

Psychological Treatments for Provoked Vestibulodynia: Integration of Mindfulness-Based and Cognitive Behavioral Therapies

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Provoked vestibulodynia (PVD) is a chronic and distressing genital pain condition involving sharp pain to the vulvar vestibule with lifetime prevalence as high as 12%. PVD is the most prevalent cause of pain during sexual intercourse (dyspareunia) in premenopausal women, and gives rise to considerable sexual and relational concerns. As intercourse for women with PVD is either painful or impossible, PVD has pronounced negative effects on women's romantic relationship adjustment and sexual intimacy, as well as their emotional well-being and sense of sexual self-efficacy. Given the low efficacy and high side-effect profile of medications for the treatment of PVD, attention has shifted toward psychological interventions over the past decade. Psychological treatments for PVD have the advantage of targeting both the experience of pain and its many psychosexual consequences, such as reduced desire and arousal. Cognitive behavioral therapy (CBT) currently represents one of the most popular first-line psychological interventions for PVD. Mindfulness has been increasingly used alongside, or instead of CBT for a variety of health-related conditions, particularly with respect to chronic pain disorders and more recently in women with PVD. This review provides a detailed overview of CBT and mindfulness-based approaches in treating PVD. © 2016 Wiley Periodicals, Inc. *J. Clin. Psychol.* 72:637–650, 2016.

Keywords: provoked vestibulodynia; vulvar pain; sexual pain; cognitive behavioral therapy; mindfulness; psychological interventions

Genito-pelvic pain/penetration disorder (GPPPD) is characterized by marked vulvovaginal or pelvic pain during vaginal penetration attempts and/or marked anxiety in anticipation of genital pain (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; American Psychiatric Association, 2013). Provoked vestibulodynia (PVD)—a chronic and distressing genital pain condition involving sharp pain to the vulvar vestibule—is the most common form of GPPPD, affecting up to 20% of reproductive age Canadian Women (Harlow, Wise, & Stewart, 2001) with a lifetime prevalence as high as 12% (Landry & Bergeron, 2011).

PVD involves sensations of stinging, burning, irritation, and rawness in the area demarcated by Hart's Line on the vulvar vestibule, specifically on the labia minora and the tissue containing the hymen and urethral opening. The experience of pain in this condition is provoked by touch to the vulvar vestibule region; frequent sources of discomfort include tampon insertion, sexual penetration, and gynecological examinations. This condition can be categorized as either primary, referring to “life long” PVD that has been apparent since the first attempts at vaginal insertion, or secondary, which describes “acquired” PVD that arose after a period of successful and painless vaginal insertion.

PVD is the most prevalent cause of pain during sexual intercourse (dyspareunia) in premenopausal women, and gives rise to considerable sexual and relational concerns. As intercourse for women with PVD is either painful or impossible, PVD has pronounced negative effects on women's romantic relationship adjustment and sexual intimacy, as well as their emotional well-being and sense of sexual self-efficacy (Connor, Robinson, & Wieling, 2008).

All stages of the sexual response cycle are impaired by the experience of genital pain. Reductions in sexual desire and arousal and decreased frequency of intercourse are common

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complaints among women with PVD (Gates & Galask, 2001). Women with PVD also report lower levels of pleasure during sexual activity and less success in reaching orgasm (van Lankveld et al., 2010). In addition to a decrease in sexual pleasure during penetrative sex, women with genital pain often describe diminished sexual desire for an array of non-penetrative activities (Payne, Binik, Amsel, & Khalifé, 2005). Women with PVD tend to experience discomfort with their sexual self, often reporting a general sense of detachment from their sexuality (Payne et al., 2005). It has been repeatedly shown that women with genital pain experience negative feelings toward erotic stimuli, negative emotions during sexual activity, a more negative sexual self-schema, and more negative attitudes toward sexuality (van Lankveld et al., 2010). Difficulties in coping with genital pain are thought to exacerbate struggles in managing intimate relationships (Ciechanowski, Sullivan, Jensen, Romano, & Summers, 2003).

Similar to other chronic pain conditions, research on the pathophysiology of PVD suggests that PVD is related to dysregulation of the central pain circuitry, wherein an augmentation of neural signaling within the central nervous system elicits a hypersensitivity to pain (Bohm-Stärke, 2010). Although the precise etiology of PVD in a given woman remains unclear, evidence for central sensitization underlying PVD is supported by the high comorbidity of other chronic pain conditions in women with PVD (Peters, Girdler, Carrico, Ibrahim, & Diokno, 2008).

Hyporesponsiveness of the hypothalamic-pituitary-adrenal axis has also been identified in women with PVD; the dysregulation of which has been tied to increased sensitivity to stress and pain (Arnold, Bachmann, Rosen, Kelly, & Rhoads, 2006). Accordingly, high levels of stress, anxiety, and depression are now considered to act as vulnerabilities to the development of PVD, and not simply a consequence of experiencing it (Basson, 2012). A history of anxiety disorders and major depression is 11 and 4 times more prevalent, respectively, in women with PVD compared to nonafflicted women (Khandker, Brady, & Vitonis, 2011).

