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Acupuncture as a Therapeutic Option for Hot Flashes in Prostate Cancer: Current Evidence and Perspectives

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Abstract

Background: Hot flashes are a common and distressing side effect of androgen deprivation therapy in prostate cancer (PCa) patients. Acupuncture has been proposed as a non-pharmacological approach to alleviate these symptoms, but evidence in male populations remains limited.

Materials and methods: A literature search was conducted in PubMed, VIP, and Europe PMC using the keywords "Acupuncture" AND "Prostate cancer" (and their Chinese equivalents). Only open-access human studies focusing on hot flashes were included. Data on study type, sample size, treatment protocols, and acupoints used were extracted.

Results: A total of 18 PubMed, 15 VIP, and 58 Europe PMC studies were identified. Most studies were narrative reviews or small clinical trials, with few randomized controlled trials. Frequently used acupoints included BL15, BL23, HT7, PC6, and SP6, predominantly from the Bladder and Gallbladder meridians. Treatment duration ranged from 4 to 14 weeks. Available evidence suggests acupuncture may reduce hot flash frequency and severity, though methodological limitations restrict generalizability.

Conclusion: Acupuncture appears promising for managing hot flashes in men with PCa, particularly

using points from the Bladder and Gallbladder meridians. However, further well-designed, controlled trials with larger samples are needed to confirm efficacy and guide clinical practice.

Keywords: Prostate cancer; Hot flashes; Acupuncture

Abbreviations: PCa – Prostate Cancer; TCM – Traditional Chinese Medicine; ADT – Androgen Deprivation Therapy; CBT – Cognitive Behavioral Therapy; EA – Electroacupuncture; PSA – Prostate-Specific Antigen; 5-HIAA – 5-Hydroxyindoleacetic Acid; CGRP – Calcitonin Gene-Related Peptide; SP – Spleen meridian point (acupoint); BL – Bladder Meridian Point (acupoint); GB – Gallbladder Meridian Point (acupoint); GV – Governing Vessel Meridian Point (acupoint); HT – Heart Meridian Point (acupoint); PC – Pericardium Meridian Point (acupoint); LR – Liver Meridian Point (acupoint); KI – Kidney Meridian Point (acupoint); EX-HN – Extra Head-Neck Acupoint; VIP – VIP Database (Chinese literature database); PMC – PubMed Central

Introduction

Based on the European Association of Urology, Prostate Cancer (PCa) is one of the most frequently diagnosed cancers among the male population, with 1.4 million confirmed cases worldwide [1]. Similar to other oncologic conditions, its etiology is varied and influenced by multiple factors. Heredity, dietary habits, smoking, and alcohol consumption may contribute to different incidence rates across regions [2]. Studies of families with higher incidence have reported that approximately 3–5% of cases are hereditary, 10–15% are familial, while the majority (about 85%) are sporadic. However, these data derive from a 1999 study, and updated evidence is much needed [3]. The most commonly associated genes in hereditary or familial forms include NBN, which may increase risk threefold, CHEK2, also present in breast cancer patients, HOXB13, and BRCA1/2, although the incidence of the latter is considered rare among men compared with other mutations. Recently, comorbidities and lifestyle factors have also been evaluated. Hypertension, for instance, has been linked to PCa incidence among Americans, with similar ratios in African American and White American populations [4]. A history of diabetes has also been confirmed to increase the risk of cancer and PCa [5], alongside high cholesterol, which may enhance aggressiveness [6]. According to the NCCN Clinical Practice Guidelines in Oncology, first-line treatment involves different levels of intervention depending on disease stage. These range from monitoring PSA levels, to prostatectomy (possibly followed by radiotherapy), Androgen Deprivation Therapy (ADT), and bone or lymph node therapy in the presence of metastasis [7]. The Gleason score, together with patient evaluation, guides the definition of the therapeutic approach. ADT is an effective treatment, proven to delay disease progression regardless of metastatic status [8]. Despite its benefits, common side effects include hot flashes, nocturia, and sexual dysfunction—all of which contribute to patient distress. Hot flashes are particularly difficult to treat since hormone therapy may not be suitable given the hormone-sensitive nature of PCa, and alternatives have been proposed. Cognitive Behavioral Therapy (CBT), for example, involves training patients in cognitive strategies to shift attention away from negative thoughts, while also teaching behavioral activation [9]. In a multicenter randomized trial, CBT demonstrated efficacy in reducing hot flashes in ADT patients, with high adherence and a favorable safety profile [10]. Some herbal extracts have also

