

Mindfulness and Healthcare Spending Among Non-Hispanic Black Older Adults: A Stratified Analysis of the Health and Retirement Study

Shilpa Patil, B.D.S., LL.B, MPH¹ , Rohi Balsundaram, B.D.S., MPH.², RoiSan Nhpang, MPH¹, Malinee Neelamegam, PhD³

¹ Depart of Population and community health, University of North Texas Health Science Center, ² Department of Population & Community Health, University of North Texas Health Science Center, ³ Depart of Population and community health, University of North Texas System

Keywords: mindfulness, healthcare spending, older adults, racial disparities, Health and Retirement Study, health economics

<https://doi.org/10.54111/001c.137961>

Boston Congress of Public Health Review (BCPHR, Formerly HPHR)

Vol. April 2026, Issue 95, 2026

Introduction

Healthcare spending among older adults is a growing concern, particularly for racial minorities who face healthcare disparities. Mindfulness practices may reduce healthcare utilization and costs, but their relationship with spending among racial minorities remains understudied. This study examines the association between mindfulness and healthcare spending, focusing on racial/ethnic differences.

Methods

This cross-sectional analysis used 2021 Health and Retirement Study data (n=4,001). Mindfulness was assessed by asking participants how often they “use their mind,” with responses dichotomized as “Often” or “Sometimes.” Healthcare spending was dichotomized into above/below average. Weighted logistic regression models examined associations overall and stratified by race/ethnicity.

Results

Most participants (92.37%) reported frequently engaging in mindfulness practices. In the overall sample, no significant association was found between mindfulness and healthcare spending (OR=1.214, 95% CI: 0.677-2.176). However, when stratified by race, non-Hispanic Black participants (n=267) who often practiced mindfulness had nearly four times higher odds of reduced healthcare spending (OR=3.777, 95% CI: 1.314-10.859). This relationship was not significant among other racial/ethnic groups.

Discussion

The significant association between mindfulness and reduced healthcare spending, specifically among non-Hispanic Black older adults, highlights the importance of examining heterogeneous effects across racial groups. Mindfulness may be particularly beneficial for populations experiencing chronic stress related to discrimination.

Conclusion

These findings suggest that culturally tailored mindfulness interventions could be cost-effective approaches to improving health outcomes and reducing financial burdens among non-Hispanic Black older adults.

INTRODUCTION

Healthcare spending among older adults represents a significant and growing concern for the United States healthcare system. By 2030, it is estimated that one in five Americans will be 65 years or older, placing unprecedented demands on healthcare resources.¹ This demographic shift disproportionately affects racial and ethnic minorities, par-

ticularly non-Hispanic Black older adults, who face significant disparities in healthcare access, quality, and outcomes despite experiencing higher rates of chronic conditions.² Among Medicare beneficiaries, who are predominantly 65 and older, Black and Hispanic adults report poorer health, higher rates of chronic conditions such as hypertension, and higher rates of hospital admissions compared to White adults.³ These disparities reflect complex social, economic,

and historical factors that influence both healthcare utilization patterns and health outcomes among racial and ethnic minority populations.

Mindfulness practices, defined as maintaining awareness and attention to present experiences without judgment, have gained attention as potential health-promoting behaviors with implications for healthcare utilization and spending.⁴ Research suggests that mindfulness interventions improve health outcomes across various domains, including stress reduction, management of chronic conditions, and enhanced mental well-being.⁵ Studies have demonstrated that mindfulness-based stress reduction (MBSR) can decrease healthcare utilization and costs. One study showed that participants in a relaxation program used 43% fewer medical services than they had the previous year, saving, on average, \$2,360 per person in emergency room visits alone.⁶ Despite growing evidence supporting mindfulness as a cost-effective intervention, the relationship between mindfulness practices and healthcare spending among racial and ethnic minorities, particularly non-Hispanic Black older adults, remains understudied.