Anxiety in particular may represent an important factor in the etiology of PVD. Specifically, anxiety and harm avoidance are thought to negatively affect sexual arousal, which correspondingly increase pain during vaginal intercourse (Granot & Lavee, 2005). Greater pain sensitivity and anxiety potentially lead to the avoidance of intercourse by overestimating the level of potential harm. Compared to pain-free controls, women with PVD tend to identify a number of emotional stressors, including hypervigilance, harm avoidance, somatization, somatic preoccupation, perfectionism, fear of negative evaluation, and self-dislike (Brotto, Basson, & Gehring, 2003; Ehrstrom, Kornfeld, Rvlander & Bohm-Stark, 2009; Payne, Binik, Amsel, & Khalifé, 2005).

The heightened stress and mood symptoms characteristic of women with PVD are thought to trigger and maintain central sensitization (Davidson & McEwen, 2012). Furthermore, neuroendocrine changes in the skin brought on by stress have been linked to the proliferation of nociceptor cells along the sensory nerve endings of vestibular tissue in women with PVD. Stimulation of these cells activates chronic inflammation, nerve hypersensitivity, and pain (Theoharides et al., 2004). Although other chronic medical conditions can cause problems with genital pain, it should be noted that vulvar pain due to a separate medical condition would not be diagnosed as PVD.

A wide array of treatment modalities with varying degrees of efficacy are available for the management of PVD, including psychological, physical, biomedical, and surgical options (Landry, Bergon, Dupuis, & Desrochers, 2008). Women typically consult with three or more physicians before obtaining an accurate diagnosis (Harlow & Stewart, 2003). Even once a diagnosis of PVD is reached, ongoing involvement with medical professionals commonly persists because of the limited benefit of medicinal treatments (Landry et al., 2008). Evidence supporting the efficacy of the most commonly used treatments (e.g., topical and oral pain adjuvants) is lacking, and this is especially true regarding treatments for PVD in cases in which hormonal triggers are not present.

Given the low efficacy and high side-effect profile of medications for the treatment of PVD (Basson, Wierman, Van Lankveld, & Brotto, 2010), attention has shifted toward psychological interventions over the past decade. Psychological treatments for PVD have the advantage of

targeting both the experience of pain and its many psychosexual consequences, such as reduced desire and arousal (Reissing, Binik, & Khalifé, 2004). Cognitive behavioral therapy currently represents one of the most popular first-line psychological interventions for PVD (Bergeron et al., 2001; Bergeron Khalifé, & Dupruis et al., 2008; Desrochers, Bergeron, Khalifé, Dupruis, & Jodoin, 2009).

Cognitive Behavioral Therapy (CBT)

CBT is considered a mainstay of treatment for chronic pain (Eccleston, Williams, & Morley, 2009), and consistently shows moderate to high efficacy rates in the treatment of PVD, ranging from 35% to 85%, depending on the endpoint measured (Bergeron et al., 2001). The beneficial effects of CBT are retained through to a 2.5 year follow-up period (Bergeron, Khalifé, Glazer et al., 2008) and demonstrate superior efficacy in contrast to oral topical glucocorticoids on endpoints of sexual pain and function (Bergeron, Khalifé, & Dupruis, 2008).

Within the context of PVD, CBT is centered on challenging maladaptive pain-related cognitions, change-oriented psychoeducation, and behavioral interventions, such as specific pain-relevant coping and self-management skills. CBT for PVD is aimed at decreasing genital pain, reducing anticipatory fear of pain, and improving overall sexual function (Lippincott, Williams, & Wilkins, 2008). The use of a cognitive behavioral approach in the treatment of PVD is founded upon the understanding that chronic genital pain negatively affects afflicted women's sexual, psychological, and relational health. CBT is thought to indirectly reduce PVD symptoms through combating stress, which has been found to exacerbate one's vulnerability to developing pain syndromes (Slade et al., 2007) as well as dysregulate pain sensitivity (Chapman, Tuckett, & Song, 2008). Systematic desensitization with the use of graded vaginal inserts is a common component of CBT for genital pain disorders.

A prospective study examining the efficacy of group CBT for PVD involving twelve 2-hour biweekly treatment sessions found that participants reported a significant reduction of pain during penetrative intercourse, as well as improvements in sexual satisfaction and perceived pain control after treatment (ter Kuille & Weijnenborg, 2006). Reductions in pain intensity were mediated by improvements in psychological and sexual function. A notable problem in this study was the lack of a randomized control group. Studies using waitlist or support group control samples are needed, as is research contrasting the efficacy of CBT for PVD against other psychological treatments. Table 1 provides relevant details for studies examining cognitive-behavioral and mindfulness-based psychological interventions for PVD.

One study examining the mechanisms of action for CBT as a treatment for lifelong vaginismus randomly assigned women to a 3-month-long group CBT condition or a waitlist control condition (ter Kuille et al., 2007). Compared to controls, women in the CBT group reported a higher frequency of intercourse, a decrease in fear of penetrative sex, and more successful noncoital penetrative behavior from pre- to posttreatment. The authors concluded that CBT techniques, namely, gradual exposure exercises aimed at reducing avoidance behavior and fear of penetration, represent a viable treatment for lifelong vaginismus. Unfortunately, follow-up data were either not collected or reported on.

