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RESEARCH ARTICLE

Neighborhood disadvantage and the incidence of dementia in US Black women

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Abstract

INTRODUCTION: We investigated the association of neighborhood disadvantage with the incidence of Alzheimer's disease and related dementias (ADRD) in the longitudinal Black Women's Health Study (BWHS).

METHODS: The study included 10,915 BWHS participants enrolled in Medicare for at least 1 year from 2012 to 2020. The Area Deprivation Index (ADI) was assigned to participant residential block groups over follow-up. ADRD cases were identified from Medicare files.

RESULTS: Age- and education-adjusted hazard ratios (HRs) for ADRD increased as neighborhood disadvantage increased, to 1.42 (95% confidence interval [CI] 1.06–1.91) in the most disadvantaged quintile compared to the least disadvantaged quintile, with a significant linear trend ($p = 0.012$). Associations remained, although somewhat attenuated, when individual income was controlled.

DISCUSSION: The present study adds to the evidence showing an association between living in a disadvantaged neighborhood and poorer brain health. The area-level association of deprivation with ADRD was in part explained by individual differences in socioeconomic status (SES).

KEYWORDS
African American women, Area Deprivation Index, dementia, longitudinal study, neighborhood disadvantage

Highlights

- The study assessed neighborhood deprivation in the largest cohort of US Black women.
- Cases of dementia were ascertained from Medicare claims files over 9 years of follow-up.
- Higher levels of area deprivation were associated with higher dementia risk.

1 | BACKGROUND

Alzheimer's disease and related dementias (ADRD) are more prevalent among Black American than White American individuals, with Black women bearing a disproportionate burden.[1,2] In 2014, the estimated prevalence of ADRD among Black women aged 65 and older was 15.1% compared to 11.9% among White women.[1] Given that structural and social determinants are key in driving racial and ethnic disparities,[3] researchers have investigated the role of socioeconomic status (SES) in these disparities. Control for individual SES attenuates the Black–White difference in dementia incidence in numerous studies, but differences often remain, suggesting broader factors may play a role, including area-level SES.[4–7] Numerous studies have reported an association of low neighborhood SES with poorer cognition[8] as indicated by test-based measures[9–13] or incident dementia.[14–16] In addition, several studies have found associations of low neighborhood SES with brain neuropathology indicative of dementia.[10,17–19] Some studies have classified neighborhood SES using the Area Deprivation Index (ADI), a multidimensional, 17-item metric that incorporates census data in domains of housing, income, education, and employment.[20] While the ADI has been investigated in relationship to a variety of health outcomes, only three studies have focused on cognitive health outcomes.[14–16] In two studies, a Veterans Health Administration (VHA) study[14] and the Mayo Clinic Study of Aging,[16] the most disadvantaged neighborhoods (those with higher ADI scores) had the highest risk of dementia. Among Asian American and non-Latino individuals enrolled in the Kaiser Permanente Northern California health system, the risk of incident dementia was higher in the most compared to the least disadvantaged neighborhoods among White, but not Asian, enrollees.[15] In contrast, incident dementia was not associated with cumulative neighborhood SES across the life course (15 census-based items aggregated across childhood, young adulthood, and older adulthood) in the Atherosclerosis Risk in Communities Neurocognitive Study.[21]

Few studies to date of neighborhood SES and dementia have included substantial numbers of African American women, who disproportionately reside in disadvantaged neighborhoods[22,23] and have the highest risk of ADRD in the United States.[1] The Black Women's Health Study (BWHS), a follow-up study of Black women, has followed its participants every 2 years since 1995 for information on health conditions, health behaviors, and social factors. Addresses at each questionnaire cycle have been geocoded to the block group level. We assigned ADI measures to participant block groups from 2012 to 2020 and ascertained the occurrence of ADRD from the Medicare Chronic Condition Data Warehouse (CCW).[24] We assessed the association of neighborhood deprivation measured by ADI with the incidence of ADRD during 9 years of follow-up of BWHS participants ages 65 and older, hypothesizing that greater exposure to neighborhood deprivation was associated with increased incident ADRD. This study is the first examination of the hypothesis exclusively in a large group of African American women and complements prior research in predominantly White populations.