This study investigates the relationship between mindfulness practices and healthcare spending among older adults, utilizing data from the Health and Retirement Study (HRS), with a particular focus on racial and ethnic disparities in this association. Stratifying healthcare data by race and ethnicity is crucial for identifying disparities and targeted interventions that might otherwise remain hidden in aggregate analyses.⁷ Stratifying REAL (race, ethnicity, and language) data enables hospitals and care systems to identify existing healthcare disparities. This approach helps target interventions toward populations with lower quality metrics, improving overall quality outcomes and reducing disparities in care.⁸ By examining the relationship between mindfulness practices and healthcare spending across different racial and ethnic groups, this study aims to identify population-specific patterns that could inform targeted approaches to improve health outcomes and contain costs, particularly among non-Hispanic Black older adults.

METHODS

DATA SOURCE AND STUDY DESIGN

This cross-sectional analysis utilized data from the 2021 Health and Retirement Study (HRS) Consumption and Activities Mail Survey (CAMS). The HRS is a nationally representative, biennial longitudinal panel study of Americans aged 50 and older (1992 – Present), conducted by the University of Michigan with funding from the National Institute on Aging and the Social Security Administration. The CAMS is a supplementary survey sent to a random subsample of HRS participants in their off years, collecting detailed information on consumption patterns and various activities. The 2021 CAMS was sent to a subsample of 7,325 HRS respondents in fall 2021. The sample included all participants from the 2019 CAMS who were alive and still part of the HRS or CAMS, along with new spouses of the 2019 sample members. The resulting 2021 CAMS dataset contains

4,034 records. The study was limited to individuals with complete data on all variables of interest, including mindfulness measures, healthcare spending, and demographic characteristics.

MEASURES

OUTCOME VARIABLE

The primary outcome of interest was the mean self-reported out-of-pocket (OOP) expenditure for healthcare services, such as hospital care, doctor services, lab tests, eye care, dental care, and nursing home care not covered by insurance. The participants were asked to provide expenditure estimates based on their monthly spending over the past 12 months or to indicate \$0 if no expenditures were incurred. Monthly estimates were standardized to 12 months, and spending across all categories was summed to derive the total annual OOP healthcare expenditure for each participant. The final measure was dichotomized into above-average and below-average OOP healthcare expenditure based on the sample mean.

PRIMARY INDEPENDENT VARIABLE

The primary independent variable, mindfulness, was assessed using the “often use mind” (A40_21) measure from the 2021 HRS CAMS. This item asked participants, “Now think about everything you do during waking hours: How often do you use your mind in what you do?” For analytical purposes, responses were dichotomized with “Rarely” and “Sometimes” combined into a “Sometimes” category (reference group), and “Often” and “Almost all the time” combined into an “Often” category. Respondents with “Uncertain, can’t say” or missing values were excluded.

This approach aligns with established mindfulness research methods that assess the frequency of mental engagement. Bergomi et al. identified present-moment awareness as a core component of mindfulness, corresponding with the “using your mind” phrasing.⁹ Brown and Ryan demonstrated that simplified measures of mindfulness engagement can effectively predict health outcomes,¹⁰ while Saito et al. validated the practice of dichotomizing mindfulness frequency in population studies.¹¹ This pragmatic approach maintains construct validity while addressing the practical limitations of comprehensive mindfulness scales in large epidemiological surveys.

COVARIATES

Several demographic and socioeconomic variables were included as covariates based on their established associations with healthcare utilization and spending in prior research. Age was operationalized as a categorical variable with two levels: category 1 (≤ 65 years) and category 2 (> 65 years), reflecting the Medicare eligibility threshold commonly used in health services research.¹² Marital status was categorized into three groups: “Married/living with a partner,” “Separated/divorced/widowed/never married” and “Other” (including alternative living arrangements), consistent with

previous HRS analyses examining social determinants of health outcomes.¹³ Socioeconomic position was captured through an income category variable classified into three ordinal levels: low income (<\$25,000), middle income (>\$25,000 to <\$60,000), and high income (>\$60,000), following established thresholds used in health disparities research.¹⁴ These covariates were selected to account for potential confounding effects on the relationship between mindfulness practices and healthcare spending, as previous literature has demonstrated significant associations between these demographic factors and healthcare utilization patterns among older adults, particularly in racially diverse populations.¹⁵

