SEXUAL MEDICINE REVIEWS REVIEW

Sexual Health Recovery For Prostate Cancer Survivors: The Proposed Role Of Acceptance And Mindfulness-Based Interventions

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ABSTRACT

Introduction: 1 in every 7 Canadian men is affected by prostate cancer. Given impressive advances in detection, treatment, and survival rates, there is a considerable focus on survivors' supportive care needs. Among the top unmet supportive care needs for prostate cancer survivors are concerns related to sexual health and intimacy.

Aim: To provide a rationale for introducing mindfulness- and acceptance-based approaches into the role of psychosexual interventions aimed at improving sexual satisfaction among prostate cancer survivors (and their partners).

Methods: A literature review was performed to examine the prevalence of sexual difficulties after prostate cancer treatment and the efficacy of current pharmacologic and psychological treatment approaches.

Main Outcome Measure: The main outcome measure was focused on sexual satisfaction in prostate cancer survivors.

Results: Current pharmacologic interventions for sexual difficulties after prostate cancer treatment are not fully meeting the needs of prostate cancer survivors and their partners. Conclusions cannot be drawn from existing psychological interventions because of methodologic inconsistencies. Additionally, the focus on erectile function as a measure of treatment effectiveness is likely to instill a greater sense of hopelessness and loss for prostate cancer survivors, which may exacerbate issues around sexual intimacy and satisfaction. An impressive body of evidence supports the role of mindfulness in improving women's sexual functioning and there is preliminary evidence suggesting the efficacy of this approach for improving men's sexual functioning.

Conclusion: We propose that psychosexual interventions that prioritize mindfulness and acceptance-based frameworks may help men to tune into sensations while challenging the foci on performance and erections, thereby increasing the potential for improvement to sexual satisfaction among prostate cancer survivors. **Bossio J, Miller F, O'Loughlin, JI, et al. Sexual Health Recovery for Prostate Cancer Survivors: The Proposed Role of Acceptance and Mindfulness-Based Interventions. Sex Med Rev 2019;XX:XXX–XXX.**

Key Words: Prostate Cancer; Mindfulness-Based Therapy; Acceptance; Survivorship; Sexual Function

PREVALENCE OF PROSTATE CANCER

Prostate cancer is a disease of increasing global significance.[1] In North America, prostate cancer is the most commonly diagnosed cancer in men and the second-most common cause of cancer-related death among men.[2] Although less common in developing countries, the incidence and mortality associated with prostate cancer has been increasing worldwide.[3] Based on 2013–2015 data, approximately 11.2% of men will receive a diagnosis of prostate cancer during their lifetime.[4] Currently, there are 22,300 men diagnosed with prostate cancer each year in Canada[5] and an estimated 186,320 men receiving a prostate cancer diagnosis annually in the United States.[6] Prostate cancer develops predominantly in older men, with about 6 in 10 cases being diagnosed in men above the age of 65. With an aging population, the number of men treated for prostate cancer is expected to rise.[7]

Fortunately, as a result of early prostate-specific antigen testing, prostate cancer is now being diagnosed at an earlier age, and survival rates are increasing.[8,9] Currently, the 5-, 10-, and 15-year survival rates are 100%, 98%, and 95%, respectively.[10] Despite advances in prostate cancer testing and treatment, approximately 90% of men diagnosed and treated for prostate cancer will experience significant side effects that persist long after cancer concerns have subsided.[11,12] These side effects negatively impact patient and partner quality of life,[13,14] and, for

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some men, this will impact their decision to undergo treatment at all.[15]

SURVIVORSHIP NEEDS AFTER PROSTATE CANCER

Of the side effects endured by prostate cancer survivors, issues relating to sexual function and intimacy are most commonly reported and are consistently considered among the most distressing unmet need in this patient population.[16–18] Sexual function is compromised regardless of prostate cancer treatment due to a number of different factors. Prostatectomy and radiotherapy damage the erectile nerves and blood vessels in the prostate, which can lead to fibrosis of the corpus cavernosa, resulting in erectile dysfunction.[19] These treatments can also result in penile deformities, reduced sexual desire, urinary incontinence, "dry orgasms" (ie, a lack of ejaculate with climax), as well as ejaculatory and orgasmic disorders.[20–25]

