

Complementary and Alternative Medicine Use among Older Urban African Americans: Individual and Neighborhood Associations

Priscilla T. Ryder, PhD; Beverly Wolpert, MS; Denise Orwig, PhD; Olivia Carter-Pokras, PhD; Sandra A. Black, PhD

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Purpose: Older African Americans may be vulnerable to risks due to impaired healthcare access and understudied complementary and alternative medicine (CAM) use and other traditions. We describe CAM use among older African Americans in Baltimore, MD, examining associations among CAM and sociodemographic, health status, healthcare utilization and neighborhood factors.

Methods: Cross-sectional telephone survey of 95 African Americans ages ≥ 60 on use of CAM modalities (herb/home remedies, prayer, group spiritual practices, meditation/visualization, massage, chiropractic, acupuncture, relaxation/biofeedback) in prior year.

Results: A large majority (88.4%) reported CAM use in the previous year; 50.5% reported CAM use excluding individual prayer. The most commonly reported modalities were individual prayer (96.8%), herbs/home remedies (29.5%) and group spiritual practices (17.0%). Most (77.3%) herbal/home remedy users disclosed use to providers. In multivariable logistic regression at the individual level, CAM was associated with higher number of comorbidities (OR=1.24, 95% CI: 1.06–1.45), older age (OR=1.09, 95% CI: 1.01–1.17) and more years of education (OR=1.24, 95% CI: 1.03–1.49). Adding neighborhood variables attenuated effects of comorbidity (OR=1.17, 95% CI: 0.99–1.39); residence in more racially integrated neighborhoods (OR=1.03, 95% CI: 1.00–1.06; $p=0.047$) was also important.

Conclusions: CAM use was greater than expected. Although disclosure of herb use was high, providers should probe for CAM use.

Key words: complementary and alternative medicines ■ urban population

cal Health Services Research, University of Maryland School of Pharmacy (Ryder), Baltimore, MD; Department of Epidemiology and Biostatistics, School of Public Health, University of Maryland College Park, College Park, MD (Pokras); and College of Liberal Arts, Baltimore County Community College, Essex, MD (Black). Send correspondence and reprint requests for *J Natl Med Assoc.* 2008;100:1186–1192 to: Dr. Priscilla Ryder, University of Maryland School of Pharmacy, PHSR, 220 Arch St., 12th Floor, Baltimore, MD 21201; phone: (410) 706-0875; fax: (410) 706-1488 (fax); e-mail: pryder@rx.umaryland.edu

BACKGROUND

The use of complementary and alternative medicine (CAM) is receiving increasing attention in medical and lay communities.¹⁻³ Population-based estimates of CAM use by older Americans vary from 30–88%.^{4,5} In the United States, members of different ethnic groups practice their own systems of traditional medicine, particularly African Americans and Hispanics.^{6,7} Use of folk remedies is reported to be common among African-American elders, who may also act as information conduits for younger generations.⁶ Previous reports note the use of CAM, especially herbal remedies, among all socioeconomic and demographic groups, most commonly among women, middle-aged adults and those with higher education or income.^{1,2} Broad-scale examination of CAM practices often ignores the social, economic and physical context of their use, yet these factors may be critical to the understanding of CAM use in older minority populations. An investigation that considered some of these factors among African-American and Hispanic residents of public housing found that lower education, greater reported unfair race-based treatment, financial strain and poorer health status are all associated with CAM use to prevent and treat sickness in that disadvantaged population.⁸

To address a deficit in knowledge about CAM use among African-American older adults residing in urban areas, the West Baltimore Complementary and Alternative Medicine Study was conducted as a population-based random-digit-dial (RDD) telephone survey supplemented by community outreach recruitment of older African Americans in western Baltimore, MD. This study identified patterns of CAM use and associations

with chronic health conditions, disabilities, mental well-being and neighborhood characteristics among older community-dwelling African Americans.