been tested. Vandecasteele reported positive effects of Salvia officinalis in mitigating hot flashes, although no improvement in quality of life was observed [11]. Despite the limitation of a small sample size, this work aligns with other studies evaluating natural remedies such as keishibukuryogan [12]. However, current evidence remains preliminary, and more robust studies are required.

Given the delicate nature of PCa, non-pharmacological approaches such as acupuncture have also been investigated. Capodice et al. reported that, in a single-arm pilot study, patients underwent 30-minute sessions for 14 weeks at the following acupoints: SP6, UB15, UB23, UB43, LR3, KI6, LU7, and HT7, alongside auricular acupuncture. The patients experienced reductions in the frequency and severity of hot flashes [13]. Acupuncture, a core modality of Traditional Chinese Medicine (TCM), involves needling specific points or regions to stimulate the body's response to pathological conditions. Based on TCM diagnostic criteria, PCa is often associated with dysfunction of the Kidney system, as theorized by classical TCM scholars. Data on formulas aimed at restoring Kidney Qi—the body's primary energy—indicate anticancer properties and efficacy in symptom management [14]. Other syndromes identified among patients include damp-heat, toxin–stasis combinations, and liver deficiency. The following work presents an updated state-of-the-art review on acupuncture for hot flashes in PCa patients.

Materials and Methods

Data mining was performed using PubMed, VIP, and Europe PMC with the keywords "Acupuncture" AND "Prostate cancer," along with their Chinese equivalents. Only studies involving humans available as open-access publications were considered.

Results

In total, PubMed yielded 18 results, VIP 15, and Europe PMC 58.

PubMed

Figure 1 summarizes the types of papers identified through data mining in PubMed.