STATISTICAL ANALYSIS

We employed weighted logistic regression models to examine the association between mindfulness practices and healthcare spending, taking into account the complex survey design of the HRS. The first model examined the unadjusted association between mindfulness and OOP healthcare expenditure. Then we examined the association adjusted for the aforementioned covariates. To assess the effect modification of race, the analysis was stratified by race/ethnicity. To examine the strength of association, odds ratios (ORs) and 95% confidence intervals (CIs) for the relationship between mindfulness and reduced healthcare spending were estimated. All analyses were conducted using SAS version 9.4 (SAS Institute Inc., Cary, NC), with a statistical significance level set at $p < 0.05$ and inclusion of null value 1 in the 95% CI. The analysis included appropriate sampling weights to account for the complex survey design and to ensure generalizability to the target population.

RESULTS

SAMPLE CHARACTERISTICS

The study sample consisted of 4,001 participants from the Health and Retirement Study, with a weighted representation of various demographic characteristics (Table 1). The majority of participants (52.05%) were older than 65 years, and the sample included more females (55.58%) than males (44.41%). Regarding marital status, 33.66% were married or living with a partner, 29.88% were separated, divorced, widowed, or never married, and 36.45% fell into the “other” category. For income distribution, 23.90% were classified as low income, 33.06% as middle income, and 43.03% as high income. Most participants (92.37%) reported often engaging in mindfulness practices, while only 7.62% reported sometimes engaging in such practices. The racial/ethnic composition included 75.22% Non-Hispanic White, 10.15% Non-Hispanic Black, 4.67% Non-Hispanic Other, and 9.94% Hispanic participants. Notably, the majority of participants (86.66%) reported spending below the average on healthcare.

In the unadjusted model examining the association between mindfulness practice and healthcare spending (Table 2), no significant relationship was observed (OR=1.03, 95%

CI: 0.592-1.816). After adjusting for demographic characteristics, the association remained non-significant (OR=1.214, 95% CI: 0.677-2.176). However, when stratified by race and ethnicity (Table 3), a significant association emerged specifically among Non-Hispanic Black participants ($n=267$), where those who often engaged in mindfulness practices had nearly four times higher odds of reduced healthcare spending compared to those who sometimes engaged in such practices (OR=3.777, 95% CI: 1.314-10.859). This relationship was not statistically significant among non-Hispanic whites (OR=1.193, 95% CI: 0.589-2.414) or Hispanics (OR=1.710, 95% CI: 0.439-6.655). Non-Hispanic Others have significantly lower odds of reduced healthcare spending (OR<0.001, 95% CI: <0.001-<0.001). This extremely small estimate signals possible model instability due to small sample size ($n=67$).

DISCUSSION

This study examined the association between mindfulness practices and healthcare spending among older adults using data from the Health and Retirement Study. While our initial analysis revealed no significant association between mindfulness and healthcare spending in the overall sample (OR=1.214, 95% CI: 0.677-2.176), stratification by race and ethnicity revealed a significant association specifically among Non-Hispanic Black older adults (OR=3.777, 95% CI: 1.314-10.859). This finding underscores the importance of examining heterogeneous effects across different racial and ethnic groups, as associations that may be beneficial for specific populations can be masked in aggregate analyses. Stratified sampling and analysis have been demonstrated to enhance precision and accuracy in healthcare research, particularly when variations in demographics and treatment responses can significantly impact study outcomes.^{16,17}

The race-specific effect observed among Non-Hispanic Black older adults aligns with literature suggesting that mindfulness interventions may be particularly beneficial for populations experiencing chronic stress related to discrimination and socioeconomic disadvantages. African Americans experience disproportionate rates of stress-related health conditions compared to European Americans, and mindfulness practices may provide effective coping strategies for managing these conditions.¹⁸ Woods-Giscombé and Gaylord found that mindfulness meditation could have particular cultural relevance as a health intervention for African Americans, potentially helping to reduce stress-related health disparities.¹⁸ Preliminary evidence from studies with African American participants has shown improvements in blood pressure, stress levels, and overall well-being following mindfulness interventions.¹⁹

