# Impact of Educational Seminars on Women With Provoked Vestibulodynia

**Lori A. Brotto, PhD, Leslie Sadownik, MD, Sydney Thomson, MD**

Department of Obstetrics and Gynaecology, University of British Columbia, Vancouver BC

## Abstract

**Objective:** Provoked vestibulodynia (PVD) is a common genital pain condition characterized by severe pain upon vaginal penetration. The treatment of women with PVD suggests variable efficacy across modalities. The emotional toll of PVD, because of the intimate and interpersonal nature of this sexually-provoked pain, and the relationship between PVD and anxiety, depression, and a host of subclinical emotional symptoms that may interfere with treatment, has been well documented. The role of the gynaecologist in identifying and managing these psychological symptoms has never been addressed. The goal of this study was to examine the efficacy of a brief, gynaecologist-led educational seminar on measures of psychological symptoms and sexual health.

**Methods:** Twenty-nine women with PVD participated in three one-hour educational seminars led by a gynaecologist with expertise in the management of PVD. Participants completed questionnaires before, immediately after, and six months after the third session.

**Results:** There were significant improvements in psychological symptoms of depression, anxiety, somatization, hostility, paranoid ideation, psychoticism, and the global severity index, both immediately post-seminar and at the six-month follow-up. Sexual arousal, orgasm, overall sexual function, and sexual distress also significantly improved in response to the seminars.

**Conclusion:** Gynaecologist-led educational seminars delivered in a group format have a significant positive impact on psychological symptoms and sexual functioning in women who suffer from PVD.

## Résumé

**Objectif :** La vestibulodynie provoquée (VDP) est une pathologie courante donnant lieu à de la douleur génitale caractérisée par des douleurs graves au moment de la pénétration vaginale. L'efficacité de la prise en charge des femmes qui présentent une VDP varie d'une modalité à l'autre. Les conséquences affectives de la VDP (attribuables à la nature intime et interpersonnelle de cette douleur provoquée par les relations sexuelles) et la relation entre la VDP et l'anxiété, la dépression et une foule de symptômes affectifs subcliniques qui peuvent nuire au traitement ont été bien documentées. Le rôle du gynécologue quant à l'identification et à la prise en charge de ces symptômes psychologiques n'a jamais fait l'objet d'études. L'objectif de cette étude était d'examiner l'efficacité d'un bref séminaire pédagogique (offert par un gynécologue) sur les mesures des symptômes psychologiques et de la santé sexuelle.

**Méthodes :** Vingt-neuf femmes présentant une VDP ont participé à trois séminaires pédagogiques d'une heure menés par un gynécologue se spécialisant dans la prise en charge de la VDP. Les participantes ont rempli des questionnaires avant, immédiatement après et six mois après le troisième séminaire.

**Résultats :** Des améliorations considérables ont été constatées en matière de symptômes psychologiques (de dépression, d'anxiété, de somatisation, d'hostilité, de mode de pensée persécutoire et de psychosisme) et d'indice global de gravité, tant immédiatement après le séminaire que dans le cadre du suivi à six mois. L'excitation sexuelle, l'orgasme, la fonction sexuelle globale et la détresse sexuelle ont également connu une amélioration considérable à la suite des séminaires.

**Conclusion :** Les séminaires pédagogiques menés par un gynécologue et offerts dans un contexte de groupe ont exercé des effets positifs considérables sur les symptômes psychologiques et le fonctionnement sexuel des femmes qui présentent une VDP.

J Obstet Gynaecol Can 2010;32(2):132–138

**Key Words:** Vestibulodynia, sexual dysfunction, mood, patient education

Competing Interests: None declared.

Received on June 18, 2009

Accepted on July 28, 2009

## INTRODUCTION

Vulvodynia is thought to affect some 16% of women.[1] Vulvodynia refers to pain or discomfort involving the vulva for which no obvious etiology can be found. Women complain of uncomfortable sensations such as burning, stinging, irritation, stabbing, or rawness in the genital area. The pain may be generalized or localized, and can be provoked (caused by a stimulus such as touch, wearing a tampon, or sexual activity), unprovoked (present without touch), or mixed.

