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Original Study

Associations of Clinically Relevant Levels of Depressive Symptoms and Antidepressant Use With Mortality in African American Health

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A B S T R A C T

Background: The Institute of Medicine has highlighted unequal treatment for African American individuals in health care. We examined the association of underuse of antidepressants in African American individuals with increased mortality.

Methods: We conducted a longitudinal cohort study in Metropolitan St Louis, Missouri, in a population-based study of community-dwelling African American individuals, aged 52 to 68 years. Medication evaluations and clinically relevant levels of depressive symptoms (CRLDS) assessments occurred in 2000 and 2004. The analytic sample included 830 (of 853 total, 97%) participants with complete data. CRLDS was defined as ≥9 on the 11-item Center for Epidemiologic Studies Depression scale. Antidepressant use was determined by in-home medication recording and in-center coding. Participants were placed into 4 exposure categories: persistent CRLDS—no antidepressant (n = 69); intermittent CRLDS—no antidepressant (n = 123); antidepressant treatment (n = 110); and no CRLDS—no antidepressant (n = 528). Logistic regression with backwards elimination of the 9 identified potential confounders was used to examine associations of exposures with all-cause mortality over 6 years (2004–2010). Five sensitivity analyses investigated robustness of the primary findings.

Results: The antidepressant group was independently associated with reduced mortality compared with the persistent—no antidepressant group (odds ratio [OR] 0.19, 95% confidence interval [CI] 0.08–0.44). Sensitivity analyses showed no substantive differences from the primary model; one indicated that the persistent CRLDS—no antidepressant group experienced significantly increased mortality compared with the no CRLDS—no antidepressant group (OR 2.12, 95% CI 1.10–4.09), whereas the intermittent—no antidepressant group did not (OR 0.83, 95% CI 0.44–1.58).

Conclusions: These results highlight that underuse of antidepressants in African American individuals is associated with increased mortality.

Depressive disorders are a common and serious health problem in United States. The Centers for Disease Control and Prevention report that 7.6% of Americans had depression in 2009 to 2012.[1] In this survey, non-Hispanic black persons had higher rates of depression than non-Hispanic white persons (NHWs).[1] In the population-based African American Health (AAH) study, baseline prevalence of clinically relevant levels of depressive symptoms (CRLDS) was 21.1% in 2000 to 2001.[2] Despite the high prevalence of depression in this population, treatment for depression in this minority group is often lacking.[3] Notably, in AAH, only 41 (19.5%) of the 210 individuals with CRLDS had taken a prescription antidepressant in the prior 2 weeks based on a thorough in-home medication review in 2000 to 2001.[2] Other studies indicate that African American individuals are less likely to have access and receive quality care for depression as

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contrasted to NHWs.[3–5] Among African American individuals with depression, only approximately 10% are estimated to access treatment and receive quality depression care, compared with approximately 33% of NHWs. The 10% is also the lowest in all minorities, including the Latino and Asian populations.[5]

Depression has been associated with excess mortality in a number of studies of individuals in the general population[6,7] and of people with chronic or severe diseases.[8–10] However, the strength of the association between depression and mortality varies across studies, as documented in a meta-analysis.[7] In this systematic review, 7 of 25 studies failed to demonstrate significant associations between depression and mortality, possibly because of differences in populations, chronic illnesses, and other confounding variables. Notably, although the depression-mortality association has been investigated in US whites, African American individuals are often excluded for various reasons.[11] One study in diabetic veterans did show that mortality risk was higher in depressed white individuals than in depressed black individuals.[12]

The effect of antidepressant use on this depression-mortality association has occasionally been studied in selected patient groups. For example, in chronically ill patients, antidepressant use showed conflicting results related to mortality.[13–17] A recent study showed that antidepressant use resulted in a lower hazard ratio for mortality compared with no use in patients 65 years or older with diabetes, but this effect was not found in younger patients with diabetes.[17] However, we were unable to identify any investigation of the mortality-antidepressant treatment relationship in representative cohorts of any race-ethnicity minority subgroup in the general population.

Compared with NHWs, African American individuals with depression show increased chronicity, are generally underrecognized and undertreated, and appear to have poorer outcomes when treated.[3] Additionally, the effect of antidepressant therapy on the depression-mortality relationship has not been studied in population-based samples of African American individuals. For these reasons, we examined the effect of antidepressant use on the association between CRLDS and all-cause mortality over 6 years in the AAH population. We hypothesized that persistent CRLDS with no antidepressant treatment would be associated with higher mortality when compared with any antidepressant treatment or no CRLDS or intermittent CRLDS with no antidepressant treatment.