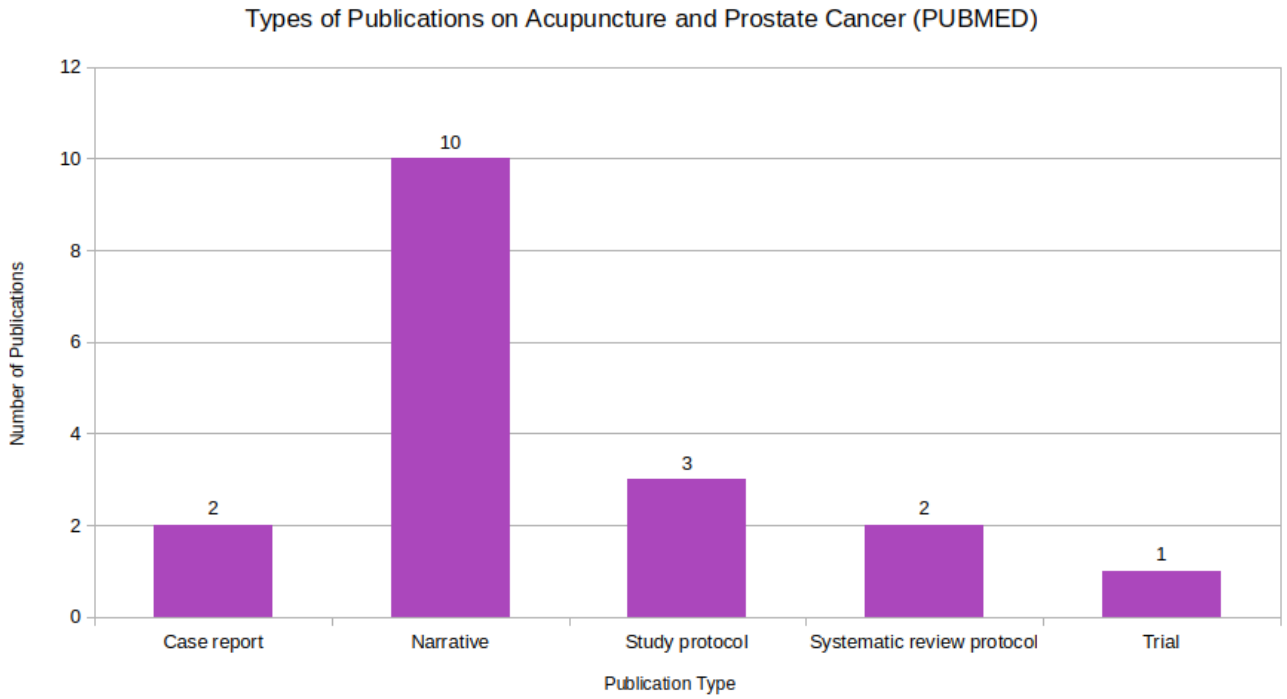

Figure1: Distribution of publication types in PubMed on acupuncture for prostate cancer. Categories include case reports, expert opinions, research studies (in vitro and in vivo), study protocols, narrative papers (systematic reviews and commentaries), and clinical trials (controlled, double-arm, or pilot studies).

Among the two case reports, one involved a PCa patient with hip pain, while the other described post-radiation lymphedema caused by bee venom; therefore, both were considered out of scope. The trial by Beer et al. included patients who had undergone bilateral orchiectomy and were treated with gonadotropin-releasing hormone agonists or antagonists, with or without androgens, and experiencing hot flashes **[15].** In total, 22 patients were enrolled and completed a full cycle of acupuncture treatment at GB34, BL15, BL23 (Electroacupuncture, EA), BL32 (EA), together with GV20, HT7, PC6, LR2, and SP6. Two patients were considered ineligible, and one withdrew in the first week and was excluded. The follow-up lasted 8 weeks, with treatment administered twice weekly for 4 weeks and once weekly for an additional 2 weeks. Based on hot flash diary scores, the main outcome after 4 weeks of therapy was a 60% reduction compared to baseline. Adverse events were reported and classified as mild, with none considered clinically significant and none resulting in dropouts. Biochemical evaluation assessed urinary excretion of 5-HIAA, which may indicate serotonin abnormalities often related to hot flashes **[16].** Mixed trends were reported, while evaluation of CGRP, another crucial thermoregulator **[17],** showed no appreciable changes, limiting interpretation of the results. Among the narrative papers, Morrow and colleagues highlighted the potential of acupuncture for hot flashes, with data indicating that compared to venlafaxine, patients who underwent acupuncture had a higher rate of symptom improvement **[18].** However, these data come from a female population of breast cancer

patients, which falls outside the scope of this work, although the physiopathology is similar. In another narrative paper, a small study involving 17 PCa patients evaluated the efficacy of a 6-week course of acupuncture and EA at GB34, SP6 (EA), KI3, ST36 (EA), BL15 (EA), BL23 (EA), Taiyang (EX-HN5), HT7, PC6, and LI11. Results indicated a reduction in hot flash scores ($p<0.01$) starting from week 2, with maintenance of beneficial effects for up to 8 months **[19].**

VIP

Data mining of the VIP database yielded 15 results, of which only 5 were open access. **Figure 2** summarizes the types of papers identified from the VIP database search.