Androgen deprivation therapy (ADT), another common prostate cancer treatment, can result in loss of libido, fatigue, penile shrinkage, weight gain, and gynecomastia (ie, enlarged breast tissue).[26] Anatomic changes resulting from ADT use add a significant challenge to patients' sexual satisfaction and sexual function, because body image and self-image are often profoundly impacted by these side effects and, thus, further impair sexual functioning.[27,28] Bodily changes associated with ADT (eg, gynecomastia) and decreased libido are antithetical to core components of masculinity ideals and have been shown to contribute to feelings of depression, anxiety, and frustration for the patient, as well as their partner, if they are in a relationship.[29]

Rates of erectile function preservation vary greatly in the literature, depending on the definition of function used, method of data collection, and study end-points.[20,30,31] Pre-treatment erectile function, defined as having an erection firm enough for intercourse, has been reported in approximately 70% of patients.[32,33] Burnett et al[20] reviewed 436 articles on erectile function outcomes after prostate cancer treatment, in which the percentage of patients endorsing functional erections varied from 0–74% for prostatectomy patients and 15–92% for external beam radiation patients. The ProtecT trial[34] was the first randomized control trial for prostate cancer treatments, in which 1,643 prostate cancer patients were randomized to receive either active monitoring, prostatectomy, or radiotherapy. Patients were subsequently followed up over 10 years. Although there was no significant difference in mortality rates between any of the treatment groups, erectile function was lowest for patients after prostatectomy at all time points, being reported by 12%, 21%, and 17% of patients after 6 months, 3 years, and 6 years, respectively. Comparatively, erectile function at the same 3 timepoints was reported by 22%, 34%, and 27% of radiotherapy patients, respectively, and 52%, 41%, and 30% of those in the active monitoring group.[32] These results demonstrate the differential pathways of erectile function outcomes in men undergoing different prostate cancer treatments; that is, for those men who undergo prostatectomy and experience erectile recovery, functionality typically improves over a 2–3-year period, whereas erectile function decreases over time for men who experience radiotherapy. Unless men receive proper education about expected erectile function recovery trajectories over time for the specific treatment they receive, they are at risk of experiencing even more distress. This is particularly likely to occur in men after radiotherapy if they are misadvised that their erectile function will recover within a couple of years, because it might in men who undergo a prostatectomy, or if they are not prepared for this change.

Certain factors, such as cancer severity, pre-treatment erectile function, age, and the existence of comorbidities such as obesity, cardiovascular problems, or diabetes influence post-treatment sexual function outcomes and can be used to predict the likelihood of successful sexual rehabilitation.[12,29,35–37] In recent years, prostate cancer treatments have been modified with the aim of minimizing the impact on sexual function. For example, some surgeons have introduced the use of nerve-sparing techniques during prostatectomies, whereas others have adopted robotic surgical techniques aimed at maintaining anatomical integrity of periprostatic structure. Although the ability to guarantee preservation of nerve integrity requires microscopic imaging that, presently, is not feasible in the context of these surgeries, the likelihood of preserving erectile function can be improved with use of nerve-sparing techniques.[29,38–41] Relatedly, another way of minimizing negative outcomes for prostate cancer survivors is reserving the use of adjuvant ADT for intervention only in high-risk patients, due to its adverse effect on patient quality of life, particularly relating to sexual function.[29,42] Furthermore, the detrimental impact of ADT on sexual function can be mitigated without compromising survival by opting for intermittent ADT,[43–46] in which patients are given a break in their drug treatment, allowing for androgen levels to begin to recover.

PHARMACEUTICALS AS A FIRST-LINE APPROACH

To address prostate cancer survivors' post-operative erectile function, various medical interventions may be recommended. Among the medical interventions available are phosphodiesterase type 5 inhibitors (PDE5-Is), intracavernous injections, vacuum erection devices, and implantation of a penile prosthesis.[47] Both intracavernous injections and vacuum erection devices are more effective at achieving erections sufficient for penetrative intercourse compared with PDE5-Is, but uptake is low and long-term adherence is poor, unrelated to effectiveness.[48,49] Penile prostheses are recommended as a last-line intervention after pharmacotherapies have been proven ineffective, and, because of the irreversible and invasive nature of this surgery, only a small percentage of prostate cancer survivors will undergo it.[50] In contrast, PDE5-Is such as sildenafil (ie, Viagra) are noninvasive, discrete, and by far the most popular treatment option among prostate cancer survivors[51]; as a result, they are

first-line interventions for sexual recovery in prostate cancer survivors.