METHODS

Participant Selection

The study was approved by the University of Maryland School of Medicine institutional review board, and informed consent was obtained from all participants prior to survey administration. Participants for the cross-sectional telephone survey were recruited through RDD and community outreach. Eligibility criteria included age ≥ 60 years, self-identification as African American or black, access to a landline telephone, ability to communicate orally in English and Baltimore City residence within any of 10 contiguous ZIP codes. Exclusion criteria were institutional residence or cognitive impairment severe enough to render the respondent unable to describe study aims and procedures during the consent process. Randomly generated numbers from local telephone exchanges were purchased from a commercial firm. Numbers that were not reached after 7 attempts were checked against a reverse directory. When possible, a letter explaining the study was sent, and the number was called once more. Of 3,663 telephone numbers called, 122 eligible potential respondents (3% of numbers contacted) were identified; 2,689 (70.9%) numbers were ineligible, and eligibility was unknown in 851 cases. Seventy-six (62.3%) eligible potential respondents consented to participate. Thirty-six persons refused to participate, and appointments for interviews could not be arranged for 9 people (passive refusals). Seventy-two interviews were completed; 4 were discontinued before completion. Using the American Association of Public Opinion Research (AAPOR)⁹ Response Rate 1 (RR1) formula, the completed interview response rate was 4.1%. Adjusting for the number of respondents expected to have been eligible, the AAPOR Response Rate 3 (RR3) was 37%.

Because of low RDD response, a community outreach component was added. Five senior centers, 12 senior housing sites, 1 church, 1 healthcare site and friendship networks were contacted to reach potential respondents. Forty volunteer contacts were identified through outreach; 5 were ineligible, 1 person subsequently declined the survey, and 11 could not be scheduled before data collection ended. Twenty-three interviews were thus completed from the volunteer sample, yielding a total of 95 completed telephone surveys. All participants were asked for permission to conduct an in-home audit of medications and supplements; home visits with medication audits were completed with 46 participants.

Measures

The main study outcome was self-report of CAM use in the prior year. Using questions similar to those

contained in the 2002 National Health Interview Survey Alternative Health/Complementary and Alternative Medicine Supplement, participants were asked about their familiarity with prior year's use of and reasons for using 8 modalities of CAM: individual prayer, herb/home remedies, group spiritual practices, meditation/visualization, massage for health, chiropractic, acupuncture and relaxation/biofeedback. Additional information was solicited on the use of herbal medications, including specific reasons for use and whether the respondent had discussed use with regular allopathic healthcare providers.

Information was also collected on sociodemographics, economic status, healthcare utilization, preventive health practices, social support, and involvement in religious and other groups. To assess experiences of and reaction to race-based unfair treatment, questions were adapted from the Experience of Discrimination instrument¹⁰ and the Reaction to Race module of the 2002 Behavioral Risk Factor Surveillance Survey.¹¹ Physical health and function were assessed using the SF-12 instrument. Mental health status was further assessed using a 16-item shortened version of the Centers for Epidemiologic Study–Depression Scale (CES-D).¹² The 16-item version of the CES-D was validated using CES-D data from participants in another study of 150 persons living in western Baltimore, 93% of whom were African Americans. A *t* test was performed on the 16-item and 20-item versions of the CES-D, with no significant differences in scores, thus indicating no systematic bias in the shortened version. The standardized Cronbach alpha was 0.898 for the 16-item scale and 0.913 for the entire 20-item CES-D in this data set. Scores from the shortened scale were multiplied by 1.25 in order to be comparable to the standard 20-item CES-D.

“Neighborhood” was operationalized as community statistical area (CSA), an aggregate of 1–10 (typically 3) census tracts roughly corresponding to current and traditional Baltimore neighborhoods as determined by the Baltimore Neighborhood Indicators Alliance.¹³ Twelve contiguous CSAs with similar characteristics but only 1 or 2 participants were aggregated into 5 amalgamated neighborhoods so that no neighborhood contained < 3 individuals.