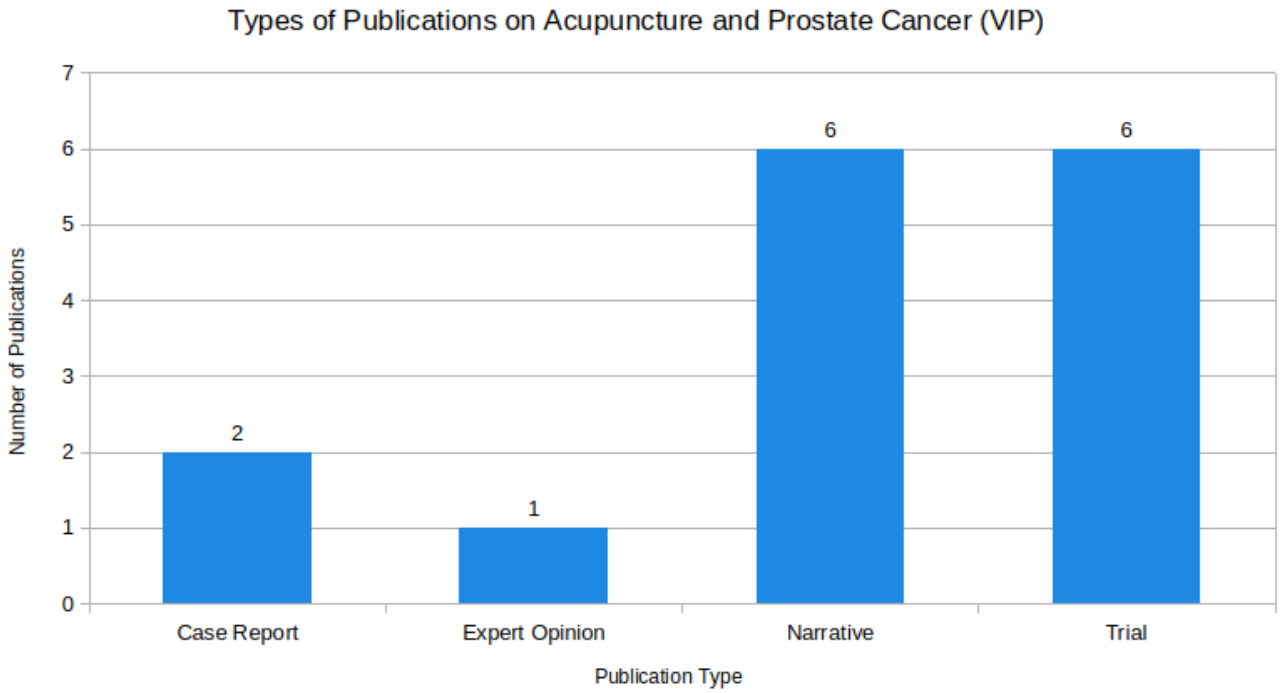

Figure 2: Distribution of publication types in VIP on acupuncture for prostate cancer. Categories include case reports, expert opinions, research studies (in vitro and in vivo), study protocols, narrative papers (systematic reviews and commentaries), and clinical trials (controlled, double-arm, or pilot studies).

Among the open-access papers, Wang and colleagues performed a data mining study to provide clinical reference. The most commonly identified acupoints included CV4, ST36, CV6, SP6, BL23, BL32, BL35, SP9, Ashi points, and BL54 **[20].** Overall, the points predominantly belonged to the Foot Taiyang Bladder meridian, Renmai, and Foot Yangming Stomach meridian, accounting for 28.57%, 25%, and 12.50% of the total, respectively. Although informative, the main reported beneficial effects involved stimulation of the immune system in PCa patients, improvement of incontinence, and general anti-cancer properties as confirmed by in vivo studies, while no mention was made of hot flashes. Similarly, Li reported a study involving 86 patients divided into two groups: one receiving no treatment after prostatectomy, and the other receiving warm

acupuncture combined with rehabilitation therapy. Significant effects were observed in the acupuncture group, with shorter duration of urinary incontinence and accelerated recovery **[21].** Among the open-access works, Xu and colleagues reviewed the state of the art of TCM approaches combined with standard Western therapy, and reported the effectiveness of Shengmai powder combined with endocrine therapy in preventing PSA elevation and ameliorating night sweats and dysuria **[22].** Regardless of acupuncture, the study also reported positive effects on serum alkaline phosphatase, as well as symptoms such as nausea, vomiting, insomnia, fatigue, and urinary incontinence; however, hot flashes were not included in the evaluation. Although limited, the works retrieved from VIP suggest promise for symptom management, especially after prostatectomy, although compelling evidence focusing specifically on hot flashes is still lacking.