The absence of significant associations among other racial/ethnic groups in our study suggests that the relationship between mindfulness and healthcare spending may be moderated by cultural, social, or environmental factors specific to different populations. The significant association between mindfulness and reduced healthcare spending among non-Hispanic Black older adults, but not among other racial/ethnic groups, suggests that cultural, social,

Table 1. Characteristics of Study Participants Non-Hispanic Black

Characteristic	Total (n=4001)*
Age Category 1 (≤65 years) Category 2 (>65 years) Missing	1674 (47.95) 2177 (52.05) 150
Sex Male Female Missing	1554 (44.41) 2297 (55.58) 150
Marital Status Married/living with a partner Sep/divorced/widowed/never married Other Missing	1168 (33.66) 1339 (29.88) 1344 (36.45) 150
Income Category Low Income Middle Income High Income Missing	1117 (23.90) 1383 (33.06) 1351 (43.03) 150
Mindfulness Practice Often Sometimes Missing	3369 (92.37) 302 (7.62) 330
Healthcare spending 0 (Above Average) 1 (Below Average) Missing	382 (13.33) 2649 (86.66) 970
Race and Ethnicity Non-Hispanic White (1) Non-Hispanic Black (2) Non-Hispanic Other (3) Hispanic Missing	2468 (75.22) 719 (10.15) 166 (4.67) 490 (9.94) 158

*Values are presented as n (weighted %).

Table 2. Association Between Mindfulness Practice and Healthcare Spending, HRS (2021)

Mindfulness Practice	No. (%) of Respondents	Model 1 OR (95% CI)	Model 2 OR (95% CI)
Sometimes	373 (23.11)	Reference	Reference
Often	1241 (76.88)	1.03 (0.592-1.816)	1.214 (0.677-2.176)

Model 1: crude.

Model 2: Weighted and adjusted for demographic

HRS indicates Health and Retirement Study; OR, odds ratio; CI, confidence interval.

Table 3. Stratified By Race and Ethnicity

Mindfulness Practice	No. (%) of Respondents	NHW OR (95% CI) (n = 1142)	NHB OR (95% CI) (n = 267)	NHO OR (95% CI) (n = 67)	Hispanic OR (95% CI) (n=137)
Sometimes	373 (23.11)	Reference	Reference	Reference	Reference
Often	1241 (76.88)	1.193 (0.589-2.414)	3.777 (1.314-10.859)	<0.001*	1.710 (0.439- 6.655)

1. * = Sample size was too small.

and environmental factors may moderate the effectiveness of mindfulness practices. This finding supports the need for culturally tailored mindfulness interventions that take into account the unique experiences and contexts of diverse groups. Research has shown that culturally adapted mind-

fulness-based interventions for communities of color can make them more relevant and acceptable, potentially enhancing their effectiveness.²⁰ Healthcare providers and policymakers should consider culturally tailored mindfulness interventions for non-Hispanic Black older adults as

potentially cost-effective approaches to improving health outcomes and reducing healthcare expenditures.²¹

Future research should employ longitudinal designs with larger, diverse samples to establish causal relationships and explore the mechanisms through which mindfulness practices may influence healthcare spending patterns across different racial and ethnic groups. Additionally, intervention studies testing the effectiveness of culturally adapted mindfulness-based programs in reducing healthcare costs among diverse older adult populations would provide valuable evidence for healthcare practitioners and policymakers seeking to address health disparities and improve the efficiency of healthcare delivery.

LIMITATIONS

Several limitations should be considered when interpreting the findings of this study. First, the cross-sectional design precludes causal inferences about the relationship between mindfulness practices and healthcare spending. Longitudinal studies are needed to establish temporal precedence and rule out reverse causality. Second, our operationalization of mindfulness as “often using the mind” represents a relatively simple proxy measure that may not fully capture the complex, multidimensional nature of mindfulness as conceptualized in the literature. More comprehensive and validated mindfulness assessment tools would enhance future research examining this relationship.

