Body Image in Women with Primary and Secondary Provoked Vestibulodynia: A Controlled Study

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ABSTRACT

Introduction. Provoked vestibulodynia (PVD) is a women's genito-pelvic pain condition associated with psychosexual impairments, including depression. Body image (BI) has been found to be different in women with primary (PVD1) and secondary (PVD2) PVD. No controlled study has compared BI in women with PVD1 and PVD2 and investigated its associations with sexual satisfaction, sexual function, and pain.

Aims. The aims of this study were to (i) compare BI in women with PVD1, PVD2, and asymptomatic controls and (ii) to examine associations between BI and sexual satisfaction, sexual function, and pain during intercourse in women with PVD.

Methods. Fifty-seven women (20 with PVD1, 19 with PVD2, and 18 controls) completed measures of BI, sexual satisfaction, sexual function, pain during intercourse, and depression.

Main Outcome Measures. The main outcome measures were (i) Global Measure of Sexual Satisfaction Scale, (ii) Female Sexual Function Index, and (iii) pain numerical rating scale.

Results. Controlling for depression, women with PVD1 reported more body exposure anxiety during sexual activities than women with PVD2 and controls $F(2,51) = 4.23$, $P = 0.02$. For women with PVD, more negative BI during sexual activities was associated with lower sexual satisfaction ($\beta = -0.45$, $P = 0.02$) and function ($\beta = -0.39$, $P = 0.04$) and higher pain during intercourse ($\beta = 0.59$, $P = 0.004$). More positive body esteem was associated with higher sexual function ($\beta = 0.34$, $P = 0.05$).

Conclusions. Findings suggest that women with PVD1 present more body exposure anxiety during sexual activities than women with PVD2 and asymptomatic women. Body esteem and general attitudes toward women's genitalia were not significantly different between groups. Higher body exposure anxiety during sexual activities was associated with poorer sexual outcomes in women with PVD. Further studies assessing interventions targeting BI during sexual activities in this population are needed, as improving BI during sexual interactions may enhance sexual outcomes in women with PVD. **Maillé DL, Bergeron S, and Lambert B. Body image in women with primary and secondary provoked vestibulodynia: A controlled study. J Sex Med **;**:**–**.**

Key Words. Dyspareunia; Provoked Vestibulodynia; Body Image; Sexual Satisfaction; Sexual Function; Vulvodynia

Introduction

Provoked vestibulodynia (PVD) is the most common form of genito-pelvic pain, or dyspareunia, with an estimated prevalence of 8% in women of the general population [1]. PVD is defined as "vulvar discomfort, most often described as a burning pain, occurring in the absence of relevant visible findings or a specific, clinically identifiable, neurologic disorder," localized to the vulvar vestibule and provoked by pressure [2]. It is associated with significant impairments in sexual and psychological functioning [3]. Women suffering from PVD report lower sexual satisfaction,

fewer sexual activities, lower levels of sexual desire, subjective arousal and lubrication, and fewer orgasms [4–8].

Studies have found that women with PVD report more symptoms of anxiety and depression, lower self-esteem [8–11], and distress regarding their pain and their sexual functioning, in comparison with women without genital pain [3,12]. One study has shown that women with PVD report a more negative body image (BI) [13] in comparison with women without PVD, yet no studies to date have examined the role of BI in the experience of pain and sexual dysfunction in this population. Given that a negative BI has been associated with negative sexual outcomes in samples of young women without sexual difficulties (e.g., Weaver and Byers and Seal et al. [14,15]), a negative BI may also be associated with lower sexual satisfaction and function in women with PVD.

Women suffering from PVD can be subdivided into two groups: primary (PVD1) and secondary (PVD2). Women with PVD1 have had pain during intercourse since their first penetrative attempt. For women with PVD2, the pain appeared after a period of pain-free intercourse. These two types of PVD each represent approximately 50% of women affected by this condition [16–18]. These two profiles appear to differ on sexual history and socio-demographic characteristics, although studies to date have yielded contradictory findings. Recent results suggest that the two groups do not differ significantly on age [19,20] and age of first intercourse [19]. Both groups also report similar frequencies of intercourse [20]. In terms of psychosexual differences, research published to date suggests that women with PVD1 have more symptoms of depression and are more avoidant of sexuality than women with PVD2 [21]. Conversely, Brotto and colleagues found no group differences between women with PVD1 and PVD2 on measures of depression. In their study, however, women with PVD2 reported lower sexual functioning [19]. The disparities between published studies underline the need for more research comparing the two subtypes of PVD. BI is of particular interest given that women with PVD report experiencing their bodies as defective [22] and that the time of onset of PVD (primary vs. secondary) may be associated with the extent of BI preoccupations. In turn, BI preoccupations may contribute negatively to sexual function and satisfaction in this population of young women coping with a distressing genito-pelvic pain problem.