PMC Europe

Data mining using PMC Europe yielded 85 results. **Figure 3** summarizes the types of papers retrieved.

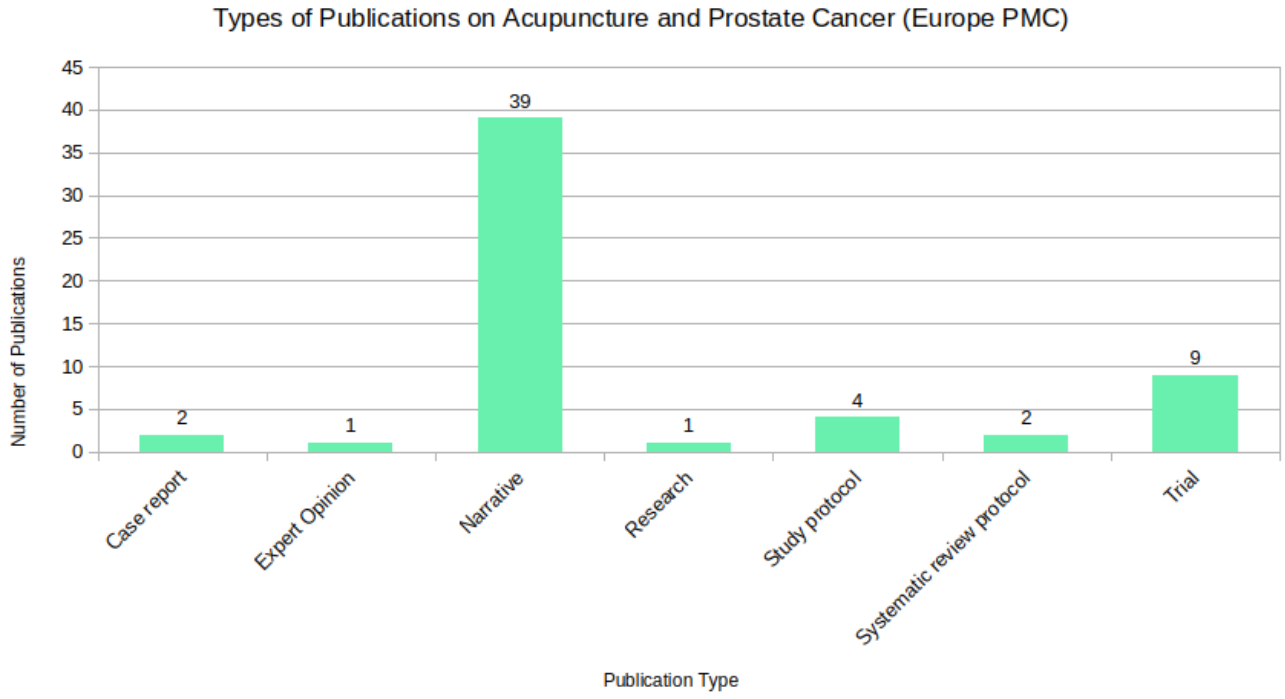

Figure 3: Distribution of publication types in Europe PMC on acupuncture for prostate cancer. Categories include case reports, expert opinions, research studies (in vitro and in vivo), study protocols, narrative papers (systematic reviews and commentaries), and clinical trials (controlled, double-arm, or pilot studies).