RESEARCH IN CONTEXT

1. **Systematic review**: The authors searched PubMed for literature relevant to neighborhood disadvantage and cognition, cognitive decline, and cognition biomarkers, with a focus on United States (US) longitudinal studies. Studies were reviewed, and those relevant to the present study are described and cited in the literature review.
2. **Interpretation**: Study findings suggest that higher levels of neighborhood deprivation are associated with greater dementia incidence in Black women, and that the association may be due, in part, to individual socioeconomic status. Black women, who have the highest incidence of dementia in the US and who disproportionately live in disadvantaged neighborhoods, have been underrepresented in prior studies of the topic.
3. **Future directions**: Future studies should explicate pathways by which neighborhood deprivation contributes to brain health. Such studies will inform the design of both area- and individual-level interventions that aim to alleviate the detrimental impact of neighborhood deprivation.

2 | METHODS

2.1 | Study population

The BWHS is a nationwide, prospective cohort study established in 1995, when 59,000 women aged 21 through 69 years, who lived in the US and self-reported as Black, enrolled by completing health questionnaires. The baseline questionnaire elicited information on demographic and lifestyle factors, reproductive history, and medical conditions. The cohort is followed biennially by mailed and web-based questionnaires to update exposures and ascertain incident disease. Follow-up of the baseline cohort through 2021 has been complete for more than 80% of potential person-years. The study protocol was approved by the institutional review board of Boston University Medical Campus. Participants indicate consent by completing the questionnaires.

2.2 | ADI

The ADI is an index derived from factor analysis of 17 census variables in the domains of housing quality, income and assets, poverty, education, and employment.[25] The index has been widely used in health research[14,16,18,26,27] and is available at the University of Wisconsin School of Medicine and Public Health's Neighborhood Atlas website.[20,28] ADI scores have been transformed into quintiles based on state-specific distributions, with the first quintile representing the

least disadvantaged and the fifth most disadvantaged quintiles. We downloaded ADI data for 2015, based on American Community Survey data from 2011 to 2015, and from 2020, based on American Community Survey data from 2016 to 2020. We linked the 2015 ADI to BWHS participant block groups, based on addresses reported by participants, for the years 2012–2015 and the 2020 ADI to block groups for the years 2016–2019. ADI was time-varying as it reflected residential moves made by participants. The ADI correlated well with a census-based measure of neighborhood SES that was developed using BWHS data,[29] with a Spearman correlation coefficient of 0.78 for 2015 data.

2.3 | Analytic cohort

We matched BWHS participants who provided their social security number (94%) and were age 65 or older to Center for Medicare and Medicaid Services (CMS) files on date of birth, gender, and social security number for each year of follow-up during 2012–2020. The analytic cohort was confined to participants enrolled in fee-for-service (FFS) Medicare, whose claims data are made available through CMS. Participants who exclusively had private Medicare Advantage (MA) plans were excluded. For each year of follow-up, we required that participants have FFS Medicare coverage for at least 11 months. Exceptions were that women who died in a given year were required to have FFS coverage up to the month of death, and women newly eligible for Medicare in a given year were required to have FFS from their first month of enrollment. Women entered the cohort over follow-up as they aged into FFS Medicare coverage at age 65. Of 18,829 BWHS participants aged 65 in 2012 or in any succeeding year up to 2020, and who matched to the Medicare data files at some point over follow-up, we excluded 573 individuals who had a history of dementia (based on self/family report or Medicare claims), 594 who had reported a stroke prior to 2012, 6675 who never met the FFS criteria over follow-up, 14 missing data on education, and 58 missing ADI scores, for a final analytic cohort numbering 10,915. We followed participants from 2012 to 2020 for incident ADRD, stroke, or death for a total of 47,152 person-years, with an average follow-up time of 4.5 years (standard deviation [SD] 2.9 years).

To assess differences among BWHS participants by type of Medicare enrollment, we compared women who met the FFS criteria with women excluded because they exclusively had MA. Women with MA were younger (mean age 58.3 [SD 7.2]) than women who had FFS (mean age 61.5 [SD 7.2]). In age-adjusted comparisons, the MA and FFS groups were similar on levels of parental education, vigorous physical activity, smoking, alcohol consumption, and history of cardiovascular disease, diabetes, hypertension, depression, and stroke (data not shown). Women with FFS were more likely to have graduated from college (47%) than women with MA (41%), and they had higher incomes as of 2003 (17% ≥ $100,000/year vs. 13% ≥ $100,000/year). These differences are consistent with national data on MA and FFS Medicare enrollees.[30,31]

TABLE 1 ICD codes for Alzheimer's disease and related disorders used in the Chronic Condition Data Warehouse, 2012–2020.