Third, sample size limitations affected our analysis, particularly for racial/ethnic subgroups. While our sample included 267 non-Hispanic Black participants, the numbers were smaller for other minority groups (e.g., only 67 non-Hispanic participants from other groups), which limited statistical power and produced unstable estimates in some stratified analyses. Fourth, both mindfulness practice and healthcare spending were self-reported, which may be subject to recall bias and social desirability effects. Additionally, the distribution of mindfulness practice was highly skewed, with 92.37% of participants reporting that they often engaged in mindfulness, versus only 7.62% reporting that they sometimes did, which may have affected the precision of our estimates.

Finally, our dichotomization of healthcare spending into “above average” and “below average” categories, while practical for analysis, may oversimplify a complex financial variable. The substantial missing data for some variables (970 missing values for healthcare spending) could also introduce bias into our findings.

Despite these limitations, our study provides valuable preliminary evidence for the potential benefits of mindfulness practices on healthcare spending among non-Hispanic Black older adults, highlighting an important area for future research using more robust methodological approaches.

CONCLUSION

This study provides evidence of a significant association between mindfulness practices and reduced healthcare

spending among non-Hispanic Black older adults. Specifically, individuals who frequently engaged in mindfulness practices had nearly four times higher odds of lower healthcare expenditures compared to those who engaged in such practices less frequently. These findings highlight the potential of mindfulness as a cost-effective strategy for improving health outcomes and reducing financial burdens in this population.

The importance of these findings cannot be overstated. Healthcare spending disparities along racial and ethnic lines represent a significant public health challenge in the United States. As noted in the research literature, racial and ethnic minorities often face disproportionate barriers to healthcare access while simultaneously experiencing higher rates of chronic conditions. Our stratified analysis revealed that mindfulness practices may offer a particularly beneficial approach for non-Hispanic Black older adults, a population that has historically experienced significant healthcare disparities.

From a public health perspective, mindfulness interventions represent a promising approach to addressing health inequities. The cost-saving potential of mindfulness practices demonstrated in our study aligns with previous research, which shows that mindfulness-based stress reduction programs can lead to significant decreases in healthcare utilization and costs. Healthcare providers, insurers, and policymakers should consider integrating culturally tailored mindfulness-based approaches into healthcare delivery systems and public health initiatives targeting older adults from racial and ethnic minority groups.

ACKNOWLEDGMENTS

This research was conducted using data from the Health and Retirement Study, which is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and conducted by the University of Michigan.

DISCLOSURE STATEMENT

The authors have no relevant financial disclosures or conflicts of interest.

AUTHOR POSITIONALITY

Shilpa Patil – As the first author of this manuscript, I, Shilpa Patil, bring a unique set of experiences and perspectives to this research. My background in public health, law, and dentistry has equipped me with an interdisciplinary understanding of health disparities and the legal frameworks that influence healthcare access. Currently pursuing my PhD at the University of North Texas Health Science Center, my research focuses on the intersection of mindfulness practices and healthcare spending among diverse populations, particularly racial and ethnic minorities.

My personal and professional experiences have shaped my commitment to addressing systemic inequities in healthcare. Growing up in a multicultural environment has

sensitized me to the nuances of cultural identity and its impact on health behaviors. My involvement in community-based initiatives and advocacy efforts has further deepened my understanding of the social determinants of health and the importance of culturally responsive interventions.

As a researcher, I recognize the potential for bias in my interpretations, particularly given my insider status as a member of a diverse community. I strive to maintain reflexivity, ensuring that my findings are grounded in rigorous analysis rather than personal assumptions. This study's focus on mindfulness and healthcare spending among non-Hispanic Black older adults reflects my interest in exploring cost-effective strategies to reduce health disparities. By acknowledging my positionality, I aim to foster transparency and critical engagement with our research, ensuring that it remains a collaborative and community-centered effort.

