Awareness of Prostate Cancer and Screening Modalities Among Long Island Men

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Abstract
Despite advances in prostate cancer (PC) treatment and outcomes, it remains one of the most commonly diagnosed cancers and the second leading cause of cancer mortality in men. Furthermore, there exist little data about patient awareness of PC and the frequency of screening. Adult men (470) presenting to the emergency department at a tertiary care center (Stony Brook University) between 2014 and 2015 were surveyed orally for their perceived risk of PC, awareness of PC and screening modalities, and screening history. In a population that mirrors the racial demographics of the United States, it was observed that significant disparities in awareness of PC exist among several populations including those at greatest risk. This study revealed an important opportunity for education on PC and screening modalities among the population of men at risk.

Keywords
prostate cancer, screening, health care disparities, race, education

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Introduction
Prostate cancer (PC) is one of the most commonly diagnosed cancers with an annual estimated incidence of 220,800 in 2015 (American Cancer Society, 2015). PC still remains the second leading cause of cancer mortality in men, claiming more than 26,000 lives in 2015 (Siegel, Miller, & Jemal, 2016). It is projected that the number of years of potential life lost due to PC deaths will increase by 226.1% from 291,853 in 2004 to 951,753 in 2050 (Li & Ekwueme, 2010). The early detection of PC has been associated with a reduction in mortality more so than any other malignancy (Sanda & Kaplan, 2009). However, the early detection of PC has been associated with a reduction in mortality more so than any other malignancy (Sanda & Kaplan, 2009). PC, usually diagnosed in its early stages, can be treated with various modalities. Risks and concern for adverse effects as a result of treatment of patients with low-risk PC has led to new approaches for disease screening and surveillance (Sanda & Kaplan, 2009). Despite these advances, there remains little data about patient awareness of PC and the frequency of screening.

Men at greater risk for PC and mortality did report higher rates of screening. This was true particularly in Black men who have a 60% greater risk of PC and 130% greater risk of PC-related mortality as well in men with a family history who are two to five times more likely to develop PC (McDavid, Melnik, & Derderian, 2000). Racial disparities in the treatment of PC have been demonstrated. One study reported that Hispanic and African American men were given less medical monitoring, a necessary element of “watchful waiting” (Shavers, Brown, & Klabunde, 2004). Furthermore, these men had longer median times from diagnosis to medical monitoring or procedure than White men (Shavers et al., 2004). This study was designed to describe the rates of self-reported PC screening and awareness in an unselected group of emergency department patients sampled from a suburban tertiary care center population that is similar to the greater U.S. population and identify disparities in awareness.

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Method

After obtaining institutional review board approval, men above the age of 18 years presenting to the Stony Brook University Emergency Department were enrolled by Academic Associates, Sunday through Friday from 9 a.m. to 9 p.m., after obtaining informed consent orally. Stony Brook University Medical Center is a tertiary care center in Suffolk County, New York, with a population estimated at 1.5 million in 2014. According to the U.S. census, in 2014, approximately 69% of the population in Suffolk County identified as White alone, non-Hispanic or non-Latino; 18% identified as Hispanic or Latino; 8.4% identified as Black or African American; and 4% identified as Asian. Meanwhile, in July 2015, the U.S. census reported the racial makeup of the entire country as 77.1% White alone, 17.6% Hispanic or Latino, 13.3% Black or African American alone, and 5.6% Asian alone. In addition, the U.S. census reports similar education levels, with approximately 90% of adults (25 years and older) having a high school diploma or GED in Suffolk County and approximately 88% in the U.S. overall. Approximately 33.5% of adults have a bachelor’s degree or higher in Suffolk County compared with approximately 33% in the U.S. population. Because both the racial makeup and education status of Suffolk County mirror that of the United States, this study provides a unique opportunity to simulate awareness on a national scale. Patients with an altered mental status or presenting to the emergency department in critical care were excluded. Patients unable to speak English were also excluded. Enrolled patients were surveyed orally by the Academic Associates. Information was collected regarding demographics. Participants were then assessed for their awareness of PC, their risk for development of PC, and for their understanding of available PC screening methods. Participants were questioned about the digital rectal exam (DRE) in two different ways. Patients who expressed awareness of screening methods were then queried for their own screening history. Differences in PC awareness were then identified based on race/ethnicity, marital status, education, comorbidities, history of PC, and family history of PC. After completing the survey, participants were presented with a fact sheet about PC from the Urology Care Foundation as a public health measure to increase PC awareness. A sample size calculation performed prior to enrollment indicated that 400 participants would be required to estimate proportions with accuracy (95% confidence intervals) of 5%. In statistical analysis, continuous variables were described using means and categorical variables were described using percentages. Comparisons were performed using chi-square tests and t tests for categorical and continuous variables, respectively.

Table 1. Patient Population/Demographics (n = 470).

| Study population, % (n) |
|-------------------------|
| Mean age ± SD | 48 ± 18 |

Table 1. Patient Population/Demographics (n = 470).

