Investigation of Literature and Statistics in Black Patients with Prostate Cancer

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References and E-copy of Poster

Introduction

In American men, prostate cancer (PCa) is the second leading cause of cancer death following lung cancer[1,2]. Demonstration in current literature shows that PCa in the United States is more likely to develop in non-Hispanic black men[1]. Literature currently suggests there is a complex contribution to this discrepancy including modifiable, biologic and nonbiological factors. Non-biological factors include low socioeconomic status, access to care and treatments[2,3,4]. While biologic factors include genetic mutations such as *BRCA1* or *BRCA2*[5,6]. Johnson et al. reports after adjusting for the effects of non-biologic factors, racial disparities within mortality persist[6]. While Fletcher et al. reports, in adjusting for patients' disease and treatment characteristics, regardless of disease grade during presentation, there was no significant racial difference in PCa survival[3]. Similar findings were found in a 2019 study evaluating data from the National Cancer Database[7]. When accounting for treatment, access to care and cancer characteristics, black patients in fact had a better overall survival[7]. The contribution of modifiable factors are still debated, but include exercise, diet, smoking, and obesity[8]. The underlying cause of these disparities remains a topic of discussion and one we hope to highlight throughout this research. By further investigating these potential risk factors, coupled with review of current statistics and trends, we aim to deepen the current understanding of PCa.

Objectives

- Review 2020 Surveillance Epidemiology and End Results (SEER) data
- Review Mortality Rates and Trends
- Explore factors contributing to the discrepancy in PCa mortality in black patients
  - Mental Health
  - Socioeconomic Status
  - Nutrition
  - Environment
  - Screening
  - Genetics
- Divulge strategies from a biopsychosocial lens aimed to address the areas identified through our research

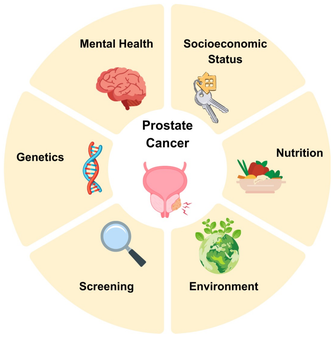

Figure 1: The areas this research paper focused on regarding prostate cancer in black patients.

Methods

- We employed a combination of relevant MeSH terms and keywords, including "prostate cancer," "black populations," "African American," "cancer disparities," "prostate cancer risk factors," and "cancer epidemiology."
- Boolean operators such as "AND" and "OR" were used to refine the search.
- The search was limited to articles published in the English language between the years 2000 and 2023.

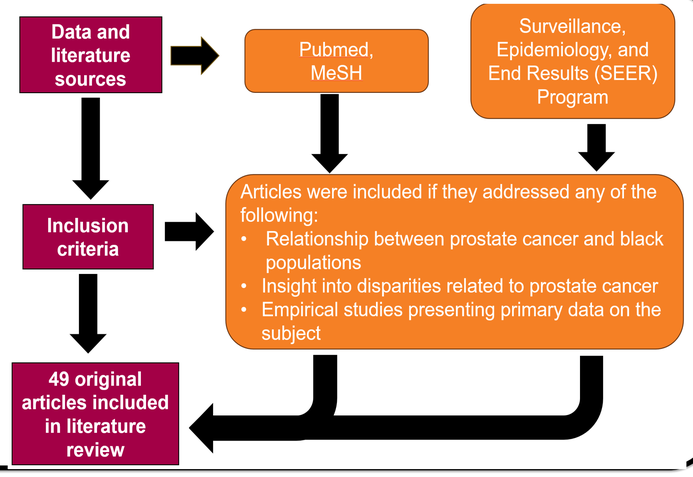

Figure 2: This flow diagram visually outlines the sources and criteria employed in the selection process for articles included in this comprehensive review.