Vestibulodynia is a specific type of localized provoked vulvodynia. It is one of the most common causes of painful sexual intercourse. There appears to be a bimodal age distribution. Most women who suffer from PVD are in their 20s or 30s, and their pain is typically lifelong; the next largest prevalence is among perimenopausal women (whose pain is acquired).[2] Patients with vestibulodynia experience a burning or rawness located at the vestibule or entrance to the vagina. The pain is commonly provoked by direct touch, and therefore it interferes with sexual activities including

foreplay and intercourse. Because sex hurts, many women avoid sexual intimacy and this may have a significant negative impact on their emotional well-being and their personal relationships.[3–5] Diagnosis is based primarily on clinical history and examination. A cotton swab tip applied in a clock-like fashion around the vestibule along Hart's line will reproduce the pain. Erythema around the vulvar vestibule is variable and is not used as a hallmark clinical sign of PVD.[2]

The pathophysiology of PVD is poorly understood. However, it is generally accepted that a key component is dysfunction in central pain centres, leading to neuropathic pain (nerve damage), and resulting in central sensitization (neurological changes due to repeated nerve stimulation).[6–8] Histology of the vestibule shows a marked increase in mast cells as well as in pain nociceptors,[9] such that touch is misperceived as pain. Interestingly, women with PVD have also been found to exhibit lower pain thresholds in non-genital parts of the body,[10] supporting the notion that PVD is characterized by central dysfunction in pain centres.

The management of PVD is complex and includes medical, behavioural, and surgical interventions. Reported efficacy rates for the different treatments vary; the most promising treatments include neurophysiological treatments (biofeedback, pharmacotherapy), cognitive-behavioural therapy, and vestibulectomy (excision of the hymen and vestibular tissue).[11,12] Determining which women will respond positively to which treatment is not currently possible, and the vast majority of women with PVD will try many different treatment modalities before experiencing any significant benefit. Indeed, our review of 301 patients seeking care in our centre revealed an average duration of symptoms of 38 months (range 1–480 months) with an average of three different types of medical care providers seen.[13] In this sample, women reported that 70% of the different interventions tried were ineffective for reducing pain. With increasing duration of untreated symptoms, levels of distress and frustration increase,[14] and although the role of psychological factors in etiology is not entirely clear, the presence of psychological symptoms *during* PVD can have a significant negative impact on prognosis.

**ABBREVIATIONS**

| | |
|---|---|
| BAI | Beck Anxiety Inventory |
| BDI | Beck Depression Inventory |
| BSI | Brief Symptom Inventory |
| FSDS | Female Sexual Distress Scale |
| FSFI | Female Sexual Function Index |
| PVD | provoked vestibulodynia |

Largely because of the significant emotional toll of this pain, there has been an increase in publications focusing on the psychological characteristics of women with PVD. These have found a significant correlation between the severity of PVD symptoms and the extent of catastrophizing.[15–17] Neuroimaging data show less grey-matter density among women with PVD and increased activity in catastrophizing centres in the brain.[16] Women with PVD also have higher levels of somatization, anxiety sensitivity, and fear of negative evaluation than women without PVD.[18] The nature of the sexual pain and its impact on her sexual relationship, self-identity, and mood also understandably predispose an affected woman to high rates of anxiety and distress.[17]

We aimed to study the impact of a series of educational seminars, given to women prior to individualized treatment for PVD, on psychological symptoms and self-reported sexual health. The goal in administering these seminars was to provide consistent and thorough educational information to women before they engaged in a program of individualized treatment. We hypothesized that providing this information would result in significantly decreased psychological symptoms of distress, which would better position women to benefit from subsequent medical treatment. The aim of this study was to characterize the psychological and sexual health outcomes among a subsample of women participating in our educational seminars.

## METHODS

From 2001 to 2008, all patients who received a confirmed diagnosis of PVD at our hospital's women's clinic were invited to attend a series of educational seminars. Initial evaluation of these patients consisted of a standardized medical history and pelvic examination performed by a gynaecologist specializing in vulvovaginal diseases. Approximately 150 patients attended the seminars between 2001 and 2008; this study focused on 29 patients who participated between 2007 and 2009, with 25 self-identifying as Caucasian. The average age of the sample was 32 (range 20–51). This was a highly educated group, with the average level of education being a four-year undergraduate degree (n = 20). Complete demographic data are shown in Table 1.

