ORIGINAL RESEARCH

Are Primary and Secondary Provoked Vestibulodynia Two Different Entities? A Comparison of Pain, Psychosocial, and Sexual Characteristics

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ABSTRACT

Introduction. Provoked vestibulodynia (PVD) is suspected to be the most frequent cause of vulvodynia in premenopausal women. Based on the onset of PVD relative to the start of sexual experience, PVD can be divided into primary (PVD1) and secondary PVD (PVD2). Studies comparing these PVD subgroups are inconclusive as to whether differences exist in sexual and psychosocial functioning.

Aim. The aim of this study was to compare the pain, sexual and psychosocial functioning of a large clinical and community-based sample of premenopausal women with PVD1 and PVD2.

Methods. A total of 269 women (n = 94 PVD1; n = 175 PVD2) completed measures on sociodemographics, pain, sexual, and psychosocial functioning.

Main Outcome Measures. Dependent variables were the 0–10 pain numerical rating scale, McGill–Melzack Pain Questionnaire, Female Sexual Function Index, Global Measure of Sexual Satisfaction, Beck Depression Inventory-II, Painful Intercourse Self-Efficacy Scale, Pain Catastrophizing Scale, State-Trait Anxiety Inventory Trait Subscale, Ambivalence over Emotional Expression Questionnaire, Hurlbert Index of Sexual Assertiveness, Experiences in Close Relationships Scale—Revised, and Dyadic Adjustment Scale-Revised.

Results. At first sexual relationship, women with PVD2 were significantly younger than women with PVD1 ($P < 0.01$). The average relationship duration was significantly longer in women with PVD2 compared with women with PVD1 ($P < 0.01$). Although women with PVD1 described a significantly longer duration of pain compared with women with PVD2 ($P < 0.01$), no significant subtype differences were found in pain intensity during intercourse. When controlling for the sociodemographics mentioned earlier, no significant differences were found in sexual, psychological, and relational functioning between the PVD subgroups. Nevertheless, on average, both groups were in the clinical range of sexual dysfunction and reported impaired psychological functioning.

Conclusions. The findings show that there are no significant differences in the sexual and psychosocial profiles of women with PVD1 and PVD2. Results suggest that similar psychosocial and sex therapy interventions should be offered to both subgroups of PVD. **Aerts L, Bergeron S, Corsini-Munt S, Steben M, and Pâquet M. Are primary and secondary provoked vestibulodynia two different entities? A comparison of pain, psychosocial, and sexual characteristics. J Sex Med 2015;12:1463–1473.**

Key Words. Provoked Vestibulodynia; Vulvodynia; Female Genital Pain; Dyspareunia; Primary Subtype; Secondary Subtype

Introduction

Vulvodynia, or chronic unexplained vulvar pain, is a major health concern for women of all ages. With a prevalence of 8% in the general population, vulvodynia affects women across the lifespan, and across ethnic and socioeconomic groups [1]. Provoked vestibulodynia (PVD)—an acute recurrent pain localized within the vulvar vestibule and experienced primarily during intercourse—is suspected to be the most frequent cause of vulvodynia in premenopausal women [2]. Based on the onset of PVD relative to the start of sexual experience, PVD can be divided into primary (PVD1) and secondary PVD (PVD2). Women with PVD1 report pain from early attempts at penetration (including tampon insertion, sexual activity, etc.), whereas women with PVD2 are characterized by recalling a period of pain-free intercourse. The subtypes of primary (lifelong) and secondary (acquired) vestibulodynia are widely used in many classification systems, such as the Diagnostic and Statistical Manual of Mental Disorders (DSM) Fifth Edition classification for genito-pelvic pain/penetration disorder [3] and the International Society for the Study of Vulvovaginal Diseases classification of vulvodynia [4]. Despite evidence of biomedical differences between both PVD subgroups [5–18], research comparing sociodemographics, pain, sexual, and psychosocial functioning in both entities has generated conflicting data [6,18,19]. The discrepancies in findings could be explained by the fact that most studies have been limited by small, clinical samples and have focused on a limited number of sexual and psychosocial variables.

