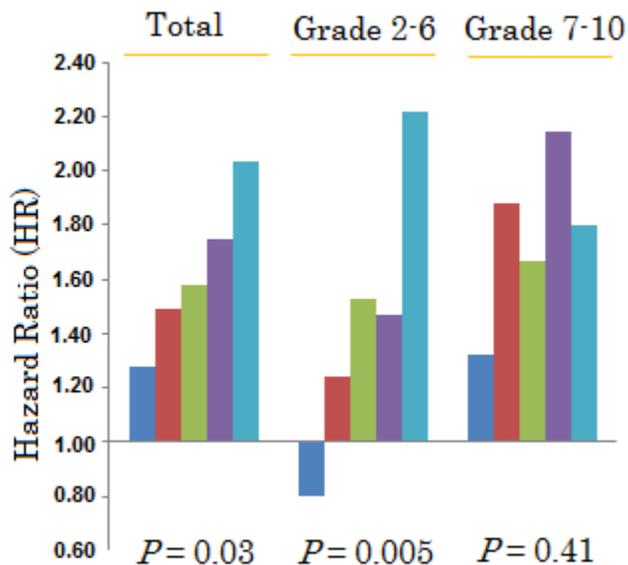


Racial differences in the association of obesity with prostate cancer risk

September 21, 2015

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Prostate cancer risk in African American versus non-Hispanic white men, overall and stratified into low- or high-grade tumors (Gleason score 2-6 and 7-10, respectively). P-values are for the trend of increasing risk of prostate cancer in African American men compared to non-Hispanic white men as body mass index (BMI) increases.

Image provided by Dr. Wendy Barrington.

Prostate cancer is the most commonly diagnosed cancer among men in the United States, besides non-melanoma skin cancer, but rates vary substantially by race. African American men have the highest incidence of prostate cancer, as well as the highest rates of aggressive disease and prostate cancer mortality. The reason for these racial disparities remains unclear, though several genetic and environmental factors are thought to play a role. Obesity, for example, may affect prostate cancer risk in some populations more than others. As previous studies in this area have been inconsistent, Drs. Wendy Barrington, Alan Kristal, and colleagues in the Public Health Sciences Division evaluated the differential impact of obesity on prostate cancer risk in African American and non-Hispanic whites. As recently reported in *JAMA Oncology*, the authors found that obesity is more strongly associated with increased prostate cancer risk in African Americans than in non-Hispanic whites, suggesting that targeted lifestyle interventions could help reduce this racial disparity.

To evaluate the effect of obesity on prostate cancer, the researchers analyzed data collected during the Selenium and Vitamin E Cancer Prevention Trial (SELECT). This international clinical trial of vitamin supplementation for prostate cancer prevention recruited nearly 3,400 African American and

23,000 non-Hispanic white men from the United States, Canada, and Puerto Rico. Importantly, participants provided information on a large number of personal characteristics and health factors that could be accounted for in the obesity analyses, including education, smoking, diabetes, and family history of prostate cancer. After a median of 5.6 years of follow-up, over 1,700 of these men developed prostate cancer.

Analyzing these data, the authors found substantial racial differences in the associations of obesity with prostate cancer risk. Body mass index (BMI) was found to be positively associated with an increase in prostate cancer risk in African Americans, but not non-Hispanic whites. Said senior author Dr. Kristal, "these different effects of obesity might explain at least some of the difference in risk between African American and non-Hispanic white men and, more importantly, preventing obesity in African American men could substantially lower their cancer risk."

The authors further evaluated the association between BMI and prostate cancer according to tumor grade (low or high, based on Gleason score). Said lead author Dr. Barrington, "Obesity substantially increases the risks of both low- and high-grade prostate cancer among African-American men, but modestly decreases the risk of low-grade and increases the risk of high-grade cancer among non-Hispanic white men." Furthermore, while obesity was associated with an increased risk of high-grade prostate cancer in both groups, the effect was much larger in African American men.

Overall, the authors found a 58% increased risk for prostate cancer among African American compared to non-Hispanic white men. In addition to differences by obesity, there are likely other unmeasured aspects of race that contribute to the observed increased prostate cancer risk. Said Dr. Barrington, "race strongly affects access to resources and opportunities through historic and contemporary social injustices and this has health consequences. 'African-American race effect' is a term we used to describe the difference in cancer risk between African American and non-Hispanic white men. It is essentially measuring unidentified risk factors that are associated with living as an African-American man in this country. This is another context in which to highlight that #BlackLivesMatter."

"The bottom line is that African-American men disproportionately experience prostate cancer burden and death and that obesity plays a significant role in those outcomes," said Dr. Kristal. "It is important to note that the distribution of obesity across racial and ethnic groups is not based solely on individual factors, but is also influenced by larger social structures, policy, practices, norms, and values," said Dr. Barrington. Importantly, the findings from this study not only show that obesity is differentially associated with prostate cancer risk, but also suggest a targeted approach of obesity prevention and treatment efforts to reducing racial disparities in prostate cancer.

Future research will be needed to evaluate the mechanisms through which obesity may differentially affect prostate cancer risk. Said Dr. Kristal, "there is some evidence that the biological responses to obesity, for example on inflammation and glucose tolerance, are more pronounced in African American men." Both processes may contribute to cancer risk. Even in the absence of mechanistic understanding, however, weight loss has many other benefits and is unlikely to cause harm. Said Kristal, "our findings, therefore, should motivate physicians, especially those who care for African-American men, to address weight loss and maintenance." Hopefully, these findings will also provide a little more motivation to overweight men of all backgrounds to follow through on these weight-loss recommendations.

Additional Fred Hutch investigators contributing to this project were Drs. Jeannette Schenk, Katie Arnold, Ruth Etzioni, and Marian Neuhouser.

Citation:

[Barrington WE, Schenk JM, Etzioni R, Arnold KB, Neuhouser ML, Thompson IM Jr, Lucia MS, Kristal AR](#). 2015. Difference in Association of Obesity With Prostate Cancer Risk Between US African American and Non-Hispanic White Men in the Selenium and Vitamin E Cancer Prevention Trial (SELECT). *JAMA Oncol*. 1(3):342-9. doi: 10.1001/jamaoncol.2015.0513.

SELECT was funded in part by Public Health Service grants CA37429 and 5UM1CA182883 from the National Cancer Institute (NCI) and the National Center for Complementary and Alternative Medicine of the National Institutes of Health. Dr. Barrington was supported by a training grant from the NCI (R25CA094880).