The one-hour seminars were spaced two weeks apart, and there were a total of four to eight patients participating in the session, along with the senior obstetrics-gynaecology group facilitator and a third-year resident in obstetrics and gynaecology. The overall goal of the educational intervention was to disseminate accurate information about PVD. A standard PowerPoint presentation was used to facilitate the discussion. There were opportunities to ask questions of the gynaecologist as well as to share experiences with the other group members, but the sessions were considered to

**Table 1. Demographic characteristics of participants (n = 29)**

| | |
|---|---|
| Highest level of education* | |
| Graduate degree | 2 |
| Undergraduate degree | 20 |
| Any post-secondary education | 3 |
| High school | 3 |
| Marital status | |
| Married | 15 |
| Common-law | 6 |
| In relationship but not cohabiting | 6 |
| Single | 2 |
| Pregnancy history | |
| Mean number of pregnancies (SD) | 1.0 (2.0) |
| Mean number of children (SD) | 0.43 (0.74) |
| Ethnic Background | |
| Caucasian | 25 |
| South Asian | 3 |
| Middle Eastern | 1 |

*One woman did not answer this question.

be neither psychological group therapy nor support groups. Seminar 1 focused on what PVD is and how it is diagnosed. This was followed by a general description of the treatments that reduce pain, restore sexual health, and restore pelvic floor stability. A brief review of the female sexual response cycle was discussed, highlighting the difference between spontaneous and responsive sexual desire.[19,20] Seminar 2 presented information that helped women to understand the mechanism of neuropathic pain and how certain psychological states (depression, anxiety) and behaviours (focusing on pain, catastrophizing, avoidance) can produce a heightened response to pain stimuli. The negative impact of PVD on sexual relationships and sexual health was discussed in more detail, with suggestions about how sexual pleasuring without intercourse can help re-establish confidence in having sexual intimacy. Also presented was information about how the negative emotions (sadness, anger) associated with sexual experiences can affect other life experiences. Seminar 3 provided a series of case examples that illustrated management options for PVD.

Participants completed a standard medical history at their first medical appointment at the centre. Immediately before and after the seminars women completed a battery of questionnaires at home and returned them to the gynaecologist. Six months following the completion of the seminars, all women were mailed a third and final questionnaire package and were asked to complete and return them to the clinic. Upon receipt, all data were entered into a research database maintained in the laboratory of the first author.

Measures of sexual response, sexual distress, and psychological functioning were administered at each of the three assessment points by a research assistant. Sexual response was assessed with the FSFI,[21] which is a validated 19-item measure providing separate indices of desire, arousal, lubrication, orgasm, pain, and satisfaction, as well as a total sexual function score. Higher scores on each subscale indicate better levels of sexual functioning. Test–retest reliability for the FSFI is high (ranging from $r = 0.79$ to $r = 0.86$ for the different domains) and internal consistency is high (Cronbach $\alpha \geq 0.82$). The FSFI has also been shown to differentiate significantly between women with and without PVD.[22]

Sexual distress was measured with the 12-item FSDS.[23] Higher scores on this measure reflect higher levels of sexually-related distress. Using Cronbach alpha, a high level of internal consistency was established for the FSDS, with a range from 0.86 in an early study to the low 0.90s in later clinical trials. Test–retest reliability has also been found to be respectable, and the FSDS was found to successfully distinguish between women with and without sexual dysfunction.[23]

Psychological symptoms were assessed with three measures: the BDI,[24] the BAI,[25] and the BSI.[26]

The BDI is a 21-item self-report questionnaire designed to assess the severity of depressive symptoms over the preceding week in clinical and non-clinical samples. The statements are rated on a 4-point scale ranging from 0 to 3. A score ≥ 15 denotes probable depression. In a sample of college students, the internal consistency of the BDI was excellent at 0.90.[27]

The BAI is a commonly used, 21-item self-report measure of symptoms of anxiety over the preceding week, with higher scores indicating more anxiety (scale: 0–63). The BAI has a high internal consistency ($\alpha = 0.92$) and a test–retest reliability over one week of $r(81) = 0.75$.[25]

The BSI is a self-report questionnaire that measures psychological symptoms in terms of nine major symptom dimensions and three global indices of distress. Respondents rate the level of distress they have experienced over the previous two weeks for each of 53 items. The items are rated on a 5-point Likert scale, ranging from 0 (not at all) to 4 (extremely). The internal consistency reliability for the nine dimensions ranges from 0.71 for psychoticism (a measure of social alienation) to 0.85 for depression. Test-retest reliability for the nine symptoms ranges from 0.68 for somatization to 0.91 for phobic anxiety and is 0.90 for the global severity index.[26]

