40 (.09)		1.00 (.03) **		3.35 (.19)		2.59 (.10) **		8.00 (.18)		6.93 (.10) **	
Health conditions												
Three or more	33.7 [30, 38]		34.2 [32, 36]		54.8 [49, 61]		51.6 [48, 55]		74.7 [70, 79]		72.5 [70, 75]	
Less than three	66.3 [62, 70]		65.8 [64, 68]		45.2 [39, 51]		48.4 [45, 52]		25.3 [21, 30]		27.5 [25, 30]	
Hospitalized in year												
Hospitalized	15.8 [13, 19]		12.4 [11, 14] *		24.1 [19, 30]		20.6 [18, 24]		39.3 [36, 43]		37.3 [34, 40]	
Not hospitalized	84 [81, 87]		88 [86, 89] *		75.9 [70, 81]		79.4 [76, 82]		60.7 [57, 64]		62.7 [60, 66]	
Dementia												
Probable dementia	5.1 [4.0, 6.6]		2.0 [1.5, 2.7] **		8.8 [6, 12]		5.4 [4.3, 6.8] *		32.1 [28, 37]		23.1 [21, 26] **	
No or possible dementia	94.9 [93, 96]		98.0 [97, 99] **		91.2 [87, 94]		94.6 [93, 96] *		67.9 [63, 72]		76.9 [74, 79] **	
Marital status												
Unmarried	58.0 [54, 62]		36.0 [34, 38] **		63.2 [58, 68]		41.3 [38, 44] **		71.9 [68, 75]		53.7 [50, 57] **	
Married	42.0 [38, 46]		64.0 [62, 66] **		36.8 [32, 42]		58.7 [56, 62] **		28.1 [25, 32]		46.3 [43, 50] **	
Living arrangement												
Lives alone	34.2 [31, 38]		25.2 [24, 27] **		32.1 [27, 37]		29.1 [26, 32]		26.6 [22, 32]		30.5 [27, 34]	
Lives with others	65.8 [62, 69]		74.8 [73, 76] **		67.9 [63, 73]		70.9 [68, 74]		73.4 [68, 78]		69.5 [66, 73]	
Insurance												

	No need Black (<i>n</i> = 2,612)	No need White (<i>n</i> = 689)	1–2 needs Black (<i>n</i> = 339)	1–2 needs White (<i>n</i> = 1,046)	>2 needs Black (<i>n</i> = 570)	>2 needs White (<i>n</i> = 1,203)
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Medicare/Medicaid	23.0 [19, 28]	4.3 [4, 5]**	25.4 [21, 31]	5.1 [4, 7]**	41.3 [37, 46]	14.7 [12, 18]**
Medicare	77.1 [72, 81]	95.7 [95, 97]**	74.6 [69, 79]	94.9 [93, 96]**	58.7 [54, 63]	85.3 [82, 88]**
Education						
Less than high school	32.4 [29, 36]	13.2 [11, 15]**	38.8 [32, 46]	16.3 [14, 19]**	47.8 [42, 53]	25.7 [22, 30]**
Graduated high school	28.6 [24, 33]	27.5 [26, 29]	24.8 [19, 31]	31.2 [28, 34]**	20.5 [17, 24]	30.5 [27, 34]**
Beyond high school	38.8 [33, 45]	59.2 [56, 62]**	36.4 [30, 43]	52.5 [49, 56]**	31.1 [26, 36]	43.4 [39, 48]**

Note. The *p* values reflect relationship between Black and White participants within each category of need and are calculated using Pearson's χ^2 .

Data are survey-weight adjusted. NHATS = National Health and Aging Trends Study; CI = confidence interval.

* $p < .05$.

** $p < .01$.

Table 2
Prevalence of Need for Assistance With ADL, IADL, and Mobility Activities and Adverse Consequences of Unmet Need by Race.