At a low dose, PDE5-Is are commonly used to facilitate "penile rehabilitation." This technique is predicated on the hypothesis that reduced nocturnal erection frequency after prostate cancer treatments can lead to reduced penile blood flow and oxygenation, resulting in fibrosis of the corpora cavernosa and, thus, reduced erectile functioning in the long term. Penile rehabilitation uses a daily low dose of tadalafil (ie, Cialis, a PDE5-I) to facilitate blood flow to penile tissue and blood vessels, thus preserving functionality. Men may also take a higher dose of PDE5-I as an as-needed prescription (ie, before a sexual encounter).

Whereas penile rehabilitation via a low dose of PDE5-I use is believed to improve cavernosal oxygenation, preservation of endothelial structure, and prevention of degradation of smooth muscle health,[52,53] this theoretically strong method of preserving post-intervention erectile function has yet to undergo rigorous empirical evaluation. Existing research demonstrates limited effectiveness, both with respect to penile rehabilitation[54] and facilitation of situational erections (ie, aiding erections during partnered sexual activity[51]). Study results indicate that successful treatment with PDE5-Is is largely dependent on factors such as age, time after surgery, and success of bilateral nerve-sparing surgery.[55–57] Furthermore, at a price range of $5–$30 CAD per pill, the cost of this intervention can be prohibitively expensive, because it is not covered by the Canadian health care system and rarely covered by extended insurance companies. As a result of limited efficacy and high costs, discontinuation rates are exceedingly high. Studies have shown that only 27–39% of prostate cancer survivors who are prescribed PDE5-Is to address postoperative erectile dysfunction continue to use the medication long-term.[51,58] Inconsistent efficacy and low adherence suggest that medical interventions aimed at erectile function alone are insufficient in meeting the needs of prostate cancer survivors, perhaps because they do not address psychosocial sequelae. Indeed, sexuality is a complex interplay of biologic, psychological, and social factors, and current front-line interventions fail to address the broader scope of contributing factors.

EFFICACY OF PSYCHOSEXUAL INTERVENTIONS

Given the complexity of factors influencing sexuality, as well as the increasing number of prostate cancer survivors, best practice recommendations have started to emphasize the need for interventions aimed at addressing psychosexual concerns among prostate cancer survivors and their partners, because many of these side effects are lifelong[20] and lead to significant distress.[16–18] Although previous research has documented the efficacy of psychosocial interventions in increasing adherence to medical treatments for erectile functioning,[51] efficacy outcomes are inconsistent,[12,59] and adherence rates to medical treatments remain low,[60,61] irrespective of efficacy.[62,63] The disappointing efficacy for medical interventions suggests that a single-pronged biomedical approach may be insufficient to address the complex needs of prostate cancer survivors, likely because the psychosocial sequelae remain unaddressed.

In more recent years, empirical evaluation of psychological interventions for prostate cancer survivors has begun to gain traction, but the number of these interventions focused on sexual health is limited. Some studies have reported minimal improvements in sexual functioning, intimacy, and relationship satisfaction.[63–65] A recent systematic review by Chambers and colleagues[66] of psychosocial interventions for prostate cancer survivors and their partners described a total of 5 trials in the literature that reportedly improved sexuality outcomes. However, it is difficult to draw firm conclusions about specific interventions, because the conclusions drawn in the Chambers review are restricted by the same limitations that befall the psychosexual intervention literature as a whole.[67] That is, there is considerable heterogeneity in the existent treatment groups, methodology among these evaluations is lacking rigor in some cases, and no psychosexual interventions draw on evidenced-based theoretical orientations to guide their therapeutic interventions.