To date, only two studies have conducted randomized control studies assessing the efficacy of CBT for PVD (Bergeron et al., 2001; Masheb, Kerns, & Richmand, 2009). In the first, carried out by Bergeron and colleagues (2001), women were randomly assigned to one of three groups: CBT, pelvic floor biofeedback, or vestibulectomy (surgical removal of the posterior hymen and mucosa of the anterior and posterior vestibule). CBT was administered in 10 group sessions to women with PVD, and resulted in a reduction in pain intensity, significantly improved psychological adjustment, and improved sexual function.

Participants from all three groups reported significant reductions in pain, with vestibulectomy resulting in the greatest pain reduction (47%–70%), followed by CBT (21%–38%), and biofeedback (19%–35%). All effects were maintained at a 2.5-year follow-up assessment (Bergeron Khalifé, Glaze et al., 2008). Although vestibulectomy was shown to be more effective than CBT or biofeedback, the exclusion criteria for this procedure are extensive, and various risks are involved. Moreover, many women themselves would prefer less invasive treatments before

Table 1
An Outline of Research Studies That Have Examined CBT and MBCT as Treatments for PVD

| Treatment | Study | N | Control group | Data | Intervention | Outcomes | Follow-up |
|------------------------|---|-----|---|----------------------------|--|---|--|
| CBT | ter Kuile & Weijnen, 2006 | 76 | None | Quantitative | 12 group 2-hour sessions over 6 months | <ul style="list-style-type: none"> ● Reductions in pain during penetration ● Improved sexual satisfaction ● Improved sense of perceived pain control | None |
| CBT | ter Kuile, van Lankveld, de Groot, Melles, Felfis, & Zandbergen, 2007 | 117 | CBT (<i>n</i> = 81) Waitlist (<i>n</i> = 36) | Quantitative | 10 group 2-hour sessions over 3 months | <ul style="list-style-type: none"> ● Increase in intercourse ● Decrease in fear of coitus ● Enhancement of successful noncoital penetration behavior | None |
| CBT | Bergeron et al., 2001; Bergeron, Khalife, Glazer, et al. | 87 | CBT Biofeedback Vestibulectomy | Quantitative | 10 group sessions | <ul style="list-style-type: none"> ● Significant reductions in pain intensity reported by all groups (CBT second to surgery) ● Improvements in psychosexual function and psychological adjustment | Results maintained at 6-month follow-up and at 2.5 year follow-up assessment |
| CBT | Masheb, Kerns, & Richmand, 2009 | 50 | CBT (<i>n</i> = 25) supportive psychotherapy (<i>n</i> = 25) | Quantitative | 10-week treatments | <ul style="list-style-type: none"> ● Both treatments improved pain severity, sexual function, and psychological function ● CBT group superior gains in sexual function and pain severity during vulvar exam | Results maintained at 1-year follow-up |
| MBCT | Brotto et al., 2015; Brotto, Basson, Carlson, & Zhu, 2013 | 85 | MBCT (<i>n</i> = 62) waitlist (<i>n</i> = 23) | Quantitative & qualitative | 4-session group therapy | <ul style="list-style-type: none"> ● Improved pain self-efficacy, pain vigilance, pain catastrophizing, and allodynia ● Improved sexual distress ● Improved mood | Results maintained or further improved at 6-month follow-up |
| Multidisciplinary MBCT | Sadownik, Seal, & Brotto, 2011 | 19 | None | Qualitative | Three 2-hour group therapy sessions | <ul style="list-style-type: none"> ● Increased knowledge of PVD ● Enhanced skill set for coping with PVD ● Perceived improvements in mood ● Sense of validation, support, and empowerment | None |

Note. CBT = cognitive behavioral therapy; MBCT = mindfulness-based cognitive behavioral therapy; PVD = provoked vestibulodynia.

even considering vestibulectomy. It should be noted that there was significantly lower attrition in the CBT group, and all three treatments produced equivalent improvements in psychosexual function.

The second randomized clinical trial for women with PVD tested the relative efficacy of individualized 10-week treatments of CBT versus supportive psychotherapy (Masheb et al., 2009). Both treatments significantly improved pain severity, sexual function, and psychological function. However, relative to women in the supportive psychotherapy group, participants in the CBT condition reported significantly greater treatment gains, including greater improvements in overall sexual function and pain severity ratings during gynecological examination. Results were maintained at a 1-year follow-up. The authors hypothesized that specific behavioral strategies used in the CBT condition were more beneficial in mitigating pain provoked by touch and enhancing sexual function, in contrast to a talk therapy, which lacks behavioral interventions. Women in the CBT group also reported greater treatment satisfaction; as pain severity ratings and overall sexual function were the only measures significantly correlated with treatment satisfaction, these two outcome measures may be more important contributors to treatment satisfaction. These findings lend support for the use of CBT for PVD, and suggest that the directive approach of CBT represents a promising avenue toward yielding better outcomes and greater treatment satisfaction compared to a less directive approach.