Among the narrative papers, the work by Lee and colleagues stood out for its alignment with the present study **[23].** Their systematic review evaluated the effect of acupuncture in PCa patients for the treatment of hot flashes. A total of 6 papers were included, comprising randomized controlled trials and uncontrolled observational studies from Sweden, the USA, and the UK. Outcomes primarily included hot flash frequency, severity, and composite scores. The treatment courses varied from 10 to 14 weeks, with conventional acupuncture as the main procedure, followed by

auricular acupuncture. The most frequently used acupoints were BL15, BL23, BL32, GV20, HT7, PC6, LR3, SP6, and SP9. Reductions in hot flash scores were reported, although limitations were acknowledged, including the lack of an appropriate placebo strategy for acupuncture trials, the small number of included studies, and the limited number of participants, which makes generalization difficult. A systematic review by Frisk assessed strategies to manage hot flashes in PCa patients **[24].** Among possible options, the author mentioned the work by Hammar et al., who exposed 7 patients with vasomotor symptoms to 30-minute acupuncture sessions twice a week for 2 weeks, followed by once-weekly sessions for 10 weeks at BL15, BL23, BL32, GV20, HT7, PC6, LR3, SP6, and SP9 **[25].** Although only 6 patients completed the treatment course, all showed a significant reduction in the number of hot flashes ($p<0.05$). The same review also mentioned a non–open access study involving 194 patients, of whom 144 reported improvements in hot flash frequency.

Electroacupuncture (EA) is considered superior to conventional acupuncture in several conditions. Within the context of hot flashes, we retrieved only one paper involving 39 patients who completed the treatment course and were divided into EA and conventional acupuncture groups **[26].** The treatment lasted 12 weeks, with sessions twice weekly during the first 2 weeks and once weekly for the following 10 weeks. Selected acupoints included BL15, BL23, BL32, GV20, HT7, PC6, LR3, SP6, and SP9. Compared to baseline, both groups showed reductions in the median number of hot flashes and in distress scores.

Discussion

The present review highlights the limited but growing evidence on the role of acupuncture in managing hot flashes among Prostate Cancer (PCa) patients. A consistent finding across the analyzed studies is the frequent selection of points belonging to the Bladder and Gallbladder meridians. As shown in **Figure 4**, the most frequently used acupoints in studies targeting hot flashes in PCa patients predominantly belong to the Bladder and Gallbladder meridians. Points such as BL15, BL23, HT7, PC6, and SP6 were cited five times across the included studies, while BL32, SP9, and LR3 appeared three times. Other points, including GB34, GV20, EX-HN5, KI3, LI11, LR2, and ST36, were used less frequently, reflecting both meridian selection and syndrome differentiation strategies in TCM.