Several authors hypothesize that different etiological pathways may lead to PVD1 and PVD2 [6–14]. Studies have suggested a different genetic profile in women with PVD1 and PVD2 [9–12]. Goetsch noted that women with PVD1 tended to have strong family histories of dyspareunia [9]. More recently, it has been shown that women with PVD1 were significantly more likely to display a Mannose-binding lectin (MBL) gene polymorphism, MBL*B compared with women with PVD2 [12] and that women with PVD1 may have developed their disorder because of a congenital neuronal hyperplasia in the urogenitally derived tissue [10]. Indeed, recent histologic studies showed significant neural hypertrophy and hyperplasia in PVD1 compared with PVD2 [7,8]. These differences in nerve fibers may account for a difference in sensitivity to pain between both PVD subtypes. Focusing on pain perception, studies have shown that compared with women with PVD2, women with PVD1 reported a higher sensitivity to thermal stimuli on the forearm and vestibule [18], and higher pain ratings for suprathreshold heat stimuli [6]. In addition, there is some evidence that women with PVD2 may have a better treatment outcome than women with PVD1. A study on the multidisciplinary treatment for PVD showed that women with PVD2 were more likely to have major improvement compared with women with PVD1 [5]. Furthermore, previous research suggested that women with PVD2 respond better to vestibulectomy than women with PVD1 [15,16,20]. Published findings concerning sociodemographics, pain, sexual, and psychosocial aspects of these conditions have not necessarily mirrored the differences found in these biomedical studies.

To date, inconsistencies have been reported regarding the age of women with PVD1 and PVD2, with some studies showing that women with PVD1 were more likely to be younger than women with PVD2 [7,11,14], whereas other studies did not find a significant age difference between the two subgroups [6,18,19]. Furthermore, in terms of sociodemographic characteristics, previous research showed no significant PVD subtype differences on level of education [6,14,18,19], income [18,19], and length of the present romantic relationship [19].

Although no significant differences in duration of pain symptoms between both PVD subtypes had been reported [8,11,18], two studies recently showed that women with PVD1 experienced pain during penetration for a significantly longer time than women with PVD2 [7,19]. Further, in contrast to previous studies [5,19], Brotto et al. also found that women with PVD2 rated their overall vestibular pain significantly higher than women with PVD1 [19]. The larger sample sizes in recent studies may explain some of these discrepancies.

Using the Female Sexual Functioning Index (FSFI) in a sample of 26 women diagnosed with PVD, a cross-sectional study showed that women with PVD1 and PVD2 did not differ on any measures of sexual response [18]. In contrast, a recent study of 132 women consulting a tertiary center for the treatment of their vulvo-vaginal pain, showed that women with PVD2 reported lower sexual functioning compared with women with PVD1 [19]. Specifically, women with PVD2 reported significantly lower levels of desire, arousal, lubrication, orgasm, satisfaction, and overall sexual

function. Given that in this cross-sectional study, pain severity during intercourse was significantly—although weakly—correlated with low desire and low lubrication scores on the FSFI, the authors stated that the higher pain intensity in women with PVD2 may have contributed to their lower levels of sexual functioning [19].

In terms of psychological and relational functioning, research published to date suggests that women with PVD1 reported more symptoms of trait anxiety [6] and lower levels of emotional and social functioning [18] than women with PVD2. Furthermore, a small study of 50 women showed that compared with women with PVD2, women with PVD1 were more avoidant of sexuality [21]. A cross-sectional study evaluating a limited number of psychological variables showed that women with PVD1 reported significantly more role limitations because of emotional functioning, and increased levels of self-consciousness about their bodies during sex compared with women with PVD2 [18]. In contrast, findings from a large clinical study did not indicate significant differences in depression, anxiety, pain self-efficacy, and catastrophizing, or relationship adjustment between the two subgroups [19].

Previous research in individuals with chronically painful conditions has shown that more interpersonal variables may influence their sexual and psychosocial functioning as well. Ambivalence over emotional expression, defined as the extent to which a person is comfortable with the way he or she expresses emotions [22], has been shown to predict more pain, disability, and psychological distress in patients with chronic low back pain, gastrointestinal cancer, and PVD [23–25]. Furthermore, a recent study involving 101 couples in which the women presented with PVD showed that both anxious (anxiety about rejection) and avoidant (avoidance of intimacy) attachment styles were associated with women's lower sexual satisfaction [26]. Attachment avoidance was also associated with women's lower sexual function [26]. Interestingly, women's sexual assertiveness was found to be a significant mediator of the relationship between their attachment styles, sexual function, and sexual satisfaction [26]. Although these cognitive and behavioral variables are associated with psychosexual functioning in chronic pain and PVD samples [23–26], they have never been examined in the two PVD subgroups separately. Given the role of these variables in the experience of PVD, their clinical relevance, and the reported biomedical differences between the two groups, it is important to assess whether these psychosocial factors would also be expressed differently in each PVD subgroup.