Despite its documented benefits, criticisms of the traditional CBT approach as applied to sexual pain disorders must be addressed. Shaw (1994) questions the efficacy of CBT for women with vaginismus—a frequently co-occurring symptom of chronic pelvic floor muscle tension—and proposes a conceptual evolution from an emphasis on behavior to a focus on differentiation. From this perspective, behavior change in the absence of emotional growth is tantamount to changing a woman's behavior to comply with society's expectation that she perform sexually. Shaw argued for a clinical shift toward improving the quality of sex over sexual frequency, and sexual experience over performance. A central contribution of this article was to initiate the reevaluation and consequent broadening of what constitutes success in terms of treatment outcomes for women suffering from chronic vulvar pain.

In her review and critique of sex therapy for vaginismus, Kleinplatz (1998) similarly highlights CBT's emphasis on achieving sexual intercourse rather than nonpenetrative sexual acts, such as oral sex and mutual masturbation. In this way, CBT centers on a goal-oriented rather than pleasure-based approach, focusing on objective, behavioral, and physiological endpoints without attending to subjective meaning, embodiment, and connection. Although there have since been improvements in identifying patient-focused endpoints with treatment, many of these critiques persist today (e.g., Rosenbaum, 2013). Moreover, it is well known that change-oriented strategies, considered hallmark to CBT, may not bode well for all clients (Brotto, Basson, Driscoll, Smith, & Sadownik, 2015).

Mindfulness

In recent years, mindfulness has been increasingly used alongside or instead of CBT for a wide variety of health-related conditions, particularly with respect to the treatment of chronic pain disorders. Furthermore, a recent meta-analysis comparing CBT to mindfulness-based therapies found that mindfulness approaches represent a viable alternative to CBT, with particular efficacy for individuals who do not respond well to CBT (Veehof, Oskam, Schreurs, & Bohlmeijer, 2011). Unlike the change-oriented approach to CBT, mindfulness-based therapies use an acceptance-based approach (Bishop et al., 2004), with established efficacy for treating emotional stress and chronic pain conditions (Matousek & Dobin, 2010, Ludwig & Kabat-Zinn, 2008). Mindfulness practice has been shown to provide physical pain relief and reduce pain-related brain activity, as well as lessening the devastating emotional and functional impairments associated with PVD (Basson, 2012; Grant & Rainville, 2009). Stress awareness through mindfulness is thought to improve regulation of pain responsivity involved in neuroendocrine skin pathophysiology and central sensitization of PVD (Basson, 2012).

Research on mindfulness has gained in popularity owing to its promising links to emotional well-being, psychological health, and positive sexual outcomes (e.g., Brotto & Heiman,

2007; Brotto, Krychman, & Jacobson, 2008; Fink, Foran, Sweeney, & O'Hea, 2009; Murphy, Mermelstein, Edwards, & Gidycz, 2012). Mindfulness itself can be described as a state of mental focus that emphasizes acceptance and awareness of the present moment without judgment or evaluation. This state of mind or style of thinking can be thought of as a personal trait or as a cognitive skill that can be exercised and improved upon over time.

Kurtz (2005) describes the state of mindfulness as being "willfully passive," representing an intentional shift toward observing one's present experience without altering it, where thoughts freely enter conscious awareness and are then let go with the absence of any emotional attachment or reaction. In this way, the cognitive and emotional experience of pain can be "uncoupled" from the associated physical sensation of pain (Kabat-Zinn, 1982). This mindful separation of emotions from physical pain cultivates awareness of responses that exacerbate pain, such as fearful anticipation, and allow women to reconsider their response to vulvar pain (Basson, 2012).

By honing the ability to attend to the present moment in a nonjudgmental and accepting way, mindfulness represents a promising avenue toward reducing the suffering caused by PVD. Research has linked low mindfulness to hypervigilance of pain (Brown & Jones, 2010) as well as pain catastrophizing (Schutze, Rees, Preece, & Schutze, 2010), both of which are characteristic of women with PVD (Desrochers et al., 2008; Sutton, Pukall, & Chamberlain, 2009; Tupler & De Bellis, 2006; Basson et al., 2010). Indeed, a recent investigation found significant improvements in catastrophizing after a 10-week mindfulness intervention for chronic pain management (Gardner-Nix, Backman, Barbati, & Grummitt, 2008). Enhancing the ability to consciously direct one's attention to focus on being present during each moment may reduce the tendency to catastrophize the presence or anticipation of pain (Basson, 2012). Studies have also shown mindfulness techniques to facilitate pain relief and improve both the functional and the emotional elements of chronic pain (Grant & Rainville, 2009).