Data were analyzed using SPSS version 16.0 (SPSS Inc., Chicago, IL). Two sets of analyses were conducted to explore the immediate effects of the seminar as well as the sustained effects six months later. Independent samples *t* tests were used to compare pre-seminar to immediate post-seminar responses for 29 patients for whom we had baseline and immediate post-seminar data. Because of missing data at the third assessment point, six-month data were available for only 19 women. Thus, a repeated measures ANOVA was used to compare data at all three time points. In cases where a significant repeated measures ANOVA was found, pairwise contrasts were conducted to determine the area of significance.

All procedures were approved by The University of British Columbia's Behavioural Research Ethics Board.

**Table 2. Descriptive information on pain and gynaecological characteristics of participants (n = 29)**

| | |
|---|---|
| Duration of PVD symptoms, years (range) | 3.79 (1–13) |
| Ever used hormonal contraceptives | 28% |
| Age of menarche, years (range) | 12.8 (10–16) |
| Reporting pain varies with menstrual cycle | 11% |
| Ever been able to use tampons | 22% |
| Ever had a yeast infection | 24% |
| Rarely | 11% |
| Occasionally | 8% |
| Frequently | 5% |
| Average age of first intercourse, years | 18 |

## RESULTS

Of the 29 women, 27 were in a relationship of average duration 9.26 years (range 2–29). Among this group, 15/27 (55.6%) reported being satisfied with the level of closeness in their relationship, and 11 had previously sought treatment for a sexual difficulty. Information about pain duration, menstrual history, and contraceptive use is shown in Table 2.

There was a significant pre- to post-seminar effect ($P = 0.038$) on improved sexual arousal as measured by the FSFI. On a repeated measures ANOVA, there was also a significant effect ($P = 0.035$) at the six-month follow-up. Scores on the pain subscale of the FSFI showed a near-significant improvement ($P = 0.057$) from pre- to post-seminar, but this was not significant on analyses including the six-month follow-up ($P > 0.05$). Scores on the orgasm domain significantly improved ($P = 0.011$) from pre- to post-seminar, but the improvement was not significant on the overall model including the six-month follow-up data ($P > 0.05$). Although there was a trend towards improvement, the increase in scores on the desire, lubrication, and sexual satisfaction domains did not reach statistical significance ($P > 0.05$ for each) (Table 3).

Overall sexual function improved significantly from pre- to post-seminar ($P = 0.025$), and this effect was also found in the overall model including the six-month follow-up data ($P = 0.05$). There was a significant pre- to post-seminar effect of reduced sexual distress ($P = 0.026$), which was seen also in the follow-up data ($P < 0.01$).

Although BDI scores did not significantly decrease from pre- to post-seminar, depressive symptoms did continue to decrease significantly from baseline to six-month follow-up ($P = 0.019$). There was a significant effect ($P = 0.022$) of the seminar on reducing anxiety symptoms immediately post-seminar, and this was maintained at follow-up ($P = 0.042$) (Table 4).

Individual subscales on the BSI were then examined. The seminars had a significant effect on somatization ($P = 0.027$), and this was maintained at follow-up ($P = 0.01$). The significant decrease in psychological symptoms seen both immediately post seminar and at six-month follow-up was also seen for depression ($P = 0.002$ and $P = 0.01$, respectively), anxiety ($P = 0.011$ and $P = 0.003$, respectively), hostility ($P = 0.012$ and $P = 0.002$, respectively), paranoid ideation ($P = 0.001$ and $P = 0.003$, respectively), and psychoticism ($P = 0.001$ and $P = 0.005$, respectively). Scores on obsession-compulsion were not significantly reduced immediately after the seminar. However, the reduction was significant when six-month follow-up data were included ($P = 0.001$).

Interpersonal sensitivity significantly reduced from pre- to post-seminar ($P = 0.005$), but this improvement was only marginally significant when six-month follow-up data were included. Phobic anxiety did not significantly reduce from pre- to post-seminar, but the reduction in scores did reach marginal significance at the six-month follow-up ($P = 0.06$). The global severity index, an overall measure of psychological symptoms, was significantly reduced at both the immediate post-seminar assessment ($P < 0.001$) and the six-month follow-up ($P < 0.001$) (Table 4).