The available literature on the sexual and psychosocial functioning of women with PVD1 and PVD2 has generated conflicting data. The discrepancies in findings could be explained by the fact that most studies have been limited by small, clinical samples and have focused on a limited number of sexual and psychosocial variables. Thus, it is not clear to which extent the reported biomedical differences between the two groups are mirrored by or lead to psychosexual differences. Nevertheless, working under the assumption that PVD is a complex, multifactorial chronic pain syndrome, it is of interest to see whether both groups differ in terms of psychosexual functioning (i) because patients are as preoccupied about their sexual dysfunction, psychological distress, and negative impact on their relationship as they are about the pain itself; and (ii) to offer adequate clinical psychosexual support for both subgroups. Therefore, the aim of the present study was to build upon and extend previous studies by comparing women with PVD1 and PVD2 on a broader range of sociodemographic, pain, sexual, psychological, and relational characteristics in a large combined clinical and community sample of premenopausal women with PVD. Based on previous research, we hypothesized that the two subgroups would differ on certain sociodemographic, pain and sexuality variables, but that they would present relatively similar psychological profiles. There was not enough research from which to draw from to formulate hypotheses concerning the interpersonal variables introduced in this study.

Methods

Participants

Participants were recruited through referrals by gynecologists or other health professionals, as well as through local newspapers and website advertisements. If women were interested in the study, they were screened to determine their eligibility. The inclusion criteria were: (i) pain during intercourse that was subjectively distressing, occurred on at least 75% of intercourse attempts, and had lasted > 6 months; (ii) pain limited to intercourse and other activities that caused pressure to be exerted on the vulvar vestibule (e.g., riding a bicycle); and (iii) severe pain (minimum average pain of 5 on an 11-point numerical rating scale [NRS]) in one or more vestibular locations during

the cotton swab test. The exclusion criteria were: (i) vulvar pain not clearly linked to intercourse or pressure to the vestibule; and (ii) presence of one of the following: (a) major medical and/or psychiatric illness; (b) active genital or urinary infection; (c) deep dyspareunia; (d) vaginismus as per DSM—Fourth Edition criteria; (e) dermatologic lesion; (f) pregnancy; and (g) age < 18 years old or > 45 years old. Primary PVD was characterized by women recalling pain from first attempts at vaginal penetration (including tampon insertion, sexual activity, etc.). Secondary PVD was characterized by vulvo-vaginal pain appearing after a period of pain-free vaginal intercourse.

Procedure

Women recruited through gynecologists were instructed to meet with the research assistant at the clinic to determine their eligibility. Women recruited through referrals by other health care professionals or via advertisements were first screened by telephone and given an appointment with one of the participating gynecologists. Women were given a questionnaire package that included a consent form, investigator-derived standard medical and pain questionnaires as well as validated questionnaires assessing women's psychological, relational, and sexual functioning. The study was approved by the Institutional Review Board of University of Montréal.

Main Outcome Measures

Descriptive Variables

Participants completed questionnaires, which gathered information on demographics, medical and gynecological histories, relationship, and sexual experiences.

Pain

Pain intensity was assessed using an 11-point NRS by asking participants to estimate their average provoked vulvo-vaginal pain over the past month (0 represented the absence of pain and 10 constituted the worst pain ever experienced). This instrument is widely used in chronic pain studies [27] and has a good validity and reliability in assessing different types of pain [28]. It correlates well with other measures of pain [29].

The McGill–Melzack Pain Questionnaire (MPQ) [30] is both a qualitative and quantitative measure of pain, which includes 77 adjectives, three scales (sensory, evaluative, and affective), and three indices (pain rating index, number of words chosen, and present pain index). High scores on this questionnaire indicate a more severe pain experience. This questionnaire has an excellent internal validity [30] and also very good discriminant validity [31]. It has good test–retest reliability for each measured dimension [32].