As the shift toward psychosexual interventions only began within the past decade or so, a certain amount of heterogeneity across intervention design is to be expected. However, differences across existent studies on psychosexual interventions for prostate cancer survivors are so significant that drawing any overarching conclusions about efficacy is exceedingly difficult. Interventions in the literature vary in duration, from the number of sessions offered to number of hours of intervention; for example, Wittmann et al[68] developed a full day couple's retreat, Walker et al[69] and Hampton et al[70] both developed and evaluated single 3.5-hour workshops for couples, Siddons et al[71] offered an 8-session cognitive behavioral therapy (CBT) protocol for men, and Wootten et al[72] provided online modules offered to men over a 10-week period. Mode of delivery is another factor that varies considerably across studies, including online interventions,[72–74] phone-based sessions,[75] as well as treatment groups,[71,76] and there does not appear to be a consensus on whether to include partners[64,69,77,78] or not.[79,80]

Arguably one of the most significant shortcomings of the current state of the psychosexual interventions available for prostate cancer survivors is the lack of consensus in treatment modality offered across interventions. According to the American Psychological Association,[81] evidence-based practice consists of "integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences," but in the field of psychosexual interventions for prostate cancer survivors, there is minimal reliance on evidence-based psychological treatments at present. Few studies reported using a CBT approach,[71,72] which has demonstrated efficacy as a therapeutic treatment, while other interventions (those that reported on content) focused on psychoeducation,[68,75,76,82–84] "sexual

counseling,"[73] an information−motivation−behavioral skills model of behavior change,[70] "intimacy-enhancing therapy,"[64] or "support."[78] Although a shift toward psychosexual interventions is promising, these interventions fail to draw on existent evidence-based therapeutic modalities that are likely to help prostate cancer survivors accept the "new normal" that these men face with respect to sexual function, such as interventions that use an acceptance-based or a non-judgmental based model. Although psychoeducation, reality testing skills (ie, CBT), and coping strategies are all important factors in reducing distress about sexual dysfunction, they fail to explicitly teach men (and their partners) the skills to accept the fact that erections may never return, orgasms may never feel the same, penile length may never return, and more. By offering psychosexual interventions that fail to emphasize acceptance-based skills, it is conceivable that prostate cancer survivors' sexual enjoyment will be hampered, because men or their partners hold onto the hope that "things will get back to how they were before cancer," as opposed to focusing on how to enjoy sex now, after treatment.

For prostate cancer survivors, whose sexual function is unlikely to return to pre-treatment levels, there may be great promise in adapting a more acceptance-based approach. Relatedly, the lack of consistent findings across psychosexual interventions for prostate cancer survivors may be due, at least in part, to the focus on changing prostate cancer survivors' sexual functioning (eg, how to integrate penile injections or PDE5-Is into foreplay), with the explicit goal being restoration of erections to their former functional state to facilitate penetrative intercourse. This intention is central to all pharmacologic interventions mentioned in this article, and, arguably, it is inherent in many of the aforementioned psychosexual interventions, too. We posit that a singular focus on restoring sexual functioning to pre-treatment levels may cause men or their partners to become frustrated, anxious, and distressed, feelings that are likely to worsen sexual functioning and take couples farther away from the satisfying sex life they desire. Instead, by teaching skills to help men and their partners build acceptance of "a new normal sex life" after prostate cancer treatments, the aforementioned impediments to sexual function may be mitigated, thereby potentiating improvements to intimacy and sexual satisfaction, no matter how individuals and couples may define "sexual satisfaction."

THE ROLE OF ACCEPTANCE AND MINDFULNESS IN PROSTATE CANCER SURVIVORS' SEXUAL REHABILITATION

Drawing from current advances in non-cancer psychosexual therapies, strong evidence is building in favor of mindfulness and acceptance-based interventions. In addition to placing an emphasis on acceptance of post-intervention changes to sexual functioning for prostate cancer survivors, mindfulness—defined as non-judgmental present-moment awareness[85]—may offer an enhanced treatment approach to prostate cancer survivors, as well as their intimate partners. Although mindfulness has existed for ≥3,000 years, it has only been in the past 4 decades that it has made its way into western medicine and health care.[86] Efficacy of this treatment modality has been demonstrated in individuals with a variety of health-related problems.[87,88] In samples of men with prostate cancer, mindfulness training improves psychological outcomes, such as mood and quality of life,[89,90] as well as physiological variables, such as immunologic parameters.[89]