## DISCUSSION

Associated with the seminars, we found significant improvements in subscale measures of psychological function (depression, anxiety, somatization, hostility, paranoid ideation, psychoticism, obsessive-compulsive symptoms, and interpersonal sensitivity), overall global severity of psychological symptoms, sexual arousal, orgasmic function, overall sexual functioning, and sexual distress. The majority

**Table 3. Effects of seminar on sexual response (FSFI) and sexual distress (FSDS)**

| Measure | Pre-seminar (n = 29), Mean (SD) | Post-seminar (n = 29), Mean (SD) | 6-month follow-up (n = 19), Mean (SD) | *t* test (df) for pre- to post-seminar effect | F test (df) including all 3 time points |
|---|---|---|---|---|---|
| FSFI desire | 2.75 (1.22) | 2.84 (1.11) | 3.19 (0.94) | –1.89 (27) | 2.47 (2,36) |
| FSFI arousal | 3.20 (0.99) | 3.40 (1.20) | 3.80 (1.43) | –2.20 (24)* | 3.72 (2,34)* |
| FSFI lubrication | 3.44 (1.46) | 3.55 (1.42) | 3.80 (1.60) | –1.44 (24) | 1.60 (2,34) |
| FSFI orgasm | 3.20 (1.42) | 3.69 (1.56) | 3.56 (1.58) | –2.76 (23)** | 2.02 (2,34) |
| FSFI satisfaction | 3.39 (1.29) | 3.55 (1.28) | 3.63 (1.32) | –2.76 (23) | 0.51 (2,28) |
| FSFI pain | 2.20 (1.37) | 3.13 (1.12) | 3.23 (1.78) | –2.05 (17) | 1.87 (2,22) |
| FSFI total score | 19.4 (5.42) | 21.0 (5.43) | 22.4 (6.17) | –2.51 (14)* | 3.04 (2,22)* |
| FSDS | 31.5 (10.37) | 28.0 (9.45) | 25.9 (10.65) | 2.35 (28)* | 5.31 (2,36)** |

Note: significant repeated measures ANOVA effect of seminar at *$P < 0.05$ **$P < 0.01$. Scale range: FSFI arousal, lubrication, orgasm, satisfaction, and pain scores range from 0 to 5 with higher scores denoting better sexual function. FSFI desire scale ranges from 1 to 5 with higher scores denoting more desire. FSFI total score scale ranges from 2 to 36 with higher scores denoting better overall sexual function. FSDS scale ranges from 0 to 48 with higher scores denoting more sexually related distress.

of these improvements, which were detected immediately post-seminar, were retained when women were reassessed six months later. To our knowledge, this is the first published finding of improved psychological outcomes in women with PVD resulting from a gynaecologist-led educational intervention. Similar improvements in function have previously been reported following psychotherapy with mental health professionals,[12,28,29] but none have been reported following education by a physician specialist. We believe the educational seminars had a positive impact on patients by providing clear, well-organized, relevant information to women and providing this information in a group setting.

It is noteworthy that although the seminar was an educational intervention, not a psychological or support group, nearly every measure of psychological functioning improved significantly. Women with PVD suffer with this pain condition for years and see numerous health care providers.[13] In some cases patients do not receive a diagnosis and are left to hypothesize about their condition. These patients may have secret (irrational) fears that their pain is "all in their heads" or that it is due to a sexually transmitted disease, cancer, or any combination of these and other diseases. These fears and the resulting catastrophizing (a negative cognitive response to anticipated pain, commonly seen in those with chronic pains[30]) adversely affect their psychological health. An important first step to recovery is for patients to understand and accept their diagnosis. It is possible that the provision of information shared in the seminars filled this particular gap.

Women with a diagnosis of PVD likely received, over the years, misinformation or conflicting information from their different health care providers. Typically, a physician would provide information to a patient following their assessment (the history and physical examination). Patients may be anxious and overwhelmed during this first appointment, especially after a painful examination, and their ability to understand or recall the information later may be compromised. As well, because of time constraints in a busy clinic, there is little opportunity for patients to ask physicians in-depth questions. Patients may not understand why the physician prescribes a certain course of therapy (e.g., oral analgesics or pelvic floor physiotherapy) and subsequently may not comply with recommended treatments. They may also seek information from unreliable sources (such as the Internet) that may undermine the physician's recommendations.