Residential racial segregation was measured using the Racial Diversity Index (RDI), representing the probability of 2 randomly chosen neighborhood residents being of different race/ethnicity. Neighborhood income inequality was measured by the Economic Diversity Index (EDI), denoting the probability of 2 randomly chosen neighborhood residents being of different household income ranges. The proportion of persons living below the federal poverty level in each neighborhood was obtained from the Public Health Disparities Geocoding Project Monograph website.¹⁴

Analysis

CAM users and nonusers were compared in bivari-

ate analysis by Chi-squared tests and t tests. Sequential multivariable logistic regression models were developed

Table 1. West Baltimore CAM study: characteristics of the sample (N=95)

| | CAM Users¹ (N=48) | CAM Nonusers (N=47) | Total (N=95) |
|--|---|--------------------------------|---------------------|
| | N (%) | N (%) | N (%) |
| <i>Demographics</i> | | | |
| Male Sex | 16 (76.2) | 5 (23.8) | 21 (22.1) |
| Age (mean ± SD)* | 72.4 ± 7.6 | 69.1 ± 7.8 | 70.7 ± 7.8 |
| Years of Education (mean ± SD) | 12.2 ± 2.9 | 11.4 ± 2.8 | 11.8 ± 2.9 |
| Annual Household Income <\$15,000 | 42 (63.4) | 4 (57.1) | 46 (63.0) |
| Currently Married | 10 (20.8) | 10 (21.3) | 20 (21.5) |
| Attends Religious Services at Least Once per Week | 27 (58.7) | 32 (66.7) | 59 (67.8) |
| Lives Alone | 32 (66.7) | 27 (58.7) | 59 (62.8) |
| Can Count on Family/Friends All of the Time | 32 (66.7) | 27 (58.7) | 59 (62.8) |
| <i>Health Status</i> | | | |
| Excellent, Very Good or Good Self-Rated Health | 33 (68.8) | 28 (59.6) | 61 (64.2) |
| Number of Reported Diagnoses ² mean + SD ** | 7.0 ± 3.1 | 5.4 ± 2.9 | 6.2 ± 3.1 |
| Depressive Symptoms ³ | 7 (14.6) | 8 (17.0) | 15 (15.8) |
| <i>SF-12 Measures⁴</i> | | | |
| PCS-12 (mean ± SD)* | 42.2 ± 9.9 | 46.6 ± 10.9 | 44.4 ± 10.5 |
| MCS-12 (mean ± SD) | 54.2 ± 9.6 | 51.3 ± 9.5 | 52.7 ± 9.5 |
| Physical function subscale (mean ± SD)* | 44.3 ± 13.3 | 48.8 ± 12.5 | 46.5 ± 10.4 |
| Bodily pain subscale (mean ± SD) | 30.1 ± 17.1 | 26.9 ± 16.9 | 28.5 ± 13.6 |
| Vitality subscale (mean ± SD) | 50.7 ± 11.00 | 50.8 ± 11.1 | 50.7 ± 13.6 |
| <i>Body Mass Index Group</i> | | | |
| Underweight | 0 (0.0) | 2 (4.3) | 2 (2.1) |
| Desirable weight | 8 (16.7) | 9 (19.2) | 17 (17.9) |
| Overweight | 14 (29.2) | 19 (40.4) | 33 (34.7) |
| Obese | 26 (54.2) | 17 (36.2) | 43 (45.3) |
| <i>Health Utilization and Practices</i> | | | |
| <i>Usual Source of Healthcare⁵</i> | | | |
| None | – | 1 (2.2) | 1 (1.1) |
| Physician | 36 (76.6) | 28 (60.9) | 64 (68.8) |
| Hospital | 11 (23.4) | 7 (15.2) | 18 (19.4) |
| Clinic | 4 (8.5) | 11 (23.9) | 15 (16.1) |
| Emergency department | 4 (8.5) | – | 4 (4.3) |
| <i>Satisfaction with Healthcare</i> | | | |
| Very satisfied | 29 (60.4) | 29 (63.0) | 58 (61.7) |
| Somewhat satisfied | 18 (37.5) | 15 (32.6) | 33 (32.2) |
| Somewhat dissatisfied | 1 (2.1) | 2 (4.4) | 3 (3.2) |
| Number of Healthcare Visits in Prior Year (mean ± SD) | 11.2 ± 14.8 | 11.0 ± 18.1 | 11.1 ± 16.4 |
| <i>Health Insurance⁵</i> | | | |
| Medicare** | 41 (89.1) | 31 (66.0) | 72 (77.4) |
| Medicaid | 11 (23.4) | 10 (22.2) | 21 (22.8) |
| Private/supplemental insurance | 25 (54.4) | 30 (66.7) | 55 (60.4) |
| Uninsured | – | 3 (6.4) | 3 (3.2) |
| Completed Preventive Exams and Procedures in Prior Year ⁶ | 10 (20.8) | 9 (19.2) | 19 (20.0) |
| <i>Neighborhood Characteristics</i> | | | |
| Racial Diversity Index (RDI) 7 (mean ± SD) | 20.8 ± 20.9 | 15.1 ± 15.5 | 18.0 ± 18.5 |
| Economic Diversity Index (EDI) 8 (mean ± SD) | 66.4 ± 6.9 | 68.8 ± 6.1 | 67.6 ± 8.6 |
| Proportion of Residents Below Poverty (mean ± SD) | 27.3 ± 8.6 | 25.3 ± 7.6 | 26.3 ± 8.1 |