Sexual Functioning and Satisfaction

Global sexual functioning was measured by the Female Sexual Function Index (FSFI) [33] for participants who had vaginal penetration in the last 4 weeks. The FSFI consists of 19 items focusing on the following dimensions of sexual function: desire, arousal, lubrication, orgasm, satisfaction, and pain/discomfort. Higher scores indicate better sexual function, and the proposed cut off for sexual dysfunction is 26.55 [34]. The FSFI has very good psychometric qualities, is easy to administer, and discriminates clinical from nonclinical populations [35]. The Cronbach's alpha for the present sample was 0.79.

The Global Measure of Sexual Satisfaction (GMSEX) [36] was used to measure sexual satisfaction. The GMSEX is a 5-item measure that assesses satisfaction using a 7-point Likert scale. The total score ranges from 5 to 35 with higher scores corresponding to a higher sexual satisfaction. The scale has good reliability and excellent validity [37]. The Cronbach's alpha in the present sample was 0.90.

Psychological Factors

Trait anxiety was assessed with the Trait Anxiety Inventory. The Trait Anxiety Inventory is a 20-item subscale of the State-Trait Anxiety Inventory (STAI) [38]. All items are rated on a 4-point Likert scale from 1 (*not at all*) to 4 (*very much so*). The internal consistency of the Trait subscale is high (0.93) [38] and the Trait subscale produces excellent test–retest coefficients (average $r = 0.88$ at a variety of time intervals) [39]. The Cronbach's alpha in the present sample was 0.92.

Adapted from the Arthritis Self-Efficacy Scale [40], the Painful Intercourse Self-Efficacy Scale is a 20-item self-report questionnaire that was used to measure a participant's perceived ability to participate in sexual activity or to reach certain goals in pain management. The questionnaire is divided into the three dimensions of self-efficacy associated with pain during intercourse: (i) self-efficacy for controlling pain during intercourse; (ii) self-efficacy for sexual function; and (iii) self-efficacy for controlling other symptoms. Participants

responded to items on a 10-point scale ranging from 10 (*very uncertain*), 50 (*moderately uncertain*), to 100 (*very certain*). The original version of the scale was found to have good internal consistency among a sample of patients with arthritis (Cronbach's alpha ranging from 0.76 to 0.89) and acceptable test–retest reliability [40]. In this sample, the Cronbach's alpha was 0.89.

Pain catastrophizing was assessed with the Pain Catastrophizing Scale (PCS) [41]. This PCS consists of 13 items measuring exaggerated negative thoughts and feelings about the meaning of pain. Each of the 13 items is rated on a Likert scale from 0 (*not at all*) to 4 (*all the time*). The PCS is composed of three subscales: rumination, magnification, and helplessness. Higher scores indicate greater catastrophizing and scores can range from 0 to 52. The reliability and validity of the PCS have been well established [41,42]. The Cronbach's alpha in the present sample was 0.87.

Participants were asked how many times in the past month they had attempted to have sexual intercourse with vaginal penetration. The actual number of attempts, successful or not, was taken as the behavioral measure of avoidance, with a lower number of attempts being indicative of more avoidance [43].

Depression was measured via the Beck Depression Inventory-II (BDI-II), comprised of 21 items, with scores for most items ranging from 0 (*low intensity*) to 3 (*high intensity*) [44,45]. Greater scores indicate greater depressive symptoms, with scores from 0 to 9 indicating minimal symptoms, 10 to 18 indicating mild to moderate, and 19 and over indicating moderate to severe. This measure of depression has been validated for use in chronic pain populations [46]. The Cronbach's alpha in the present sample was 0.86.

Assertiveness in sexual situations was assessed using the 25-item Hurlbert Index of Sexual Assertiveness [47]. Agreement with each statement was rated on a 5-point Likert scale ranging from 1 (*none of the time*) to 5 (*all of the time*). The summation of each item provided a global score of sexual assertiveness ranging from 0 to 100, with higher scores representing a better capacity to be assertive with sexual partners. Reliability and validity have been well demonstrated [47–49]. The Cronbach's alpha in the present sample was 0.90.