Since 2003, mindfulness has been adapted and tested in a variety of different populations of women experiencing sexual health difficulties, including low sexual desire, genital pain, and sexual dysfunction caused by gynecologic cancer.[91−95] Mindfulness has also been used with couples who do not have cancer to improve intimacy.[96] As reviewed by Arora and Brotto,[97] the benefits of mindfulness on sexual function may be related to increases in participants' interoceptive awareness, their reduced distractibility during sex, improvements in their self-judgment, and greater attention to sexual arousal. In a preliminary pilot study, we found that mindfulness, when administered to groups of men who experienced situational erectile dysfunction, significantly improved erectile function, overall sexual satisfaction, and the non-judgmental observing of one's sensations.[98]

Based on the available evidence with women, we hypothesize that mindfulness may improve prostate cancer survivors' attentional focus, thus reducing distractions related to poor erectile functioning, body image, or distress from a cancer diagnosis/treatments. By encouraging men to pay attention to present-moment sensations and let go of future-oriented hyper-focus on erections, we predict that survivors of prostate cancer will have improvements in the domain of sexual and relationship satisfaction, even if erectile function does not improve.

APPLICATION OF MINDFULNESS EXERCISES IN MEN WITH PROSTATE CANCER AND THEIR PARTNERS

Regular mindfulness practice has been shown to improve psychological, physiological, and social outcomes.[99] Mindfulness practice can be done using a wide variety of activities and exercises; however, all exercises involve the same underlying practice of attending to the present moment with equanimity. Commonly cited mindfulness exercises include the Body Scan (whereby participants practice bringing non-judgmental attention to different parts of the body in successive order), the Raisin exercise (in which participants use a raisin as their point of attentional focus, using each sense, including smell, sound, touch, sight, and eventually taste, when they eat the raisin), or Mindfulness of Thoughts (where participants attend to the mental events of the mind in a non-judgmental fashion). In the case of mindfulness-based sex therapy, clinical researchers have found improvements in sexual well-being by practicing mindfulness in these non-sexual settings to build the foundational acceptance-based skills and, eventually, bringing these skills into a sexual context.[87−91] In the case of prostate cancer survivors, we recommend that mindfulness and acceptance be integrated into

patient care in much the same way. In this section, we present 2 example exercises that can be used with prostate cancer survivors, either alone or with an intimate partner.

Back to Back Sensing is a mindfulness-based intervention to be practiced by couples and was created by Kocsis and Newbery-Helps[100] for a 6-session protocol aimed at incorporating mindfulness into sex and intimacy in relationships. In this exercise, couples are instructed to sit or stand facing opposite directions with their backs touching. Over a course of approximately 20 minutes, both members of the couple are instructed to cultivate a non-judgmental curiosity and awareness to first the breath, then the sensation of their partner's back against theirs, and finally to expand their field of awareness to include the entire body. Facilitator prompts are included in the exercise to bring awareness back to the present moment each time it wanders and to bring a sense of acceptance and compassion to whatever arises in that field of awareness. The purpose of this exercise is to heighten awareness of physical sensations in the body in as much detail as possible, with an attitude of curiosity and acceptance, while also including their partner in the exercise. Frequently, thoughts, judgments, or emotions may arise regarding the partner or the relationship (eg, a longing for things to be as they were; a sense of support or closeness at the notice of the warmth of a partner's back; frustration with a partner for moving or fidgeting during the exercise); participants are simply invited to note and acknowledge these responses. This exercise can be done at home or in a therapeutic setting and, when done in a therapeutic setting, is best followed by a formal therapist-led inquiry process afterward, where participants are encouraged to discuss (i) their observation of the direct experience; (ii) the effects of bringing awareness to the experience; and (iii) applications to the inner and outer experiences in daily life, particularly in intimate settings.