* p<0.05 **p<0.01; 1: Excludes those who used individual prayer only; 2: Out of 25 conditions queried; 3: Depressive symptoms: modified CES-D score ≥16; 4SF-12: Medical Outcomes Study 12-item Short-Form Health Survey; PCS-12: Physical health component score of the SF-12; MCS-12: Mental health component score of the SF-12; 5: Categories not mutually exclusive; 6: Complete physical: blood pressure check; flu shot; and mammogram and Pap test or prostate exam, as appropriate for their sex; 7: RDI represents the probability of 2 randomly chosen neighborhood residents being of different race/ethnicity. Higher figure indicates increasing neighborhood segregation; 8: EDI represents the probability of 2 randomly chosen neighborhood residents being of different household income range groups. Higher score indicates increasing income inequality.

to examine factors associated with CAM use. An individual-level logistic regression model was created using factors significant in bivariate analysis at the $\alpha=0.10$ level (age, Medicare insurance, number of diagnoses, SF-12 physical function subscale). Income could not be included, since values were missing for 23% of participants. Two items of theoretical importance (sex, years of education) were also entered. It was essential to include the fewest number of meaningful covariates because of the small number of participants. To maintain parsimony, the Medicare, SF-12 physical function measure and sex variables were removed. Three neighborhood indicators (the RDI, EDI and the proportion of neighborhood residents below poverty) were added. The poverty measure was dropped, since it was not associated with CAM use in bivariate analysis and did not improve the logistic regression model.

RESULTS

Respondent characteristics are reported in Table 1. Typically, respondents were 69–70-year-old females, born in Baltimore, retired from a service-sector occupation and with an annual income of <\$15,000. A large majority (89.5%) reported that they had been diagnosed with hypertension; however, 73 out of the 85 reporting that diagnosis said that their hypertension was under control. In general, participants reported good health, had a regular doctor whom they saw an average 11 times in the previous year, completed most preventive medical procedures, were former smokers and reported eating 3 or 4 servings of fruits and vegetables daily. Men accounted for 22.1% of participants. In comparison to women, men reported significantly less support from family and friends ($\chi^2=5.93$, $p=0.015$), ate fewer servings of fruits and vegetables daily (mean 2 servings per day vs. 3.5 for women, $p=0.022$), and reported less

Table 2. West Baltimore CAM Study: CAM knowledge and use in prior 12 months (N=95)

CAM Knowledge and Use in Prior 12 Months

| Modality | Heard of Modality | Used in Prior 12 Months |
|-------------------------------------|--------------------------|--------------------------------|
| | N (%) | N (%) |
| Individual Prayer | 92 (96.8) | 80 (84.2) |
| Herbs/Home Remedies | 90 (94.7) | 28 (29.5) |
| Group Spiritual Practices | 85 (90.4) | 16 (17.0) |
| Meditation/Visualization Techniques | 67 (71.3) | 10 (10.6) |
| Massage | 82 (86.5) | 6 (6.3) |
| Chiropractic Care | 86 (90.5) | 4 (4.2) |
| Acupuncture | 87 (91.6) | 3 (3.2) |
| Relaxation/Biofeedback | 54 (56.8) | 1 (1.1) |