Methods

Study Sample

AAH is a well-characterized population-based cohort study of self-identified African American individuals aged 49 to 65 years at wave 1 (baseline) in 2000–2001 from 2 strata in the St Louis, Missouri, metropolitan area. The sampling strategy and recruitment have been described previously.[2,18] In brief, area 1 was a poor inner-city region and area 2 involved suburbs immediately north and west of St Louis city with generally better socioeconomic status. In total, 463 and 535 participants were recruited from areas 1 and 2, respectively.[18] The only inclusion criterion other than race and year of birth was a Mini-Mental State Examination (MMSE)[19] score $\geq$16. Recruitment involved multistage probability sampling of the community-dwelling population from the 2 areas in 2000–2001, and assessments were conducted in participants' homes. Follow-up interviews occurred at 1, 2, 3, 4, 7, and 9 years post baseline (denoted waves 2, 3, 4, 5, 8, and 10, respectively). At wave 4, 853 participants were again assessed in their own homes; of that group, 830 had complete data on the Center for Epidemiologic Studies Depression (CES-D) scale at waves 1 and 4, antidepressant treatment at waves 1 and 4, and the variables identified as potential confounders for the relationships that were examined. Vital status was assessed by tracking efforts throughout the study for all 853 AAH participants who were assessed at wave 4. Thus, the final analytic sample includes 830 participants with valid data on all variables required for the analyses. All study procedures were approved by Saint Louis University's Institutional Review Board.

Measures

Depressive symptoms were measured at waves 1 and 4 using the 11-item version of the CES-D scale. This version accurately reproduces the results from the original 20-item CES-D. A score of 9 or greater on the 11-item scale is equivalent to the accepted criterion for CRLDS of 16 or greater on the 20-item scale[20] and was used to indicate the presence of CRLDS at the time of each interview. Medications that were being taken at the time of the interview were assessed at waves 1 and 4 via careful in-home compilation and recording of any medications taken in the 2 weeks before the interview and whether the medication was taken daily or as-needed; this was followed by in-center categorization. Specifically, participants were asked to show the interviewers all medications that they took (in their original bottle, whenever possible). Interviewers recorded medication names verbatim, and pharmaceutical references were used to identify participants who had taken 1 or more antidepressants on a daily basis,[2] which served as the indication of antidepressant use.

Using the CES-D results and antidepressant use data, the 830 study participants were placed into 1 of 4 exposure categories:

1. Persistent CRLDS, no antidepressant at both waves (referent, n = 69).
2. Intermittent CRLDS, not treated with antidepressant (n = 123), composed of CRLDS not on antidepressant at wave 1 *only* (n = 63), and CRLDS not on antidepressant at wave 4 *only* (n = 60).
3. Antidepressant treatment at either wave 1 or 4 (n = 110), composed of CRLDS only at wave 1 (n = 12), CRLDS only at wave 4 (n = 13), CRLDS at both waves (n = 52), and no CRLDS at either wave (n = 33), all of whom received antidepressant treatment at one or the other wave.
4. No CRLDS, no antidepressant at both waves (n = 528)

Vital status over 6 years of follow-up starting immediately after wave 4 through wave 10 was determined via careful tracking efforts that included contacting proxies, search of multiple databases, and visits to the last known neighborhood.

Covariates

Potentially confounding covariates were evaluated for their effect on the CRLDS-treatment–mortality relationships. The initial set was identified using clinical and research-derived insights regarding the investigated research issue and included the following: *Demographic characteristics* involved age, gender, and marital status. *Socioeconomic factors* involved years of formal education, annual household income, perceived income adequacy, sampling stratum, the need to forego a needed visit to a physician in the year before one of the interviews year due to cost, and having Medicare at the wave 4 interview. Race consciousness (measured by asking respondents how often they thought about their race[21]) and a 5-item social support scale (derived from the Medical Outcomes Study[22]) represented *other psychosocial variables*. *Functional status* included self-rated health,[23] activities of daily living (measured as sum of reported difficulties for bathing, dressing, getting in/out of bed/chairs, walking across a room, getting outside, and using the toilet),[24] lower body functional limitations (LBFLs; measured as sum of reported difficulties with walking one-quarter mile, going up and down 10 steps without stopping, standing for 2 hours, stooping-crouching-kneeling, and lifting and carrying 10 pounds),[25] MMSE, bed disability (stayed in bed more than half of