The three-part instructional format used in our seminar series allowed women to reflect upon the information given in each seminar, discuss it with others, and seek further clarification at the next session if necessary. By spacing the information over three sessions, the problem of mood-associated interference in recall was minimized. There was overlap of information from one seminar to the next, with each seminar reinforcing the concepts presented in the earlier seminar. Having well-organized, clear information on the definition and pathophysiology of PVD and a rationale for why certain treatments might be recommended may have improved patient acceptance and subsequent compliance with recommended treatments. Because adults better retain information from didactic presentations when the presenter has their attention, the audience feels the information is relevant to their situation, and the information is presented with clarity,[31] our findings suggest that educating women with PVD in such a standardized format outside of the clinical office may be optimal for reducing distress and optimizing subsequent treatment.

It is noteworthy that there were significant improvements in sexual arousal and overall sexual response and a concomitant decrease in sexual distress. One of the three seminar

**Table 4. Effects of seminar on psychological symptoms (BSI), depression (BDI) and anxiety (BAI)**

| Measure | Pre-seminar (n = 29), Mean (SD) | Post-seminar (n = 29), Mean (SD) | 6-month follow-up (n = 19), Mean (SD) | *t* test (df) pre- to post-seminar | F-test (df) including all 3 time points |
|---|---|---|---|---|---|
| BDI | 12.7 (6.07) | 10.9 (6.49) | 8.21 (5.04) | 1.57 (28) | 4.46 (2,36)* |
| BAI | 12.1 (7.02) | 9.79 (5.76) | 8.89 (6.22) | 2.43 (28)* | 3.48 (2,36)* |
| BSI—hostility | 0.95 (0.47) | 0.74 (0.37) | 0.48 (0.30) | 2.70 (28)* | 7.53 (2,36)** |
| BSI—anxiety | 1.15 (0.65) | 0.94 (0.56) | 0.72 (0.55) | 2.71 (28)** | 6.88 (2,36)** |
| BSI—somatization | 1.20 (0.66) | 0.92 (0.60) | 0.75 (0.56) | 2.34 (28)* | 5.19 (2,36)** |
| BSI—obsession–compulsion | 1.56 (0.84) | 1.46 (0.68) | 1.00 (0.65) | 1.28 (28) | 8.02 (2,36)*** |
| BSI—interpersonal sensitivity | 1.13 (0.74) | 0.89 (0.52) | 0.78 (0.56) | 3.04 (28)** | 2.65 (2,36) |
| BSI—depression | 1.08 (0.75) | 0.84 (0.57) | 0.73 (0.68) | 3.36 (28)** | 3.34 (2,36)* |
| BSI—phobic anxiety | 0.29 (0.38) | 0.26 (0.42) | 0.18 (0.30) | 2.71 (28) | 6.88 (2,36) |
| BSI—paranoid ideation | 0.75 (0.79) | 0.48 (0.47) | 0.58 | 3.74 (28)*** | 6.74 (2,36)** |
| BSI—psychoticism | 0.62 (0.57) | 0.43 (0.46) | 0.50 | 3.57 (28)*** | 6.26 (2,36)** |
| BSI—Global Severity Index | 1.01 (0.46) | 0.80 (0.34) | 0.36 | 4.70 (28)*** | 10.37 (2,36)*** |

Note: significant repeated measures ANOVA effect of seminar at * $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$. Scale range: All BSI subscales range from 0 to 4 with higher scores denoting more psychological symptoms. BDI and BAI scale ranges from 0 to 63 with higher scores denoting more depressive and anxiety symptoms, respectively

sessions focused on the human sexual response cycle as described by Basson,[19,20,32] in which the lack of sexual desire at the outset of sexual activity was normalized—particularly for women with PVD, for whom the anticipation of pain with sex provokes avoidance behaviour as well as significant fear and worry. However, in discussing this model, women were encouraged to consider other, non-sexual reasons for remaining sexually active (with non-penetrative activities), and the importance of sexual stimuli in provoking arousal was discussed. It is possible that women made changes in their sexual activities following this seminar and that this translated into an improvement in sexual functioning. It is worth mentioning that although partners were not included in these sessions, the importance of partner-related factors, including during sexual activity, was discussed during the seminar. That a partner's attributions of pain can influence the pain itself in PVD has been documented.[33] The marked drop in sexual distress seen following the seminar supports the notion that a sense of normalization resulted from the group milieu that may also have contributed to reductions in sexual distress.

