

Racial Differences in Lifestyle Modification in Men with Newly-Diagnosed Prostate Cancer

TECHNICAL ABSTRACT

Background: Prostate cancer is the most common cancer in men and the second leading cause of cancer mortality. African Americans have the highest prostate cancer incidence and mortality rates among all racial/ethnic groups; prostate cancer mortality in African Americans is 2.3 times that of Caucasian Americans. Further, recurrence rates for prostate cancer after definitive treatment have been shown to be significantly higher in African Americans, and black race has been associated with decreased survival. Research suggests that prostate cancer prognosis may be affected by lifestyle factors: prostate cancer may be particularly impacted by oxidative status that, in turn, may be altered by diet and dietary supplement use. However, there is little published data on patterns of health behaviors among men diagnosed with prostate cancer, and no available information on differences by race.

Hypothesis: Men diagnosed with prostate cancer modify lifestyle factors (dietary intake and dietary supplement use) differently by race, which alters prognosis. Specifically, African Americans diagnosed with prostate cancer make fewer healthy changes than Caucasian Americans, which might contribute to worse prognosis among African Americans.

Specific Aims: The primary specific aims are to determine whether men diagnosed with prostate cancer make changes in dietary intake (total energy; carotenoids; vitamin E, calcium/vitamin D; fats/fatty acids; and isoflavones) and use of dietary supplements, and the extent to which the changes differ by race (African American and Caucasian American). Secondary aims are to determine whether alterations in dietary intake and dietary supplement use upon a diagnosis of prostate cancer are associated with changes in oxidative DNA damage in lymphocytes and prostate cancer prognosis assessed using serum prostate specific antigen (PSA) levels as an intermediate endpoint of disease progression.

Design: The proposed research builds upon a Department of Defense-sponsored prostate cancer Consortium, "Racial Differences in Prostate Cancer: Influences of Health Care and Host and Tumor Biology." The Consortium is a population-based case-only study of newly diagnosed prostate cancer cases (age 40-80 years) in 18 North Carolina counties and 7 Louisiana Parishes. For this longitudinal study, we propose to recruit a subset of Consortium participants in North Carolina (125 African Americans, 125 Caucasian Americans) and follow them for a period of 2 years. Data will be collected at baseline by the Consortium and, in this study, 6-, 12-, and 24-months later using the same methodology. Dietary intake and use of dietary supplements at each of the three follow-up assessments will be collected using a interview-administered questionnaire. Nutrient biomarkers (serum carotenoids and tocopherols), oxidative DNA damage in lymphocytes as measured by single-cell gel electrophoresis (alkaline Comet assay), and serum PSA levels will be assessed at 12- and 24-months. Oxidative DNA damage in lymphocytes and serum PSA levels will be used as objective markers of dietary effects and disease progression, respectively. All data will be collected during a home visit, except for PSA results, which will be obtained from patients' medical records.

Relevance: This project will provide important information on changes in modifiable lifestyle factors (diet and use of dietary supplements) among men diagnosed with prostate cancer, and the extent to which the changes differ by race. Identification of dietary effects on prostate cancer prognosis would suggest the importance of lifestyle behavioral factors in prostate cancer outcome. Further, the determination of racial differences in health behaviors post-diagnosis may provide insights into disparities in prostate cancer prognosis between African Americans and Caucasian Americans. Together, these data would provide information that could be used to develop appropriate interventions to lower the risk of fatal prostate cancer and reduce racial disparities in prostate cancer prognosis.