Sensate focus is a well-known exercise in the field of sex therapy,[101,102] in which members of a couple practice taking turns giving and receiving touch, with the goal of cultivating acceptance and curiosity, as opposed to focusing on achieving a sexual goal, such as sexual pleasure, penetration, or orgasm. More recently, sensate focus has been recognized as a mindfulness-based therapeutic intervention, given that a core element of this exercise is to engage in acceptance of the present moment experience, as opposed to seeking a particular goal. As stated by Weiner and Avery-Clark[102]: "When mindful instructions for Sensate Focus are followed, focusing on sensations becomes the avenue into arousal and pleasure because the autonomic nervous system is allowed to do its job, and these natural experiences are no longer the primary, conscious goal" (p. 310). For prostate cancer survivors, where physiological arousal in the form of an erection is likely no longer possible, present-moment awareness of the sensations associated with physical contact with a partner may in turn lead to a more pleasurable intimate or sexual experience, without the focus on sexual *function*, per se.

SUMMARY OF FINDINGS

- Current front-line medical/pharmacologic interventions for sexual difficulties after prostate cancer treatment fall short of meeting the sexual health needs of prostate cancer survivors and their partners, because long-term adherence is exceedingly low. These findings point toward adopting a bio-psycho-social approach as a more appropriate interventional pathway for this population.
- Existent psychosocial interventions aimed at addressing sexual health in prostate cancer populations fall short in terms of methodologic rigor, and conclusions cannot be drawn about these interventions as a whole because of inconsistencies in therapeutic approaches, evaluation methodologies, and modes of treatment delivery.
- We, as clinical researchers, are doing prostate cancer survivors a disservice by focusing on erectile functioning as a primary outcome to indicate treatment effectiveness, because erectile functioning is unlikely to return to pre-treatment levels, and this focus may, in fact, exacerbate patients' feelings of hopelessness and disappointment after prostate cancer treatment.
- Furthermore, focus on erectile functioning as a primary treatment outcome emphasizes a performance-based approach to sexual intimacy, which may in turn work against the goal of improving sexual intimacy and sexual satisfaction (however individuals and couples may define these terms).
- Acceptance and mindfulness-based therapeutic approaches to improve sexual intimacy outcomes have been shown to be effective in female populations with sexual dysfunction, including gynecological cancer populations. This approach has also been shown as a promising and feasible intervention for men with sexual dysfunction.

RECOMMENDATIONS AND CONCLUSION

We conclude this review article with 3 recommendations. First, we encourage researchers to study the impact of acceptance- and mindfulness-based approaches in improving quality of sexual life and (non-erection-focused) sexual health outcomes among survivors of prostate cancer. There is a need to establish the effect size of these approaches and to track improvements over time. Moreover, there is a critical need to identify the men for whom a mindfulness-based approach may be best suited.

Second, our recommendation to clinicians offering supportive care to men (and their partners) after prostate cancer is to consider the role of mindfulness as an adjunct to first-line treatment, or—pending further research—as a replacement to current pharmacologic first-line treatment approaches among men seeking care. In multidisciplinary centers that offer prostate cancer supportive care, where urologists, sexual medicine specialists, nurses, and mental health–trained professionals are working collaboratively, mindfulness has already been recommended as a means of cultivating non-painful pleasant touch.[103] It is possible for men to first establish a foundation in

mindfulness practice, such as those learned from practicing the Body Scan, mindfulness of breath, and mindfulness of sounds and thoughts, to set the foundation for sexual recovery, whatever that may look like for men. Another option would be to consider offering mindfulness-based interventions at the time of prostate cancer diagnosis, because mindfulness has been shown to help men cope with a diagnosis of prostate cancer.[89] By establishing a mindfulness practice in the time before onset of post-interventional sexual dysfunction, we predict that men will experience better quality of life and sexual health outcomes. Available apps, such as Headspace, Calm, and Happify, may be sufficient for teaching the core mindfulness skills to men.

Last, we recommend that men, together with their partners, integrate these learned skills in present-moment, non-judgmental awareness into the sexual context. This may involve the practice of sensate focus[104] or learning the number of mindfulness skills that have been applied to women within their sexual contexts.[105] The goal of integrating mindfulness into a sexual context is to move the focus away from a performance-based view of sexual intimacy toward a non-judgmental, present-moment view, creating room for increased focus on pleasure, enjoyment, or intimacy over erectile function.

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