Mindfulness techniques are thought to encourage acceptance and nonjudgment, and research shows that self-criticism and a lack of self-acceptance are common in women with PVD (Danielsson, Sjoberg, & Wikman, 2000; Nylanderlundqvist & Bergdahl, 2003; Jantos & White, 1997). Reducing negative self-evaluations and fostering self-acceptance may represent central mechanisms by which mindfulness practice lessens PVD symptoms. Specifically, reductions in self-criticism to decrease allostatic load may represent a key avenue through which mindfulness could address problems with central sensitization that are thought to maintain genital pain (Basson, 2012). Acceptance, which can also be conceptualized as the "willingness to continue to actively experience pain along with related thoughts and feelings" (Thompson & McCracken, 2011, p.145) may foster women's ability to acknowledge and accept their emotional reaction to genital pain with self-compassion. In support of this notion, there is empirical evidence demonstrating that mindfulness can significantly improve pain self-efficacy and reduce genital pain vigilance and awareness in women with PVD (Brotto et al., 2015).

Mindfulness has also been linked to a host of improved sexual outcomes, including enhanced sexual desire, vaginal lubrication, body esteem, and sexual satisfaction, as well as reducing sexual distress and anxiety related to sexual activity among women (Brotto, Basson, & Luria, 2008; Brotto & Basson, 2014; Brotto & Heiman, 2007; Fink et al., 2009). Studies have shown mindfulness to significantly increase subjective sexual arousal and the perception of improved physiological arousal even in the absence of actual physiological changes in sexual response (Brotto et al., 2008; Seal & Meston, 2007). One recent study investigating the effects of physical activity on sexuality found that individuals who consistently practiced yoga or another activity involving a mindfulness component reported more sexual desire and had higher levels of sexual awareness than individuals who engaged in physical activity lacking in mindfulness (Lazaridou & Kalogianni, 2013). By attending to thoughts in a nonjudgmental way, women can learn to become more present during sexual activity and alert to their sexual arousal.

In clinical populations, a brief mindfulness-based psychoeducational intervention was found to significantly improve sexual desire and sexual distress for women suffering from sexual desire and/or sexual arousal disorder (Brotto et al., 2008). Another study compared the efficacy of a brief CBT versus a mindfulness-based therapy (MBT) intervention for women with a history of childhood sexual abuse and current sexual distress (Brotto, Seal, & Rellini, 2012). Participants

were randomized to two sessions of either MBT ($n = 12$) or CBT ($n = 8$) group treatment. Sexual distress was measured via self-report, and changes in concordance between physiological sexual arousal and laboratory-based subjective arousal were measured using a vaginal photoplethysmograph (a biophysical measurement of genital arousal) and an arousometer (a continuous measure of subjective sexual arousal).

Both the CBT and MBT groups led to a significant decrease in sexual distress. However, women in the MBT group also experienced a significantly greater increase in concordance (i.e., agreement) between subjective and physiological sexual arousal compared to the CBT group. The results of this study provide support for mindfulness-based treatments targeting sexual difficulties characterized by a disconnection between physiological and subjective arousal. In addition, these findings are particularly germane to treating the sexual difficulties associated with PVD, as sexual abuse has been identified as a potential antecedent of PVD (Harlow & Steward, 2005).

A recent review of mindfulness-based cognitive therapy (MBCT) highlights its utility in treating anxiety and mood disorders, as well as delineates the essential characteristics of MBCT from the traditional practice of CBT (Sipe & Eisendrath, 2012). According to Sipe and Eisendrath, CBT promotes a new way of *looking at* pain, while MBCT encourages a new way of *being with* pain. MBCT places an emphasis on thought processes versus the thought content approach of CBT. Where CBT centers on distinguishing maladaptive thoughts from healthy thoughts, MBCT aims to identify thoughts as mental events as opposed to statements of fact. MBCT also embodies a shift from challenging dysfunctional beliefs toward noticing distracting thoughts and letting them pass without appraisal or elaboration. Specifically with respect to PVD, a primary difference between MBCT and CBT is how outcome measures are defined. CBT approaches typically define painless penile–vaginal intercourse as the goal of therapy, while MBCT places a broader emphasis on working toward both penetrative and nonpenetrative sexual activity and, importantly, sexual pleasure.

Mindfulness-Based Cognitive Behavioural Therapy

The fundamental emphasis on change within the CBT framework may seem incongruous with the reality-focused acceptance-based approach of mindfulness therapy (Fennell & Segal, 2011); however, CBT and mindfulness can serve as complimentary therapeutic processes in numerous ways to temper factors known to modulate pain. Through mindfulness one can identify a thought as being problematic; with that awareness, the problematic thought can then be challenged through the use of CBT. Research also indicates that cognitive reappraisal often occurs during early stages of mindfulness practice (Zeidan, Grant, Brown, McHaffie, & Coghill 2012), suggesting that CBT skills may have some clinical utility in learning mindfulness techniques. It has also been argued that sex therapy facilitating the development of cognitive and behavioral skills may even assume a certain level of mindfulness at baseline (Mize & Iantaffi, 2013).