Herbs/Home Remedies Used in Prior 12 Months

| Reason for Use | Herb/Remedy Used |
|---|---|
| Used for Specific Conditions | |
| Arthritis/joints | Apple cider vinegar, witches' broom, glucosamine |
| Cholesterol | Oatmeal |
| Colds | Lemon juice, onions |
| Constipation | Herbal tea |
| Cough | Horehound and honey |
| Diabetes | Diabeticine, cinnamon |
| Foot pain | Lemon Juice |
| Hot flashes | Black cohosh |
| Hypertension | Garlic, Herbal tea |
| Immune function | Echinacea |
| Insomnia | Herbal tea |
| Nausea | Mustard |
| Sight | Lutein |
| Soreness on skin | Hydrogen peroxide |
| Swollen thighs | Fat-burner pills |
| To counter effects of smoking | Selenium |
| Used for Cleansing | |
| General systemic | Watercress, turnip greens, green tea, black tea, Q-gel plus, Kidney Clear pills |
| Cleansing the blood | Sassafras |
| Cleansing the digestive system | Colon Cleanser pills |
| Used for Prevention/Wellness/Overall Health | Echinacea, lemon grass, green tea, wheatgrass juice, goldenseal |

bodily pain (mean SF-12 bodily pain subscale 23.5 vs. 29.9 for women, $p=0.022$). Men were less likely to have used any form of CAM in the previous year ($\chi^2=3.94$, $p=0.047$) but were more likely to have smoked at some time in their life ($\chi^2=5.01$, $p=0.025$) and be of desirable weight (Fisher's exact test 2-sided $p=0.006$).

The community outreach sample differed from those recruited through RDD in a few ways. Volunteers used CAM more frequently ($\chi^2=6.64$, $p=0.010$). They also had higher SF-12 bodily pain scores (mean 33.5 vs. 26.9, $p=0.040$) and lower SF-12 physical function scores (42.6 vs. 47.8, $p=0.040$), reported fewer situations of race-based unfair treatment (1.1 vs. 1.4, $p=0.042$) and were more likely to state that they "never" thought about their race ($\chi^2=4.21$, $p=0.040$).

A large majority (88.4%) of respondents reported using ≥ 1 form of CAM in the previous 12 months. When individual prayer was excluded, just more than half (50.5%) reported CAM use in the prior year. The mean number of modalities used was 1.56 (SD=1.4). One respondent reported using 5 modalities out of the 8 questioned, and 5 reported using 4. Table 2 reports CAM use and knowledge and lists specific herbs and home remedies with the reasons for use. Most respondents reported having heard of all modalities, with knowledge ranging from 56.6% for relaxation/visualization techniques to $>90\%$ for prayer, herbs, group spiritual practices, acupuncture and chiropractic care. Specific herbs and home remedies reported included traditional agents, currently popular herbals and commercial formulations.

Table 3 shows the final logistic regression models for use of CAM with individual factors only and then with introduction of neighborhood factors. Age and education were positively and significantly associated with CAM use in both models. While the association of physical health was significant in the individual-level model, it weakened considerably in the multilevel model. Residential racial segregation was significantly associated with CAM use after adjusting for individual factors—as

segregation increased, CAM use decreased. Decreasing income inequality (or conversely, increasing economic diversity) approached statistical significance.

DISCUSSION

This study examines use of CAM among African Americans ages ≥ 60 years living in 19 contiguous neighborhoods in western Baltimore. Our results suggest that age (but not sex), socioeconomic position (as measured by educational attainment) and physical health status (as measured by number of reported diagnoses) are important correlates of CAM use in this medically vulnerable and understudied population. Additionally, certain characteristics of the neighborhood—particularly racial and economic diversity—may affect CAM use.

Respondents reported a great deal of familiarity with CAM. Knowledge of individual prayer for health, herbal medications or home remedies, group spiritual practices, acupuncture, and chiropractic all exceeded 90%. Including individual prayer, 88.4% of respondents reported use of ≥ 1 CAM in the previous 12 months. Prayer was the most commonly reported type (84.2%), followed by herbs/home remedies (29.5%), group spiritual practices (17.0%) and meditation/visualization techniques (10.6%). Half of the respondents (50.5%) reported using a form of CAM other than individual prayer during the previous year—more than double the 20.5% reported by older African Americans in the 2002 National Health Interview Survey.¹⁵ Other investigators have also found prayer to be the most common modality of CAM among older African Americans.^{16,17}