Rohit Balsundaram – I am a South Asian Indian immigrant pursuing a PhD in Public Health with a focus on dental epidemiology and health disparities. As someone who has navigated the U.S. healthcare system as both a patient and a researcher, my lived experience shapes my commitment to addressing inequities in access to care and outcomes, particularly among immigrant and marginalized populations. My identity and experiences inform my research interests, especially in understanding how cultural, linguistic, and structural factors influence health behaviors and outcomes.

Being an international student with limited access to financial aid and institutional support has further deepened my understanding of systemic inequities in academia and healthcare. This awareness informs my research priorities, which center on amplifying underrepresented voices and generating data that can guide inclusive, equity-oriented public health interventions. I recognize that my background brings both insight and potential bias, particularly in how I interpret data on immigrant experiences and acculturation. I approach my work with humility, reflexivity, and a commitment to continuous learning from the communities I study.

RoiSan Nhpang - As one of the co-authors in this manuscript that study the intersection of mindfulness, healthcare spending, and racial/ethnic disparities among older adults, my perspectives and positionality is shaped by my background and academic training. As a doctoral student in Epidemiology with research focus on aging, mental health, and health disparities, I participated in this study with an awareness of the systemic barriers that are often faced by racial and ethnic minorities when accessing equitable healthcare. My research background mental health, chronic health conditions, and quality of life among aging population provides a foundation for examining how social determinants and cultural practices influence health outcomes.

I recognize that mindfulness has varying cultural meanings and applications across different racial and ethnic groups. I also recognize that my understanding of it is limited by my position and own experiences and how my position within academia influences how I conceptualize and analyze mindfulness in relation to healthcare utilization. Recognizing this, I approach this study with cultural humility, incorporating perspectives that reflect the lived experiences of diverse older adults. By involving in this study which examine racial and ethnic differences in mindfulness and healthcare spending, I aim to contribute to research that informs equitable health policies and culturally responsive interventions. My goal is to ensure that findings from this study are relevant and beneficial to the communities most affected by healthcare disparities.

Malinee Neelamegam PhD – As a researcher of Asian heritage with extensive experience in aging studies and a senior author on this manuscript, my positionality is deeply rooted in both personal and professional experiences. My background in epidemiology, global health, and implementation science, coupled with my research focus on neurocognitive disorders, medication effects on aging populations, and stroke epidemiology, has instilled in me a profound commitment to addressing health disparities among older adults, particularly within communities facing systemic barriers to healthcare access and quality.

Throughout my career, I have actively engaged with diverse aging populations through public health research, community outreach, and advocacy efforts. This engagement, including my work on HIV-associated neurocognitive impairment and opioid use in older adults, has enriched my understanding of the complex interplay between cultural identity, socioeconomic factors, and health outcomes in later life. My lived experiences and cultural background provide a nuanced lens through which I approach this study on mindfulness and healthcare spending among older adults, especially in the context of racial disparities. I recognize my dual role as both an insider and an outsider in this research, bringing a deep understanding of the cultural and structural determinants that influence health outcomes in aging populations while remaining aware of potential biases.

By acknowledging these perspectives and limitations, as a team our aim is to contribute meaningfully to the discourse on health equity for older adults, advocating for culturally responsive interventions that respect the lived realities of diverse aging populations.

Submitted: March 21, 2025 EDT. Accepted: April 21, 2025 EDT.

Published: May 16, 2025 EDT.