	Black (n = 1,598)	White (n = 4,861)	Pearson's χ^2
	% (95% CI)	% (95% CI)	p value
Needs assistance with an ADL task	30.60 [27.9, 33.5]	21.60 [20.4, 22.9]	<.001
Experienced an ADL consequence	25.92 [22.2, 30]	21.69 [19.4, 24.2]	.062
Needs assistance with an IADL task	40.36 [37.4, 43.3]	29.28 [27.6, 31.1]	<.001
Experienced an IADL consequence	16.57 [13.5, 20.2]	18.19 [16.1, 20.4]	.411
Needs assistance with a mobility task	38.71 [36.1, 41.4]	27.34 [26.0, 28.9]	<.001
Experienced a mobility consequence	31.44 [26.9, 36.4]	27.43 [24.6, 30.4]	.142
Needs assistance with any activity	52.9 [49.9, 55.9]	41.52 [39.7, 43.3]	<.001
Experienced any consequence	35.3 [0.31, 39.9]	29.9 [27.6, 32.4]	.028

Note. Data are survey-weight adjusted. CI = confidence interval; ADL = Activities of Daily Living; IADL = Instrumental Activities of Daily Living.

Table 3

Logistic Regression Results for Need From Full Sample and Adverse Consequences of Unmet Need Among Those Reporting Need for ADL, IADL, and Mobility Activities.

	ADL need		IADL need		Mobility need		ADL consequence		IADL consequence		Mobility consequence	
	AOR (95% CI)		AOR (95% CI)		AOR (95% CI)		AOR (n = 1,761) (95% CI)		AOR (n = 2,339) (95% CI)		AOR (n = 2,185) (95% CI)	
Black	0.97 [0.76, 1.24]		0.96 [0.78, 1.18]		0.98 [0.80, 1.19]		0.90 [0.65, 1.24]		0.87 [0.64, 1.18]		0.82 [0.59, 1.14]	
Age 85+ (65–84)	1.24 [0.98, 1.56]		1.25 [1.02, 1.54]*		1.10 [0.89, 1.36]		0.88 [0.63, 1.23]		0.79 [0.58, 1.07]		0.95 [0.69, 1.31]	
Female	0.66 [0.57, 0.77]**		1.20 [0.97, 1.48]		0.72 [0.61, 0.86]**		0.88 [0.66, 1.17]		0.50 [0.40, 0.62]**		0.97 [0.74, 1.26]	
Physical capacity limitations (0–12)	1.43 [1.39, 1.48]**		1.46 [1.41, 1.50]**		1.53 [1.48, 1.57]**		1.23 [1.18, 1.28]**		1.04 [1.00, 1.09]*		1.33 [1.29, 1.37]**	
3+ chronic conditions	1.44 [1.19, 1.74]**		1.48 [1.30, 1.68]**		1.44 [1.20, 1.73]**		1.38 [1.00, 1.89]*		1.36 [0.99, 1.86]		1.17 [0.88, 1.54]	
Probable dementia	1.86 [1.42, 2.45]**		4.04 [3.01, 5.42]**		1.46 [1.10, 1.93]**		1.43 [1.08, 1.89]*		0.79 [0.55, 1.14]		0.89 [0.66, 1.19]	
Hospital stay in past 12 months	1.30 [1.10, 1.54]**		1.59 [1.32, 1.92]**		1.30 [1.07, 1.59]*		1.14 [0.84, 1.55]		0.93 [0.71, 1.23]		1.43 [1.13, 1.81]**	
Married	1.17 [0.91, 1.51]		0.91 [0.71, 1.16]		0.83 [0.67, 1.02]		0.86 [0.57, 1.30]		0.99 [0.67, 1.45]		1.07 [0.77, 1.49]	
Lives alone	0.86 [0.67, 1.10]		0.99 [0.78, 1.25]		0.75 [0.60, 0.94]*		1.03 [0.70, 1.50]		1.63 [1.11, 2.38]*		0.89 [0.61, 1.31]	
Medicaid	1.43 [1.10, 1.86]**		1.33 [0.99, 1.77]		1.25 [0.91, 1.71]		1.39 [0.98, 1.96]		1.38 [0.98, 1.95]		1.26 [0.90, 1.77]	
High school (no high school)	1.06 [0.83, 1.37]		1.19 [0.95, 1.50]		0.95 [0.72, 1.26]		1.12 [0.80, 1.57]		1.02 [0.75, 1.40]		0.89 [0.62, 1.28]	
Beyond high school (no high school)	1.39 [1.12, 1.74]**		1.34 [1.08, 1.67]**		1.18 [0.93, 1.50]		1.45 [1.10, 1.92]**		1.66 [1.21, 2.28]**		1.18 [0.86, 1.63]	