Ambivalence over emotional expression (AEE) was measured with the Ambivalence over Emotional Expression Questionnaire (AEQ) [22]. This self-report measure consists of 28 items, with a total score being computed on a 5-point scale and higher scores indicating more AEE. The AEQ has been shown to have good psychometric properties, including good internal stability ($\alpha = 0.89$), test–retest reliability, and convergent validity [22]. The Cronbach's alpha in the present sample was 0.93.

Relationship Factors

The revised Dyadic Adjustment Scale—Revised (DAS-R) [50] was used to evaluate relationship adjustment according to the following dimensions: consensus, satisfaction, cohesion, and affectional expression. The DAS-R includes only 14 items, each of which asks the respondents to rate certain aspects of her/his relationship on a 5- or 6-point scale. Scores on the DAS-R range from 0 to 69 with higher scores indicating greater relationship satisfaction and lower scores indicating greater relationship distress. The cutoff score for the DAS-R is 48 such that scores of 48 and above indicate nondistress, and scores of 47 and below indicate marital/relationship distress. The original DAS shows good psychometric properties, and the revised scale is a shorter version that shows high correlation with the original [50]. The Cronbach's alpha in the present study was 0.83.

The two dimensions of romantic attachment were measured using the Experiences in Close Relationships Scale—Revised (ECR-R) [51]. This 36-item scale consists of two 18-item subscales assessing anxiety about rejection and avoidance of intimacy. The extent of agreement with each item is rated on a Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). One score for each dimension was computed by averaging items of each subscale, with higher scores indicating higher attachment anxiety and avoidance. Fraley et al. have provided evidence for the reliability and validity of the ECR-R [51]. In the current sample, Cronbach's alphas were 0.88 for the anxiety subscale and 0.86 for the avoidant subscale.

Statistical Analyses

All data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 21 (IBM Corporation, Armonk, NY, USA). First, independent samples *t*-tests (Mann–Whitney *U*-test) were used to compare the primary and secondary PVD subtypes on sociodemographics and pain characteristics. Second, analyses of covariance controlling for relevant sociodemographics were used to compare the two PVD subgroups on sexual, psychological, and relationship measures. The BDI-II, Hurlbert Index of Sexual Assertiveness, AEQ, and ECR-R were added at a later stage

of the study and therefore were only completed by part of the sample (n = 161), of which 50 women (31%) had PVD1, and 111 women (39%) had PVD2. The significance level was set at alpha = 0.05.

Results

Sample Characteristics

The sample comprised 269 participants. One hundred eight (40%) responded to an advertisement and 161 women (60%) were referred by a health care professional, i.e., had been seeking care, and were thus considered to be more of a clinical sample. They were all diagnosed with PVD by a gynecologist. Ninety-four women (35%) had primary PVD, and 175 (65%) had secondary PVD. As shown in Table 1, the mean age of the sample was 27.1 years (range = 19–45, standard deviation [SD] = 5.6). The mean relationship duration was 48 months (range = 0.5–276.0, SD = 45.4). The majority (85.9%) identified culturally as University of Montréal and were Catholic (79.2%). Participants were found to be well educated, with a mean of 15.9 years of education (range = 7–24, SD = 2.5), and 47.6% of the women had a household income of > $60.000 per year. All women who did not engage in intercourse (21.5%) were asked the reason for not engaging in intercourse, and 36% indicated that pain was at least one of the potential reasons.

The means and standard deviations for each variable based on group (PVD 1 and PVD2) are provided in Table 1. Women with PVD1 were significantly younger than women with PVD2 (26.0 ± 5.5 vs. 27.7 ± 5.5 years, respectively, $P < 0.01$). The average duration of the present committed relationship was significantly longer in women with PVD2 (53.0 ± 46.7 months) compared with women with PVD1 (38.7 ± 41.6 months), $P < 0.01$. Furthermore, at first sexual intercourse attempt, women with PVD2 (17.4 ± 2.5 years) were significantly younger than women with PVD1 (18.2 ± 3.6 years), $P < 0.05$. Finally, there were no significant subtype differences on education level, annual household income, culture, or religion. Because of these group differences, duration of committed relationship and age at first sexual intercourse attempt were controlled for in subsequent analyses. Age was not controlled for because it correlated significantly with the duration of pain symptoms ($r = 0.37$) and the duration of committed relationship ($r = 0.51$).

