

Dietary Practices Among Stroke-survivors—Racial/Ethnic Differences

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Background: Healthy lifestyle choices, particularly optimal nutrition, are crucial to stroke prevention and reducing risk of recurrent stroke. Racial differences exist in poststroke outcomes; however, few studies have examined the influence of race on poststroke diet or nutrition practices, despite nutrition being critical to stroke recovery. The objective of this analyzes was therefore to examine racial/ ethnic differences in nutrition activities among stroke survivors using data from the National Health and Nutrition Examination Surveys. *Methods:* Cross-sectional data from National Health and Nutrition Examination Surveys (2011-2014) were analyzed for adults (n = 431) who responded “yes” that they had been told by a health professional that they had a stroke. The main outcome measure was food consumption/ nutrition behavior. Descriptive statistics were conducted for demographic characteristics. Pearson Chi square statistics were performed for baseline demographic and clinical comparisons. A negative binomial regression analysis was utilized for racial/ethnic comparisons of dietary/nutrition behaviors. *Results:* The mean age of the sample was 66.6 years (Standard Deviation, 12.7) but the mean age of stroke onset was 57.9 years (Standard Deviation, 15.8), with Mexican American/Hispanics experiencing their strokes at a younger age than other racial groups ($P < .007$). After controlling for baseline differences in key demographic and clinical covariates variables, Blacks consumed a higher number of ready-to-eat foods ($P = .000$) in the past 30 days while Mexican American/Hispanics consumed a higher number of frozen meals/pizza in the past 30 days ($P = .004$). *Conclusions:* Racial/ethnic differences in poststroke nutrition practices, highlight a potential need for focused nutrition counseling for minority population at higher risk of poor poststroke outcomes.

Key Words: Stroke—racial-ethnic—National Health and Nutrition Examination Surveys (NHANES)—nutrition—dietary behavior/practice.

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Introduction

Worldwide estimates indicate that more than 15 million individuals are diagnosed with a stroke each year.¹ In the United States (US) alone, approximately 795,000

Americans experience a new or recurrent stroke each year.² Studies in the US and other countries consistently show racial disparities in stroke with Non-Hispanic Blacks (Blacks) being at twice the risk than Non-Hispanic Whites (Whites).²⁻⁵ These observed higher rates among

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Blacks continue to exist despite a substantial overall decrease in stroke among Whites in the US.⁵

Beyond racial differences in stroke rates, racial disparities also exist in stroke related outcomes. A recent review of the literature that included 17 studies, and 429,108 stroke survivors showed that Whites achieve better outcomes than Blacks even after both groups received rehabilitation.⁶ The underlying cause of these disparities are not entirely clear and studies are needed to examine issues beyond access to early stroke care, rehabilitation, and lack of family support. It is however, well established that an individual who has survived a stroke is at risk of experiencing another stroke within five years, hence adopting a healthy lifestyle to reduce the risk is recommended.⁷

Secondary stroke prevention has received substantial attention with risk reduction strategies primarily emphasizing strict management of comorbid disease conditions (hypertension, diabetes, high cholesterol, etc.) that contribute to stroke risk.⁸ Less attention has been given to diet/nutrition which is critical to both general stroke reduction and reductions in obesity, a risk factor commonly associated with stroke. National efforts from the American Heart Association (AHA) and American Stroke Association (ASA) currently exist to improve nutrition among stroke survivors. For example, the dietary guidelines for Americans⁹ offer the foundation for both AHA and ASA "Guidelines for the Prevention of Stroke in Patients with Stroke and Transient Ischemic Attack",⁸ and the American College of Cardiology/AHA guidelines on "Lifestyle Management to Reduce Cardiovascular Risk."¹⁰ which emphasizes the importance of nutrition to reduce risk of cardiovascular conditions such as stroke. Both guidelines emphasize the role nutrition plays in optimal stroke recovery and secondary disease prevention. The AHA/ASA specifically notes that under nutrition and deficiency of specific micronutrients may negatively impact the stroke recovery process.⁸

Current AHA/ASA, general guidelines recommend nutritional assessments, reduction in cholesterol and sodium intake, vitamin supplementation, and counseling to facilitate Mediterranean-type diets for nutrition management in stroke survivors and to prevent secondary stroke.⁸ Although the American College of Cardiology/AHA primarily emphasizes general cardiovascular risk and not stroke specifically, and recommends the Dietary Approaches to Stop Hypertension dietary principles, which has also been shown to reduce stroke risk.¹¹ Though the approaches differ, both recommendations focus on dietary lifestyle modifications.

To date, however, it is unclear how the comprehensive nutrition guidelines are utilized in stroke survivors to reduce risk of stroke reoccurrence and improve poststroke guidelines. Additionally, it is unclear that how well stroke survivors understand the impact of nutrition on stroke recovery or reduction of secondary stroke risk. Further, few studies have examined potential racial ethnic differences in

dietary/nutrition behavior and management among stroke survivors, and how potential differences may contribute to long standing racial ethnic differences in stroke outcomes. As a critical first step to understand these issues, the objective of this study was to examine racial ethnic differences in nutrition practices in stroke survivors. To complete this study, data from the National Health and Nutrition Examination Surveys (NHANES) was examined.¹² This study was reviewed and approved by the East Carolina University Institutional Review Board.

Materials and Methods

NHANES is an annual survey completed by the Centers for Disease Control and Prevention (CDC) national center for health statistics to estimate the number and percent of the US population with selected diseases and risk factors.¹² The NHANES was initiated more than 50 years ago to monitor selected disease conditions and explore their relationship to diet, nutrition and health. NHANES is a two-year survey designed to be nationally representative by using a complex, stratified multistage probability sample of the non-institutionalized US civilian population to generate estimates. Additional details about the survey are available at: <https://www.cdc.gov/nchs/nhanes/index.htm>.

The NHANES includes a wide range of survey topics and of specific importance to this work were the "Medical Conditions" and the "Diet Behavior & Nutrition" modules of the Questionnaire data." The "Medical Conditions" module provides self-reported data on a broad range of health conditions including but not limited to: stroke, heart attack, coronary artery disease, congestive heart failure, and diabetes. Similarly, the NHANES "Diet Behavior & Nutrition" module examined the respondent's dietary and nutrition behaviors.

For this study, data from the 2011-2012 and 2013-2014 (2011-2014) NHANES were utilized. The overall 2011-2014 sample consisted of 19,134 individuals (children and adults). The sample included in the study consisted of adults aged greater than 18 years who responded "Yes", when asked "Has a doctor or other health professional ever told you that you...had a stroke?" and completed the diet behavior and nutrition module. The diet behavior and nutrition module asked respondents: (a) how healthy they rated their diet and (b) how many meals were not prepared at home, were from fast food/pizza place, ready-to-eat or frozen meals/pizza.

All respondents, self-identified their race/ethnicity as either Mexican American (MA) or Other Hispanic (HIS), Non-Hispanic White (whites), Non-Hispanic Black (blacks) or other. Demographic information (age, age of stroke, sex, education, household income, health insurance and presence of other co morbid health conditions) were also collected.

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