Note. Data are survey-weight adjusted. AOR = adjusted odds ratio; CI = confidence interval; ADL = Activities of Daily Living; IADL = Instrumental Activities of Daily Living.

* $p < .05$.

** $p < .01$.

Log-Odds Parameter Estimates of Nursing Home Placement and Death and Reported Consequence of Unmet Need in Round 2.

Table 4

	Nursing home (<i>n</i> = 5,494)		Death (<i>n</i> = 5,494)		Consequence of unmet need (<i>n</i> = 6,459)	
	Log odds (95% CI)	<i>p</i> value	Log odds (95% CI)	<i>p</i> value	Log odds (95% CI)	<i>p</i> value
Black (reference is White)	−0.29 [−2.67, 2.10]	.811	−0.08 [−0.91, 0.75]	.848	0.44 [−0.23, 1.11]	.197
Any need Round 1 (reference is no need)	1.20 [0.07, 2.34]	.038	0.67 [0.25, 1.10]	.003	1.97 [1.62, 2.33]	<.001
Black × Any Need (interaction term)	0.00 [−2.43, 2.42]	.997	−0.73 [−1.58, 0.11]	.089	−0.51 [−1.15, 0.14]	.121
Age 85+ (reference: 65–84)	0.32 [−0.45, 1.09]	.407	0.70 [0.31, 1.09]	.001	0.20 [−0.03, 0.44]	.086
Female (reference is male)	0.41 [−0.18, 0.99]	.167	−0.77 [−1.11, −0.44]	<.001	0.11 [−0.13, 0.35]	.359
Physical capacity limitations (0–12)	0.07 [0.05, 0.18]	.241	0.16 [0.11, 0.21]	<.001	0.14 [0.11, 0.17]	<.001
Three or more chronic conditions	0.05 [−0.40, 0.50]	.825	0.45 [0.12, 0.78]	.010	0.29 [0.07, 0.51]	.010
Probable dementia (reference possible/no)	2.30 [1.32, 3.27]	.000	0.83 [0.38, 1.29]	.000	0.04 [−0.27, 0.34]	.809
Hospital stay in past 12 months	0.63 [0.06, 1.19]	.031	0.83 [0.52, 1.15]	<.001	0.12 [−0.10, 0.33]	.294
Married	−0.71 [−1.69, 0.27]	.150	−0.39 [−0.83, 0.03]	.070	0.03 [−0.25, 0.31]	.840
Lives alone	0.20 [−0.43, 0.84]	.526	−0.13 [−0.52, 0.26]	.517	−0.04 [−0.25, 0.18]	.726
Medicaid	0.63 [−0.07, 1.32]	.075	−0.05 [−0.50, 0.41]	.837	0.40 [0.16, 0.64]	.002
High school (reference is less than HS)	−0.35 [−1.13, 0.43]	.377	−0.21 [−0.61, 0.19]	.312	−0.14 [−0.41, 0.13]	.315
Beyond high school (reference is less than HS)	0.69 [−0.03, 1.42]	.061	−0.01 [−0.40, 0.38]	.948	0.32 [0.09, 0.55]	.008

Note. These are multinomial logistic regression results for nursing home and death and logistic regression results for unmet need consequence. Data are survey-weight adjusted. CI = confidence interval.