Furthermore, the ability to critique negative cognitions using CBT is augmented by the ability to meaningfully focus attention through mindfulness. The more practiced one becomes with mindfulness, the more able he or she is to experience thoughts and emotions as temporary mental events, rather than facts, that rise and pass with time, thus lessening the need to actively challenge them. Catastrophizing, for example, can be attenuated by noticing, challenging, and creating a more balanced thought (through CBT) and/or accepting thoughts simply as mental events (through mindfulness; Basson, 2012). Similarly, the separation of negative physical sensations from aversive emotional reactions may be accomplished through critiquing thoughts about pain with CBT skills, and then exercising specific mindfulness practice to separate the two components (Brotto et al., 2014). It has been proposed that a mindful approach to PVD may enhance the ability to successfully cope with genital pain, which can be viewed as a fellow journeyman, rather than a source of emotional distress (Vowles, McCracken, & O'Brien, 2011).

A model proposed by Basson (2012) posits that mindfulness may reduce pain perception through neurophysiological mechanisms. In this framework, the incorporation of mindfulness training as applied to sexual pain is proposed to decrease allostatic load in women with PVD,

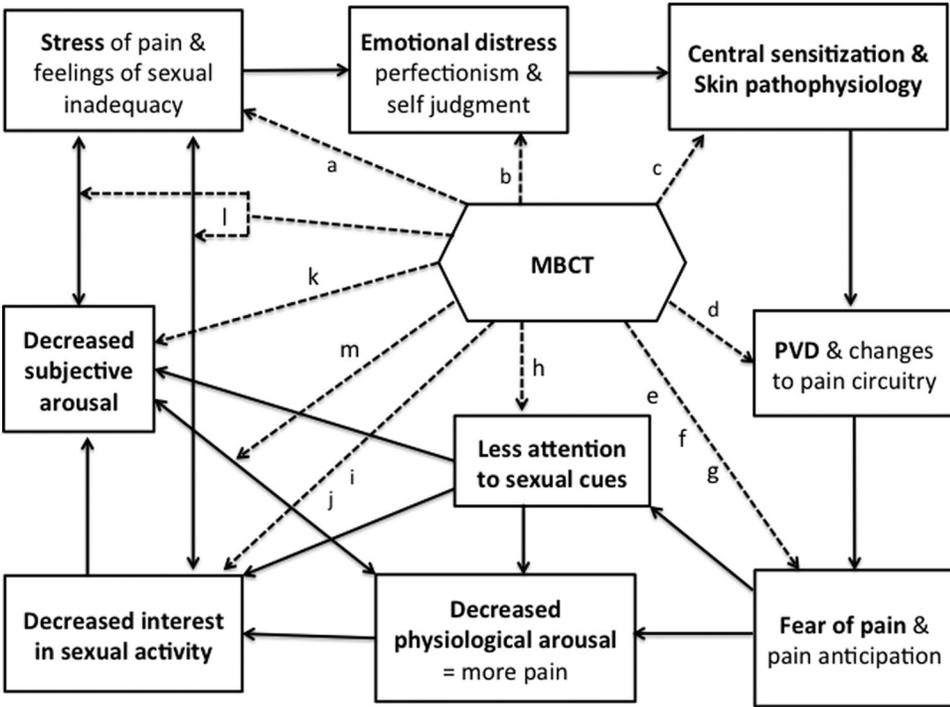


Figure 1. Basson's (2012) circular model of provoked vestibulodynia illustrating the compounding effects of subsequent sexual dysfunction on overall allostatic load, including a fear avoidance loop (Ter Kuile, Both, van Lankveld, 2010; Barlow, 1986; Spano & Lamont, 1975) [solid black arrows]. Emotional distress is thought to be associated with neuroplastic changes in the central nervous system resulting in central sensitization and pain amplification. Feelings of being sexual substandard exacerbate etiological factors, as well as reduce sexual arousal and sexual motivation. Fear of pain may impair processing of sexual stimuli both within and outside of sexual activity. Stress responses of the body compound skin pathophysiology. The letters successively correspond to the pathways by which MBCT could activate better coping and attenuation of vulvar pain [dotted line arrows]: a) Stress reduction by focusing on the present instead of the future; b) improved self-acceptance and reduced self-criticism by exercising self-kindness and re-evaluating unrealistic self expectations; c) reduced allostatic load, and corresponding decrease on central sensitization and neuroendocrine changes in the skin; d) attending to pain with a nonreactive and nonjudgmental mindset reduces pain and pain-related brain activity; e) improve sense of control over pain by understanding the components of vulvar pain and engaging in negotiation as an equal sexual partner; f) Decreased pain catastrophizing by identifying and creating more balanced thoughts and accepting thoughts as mental events; g) separation of aversive physical sensations from negative reaction by critiquing and challenging thoughts about pain; h) attending to the present moment increases awareness of sexual stimuli; i) reductions in sex avoidance through expectations of reward associated with changes in dyadic sexual behaviour; j) sensate focus to increase sexual arousal and motivation; k) increased awareness of physical sensations heightens sexual pleasure and improves subjective sexual arousal; l) improved sexual self efficacy leads to increased sexual motivation and sexual arousal.

thereby addressing the neuroendocrine skin pathophysiology and pain hypersensitivity characteristic of this condition. Pathways by which MBCT may activate enhanced coping and reductions in vulvar pain are mapped onto Basson's (2012) model in Figure 1. MBCT has been successfully used in treating sexual desire (Brotto & Woo, 2010) as well as numerous aspects of sexual functioning in gynecological cancer survivors (Brotto, Erskine et al., 2012). MBCT may have the potential to act synergistically, such that the combined modalities are more effective than either treatment alone.