ICD 9 diagnoses codes
331.0, 331.11, 331.19, 331.2, 331.7, 290.0, 290.10, 290.11, 290.12, 290.13, 290.20, 290.21, 290.3, 290.40, 290.41, 290.42, 290.43, 294.0, 294.10, 294.11, 294.20, 294.21, 294.8, 797
ICD 10 diagnoses codes
F01.50, F01.51, F02.80, F02.81, F03.90, F03.91, F04, G13.2, G13.8, F05, F06.1, F06.8, G30.0, G30.1, G30.8, G30.9, G31.1, G31.2, G31.01, G31.09, G91.4, G94, R41.81, R54

2.4 | Case identification

We used the CCW to identify participants for whom a claim for ADRD had been made during follow-up, based on claims for relevant ICD codes (Table 1) made by any carrier, skilled nursing facility, hospital inpatient or outpatient facility, or home health agency. The date when a beneficiary first met the criteria for ADRD was used to assign incident cases to the appropriate month and year. A case was defined as a participant who received a first claim for ADRD during 2012–2020 and in addition, had a second claim for ADRD within 2 years or death within 1 year of the initial claim.[32] Inclusion of the latter two criteria rules out dementia diagnoses that are not confirmed.

2.5 | Covariates

Self-reported height and weight were ascertained at study baseline in 1995, and weight was updated on all questionnaires. During follow-up, participants completed questionnaires that asked about alcohol consumption (2011, 2013, 2019), smoking (2013, 2015, 2019), and vigorous physical activity (2011, 2015, 2019). Income and participant education were obtained in 2003 and parental education in 2009. Household income and the number of people supported by that income were reported in 2003. All questionnaires ascertained incident myocardial infarction (MI), stroke, congestive heart failure (CHF), coronary artery bypass graft (CABG), depression, type 2 diabetes, and hypertension. BWHS validation studies have indicated highly accurate reporting for height and weight,[33] diabetes[34] and hypertension.[35] In a validation study of stroke, among 618 women who reported stroke for whom we obtained medical records, 73% were confirmed.[36]

2.6 | Statistical analysis

Person-time was calculated from 2012 (for those age 65 in 2012) or when first aging into the cohort, to diagnosis of dementia, stroke, or death, whichever came first. If a participant received a diagnosis of ADRD but did not meet the additional criteria of death within 1 year or a second claim for ADRD within 2 years of the initial claim, she was censored (excluded from subsequent cycles) at the time of the ADRD

TABLE 2 Characteristics[a] in BWHS[b] participants identified in Medicare claims data[c] by quintile of Area Deprivation Index 2012-2020.

	Quintile of Area Deprivation Index				
Parameter	**1 (least)**	**2**	**3**	**4**	**5 (most)**
Mean age (SD)	65.9 (6.4)	65.5 (6.2)	65.9 (6.6)	66.1(6.5)	66.8 (6.9)
Percentage with characteristic					
BMI ≥ 30[d]	33	35	37	39	39
Participant ≥ 16 years education (2003)	69	61	52	46	39
Parental ≥ 16 years education (2009)	13	11	10	7	7
Household income ≥ $100,000 (2003)	28	19	13	8	5
Highest quintile of per person income	32	25	19	15	11
≤ 1 h/week vigorous physical activity	36	34	38	41	39
Never smoker	42	39	39	36	32
Current drinkers	36	31	28	26	22
Ever had MI	3	3	4	4	5
Ever had coronary artery bypass graft	3	3	3	4	4
Ever had congestive heart failure	3	2	3	4	4
Ever had hypertension[e]	65	68	68	73	71
Ever had type 2 diabetes[f]	20	23	25	28	30
Ever had a stroke over follow-up 2012-2020	3	4	4	4	4
Ever doctor-diagnosed depression treated with medication	21	22	19	22	24

Abbreviations: BMI, body mass index; SD, standard deviation.
[a]Age-adjusted in 5-year intervals. All variables as of 2012 unless otherwise noted.
[b]BWHS, Black Women's Health Study.
[c]Participants aged ≥ 65 at baseline and those who reached aged 65 by the end of 2020.
[d]BMI was calculated as weight (kg)/height $(m)^2$.
[e]Doctor-diagnosed together with concurrent use of a diuretic, or use of an antihypertensive medication with or without a diagnosis of hypertension.
[f]Doctor-diagnosed at age 30 or older.

diagnosis. Participants were censored in any cycle that they did not have FFS Medicare. We calculated hazard ratios (HRs) and 95% confidence intervals (CIs) for each of ADI quintiles 2 through 5 compared to the first quintile (lowest disadvantage). We used competing risks analysis with the cumulative hazard function with the Fine and Gray method to account for causes of death not due to dementia.[37,38] Schoenfeld residuals were used to examine the proportional hazards assumption, which was met.