Descriptive Statistics

Pain Characteristics

Self-reported pain characteristics of both groups are compared in Table 2. Women with PVD rated

Table 1 Sociodemographic characteristics

	Total sample N = 269	PVD1 n = 94	PVD2 n = 175
Age (years)**	27.1 ± 5.6	26.0 ± 5.5	27.7 ± 5.5
Years of schooling	15.9 ± 2.5	15.7 ± 2.5	16.0 ± 2.4
Duration present committed relationship (months)**	48.0 ± 45.4	38.7 ± 41.6	53.0 ± 46.7
Age first sexual intercourse**	17.5 ± 2.9	18.2 ± 3.6	17.1 ± 2.5
Culture (%)			
Canadian	90.0	87.2	91.4
American	0.7	0	1.1
European	4.1	6.4	2.9
African	1.1	2.1	0.6
Asian	0.4	1.1	0
Middle Eastern	0.4	1.1	0
South American or Caribbean	2.6	2.1	2.9
Other	0.7	0	1.1
Religion (%)			
Catholic	79.3	75.5	81.1
Protestant	2.2	4.3	1.1
Jewish	1.1	1.1	1.1
Other	3.3	3.2	3.4
None	12.6	13.8	12.2
Not specified	1.5	2.1	1.1
Annual household income (%)			
Less than $60.000	52.4	60.6	48.0
More than $60.000	47.6	39.4	52.0

Significant differences between PVD1 and PVD2: *$P < 0.05$; **$P < 0.01$
Values are percentage or means ± standard deviation
PVD1 = primary provoked vestibulodynia; PVD2 = secondary provoked Vstibulodynia

Table 2 Characteristics of self-reported pain

	Total sample N = 269	PVD1 n = 94	PVD2 n = 175
Duration pain experience (months)**	61.6 ± 53.6	89.8 ± 64.9	46.2 ± 38.7
Pain intensity (0–10)	6.8 ± 1.7	6.7 ± 1.6	6.8 ± 1.8
MPQ Total	31.8 ± 14.4	32.8 ± 13.5	31.2 ± 14.9

Significant differences between PVD1 and PVD2: *$P < 0.05$; **$P < 0.01$
Values are means ± standard deviation
PVD1 = primary provoked vestibulodynia; PVD2 = secondary provoked vestibulodynia; MPQ = McGill–Melzack Pain Questionnaire

the intensity of the vulvo-vaginal pain as very high on average (6.8/10.0, SD = 1.7). However, no significant subtype differences were found in mean coital NRS pain score and in total MPQ score. The mean pain duration of the total PVD sample was 61.6 months (range = 2.0–303.9, SD = 53.6). Women with PVD1 described a significantly longer duration of pain compared with women with PVD2 (89.8 vs. 46.2 months, $P < 0.01$). Pain duration was thus controlled for in all subsequent analyses.

Sexual Functioning and Satisfaction

Results concerning sexual functioning and satisfaction of both groups are summarized in Table 3. Although the women of both groups presently having sexual intercourse (n = 201), on average, were in the clinical range of female sexual dysfunction [34], there were no significant differences with respect to FSFI total score between women with PVD1 and PVD2. In terms of sexual satisfaction, again, on average, no significant differences were found between women with PVD1 and PVD2.

Psychological Factors

Results of the STAI Trait Anxiety, Painful Intercourse Self-Efficacy Scale, PCS, BDI-II, Hurlbert Index of Sexual Assertiveness, and AEQ are summarized in Table 3. There were no significant differences between women with PVD1 and PVD2 with respect to any of the measures of psychological functioning. For both groups, the mean BDI-II score indicated the presence of mild to moderate depressive symptoms. Finally, no significant differences were found between both groups in the number of sexual intercourse attempts.

Relationship Factors

As shown in Table 3, no significant differences were found on the DAS-R total score between women with primary and secondary PVD. Average dyadic adjustment suggested no clinically meaningful relationship distress in both PVD groups. Furthermore, no significant differences were found in attachment anxiety and avoidance between women with PVD1 and PVD2.