Several of the women offered feedback after the seminars and indicated that they highly valued the group format. In other areas of female sexual dysfunction, group therapy has also been found to be as effective as individual therapy and may have greater cost-effectiveness benefits.[34] For women with PVD, receiving information with other women helped to reduce a patient's sense of isolation and normalized the condition and her experiences and feelings. Some patients took the opportunity within the seminars to share their feelings and the impact of PVD on their lives, and many wished to remain in contact with one another following the conclusion of the seminars. There is also a cost-effectiveness in offering group sessions that enhances the appeal of offering group educational seminars for PVD from a public health perspective.

The limitations of this study must be considered. First, this is a small sample of treatment-seeking women with PVD who may not represent the population of women with this condition. Thus, this cohort may have been particularly symptomatic in the area of psychological functioning before the seminar, and part of the improvement may have been regression to the mean. The lack of a no-information control group leaves open this possibility. Another limitation is that we could not control for what treatment women received between the end of the seminar and their six-month follow-up visit. Our records indicate that this group of women retained minimal (if any) contact with providers from our treatment centre following the seminars, but they may have sought and received treatment for PVD elsewhere. Thus, the extent to which the improvements noted at the follow-up visit are due to retained improvements from the seminar versus some other new treatment initiated after the seminars ended cannot be assessed.

There are important clinical implications of these findings. It is significant to note that within our study, immediately following the seminars and prior to starting any specific pain-management treatment, patients reported improvements, and these were largely retained six months later. These data suggest that administration of clear, structured information on PVD by a gynaecologist is effective and

feasible. Thus, health care providers should be encouraged to provide clear and concise information to patients and to share reliable information resources. Patients might also be encouraged to seek help from patient organizations (e.g., National Vulvodynia Association) to reduce their sense of isolation. The findings also suggest that the significant drop in psychological symptoms may optimally prepare women for subsequent pain management strategies—whether via pharmacotherapy, psychological therapy, or pelvic floor physiotherapy—with which the high baseline levels of psychological symptoms might otherwise interfere.