We assessed four models: model 1 controlled for age; model 2 for age and education; model 3 for age, education, and per capita household income (household income divided by the number of persons supported by that income); and model 4 for age, education, per capita household income, body mass index (BMI), smoking, diabetes, and hypertension. Model building was informed by a directed acyclic diagram (DAG), based on associations between the exposure and other variables identified from published literature. The DAG identified age and education as the most important potential confounders. Other variables were more likely to play a mediator role. If a value for BMI or smoking was missing for any cycle, we brought forward a prior value (up to 4 years prior for BMI and 6 years for smoking). There was a high correlation between BMI values reported 4 years apart ($r > 0.90$), and smoking status is extremely stable as well. Missing values were modeled as a separate category. In a sensitivity analysis, we calculated HRs for model 4 without bringing forward values for BMI and smoking. This resulted in 21% of observations (not individuals) having a missing BMI value as opposed to 10% when values were brought forward and 11% of observations missing smoking compared to 0% when values were brought forward. We tested for a linear trend by including the ADI quintiles in the model as one 5-category variable. All analyses were performed using SAS 9.4 (Cary, North Carolina, USA).

3 | RESULTS

Mean age of the analytic cohort over follow-up was 70.5 (SD 5.6) years. During 2012–2020, at least one claim for ADRD was made for a total of 753 participants. Among these women, 550 (73%) met the criteria of a second claim within 2 years or death within 1 year and comprise the case group.

Age-adjusted comparisons of covariates across the five quintiles of ADI are shown in Table 2. ADI quintiles were similar (i.e., differences in prevalence between quintiles 1 and 5 < 5%) in terms of

TABLE 3 Hazard ratios from 4 models for ADRD by quintile of ADI

ADI quintile	Cases[a]	Person-years	Age-adjusted HR (95% CI)	Model 2[b] HR (95% CI)	Model 3[c] HR (95% CI)	Model 4[d] HR (95% CI)
Q1 (least disadvantaged)	68	90,175	1.00	1.00	1.00	1.00
Q2	101	105,794	1.30 (0.95, 1.77)	1.28 (0.94, 1.74)	1.28 (0.94, 1.74)	1.29 (0.95, 1.76)
Q3	115	114,914	1.29 (0.96, 1.74)	1.24 (0.92, 1.68)	1.24 (0.92, 1.68)	1.20 (0.89, 1.62)
Q4	133	106,865	1.60 (1.19, 2.13)	1.52 (1.13, 2.04)	1.45 (1.08, 1.94)	1.45 (1.08, 1.94)
Q5 (most disadvantaged)	133	108,955	1.52 (1.13, 2.04)	1.42 (1.06, 1.91)	1.34 (0.99, 1.80)	1.33 (0.99, 1.79)
P for linear trend			0.002	0.012	0.062	0.076

Abbreviations: ADI, Area Deprivation Index; ADRD, Alzheimer's disease and related dementias; BMI, body mass index; CI, confidence interval; HR, hazard ratio; Q, quintile.

[a]Participant with fee-for-service Medicare coverage receiving a diagnosis of ADRD in any of years 2012–2020, followed by death within 1 year or a second diagnosis within 2 years of initial claim.

[b]Adjusted for age and years of participant education (≤ 12, 13–15, 16, ≥ 17).

[c]Additionally adjusted for per capita household income (quintiles, missing).

[d]Additionally adjusted for smoking (never, current, past), BMI (< 25, 25–29, 30–34, ≥ 35, missing), hypertension (y/n), diabetes (y/n).

sedentariness and history of MI, coronary artery bypass surgery, CHF, stroke, and depression. Compared to women in the most disadvantaged neighborhoods (quintile 5), women in the least disadvantaged neighborhoods (quintile 1) were younger, had higher incomes, and were more likely to be nonsmokers, to drink alcohol, and to have graduated from college or have a parent who graduated from college. The prevalence of BMI ≥ 30, hypertension, and type 2 diabetes increased with increasing disadvantage of the quintile.