Discussion

Previous research has been inconclusive as to whether differences exist in sexual and psychosocial functioning between women with PVD1 and PVD2. The aim of the present study was to build upon and extend previous studies by comparing women with PVD1 and PVD2 on a broader range of sociodemographic, pain, sexual, psychological, and relational characteristics in a large combined clinical and community sample of premenopausal women with PVD. The present study showed that,

Table 3 Sexual, psychological and relationship characteristics

	Total sample N = 269	PVD1 n = 94	PVD2 n = 175
FSFI total	19.7 ± 6.6	20.1 ± 6.2	19.5 ± 6.8
GMSEX	23.8 ± 6.0	23.2 ± 6.1	24.1 ± 6.0
STAI Trait	42.9 ± 10.9	44.0 ± 10.9	42.3 ± 10.9
Painful Intercourse Self-Efficacy Total score	62.7 ± 14.4	63.8 ± 13.9	62.0 ± 14.7
PCS total score	27.0 ± 10.4	27.6 ± 10.0	26.7 ± 10.7
Intercourse attempts in past month	4.4 ± 4.5	5.1 ± 4.8	4.1 ± 4.3
BDI-II	11.0 ± 8.0	10.6 ± 7.8	11.2 ± 8.2
Hurlbert Index of Sexual Assertiveness	37.8 ± 15.1	41.4 ± 14.2	36.2 ± 15.3
AEQ	2.5 ± 0.7	2.6 ± 0.7	2.4 ± 0.7
RDAS total score	51.0 ± 7.2	50.9 ± 7.3	51.0 ± 7.1
ECR-R anxiety	44.3 ± 17.3	46.8 ± 18.9	43.1 ± 16.6
ECR-R avoidance	43.1 ± 14.2	41.2 ± 11.3	44.0 ± 15.3

Significant differences between PVD1 and PVD2: *$P < 0.05$; **$P < 0.01$
Values are means ± standard deviation
PVD1 = primary provoked vestibulodynia; PVD2 = secondary provoked vestibulodynia; FSFI = Female Sexual Function Index; GMSEX = Global Measure of Sexual Satisfaction; STAI Trait = Trait Anxiety Inventory; PCS = Pain Catastrophizing Scale; BDI-II = Beck Depression Inventory-II; AEQ = Ambivalence over Emotional Expression Questionnaire; ECR = Experiences in Close Relationships Scale—Revised; RDAS = Dyadic Adjustment Scale—Revised

when controlling for sociodemographics, no significant differences were found in sexual, psychological, and relational functioning between both PVD subgroups. Nevertheless, on average, both groups were in the clinical range of sexual dysfunction and reported impaired psychological functioning.

In line with previous research [7,11,14], results showed significant differences in age, with women with PVD1 being significantly younger than women with PVD2. This is consistent with the fact that they experience pain since their first intercourse attempt, whereas women with PVD2 might develop pain after a number of years of a satisfying sex life. In contrast with previous research [19], women with PVD1 were significantly older at first sexual intercourse attempt compared with women with PVD2. It could be assumed that women with PVD1 are less interested in sex or have more conservative sexual attitudes. However, when experiencing vulvar pain during tampon use or during first sexual experiences, these women may become insecure and less likely to explore further sexual activity, namely sexual intercourse. The average duration of the present committed relationship was significantly longer in women with PVD2 compared with women with PVD1. This makes sense in light of the difference in age between both PVD subgroups. Finally, in line with previous research [6,14,18,19], the current study did not show significant subtype differences on education level, annual household income, culture, and religion.

Women with PVD1 presented with a significantly longer duration of pain compared with women with PVD2. These results corroborate previous findings [19] and are not surprising given the fact that women with PVD1 report vulvovaginal pain starting from their first attempt of vaginal penetration. In line with the findings of previous studies [29,52], women with PVD rated the intensity of the vulvo-vaginal pain as very high on average. However, in the current study, no significant subtype differences were found in mean coital NRS pain score and in total MPQ score. These results corroborate findings of two previous studies comparing pain characteristics between the two subtypes of PVD [5,18], but are in contrast with the results of a recent clinical-based study showing that women with PVD2 rated their pain symptoms significantly more severely than women with PVD1 [19]. These discrepant findings might be the result of different types of samples (clinical vs. community).