## REFERENCES


1. Bergeron S, Binik YM, Khalife S, Pagidas K. Vulvar vestibulitis syndrome: a critical review. Clin J Pain 1997;13:27–42.
2. Bergeron S, Binik YM, Khalife S, Pagidas K, Glazer H. Vulvar vestibulitis syndrome: reliability of diagnosis and evaluation of current diagnostic criteria. Obstet Gynecol 2001;98(1):45–51.
3. Connor JJ, Robinson B, Wieling E. Vulvar pain: a phenomenological study of couples in search of effective diagnosis and treatment. Fam Process 2008;47:139–55.
4. Connor JJ. Living with vulvar vestibulitis syndrome: the couple experience [dissertation]. US: ProQuest Information & Learning; 2006.
5. Sackett S, Gates E, Heckman-Stone C, Kobus AM, Galask R. Psychosexual aspects of vulvar vestibulitis. J Reprod Med 2001;46:593–8.
6. Graziottin A, Brotto L. Vulvar vestibulitis syndrome: a clinical approach. J Sex Marital Ther 2004;30:125–39.
7. Foster DC, Dworkin RH, Wood RW. Effects of intradermal foot and forearm capsaicin injections in normal and vulvodynia-afflicted women. Pain 2005;117:128–36.
8. Pukall CF, Binik YM, Khalife S, Amsel R, Abbott FV. Vestibular tactile and pain thresholds in women with vulvar vestibulitis syndrome. Pain 2002;96:163–75.
9. Chadha S, Gianotten WL, Drogendijk AC, Weijmar SWC, Blindeman LA, van der Meijden WI. Histopathologic features of vulvar vestibulitis. Int J Gynecol Pathol 1998;17:7–11.
10. Pukall CF, Baron M, Amsel R, Khalife S, Binik YM. Tender point examination in women with vulvar vestibulitis syndrome. Clin J Pain 2006;22:601–9.
11. Landry T, Bergeron S, Dupuis MJ, Desrochers G. The treatment of provoked vestibulodynia: a critical review. Clin J Pain 2008;24:155–71.
12. Bergeron S, Binik YM, Khalife S, Pagidas K, Glazer HI, Meana M, et al. A randomized comparison of group cognitive-behavioral therapy, surface electromyographic biofeedback, and vestibulectomy in the treatment of dyspareunia resulting from vulvar vestibulitis. Pain 2001;91:297–306.
13. Sadownik LA. Clinical profile of vulvodynia patients: a prospective study of 300 patients. J Reprod Med 2000;45:679–84.
14. Jantos M, Burns NR. Vulvodynia. Development of a psychosexual profile. J Reprod Med 2007;52:63–71.
15. Pukall CF, Reissing ED, Binik YM, Khalife S, Abbott FV. New clinical and research perspectives on the sexual pain disorders. J Sex Educ Ther 2000;25:36–44.
16. Schweinhardt P, Kuchinad A, Pukall CF, Bushnell MC. Increased gray matter density in young women with chronic vulvar pain. Pain 2008;140:411–9.
17. Desrochers G, Bergeron S, Landry T, Jodoin M. Do psychosexual factors play a role in the etiology of provoked vestibulodynia? A critical review. J Sex Marital Ther 2008;34:198–226.
18. Brotto LA, Basson R, Gehring D. Psychological profiles among women with vulvar vestibulitis syndrome: a chart review. J Psychosom Obstet Gynaecol 2003;24:195–203.
19. Basson R. Rethinking low sexual desire in women. BJOG 2002;109:357–63.
20. Basson R. Biopsychosocial models of women's sexual response: applications to management of 'desire disorders.' Sex Relat Ther 2003;18:107–15.
21. Rosen R, Brown C, Heiman J, Leiblum S, Meston C, Shabsigh R, et al. The Female Sexual Function Index (FSFI): A multi-dimensional self-report instrument for the assessment of female sexual function. J Sex Marital Ther 2000;26:191–208.
22. Masheb R, Lozano-Blanco C, Kohorn E, Minkin MJ, Kerns R. Assessing sexual function and dyspareunia with the female sexual function index (FSFI) in women with vulvodynia. J Sex Marital Ther 2004;30:315–24.
23. DeRogatis LR, Rosen R, Leiblum S, Burnett A, Heiman J. The Female Sexual Distress Scale (FSDS): initial validation of a standardized scale for assessment of sexually related personal distress in women. J Sex Marital Ther 2002;28:317–30.
24. Beck AT, Beamesderfer A. Assessment of depression: the depression inventory. In: Pichot P, ed. Psychological measurement in pharmopsychology. New York: Karger, Bassel;1974:151–69.
25. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. J Consult Clin Psychol 1988;56:893–7.
26. DeRogatis LR, Melisaratos N. The Brief Symptom Inventory: an introductory report. Psych Med 1983;13:595–605.
27. Storch EA, Roberti JW, Roth DA. Factor structure, concurrent validity, and internal consistency of the Beck Depression Inventory–Second Edition in a sample of college students. Depress Anxiety 2004;19:187–9.
28. Masheb RM, Kerns RD, Lozano C, Minkin MJ, Richman S. A randomized clinical trial for women with vulvodynia: cognitive-behavioral therapy vs. supportive psychotherapy. Pain 2009;141:31–40.
29. Pukall C, Kandyba K, Amsel R, Khalifé S, Binik Y. Effectiveness of hypnosis for the treatment of vulvar vestibulitis syndrome: a preliminary investigation. J Sex Med 2007;4(2):417–25.
30. Quartana PJ, Campbell CM, Edwards RR. Pain catastrophizing: a critical review. Expert Rev Neurother 2009;9(5):745–58.
31. Brown G, Manogue M. AMEE Medical Education Guide no. 22: Refreshing lecturing: a guide for lecturers. Med Teach 2001;23:231–43.
32. Basson R. A model of women's sexual arousal. J Sex Marital Ther 2002;28:1–10.
33. Jodoin M, Bergeron S, Khalife S, Dupuis MJ, Desrochers G, Leclerc B. Male partners of women with provoked vestibulodynia: attributions for pain and their implications for dyadic adjustment, sexual satisfaction, and psychological distress. J Sex Med 2008;5:2862–70.
34. Golden JS, Price S, Heinrich AG, Lobitz WC. Group vs. couple treatment of sexual dysfunctions. Arch Sex Behav 1978;7:593–602.