Both CBT and mindfulness work to alleviate future-oriented stress and improve comorbid anxiety and depression through relatively distinct means that together may prove to be particularly efficacious (Basson, 2012). Mindfulness and CBT combined can thus lessen anxiety about vulvar pain in women with PVD, the former through emphasizing focus on the present

moment and the latter by identifying maladaptive thoughts. This two-way attenuation is important, as addressing anxiety about pain is an effective means of reducing pain (Ploghaus et al., 2001).

Mindfulness-based approaches tend to discourage goal-oriented language and encourage women to reconceptualize sex as something to be experienced with meaning instead of an achievement (Rosenbaum, 2013). The addition of mindfulness techniques to systematic desensitization dilator therapy (a common element of CBT for PVD) represents a prominent clinical shift in treating genital pain. Mindfulness dilator insertion combines the act of using vaginal inserts with an enhanced emotional awareness, thus lessening feelings of obligation, disassociation, and resentment (Rosenbaum, 2013). This method encourages women to accept feelings and perceptions and to be autonomous of one's body. Instead of viewing insertion therapy as a mean by which the vagina can be sufficiently stretched to accommodate a penis, mindfulness-based dilator therapy promotes a positive and autonomous experience of vaginal penetration with an emphasis on the mind/body connection.

There is research supporting the efficacy of MBCT in reestablishing sexual functioning in women with and without pain (Brotto et al., 2008; Brotto, 2011). Because sexual arousal functions as an analgesic (Komisaruk & Whipple, 2000), fostering sexual arousal through CBT and mindfulness is important for the management of dyspareunia. Reducing sex avoidance through changes in sexual behavior is an important element of CBT, as behavioral change can facilitate reward and anticipation of pleasure from sexual interactions and reduce sexual pain (Soderman & Unterwald, 2008). The ability to identify distracting thoughts and then letting them go without evaluation or reaction is considered to be an especially important aspect of mindfulness in terms of enhancing women's sexual experience because cognitive distractions during sexual activity impair sexual arousal (Brotto et al., 2008). The ability to refocus awareness on erotic thoughts and lessen negative self-evaluations can also be cultivated through mindfulness practice.

Given the existing research on mindfulness-based therapies for chronic pain and sexual dysfunction and the established efficacy of CBT, an MBCT approach may represent a particularly beneficial approach for treating women with PVD. Despite the compelling rationale, there is a dearth of published data applying mindfulness to the treatment of PVD. To the best of our knowledge, we are aware of only a single study evaluating the efficacy of mindfulness for women with PVD, with both quantitative (Brotto et al., 2015) and qualitative (Brotto, Basson, Carlson, & Zhu, 2013) endpoints. Brotto and colleagues tested the utility of a four-session mindfulness-based group therapy for women with PVD that relied primarily on building mindfulness meditation skills alongside education and discussion of cognitive theory and practice of some CBT skills. Mindfulness skills, such as identifying distractions, was emphasized over CBT skills, with the authors noting that prolonged distraction during sexual activity has the potential to impede sexual response.

Participants were assigned to either an immediate treatment group ($n = 62$) or a waitlist control group ($n = 23$). Genital pain assessments and questionnaires were administered before and after treatment as well as a 6-month follow-up. From pre- to posttreatment, significant improvements were seen in pain self-efficacy, pain vigilance, pain catastrophizing, allodynia (i.e., genital pain provoked by cotton swab), sex-related distress, and mood endpoints. These results were either maintained or further improved upon at follow-up. Changes in dyspareunia were not observed; however, this finding may follow from few women having engaged in penetrative sex during the study. The results of this study were the first to provide empirical support for the efficacy of a brief integrated mindfulness and cognitive behavioral group intervention for women with PVD, with posttreatment gains observed in both psychological and physiological measures of pain.

The lived experiences of a subset of 14 women from the study outlined above were explored through a series of semistructured, open-ended interviews intended to capture the effect of this intervention on women's lives and genital pain. A content analysis of the interview transcripts revealed several important themes. Women reported feeling more normal and less isolated as a result of treatment, endorsing a sense of community and shared experience within the group setting. All women reported improvements in psychological outcomes as a result of treatment, specifically with respect to lower rates of depression and anxiety, greater self-esteem

and self-confidence, excitement and optimism for the future, and an enhanced propensity for positive thinking and acceptance.

There was an effect of relationship status, such that beneficial effects of supportive partners and negative effects of uncooperative partners were observed. Women expressed a great appreciation for the treatment, in terms of being thankful for both the program's existence and the positive effect of the group sessions on their lives. Barriers to treatment efficacy emerged, such as life stressors and inability to prioritize skill practice. Despite these barriers, all women expressed improvements in self-efficacy, which was defined as "feelings of empowerment, ability to manage pain and enhanced self esteem" (p. 11). Future treatments might stress the importance of ongoing practice during and after treatment.