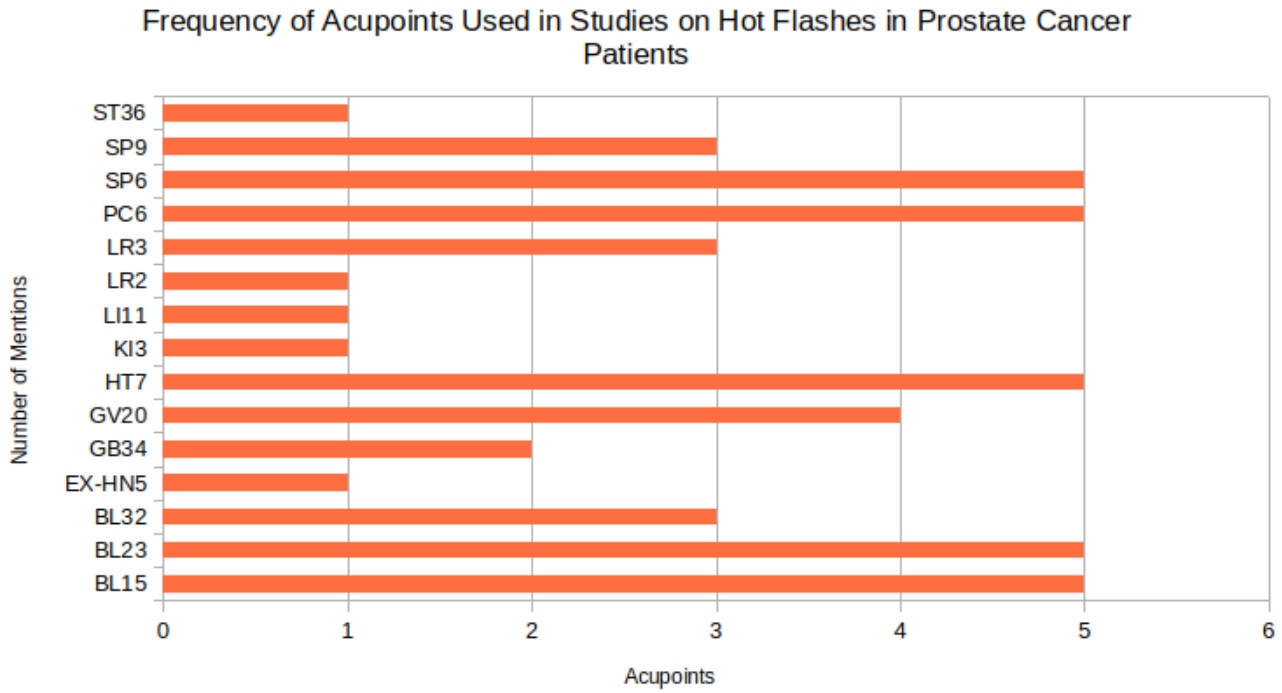

Figure 4: Frequency of acupoints used in studies reported in this review on hot flashes in prostate cancer patients. The horizontal bar chart shows the number of times each point was reported across the included studies.

This pattern may reflect two factors: first, the anatomical distribution of these meridians along the posterior and lateral aspects of the body, which makes them accessible for systemic regulation; and second, the traditional framework of syndrome differentiation in TCM, where hot flashes are commonly attributed to dysfunction of the Liver and Kidney systems **[27,28].** In this context, points from the Bladder, Gallbladder, and related meridians may be chosen to harmonize these organs, restore balance, and regulate heat **[29].** Despite encouraging outcomes, the evidence base remains limited, particularly in male populations. Most of the available studies have small sample sizes, lack adequate control groups, and often omit sham acupuncture as a comparator. Blinding was seldom performed, further weakening the methodological rigor. In addition, heterogeneity in acupoint selection and treatment schedules complicates the comparison across studies. Collectively, these limitations restrict the generalizability of the findings and underscore the need for more robust evidence. Nevertheless, acupuncture offers advantages that warrant further exploration. It is generally well tolerated, adaptable, and can be safely combined with standard therapies such as androgen deprivation therapy or rehabilitation strategies after prostatectomy **[30].** Given the distressing nature of hot flashes in PCa patients and the limited options available due to the hormone-sensitive context, acupuncture represents a promising adjunctive treatment. Future research should focus on well-designed randomized controlled trials with larger sample sizes, standardized treatment protocols, and appropriate sham controls. Such studies are essential to validate the preliminary evidence, clarify the mechanisms underlying acupuncture's

effects, and establish its role in the comprehensive management of vasomotor symptoms in PCa patients.

Conclusion

Current evidence on acupuncture for managing hot flashes in prostate cancer patients remains limited but promising. Studies consistently highlight the use of points from the Bladder and Gallbladder meridians, reflecting both anatomical accessibility and the TCM perspective linking hot flashes to Liver and Kidney dysfunction. While preliminary results suggest beneficial effects on symptom severity and frequency, most studies are small, lack sham controls, and have limited methodological rigor, making generalization difficult. Given the flexibility of acupuncture and it's potential to be combined with standard therapies, further well-designed, randomized controlled trials with larger sample sizes are warranted to confirm these findings and establish acupuncture as a viable adjunctive therapy for vasomotor symptoms in men with prostate cancer.

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