Age-adjusted HRs for ADI in relation to ADRD incidence increased as neighborhood disadvantage increased, from 1.30 (95% CI 0.95–1.77) in the second quintile to 1.52 (95% CI 1.13–2.04) in the fifth quintile, with a significant trend ($p = 0.002$) as shown in Table 3. When participant education was added to the model, the estimate for quintile 5 was reduced to 1.42 (95% CI 1.06–1.91), but the trend remained significant ($p = 0.012$). HRs from model 3, which additionally controlled for per capita household income, were attenuated for the two highest quintiles (e.g., the HR for the most disadvantaged quintile was 1.34, 95% CI 1.00–1.80), and the test for trend was no longer significant ($p = 0.062$). The addition of BMI, smoking, diabetes, and hypertension (model 4) did not materially change the model 3 HRs. In the sensitivity analyses where observations for BMI and smoking were not brought forward to fill in cycles where values were missing, HRs were attenuated by no more than 7.5%. HRs in quintiles (Q) 2 through 5, in this analysis, were as follows: Q2: 1.27 (95% CI 0.94–1.73), Q3: 1.17 (95% CI 0.87–1.58), Q4: 1.38 (95% CI 1.03–1.85), and Q5: 1.23 (95% CI 0.92–1.65). The addition to model 4 of the other variables whose values varied by > 5% across ADI quintiles (parental education and alcohol) did not materially change the model 4 estimates (data not shown).

The HRs in the two most disadvantaged quintiles were similar in women who did not graduate from college as well as in college graduates, as shown in Table 4. Due to small numbers, CIs were wider, and the test for trend was significant only in the age-adjusted model among college graduates.

4 | DISCUSSION

The risk of ADRD increased among participants in the BWHS as the disadvantage of their neighborhoods increased, up to a 42% increase in the most disadvantaged quintile compared to the most disadvantaged quintile when controlling for age and participant education. Associations were attenuated, and the test for linear trend lost statistical significance when controlling for individual income, suggesting that the area-level association of deprivation with ADRD is at least in part explained by individual differences in SES. Overall, however, HRs were stable, with age-adjusted HRs in Table 3 changing by less than 13% in the fully adjusted model 4, which included variables likely to be mediators.

The findings of the current study are similar to the findings of previous U.S. studies, most of which have found a direct association of lower neighborhood SES with brain health.[9,11–14,16,17] In two other studies that used the ADI, the magnitudes of the HRs were similar to the present results.[14,16] In the VHA study, the fully adjusted HR for ADRD in the most disadvantaged ADI quintile compared to the least disadvantaged was 1.22 (95% CI 1.21–1.24).[14] In the Mayo Clinic Study of Aging, the fully adjusted HR for incident dementia in the most compared to the least disadvantaged ADI quintile was 1.56 (95% CI 1.03–2.37).[16] In the third study that used the ADI, there was a modest association between low ADI and dementia incidence in non-Latino Whites (HR = 1.09, 95% CI 1.02–1.15) and no association in Asian Americans.[15] In the Atherosclerosis Risk in Communities study, which used a different census-based measure, there was no association of dementia incidence with neighborhood SES.[21]

Several studies have found correlations between neighborhood SES and performance-based measures of cognition: in the Chicago Health and Aging Project,[9] the Mayo Clinic Study of Aging,[16] and the Hispanic Established Populations for Epidemiologic Studies of the Elderly,[13] lower neighborhood SES was associated with greater cognitive decline. In other similar studies, while neighborhood SES was associated with

TABLE 4 Hazard ratios for ADRD by quintile of ADI by strata of education

	< 16 years of education			
ADI quintile	Cases[a]	Person-years	Age-adjusted HR (95% CI)	Model 4[b] HR (95% CI)
Q1 (least disadvantaged)	27	27,595	1.00	1.00
Q2	55	39,818	1.46 (0.92, 2.30)	1.45 (0.91–2.29)
Q3	57	53,987	1.08 (0.69, 1.70)	1.04 (0.66–1.64)
Q4	74	56,845	1.33 (0.86, 2.05)	1.30 (0.84–2.01)
Q5 (most disadvantaged)	89	65,025	1.35 (0.88, 2.07)	1.27 (0.83–1.95)
P for trend			0.309	0.482
Q1 (least disadvantaged)	41	62,580	1.00	1.00
Q2	46	65,976	1.05 (0.68, 1.62)	1.10 (0.72–1.69)
Q3	58	60,927	1.40 (0.93, 2.10)	1.33 (0.89–2.00)
Q4	59	50,020	1.63 (1.09, 2.43)	1.49 (1.00–2.23)
Q5 (most disadvantaged)	44	43,930	1.44 (0.93, 2.22)	1.30 (0.84–2.02)
P for linear trend			0.010	0.075

Abbreviations: ADI, Area Deprivation Index; ADRD, Alzheimer's disease and related dementias; BMI, body mass index; CI, confidence interval; HR, hazard ratio; Q, quintile.