The authors noted that psychoeducation, a fundamental aspect of CBT and MBCT, played a key role in normalizing the participants' perception of their condition. Learning that PVD is a real and complex medical condition encompassing the mind and body also served to further open participants up to the idea of psychological treatments.

These findings parallel those of prior research demonstrating that education alone can improve PVD symptoms (Brotto, Sadownik, & Thomson, 2010). Interestingly, the narratives reflected that some women attributed gains to their ability to identify, challenge, and replace negative thoughts using CBT, while other women credited improvements to mindfulness-based skills in acceptance and learning to view thoughts as mental events instead of truths. It is likely that both mindfulness and CBT skill development contributed to improvements in treatment outcome; however, the potential for some individuals to benefit more from one aspect of treatment over the other remains.

Further research is needed to determine the ideal modalities for administering MBCT. The authors believe that delivery of this approach for the treatment of PVD would be effective in both individual and group therapy. Although MBCT would be useful as a stand-alone treatment for PVD, a multidisciplinary approach that incorporates other treatments may be even more beneficial. Indeed, Sadownik, Brooke, and Brotto (2012) qualitatively documented the benefits of MBCT as part of a multidisciplinary vulvodynia program that incorporated pelvic floor physiotherapy, education, and medical management alongside three 2-hour sessions of MBCT. MBCT for PVD could potentially be delivered to clients as online intervention as well, with text instead of verbal dialog and mindfulness audio recordings in place of in-person guided meditations.

Finally, MBCT may be useful for addressing the dyadic relationships of women with PVD. Couples often orient toward female sexual pain in problematic ways, and issues with relationship function may emerge around psychological interventions for PVD. As noted by Rosenbaum (2013), mindful couples interventions move the sexual script away from the male partner playing the patient and supportive role and toward that of the dyad taking a journey together.

Clinicians should be aware of potential obstacles toward delivering MBCT to women with PVD and their partners. As with most multisession psychological interventions, attrition may represent a problem. To guard against attrition, instructors can communicate the level of commitment needed prior to participation, monitor attendance, and contact participants should they miss a given session. The likelihood of attrition may also determine the length of the intervention, as dropout rates tend to be lower in shorter interventions. Past research has found mindfulness-based therapy to improve sexual symptoms in only four sessions (Brotto et al., 2012), but more significant gains may result from longer interventions.

Issues with compliance may also arise, such as participants not completing homework exercises or failing to engage in at-home skill practice. To encourage compliance, instructors may find it helpful to discuss any difficulties with or benefits from homework at the beginning of each session. Brotto and colleagues (2013) noted that several women communicated regret for not having prioritized regular skill practice after program completion. Including some form of follow-up assessment or refresher session may motivate women to maintain practice of learned skills after treatment, and postprogram maintenance may be improved by addressing relapse prevention as part of the last session. Stress and busy schedules represent additional barriers to developing and maintaining improvements. Given that perception of therapeutic gains is typically not immediate in MBCT, participants may become impatient and deprioritize practice. As

mindfulness emphasizes self-acceptance and letting go of the pressure for change, it is important to highlight the significance of accepting where one is at and exercising self-compassion in terms of working within ones availability.

Conclusion

There is strong evidence for the efficacy of CBT for PVD (Masheb et al., 2009; Bergeron et al., 2001; Bergeron Khalifé, & Dupuis, 2008), and there has been a single study evaluating a brief mindfulness-based intervention for women with PVD (Brotto et al., 2015). The limited body of research on mindfulness-based cognitive therapy is promising. MBCT has demonstrated its efficacy in treating a variety of disorders, with recent research highlighting its utility and benefits for treating women with PVD, as well as conditions that are commonly comorbid with PVD, such as depression and anxiety. However, there remains a need for additional research applying MBCT to the treatment of PVD. Randomized controlled trials evaluating MBCT against active and empirically validated therapies represent the logical next step. Given that randomized control trials evaluating a full eight-session MBCT are most commonly used with anxiety, depression, and other chronic pain conditions, empirically tested interventions of this nature for women with PVD would further this line of research.

In addition, head-to-head studies comparing the efficacy of CBT versus MBCT for PVD is needed to determine whether one is superior to the other and identify participant characteristics that would lend a particular treatment approach better than others. Indeed, research examining any added value of mindfulness above and beyond traditional CBT would allow for the identification of particular patients who might respond to one treatment (or the other) preferentially. Research contrasting MBCT with different interventions would delineate how women with PVD may differ in response to change-oriented versus acceptance-based treatments, therefore guiding which treatment might be the preferred recommendation for a patient presenting with PVD.

Research investigating potential predictors of pain outcome, such as specific cognitive and affective variables, would improve knowledge concerning who might benefit most from either CBT or MBCT interventions for PVD. The field of PVD research is void of controlled studies when it comes to medication and topical treatments. Psychological treatment outcome literature on MBCT for PVD can include a no-treatment control group as well as an intervention providing basic information and education to control for the presence of therapy nonspecific effects. Further research on the etiology of PVD and the mechanisms of therapeutic change that underlie the MBCT approach for treating this condition is also needed.

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