

The Effectiveness of Treatment Options for Localized Prostate Cancer-A Meta-Analysis of Cross-Sectional and Cohort Studies

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I. Introduction (The Context & Importance)

Prostate cancer is the commonest of cancers for men in the western world (Hammond, 2018). The most diagnosed non-skin cancer in American men is prostate cancer (Owens, et al., 2021). One in seven American men will be diagnosed with prostate cancer in his lifetime (Bayliss, 2017; Hammond, 2018). Prostate cancer is among the four cancers with the highest global incidence with 1.5 million new cases and 400,000 deaths per year in 2022 (Mallah et al., 2025). The cumulative lifetime risk of prostate cancer diagnosis for men in more developed countries is 12.3%, and in less developed countries is 4.4% (Cunningham et al., 2022). Ultimately, 1 out of 44 men will die of prostate cancer (Perez Kerkvliet et al., 2025). African American (AA) men have a Prostate cancer incidence rate over 50% higher than European American (EA) (Owens, et al., 2021). Black men have the highest rate of prostate cancer morbidity and mortality in the US and often receive delayed and/ or poorer-quality treatment (Malika et al., 2022). A need exists for effective treatments of prostate cancer (Naiki et al., 2025).

Prostate cancer treatment varies significantly depending on the stage, risk group, and other factors such as PSA levels, Gleason score, and the patient's overall health (Mallah et al., 2025). Generally, White men were more likely to opt for surgery, with Black and Hispanic men less likely to undergo surgery (Alexis & Worsley, 2025). Surgery resulted in little to no reduction in all-cause mortality among men with PSA <10 ng/ml, those with D'Amico low-risk cancers, or those with high-risk cancers (Wilt et al., 2020). In the absence of a generally superior treatment option, patient preferences should guide treatment selection process (Cuypers et al., 2019). Several treatment options available for prostate cancer include active surveillance (AS), external beam radiation,

high- or low- dose brachytherapy, open radical prostatectomy, robot-assisted prostatectomy, and hormonal ablation.

II. Synthesis of Recent Findings (The Evidence)

The research interest determined the effects treatment options have on patients with localized prostate cancer and identified factors that influence treatment options; therefore, a systematic analysis was conducted, and the review was reported according to the PRISMA guidelines (Page et.al., 2021). The systematic review of cross-sectional and cohort studies searches was conducted in MEDLINE, EBSCOhost, ProQuest, CINAHL and PsycINFO of articles published between 2010 and 2025 to ensure robust information on the topic.

There was a total of 2,636 participants diagnosed with localized prostate cancer in the studies, and the average age of the men ranged from 40 to 85 years. All participants from the diverse regions of North America, Northwestern Europe, and Northwestern Europe, the ethnicity of participants was classified as Caucasian/white, African American/Black, Asian, Asian/Hispanic, Non-Hispanic black, non-Hispanic white, and Other.

Meta-analyses were conducted via random-effects model due to high heterogeneity. The men sexual functions statistically significant at 0.93(random-effects 95% CI, 0.22-1.64) $p = 0.01$, urinary functions statistically significant at 2.38(random-effects 95% CI, 1.36-2.63) $p < 0.01$, bowel functions statistically significant at 3.76(random-effects 95% CI, 1.94-5.59) $p < 0.01$. Age factors statistically significant at 0.76(random-effects 95% CI, 0.11-1.42) $p = 0.02$, PSA levels statistically significant at -0.61(random-effects 95% CI, -1.15 to -0.07) $p = 0.03$, and analysis of clinical stage was statisti-

cally significant at 0.66(random-effects 95% CI, 0.14-1.17) p= 0.01.

III. Critical Evaluation & Gaps

While these findings are significant, the research highlights a need to explore alternate therapies like counseling for men diagnosed with prostate cancer at a young age and include family members in prostate cancer treatment discussions. Despite all available treatment options, surgery remains the most received treatment for localized prostate cancer.

The use of active surveillance shows more acceptability in the treatment of localized prostate cancer as it allows men to preserve those areas valued for quality of life. It has been observed that radical prostatectomy negatively affects the sexual, urinary, and bowel functions of men more than other treatment options.

IV. Conclusion & Future Outlook

The studies emphasized the importance of low-risk interventions for localized prostate cancer. The effectiveness of radical prostatectomy cannot be overemphasized in certain situations based on the grade of prostate cancer. However, opting for surgery in low-risk prostate cancer may be due to other psychological components like fear of unknown and lack of appropriate information. Regular PSA tests allow patients to avoid invasive treatments like surgery or radiation unless the cancer shows signs of progression. Perhaps PSA levels of between 4.0 and 10.0 ng/mL can benefit more from non-invasive interventions. More studies required to determine the impact of nutrition and the use of complimentary alternative therapies among various ethnic groups.

Conflict of Interest Statement: The author declares no conflicts of interest regarding the publication of this editorial

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