[a]Participant with fee-for-service Medicare coverage receiving a diagnosis of ADRD in any of years 2012–2020, followed by death within 1 year or a second diagnosis within 2 years of initial claim.

[b]Adjusted for age, years of education (≤ 12, 13–15, 16, ≥ 17), for per capita household income (quintiles, missing), smoking (never, current, past), BMI (< 25, 25–29, 30–34, ≥ 35, missing), hypertension (y/n), diabetes (y/n).

a baseline measure of cognition, it was not associated with change over time.[11,12] Other studies have found associations of the ADI with indices of brain neuropathology associated with ADRD.[10,17–19]

While previous cohort studies have many strengths, including the huge size of the VHA study[14] and the clinic-assessed outcomes in the smaller studies,[9,11,12,17] most drew from a limited region of the country, and only three had enough Black participants for separate analysis.[11,12,21] Two of the latter studies found an association of neighborhood SES with baseline cognition among Black participants,[11,12] while the third found no association with dementia incidence.[21] The present study is the largest to date of Black women, with participants drawn from across the country and with longitudinal information on many potential confounders. We lacked information on several cognition-related variables that could have been relevant (e.g., baseline cognition, history of traumatic brain injury). Because the cohort was developed specifically to study the health of Black women, no other genders or ethnic groups are included.

A limitation of the present study is the use of Medicare claims files for case identification. Only women with FFS Medicare are included, about 56% of BWHS Medicare beneficiaries overall over follow-up. The distribution of many risk factors for ADRD was similar between BWHS participants with MA and FFS Medicare. However, women with FFS Medicare were slightly older and had higher education and income than women with MA. Although these differences were not substantial, the present results may be less generalizable to younger, less educated, and less well-off women than in the present study. The use of Medicare claims for case identification leads to some degree of misclassification. The validity of claims data has been evaluated in several studies, with sensitivities ranging from 49% to 87% and specificities from 77% to 89%.[39–43] However, results across validity studies are not strictly comparable because the studies used different algorithms to identify Medicare dementia claims, and results varied substantially based on the specifics of the algorithms. In addition, studies have used data from different years that cover changing practices in dementia diagnosis. Several studies have shown that Black Medicare enrollees are less likely than White enrollees to receive a claim for dementia in Medicare data.[39,44,45] For example, 90% of White participants diagnosed with dementia in the Rush Alzheimer's Disease Center clinic were identified in the claims, compared to 75% of other—mostly Black—participants,[39] and among 88 Black participants with cognitive impairment from the same cohort, only 55% were identified in Medicare claims within 2 years of clinical diagnosis, and 18% had no claim until ≥ 10 years after diagnosis or no claim at all.[44] These results are consistent with observations that African American individuals with cognition problems are less likely to receive a diagnosis of dementia than White American individuals, at least until their symptoms have become substantially more severe.[44,46,47] In our analysis, potential underdiagnosis of ADRD may have attenuated statistical power, since all the participants were Black women. If women from highly disadvantaged neighborhoods were more likely to be missed in the claims data, the association we observed would be an underestimate.

The present study adds to the accumulating evidence that living in a disadvantaged neighborhood is associated with potential detrimental effects on brain health. It extends prior literature by focusing on a large group of Black women, which is of importance given that this group is more likely to experience living in disadvantaged neighborhoods and

have a higher risk of dementia. In 2022, 19% of Black American individuals lived in high-poverty neighborhoods.[48] It has been projected that 11,088,000 Americans age 65 and over will have ADRD by 2050, of whom 1,575,000 (~14%) will be Black individuals.[1] Enacting policies to improve living conditions in such neighborhoods, such as providing access to healthy food, places for physical activity, and lowering air pollution, has the potential to reduce the number of Black Americans developing dementia.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest. Author disclosures are available in the Supporting Information.

CONSENT STATEMENT

All BWHS participants provide informed consent.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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