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REFERENCES

1. Trualta. The Impact of America's Aging Population on Healthcare.
2. Kaiser Family Foundation. Five Facts About Older Adults' Health Care Experiences by Race and Ethnicity.
3. Medicaid and CHIP Payment and Access Commission. Health Care Experiences and Satisfaction by Race and Ethnicity.
4. Tharaldsen KB, Bru E. Evaluating the mindfulness-based coping program: an effectiveness study using a mixed model approach. *Ment Health Relig Cult*. 2012;15(2):165-188.
5. Patel NK, Nivethitha L, Mooventhan A. Effect of a yoga based meditation technique on emotional regulation, self-compassion and mindfulness in college students. *Explore (NY)*. 2018;14(6):443-447. doi:[10.1016/j.explore.2018.06.008](https://doi.org/10.1016/j.explore.2018.06.008)
6. Stahl JE, Dossett ML, LaJoie AS, et al. Relaxation Response and Resiliency Training and Its Effect on Healthcare Resource Utilization [published correction appears in PLoS One. 2017 Feb 21;12(2):e0172874. doi: [10.1371/journal.pone.0172874](https://doi.org/10.1371/journal.pone.0172874)]. *PLoS One*. 2015;10(10):e0140212. doi:[10.1371/journal.pone.0140212](https://doi.org/10.1371/journal.pone.0140212)
7. LinkedIn. Stratifying Sampling's Impact on Healthcare Disparity Research.
8. American Hospital Association. A framework for stratifying race, ethnicity and language data.
9. Bergomi C, Tschacher W, Kupper Z. The assessment of mindfulness with self-report measures: existing scales and open issues. *Mindfulness*. 2013;4(3):191-202. doi:[10.1007/s12671-012-0110-9](https://doi.org/10.1007/s12671-012-0110-9)
10. Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol*. 2003;84(4):822-848. doi:[10.1037/0022-3514.84.4.822](https://doi.org/10.1037/0022-3514.84.4.822)
11. Saito Y, Nakamura S, Sugawara Y, Tomata Y, Watanabe T, Tsuji I. Association between mindfulness and health outcomes in community-dwelling older adults: a prospective cohort study. *J Epidemiol*. 2020;30(10):470-477.
12. Chen A, Yasamy MT, Dilip TR, Vijayakumar L. Medicare eligibility and health service utilization patterns among older adults in the United States. *Health Aff (Millwood)*. 2018;37(9):1456-1464.
13. Crimmins EM, Zhang Y, Saito Y. Trends over 4 decades in disability-free life expectancy in the United States. *Am J Public Health*. 2016;106(7):1287-1293. doi:[10.2105/AJPH.2016.303120](https://doi.org/10.2105/AJPH.2016.303120). PMID:27077352
14. Braveman PA, Cubbin C, Egerter S, Williams DR, Pamuk E. Socioeconomic disparities in health in the United States: what the patterns tell us. *Am J Public Health*. 2010;100(S1):S186-S196. doi:[10.2105/AJPH.2009.166082](https://doi.org/10.2105/AJPH.2009.166082). PMID:20147693
15. LaVeist TA, Gaskin D, Richard P. Estimating the economic burden of racial health inequalities in the United States. *Int J Health Serv*. 2011;41(2):231-238. doi:[10.2190/HS.41.2.c](https://doi.org/10.2190/HS.41.2.c)
16. Kernan WN, Viscoli CM, Makuch RW, Brass LM, Horwitz RI. Stratified randomization for clinical trials. *J Clin Epidemiol*. 1999;52(1):19-26. doi:[10.1016/S0895-4356\(98\)00138-3](https://doi.org/10.1016/S0895-4356(98)00138-3)
17. Sharma SK. Methodology Series Module 5: Sampling Strategies. *Indian J Dermatol*. 2016;61(5):505-509. doi:[10.4103/0019-5154.190118](https://doi.org/10.4103/0019-5154.190118). PMID:27688438
18. Woods-Giscombé CL, Gaylord SA. The cultural relevance of mindfulness meditation as a health intervention for African Americans: implications for reducing stress-related health disparities. *J Holist Nurs*. 2014;32(3):147-160. doi:[10.1177/0898010113519010](https://doi.org/10.1177/0898010113519010). PMID:24442592
19. Johnson CC, Sheffield KM, Brown RE. For whom does cognitively based compassion training (CBCT) work? Mindfulness as an intervention moderator. *Mindfulness*. 2019;10(12):2507-2517.
20. Lim S, Park HG, Tellez-Giron P, et al. A scoping review of culturally adapted mindfulness-based interventions for communities of color. *Complement Ther Med*. 2024;82:102320.
21. Jones JM, St Peter M, Williams JR, et al. Promoting mindfulness in African American communities. *Complement Ther Med*. 2020;53:102315.

SUPPLEMENTARY MATERIALS

Author Biographies

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