Using the FSFI, Brotto et al. showed that women with PVD2 reported significantly worse sexual functioning than women with PVD1 [19]. Sutton et al. on the other hand, did not find any differences in sexual response between both PVD subgroups [18]. The results of the current study are in line with the latter findings, showing that women with PVD1 and PVD2 did not differ with respect to sexual functioning and sexual satisfaction. Although both the current study and the study of Brotto et al. are based on fairly large sample sizes (269 and 132 women with PVD, respectively), women participating in the study of Brotto et al. were all actively seeking treatment for their PVD symptoms, whereas the current study was based on a combined clinical and community sample, where participants may have been less distressed on average. Further, in the present study, duration of pain symptoms, age at first sexual intercourse attempt, and duration of the current partner relationship were controlled for because (i) they were different between the two groups yet are unrelated to etiology; and (ii) are either associated with sexual function and/or chronic pain outcomes [53,54].

In contrast to previous studies examining both subtypes of PVD [6,18,21], the current sample showed that women with PVD1 and PVD2 did not differ significantly on depression, trait anxiety, pain self-efficacy, catastrophizing and dyadic adjustment. These results are in line with findings from a recent large-scale study [19]. In addition, the present study also showed that no significant difference existed between women with PVD1 and PVD2 in terms of behavioral avoidance of vaginal penetration, sexual assertiveness, ambivalence over emotional expression, and romantic attachment—more interpersonal psychological variables. This suggests that although women with PVD1 and PVD2 may differ in terms of their biomedical characteristics, and possibly, etiology, they nevertheless present similar psychosocial profiles.

Taken together, findings of the present study suggest that, when controlling for sociodemographics, there are no significant differences in the sexual and psychosocial profiles of women with primary and secondary PVD. Nevertheless, on average, both groups were functioning below the clinical cut off (26.5) for female sexual dysfunction [34]. Moreover, although there were no subtype differences, psychological impairments were also common in both groups.

The present study expanded upon the investigation of sexual and psychosocial factors in these PVD subgroups using a large, combined clinical and community sample of women with PVD, and by including a wide range of intra-individual and interpersonal psychosocial factors. As a result, the findings of the present study may be more representative of the general population of women afflicted with PVD. Finally, analyses concerning sexual and psychosocial functioning between the two subgroups were performed after controlling for relevant sociodemographics, which are distinct from etiology. In addition to the strengths of the present study, there are limitations that must be considered. First, we only assessed women with a premenopausal status. Thus, our findings may not be generalizable to the PVD population as a whole. By limiting recruitment only to premenopausal women younger than 45, we excluded the possibility of examining potential subtype differences that may be due to estrogen deficiency. Second, certain factors that have been shown to be associated with the development of PVD, such as pain during tampon insertion and avoidance of tampon use before first sexual intercourse [55], lifetime occurrence of sexual abuse [55], lifetime frequency of fearing physical abuse [55], and the use of combined hormonal contraceptives [56–60], were not assessed in the present study and could have influenced our results. Finally, all the measures consisted of self-report questionnaires, which are subject to social desirability biases.

As the present study showed group differences in sociodemographic variables, such as age, duration of pain, duration of the present committed relationship and age at first intercourse attempt, future studies comparing etiology, biomedical and psychosexual treatment between women with primary and secondary PVD, should control for sociodemographics in their analyses. Furthermore, more research is needed concerning potential differences in treatment response between women with PVD1 and PVD2, including psychosexual interventions and using randomized controlled trial methodologies. Such findings could further orient our treatment recommendations.

In terms of clinical implications, findings suggest that similar psychosocial and sex therapy interventions should be offered to both subgroups of PVD. Indeed, although several authors have suggested that PVD1 and PVD2 are two different entities in terms of etiological pathways [6–14] and treatment response [5,15,16,20], the current study indicates that vulvar pain is associated with impairments in sexual functioning and psychosocial well-being in both PVD subgroups. Therefore, clinicians should be sensitive to the sexual and psychosocial needs of women with PVD, regardless of subtype, through provision of accurate education and psychosexual support.

Conclusion

Including a wide range of intra-individual and interpersonal psychosocial factors, the findings of the present study suggest that women with PVD1 and PVD2 do not differ with respect to sexual and psychosocial profiles. However, both groups experience significant degrees of sexual dysfunction and psychological impairment. Our results support the integration of psychosocial and sex therapy interventions in the treatment of both subgroups of PVD.

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