| Race/ethnicity | Study population, % (n) |
|----------------|-------------------------|
| Caucasian      | 77 (361)                |
| Hispanic       | 9 (44)                  |
| African American | 6 (29)               |
| Asian/Pacific Islander | 4 (19)             |
| Other          | 3 (13)                  |

| Marital status | Study population, % (n) |
|----------------|-------------------------|
| Single         | 39 (181)                |
| Married        | 50 (234)                |
| Widowed        | 2 (11)                  |
| Divorced       | 7 (34)                  |
| Other          | <1 (2)                  |

| Education | Study population, % (n) |
|-----------|-------------------------|
| <High school | 6 (27)                |
| High school graduate | 32 (150)            |
| Vocation/technical school | 2 (8)                |
| Some college | 24 (114)               |
| College     | 24 (111)                |
| Graduate/professional degree | 13 (59)             |

| Comorbid conditions | Study population, % (n) |
|---------------------|-------------------------|
| Hypertension         | 35 (162)                |
| Diabetes             | 14 (65)                 |
| Asthma               | 13 (62)                 |
| CAD                  | 10 (49)                 |
| Other cancer         | 7 (33)                  |
| CHF                  | 6 (30)                  |
| COPD                 | 4 (17)                  |
| First-degree relative with prostate cancer | 6 (29)              |

| PC history | Study population, % (n) |
|------------|-------------------------|
| Have a PCP | 76 (357)                |
| Have a PCP and saw PCP in 2015 | 82 (291)             |

Note. CAD = coronary artery disease; CHF = congestive heart failure; COPD = chronic obstructive pulmonary disorder; PC = primary care provider.

Results

There were 470 completed surveys. The mean age of participants was 48 years (SD = 18) of whom 361 (77%) identified as White. Other demographic information and associated comorbidities are listed in Table 1.

Of the men surveyed, 451 (96%) reported they had heard of PC. Three hundred and thirty-nine participants (72%) had heard of the DRE. Of all participants, 217 (46%) reported that they had had a DRE. Most participants, 420 (89%), had heard of a prostate exam. Half, 233, of the participants claimed to have had a prostate exam. Initially, participants were asked about the DRE in two different ways to weed out inconsistent surveys. However, it was quickly determined that this method only illustrated a difference in the use of nomenclature when speaking with
patients. A total of 222 participants (47%) stated that they had heard of the prostate-specific antigen (PSA) test. Only 137 participants (29%) claimed to have ever had a PSA test. Despite the relatively high levels of awareness of PC and screening modalities, disparities were consistently identified among certain demographics, including men identifying as African American and Hispanic, as reported in Table 2. Disparities in awareness were also seen among populations with certain comorbidities including coronary artery disease and hypertension as seen in Table 3.

More than three quarters (355, 76%) of participants believed they were at average risk of developing PC in the next 5 years. Thirty-five men (7%) believed they were at high risk and the remainder of participants had not heard of PC or reported they did not know their risk. Three hundred and nineteen participants (68%) reported they were at average risk of developing PC in their lifetime; 78 (17%) believed they were at high risk for developing PC. Of all participants, 287 (61%) reported they were aware of different levels of risk for developing PC.

Men with a first-degree relative diagnosed with PC, and therefore at high risk, were significantly more likely to believe they were at high risk for developing PC in the next 5 years, 10 years, and over their lifetimes (p < .001). However, less than half of men (13 of 27, 48%), who reported a first-degree relative with PC, were aware that they were at high risk during their lifetime. Similarly, less than 15% of African American men (3 of 23, 13%) were aware that they were at high risk.

Discussion and Conclusions

While nearly half of men surveyed had heard of the PSA exam and a majority of men had heard of PC, the DRE, and the prostate exam, significant disparities in awareness of PC and screening modalities were observed. Hispanic men and men who did not complete high school were significantly less aware of PC and the PSA test. Surprisingly, men with hypertension, likely to have interactions with a primary care provider, were less likely to be aware of the DRE and PSA test. Likewise, men with coronary artery disease were less likely to be aware of the prostate exam and PSA test despite recent interaction with a primary care physician. African American men, a population identified with an increased risk for PC, were significantly less aware of the PSA test. Single and divorced men were also less aware of the DRE.

This study used a convenience sample of patients in the emergency department while Academic Associates were present. In addition, patients were excluded if they were in critical condition, had an altered mental status, or were unable to speak English. This selection engenders
bias and is a limitation of the study. In addition, questions were asked directly to the participant instead of using a written form and this is a limitation. Last, because many patients have primary care providers outside of the hospital system and electronic medical records, it is not possible to assess the correctness of patient recall and this is a limitation.

Overall, a meaningful gap was identified in awareness of risk for PC in men at high risk, with an affected first-degree relative. These disparities were demonstrated in a randomly selected population that closely models that of the United States. Most important, the men at greatest risk were least likely to be aware; as a result, there exists a significant opportunity for education and screening that may benefit this population of high-risk patients unaware of their risk. Further research should evaluate the potential opportunities for conversations between health care providers and patients in high-risk populations so that patients can make informed decisions about their screening and early interventions.

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References
American Cancer Society. (2015). Cancer facts and figures 2015. Retrieved from http://www.cancer.org/acs/groups/content/@editorial/documents/document/acspc-044552.pdf
Li, C., & Ekewume, D. U. (2010). Years of potential life lost caused by prostate cancer deaths in the United States: Projection from 2004 through 2050. Cancer Epidemiology, 34, 368-372.
McDavid, K., Melnik, T., & Derderian, H. (2000). Prostate cancer screening trends of New York State men at least 50 years of age, 1994 to 1997. Preventive Medicine, 31, 195-202.
Sanda, M. G., & Kaplan, I. D. (2009). A 64-year-old man with low-risk prostate cancer: Review of prostate cancer treatment. Journal of the American Medical Association, 20, 2141-2151.
Shavers, V. L., Brown, M. L., & Klabunde, C. (2004). Race/ethnicity and the receipt of watchful waiting for the initial management of prostate cancer. Journal of General Internal Medicine, 19, 146-155.
Siegel, R., Miller, K., & Jemal, A. (2016). Cancer statistics. CA: A Cancer Journal for Clinicians, 66, 7-30.