The range of herbals and home remedies reported by nearly 30% of participants is wide, including traditional agents (e.g., horehound, lemon juice, sassafras), currently popular herbals (e.g., echinacea, wheatgrass juice, herbal teas) and commercial formulations (e.g., fat burner pills, Q-gel plus). The use of some of the reported herbs may have negative consequences; for example, the goldenseal used by one participant to enhance overall

Table 3. West Baltimore CAM Study: multivariable logistic regression of CAM use (N=95 individuals in 19 neighborhoods)

| Factor | Model 1: Individual-Level Factors only | | Model 2: Adding Neighborhood Factors | |
|---|--|---------|--------------------------------------|---------|
| | Adjusted OR (95% CI) | P Value | Adjusted OR (95% CI) | P Value |
| Age (years) | 1.07 (1.01, 1.14) | 0.023 | 1.09 (1.01, 1.17) | 0.023 |
| Years of education | 1.21 (1.03, 1.43) | 0.024 | 1.24 (1.03, 1.49) | 0.024 |
| Number of reported diagnoses ¹ | 1.24 (1.06, 1.45) | 0.007 | 1.17 (0.99, 1.39) | 0.070 |
| Residential racial segregation ² | | | 1.03 (1.00, 1.06) ⁴ | 0.047 |
| Income inequality ³ | | | 0.93 (0.86, 1.00) | 0.063 |

1: Out of conditions 25 queried; 2 Measured as the Racial Diversity Index, which represents the probability of 2 randomly chosen neighborhood residents being of different race/ethnicity. Higher figure indicates increasing neighborhood segregation; 3: Measured as the Economic Diversity Index, which represents the probability of 2 randomly chosen neighborhood residents being of different household income range groups. Higher score indicates increasing income inequality; 4: 95% Confidence Interval includes 1 because of rounding.

health is listed on the Mayo Clinic website as potentially causing or worsening high blood pressure.¹⁸

Seventeen out of 22 (72.7%) respondents reported disclosing their use of herbs to their healthcare providers. In contrast, only 45% of African-American patients in an urban primary care clinic were reported to disclose herbal use to their providers,¹⁹ while 34.9% of non-Hispanic black respondents to the 2002 National Health Interview Survey disclosed CAM use.³

Correlates of CAM use in this population include greater educational attainment, older age and more comorbidities. The positive association of education and CAM among African-American adults has been frequently reported.^{6,20,21} Among older adults, CAM has been associated with higher age and those in poorer health in other investigations.²² Unlike the Bazargan et al.⁸ study of minority heads of households in 3 public housing communities, we did not find an association between CAM and financial strain.

Health effects of the neighborhood are increasingly being explored as a risk factor for health-related outcomes, independent of the attributes of the individuals under study. A recent (October 17, 2007) PubMed search of the terms “neighborhood” and “health” turned up 17,172 citations. Williams and Earl²³ suggest that investigations of health and race include the effects of neighborhood and racial discrimination. Although we did not find any association between CAM and race-based treatment, our findings of economic diversity/income inequality in bivariate analysis and of residential racial segregation in multivariable analysis approached significance and call for further exploration. It is especially interesting to note that in this investigation, neighborhood characteristics appeared to moderate the influence of physical health on CAM use. While closely associated with CAM use in the individual-level model, its significance lessened considerably with the addition of neighborhood factors.

Providers need to be aware that CAM use, particularly of herbal medications and home remedies, may be high among older urban African Americans, and they should probe for use. Providers should ask patients about all forms of CAM, since many respondents employed >1 modality. Almost half of the respondents allowed a home visit in which interviewers conducted a review of medications, at which time uses of additional agents or different modalities were sometimes disclosed by respondents; therefore, it may be necessary to probe for multiple CAM modalities and agents.

This study is limited by its small sample size and low response to RDD recruitment. These may limit its generalizability to the entire population of older African Americans who live in Baltimore or other urban areas. The study does have several strengths, however, including the population-based recruitment of the majority of respondents and its consideration of effects of unfair

race-based treatment and neighborhood health influences. We revealed a greater and more varied use of CAM than previously reported, suggesting that providers need to be aware that CAM use is high and that many patients may employ >1 modality. Larger-scale explorations of CAM use among urban older African Americans should consider neighborhood characteristics.

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