Discussion

Mortality Rates and Trends

- In the 1950s, cancer death rates among black patients were lower when compared to white patients. In the 1960s, this reversed and continued until the 1990s[4].
- From years 2000-2014, the annual percentage change (APC) of age adjusted mortality rates of PCa in non-Hispanic black men was - 4.1%, a significant decrease[9].
- Years 2014-2020 demonstrated an APC of -1.4%, a not significant change[9].
- Decreasing mortality rates from PCa may be due to improved treatments and hormone therapy, although, researchers believe the incidence of distant stage disease may be associated with USPSTF prostate cancer antigen (PSA) screening recommendations[10].
- The median age at death from PCa during years 2016-2020 within the non-Hispanic black population was 75 years old, the youngest among other races and ethnicities[9].
- Age of onset and subclinical rates of PCa is similar between white and black men, while the rate of metastatic disease occurs four times more frequently in black men [11].
- Research has shown black patients are more likely to experience delayed treatment, underutilization of treatments, poor interactions with physicians and longer referral times when compared to other racial and ethnic groups [10]. Research has demonstrated when white and black patients were assigned treatment uniformly without regard for race, survival outcomes were equivalent [11].

Mental Health

- Diagnosis of depression following PCa diagnosis is associated with higher all-cause mortality[12,13,14].
- Black Veterans with PCa were found to be diagnosed with depression more often than white veterans and less likely to be prescribed antidepressants in comparison[12].
- Treatment for PCa can cause urinary and bowel incontinence, which can lead patients to lead a secluded lifestyle out of embarrassment[15].

Socioeconomic Status

- Lower Socioeconomic Status (SES) is a contributor to PCa risk but is not sufficient to explain the higher incidence and mortality seen among black patients[16,17].
- Hispanic Men have a lower PCa burden compared to black patients despite lower rates of health insurance coverage[17].
- A study evaluating PSA levels, Gleason Staging, and combined risk demonstrated that neighborhood SES was correlated to increase risk of PCa burden[18].

Nutrition/Environmental Factors

- Currently, the established risk factors for PCa include family history, age, and race[16].
- PCa risk factors undergoing research include diet, exercise, smoking and obesity[8].
- National survey study demonstrated Health Equity Index of non-Hispanic black populations was worse when compared to non-Hispanic white populations, with socioeconomic status playing an important role[19,20].
- Research has also shown that placing supermarkets in food deserts doesn't solve the problem alone, instead actively marketing healthy foods and offering better prices collaboratively enables consumers to forgo less healthy options[21].
- "Food Swamp" are areas that contain large amounts of unhealthy food with little affordable health options; non-Hispanic black patients are 38% more likely to report living in a food swamp[19].

Genetics

- Development of PCa from hereditary and spontaneous mutations was not initially widely accepted and there is still much debate today. Advancements in genetic technology have allowed for better identification of genetic variants.
- This advancement in technology can be used for screening for genetic alterations and serves a role in treatment modalities.
  - BRCA mutations have been implicated in PCa[6] and have also been found to be susceptible to platinum-based chemotherapies[22,23].

PSA Screening and Clinical Aspect

- PSA levels have been a part of screening procedures along with digital rectal exams. There are limitations to PSA testing requiring careful correlation to the patient's clinical picture. The most significant limitation to utilizing PSA is the lack of specificity, particularly at lower levels[24].
- USPSTF guidelines recommend men between 55-69 years of age be screened on a case-by-case basis. These guidelines were based on two major studies, one of which 4% of the subjects were black[25].
- Analysis of SEER data suggested that PSA screening should begin around age 40 in black men[26].

Conclusion

Extensive research has already been completed over decades analyzing the relationships between environmental, socioeconomic, and genetic risk factors in the development of PCa. We propose addressing modifiable risk factors through advising oncology teams to administer routine depression and anxiety screening to patients, offering support, and suggest assessing health literacy and determining what patients know about their diagnosis and the factors that can influence outcomes, one being their social support. Opening this conversation allows for evaluation of the patient's current social circumstances, leading to a more individualized and culturally targeted approach in treating the patient holistically. To mitigate delayed and underutilization of treatments and longer referral times, we suggest increased attention to transition of care. When patients are diagnosed and referred, many are lost to follow up. Awareness of this vulnerable population and implementing steps, such as communication with phone calls, offering family meetings to discuss the treatment plan, ensuring adequate social support, and addressing factors that may influence the patients' ability to attend appointments or adhere to treatment, such as transportation, are realistic methods to improve accessibility of PCa treatment and improve disease outcomes. These interventions may require the involvement of a social worker or other aspects of a care team with expertise in this area. Implementing change in these areas starts with research, data and education.