BI is a multidimensional construct defined as an individual's experience of his or her body, including affective, perceptual, and evaluative components. BI may vary depending on the context in which it is being assessed (e.g., sexual intimacy vs. friendship). It can also be expressed in behavior, such as hiding one's body [23]. A negative BI has been related to intrapersonal difficulties, such as depression, as well as interpersonal struggles such as insecure adult attachment and fear of romantic intimacy [24–29].

BI has been studied in women without genital pain in relation to sexuality outcomes. Women who perceive themselves as good sexual partners are less concerned about the appearance of their bodies in a context of physical intimacy and rate their body and face more positively [30,31]. Regarding sexual satisfaction, some studies highlighted associations between a more positive perception of female genitalia and BI and higher sexual satisfaction [32,33], while other studies found no link between these variables [14,34–36]. These diverging results could be explained by the use of different questionnaires, focusing on distinct facets of BI. With respect to sexual functioning, the most consistent finding across studies is the association between a less positive BI and lower levels of sexual desire [15,34,36]. As for sexual behaviors, women with a more negative BI report a lower frequency of sexual activity and tend to adopt avoidant behaviors toward sexuality [27,30,33,36–38]. In sum, among young women without sexual dysfunction, a more positive BI is associated with a more positive perception of oneself as a sexual partner, higher desire, and higher frequency of sexual activity.

There has been little research examining BI in women with genital pain. The first study investigating BI found that 63% of the sample of women with PVD had endorsed the item of the Beck Depression Inventory (BDI) describing a negative change in BI [10]. Subsequently, Sackett and colleagues [11] found that 73% of their sample of women with PVD reported feeling less sexually desirable and 49% felt less feminine, according to their researcher-developed questionnaire. In a more recent controlled study, women with PVD had lower BI scores than women in a control group [13]. A more negative BI was associated with higher pain perception, more somatization, and more pain catastrophizing in women with PVD. Although interesting, this study did not differentiate women with PVD1 from those with PVD2 [13]. Another study of different types of chronic

vulvovaginal disorders found no significant difference between the BI scores of women with PVD and those with other chronic diseases, showing that all causes of dyspareunia may be negatively associated with BI. However, the small number of women with PVD (N = 7) limits the conclusions that can be drawn from this study [39]. Only one study to date compared the BI scores of women with PVD1 and PVD2. Results indicate that women with PVD1 presented more anxiety and self-awareness with exposure of their bodies during sexual activities in comparison with women with PVD2 [20].

Findings from the few studies conducted among women with PVD1 and PVD2 suggest significant differences between these two groups, specifically in relation to BI. As BI is associated with several aspects of sexuality in other populations of women and with pain intensity in one PVD study [13,15,30,36], BI represents a variable of interest to improve our knowledge of both types of PVD. From a methodological standpoint, some of the studies that have examined BI in relation to PVD present limitations such as the use of unvalidated measures to assess BI [10,11,39] and the absence of a control group [10,11,20,39]. This study proposes to overcome some of these limitations. In addition, given the multidimensional nature of BI, the use of questionnaires targeting various facets of this construct is useful to its measurement. Finally, because both negative BI and the presence of PVD have been associated with higher depressive symptoms, the present study included a depression measure as a covariate.

Aims

The aims of the present study were to (i) describe and compare BI in three groups of women (PVD1, PVD2, and asymptomatic controls) and (ii) examine the extent to which BI is associated with sexual satisfaction, sexual function, and pain during intercourse in women with PVD. It was expected that women with PVD1 would report a more negative BI than women with PVD2 and that these two groups would report a more negative BI than asymptomatic women. The lack of research on BI in the context of genito-pelvic pain did not allow us to formulate a specific hypothesis for the second aim, although based on research in women without sexual dysfunction, we expected that a more negative BI would be associated with worse sexuality outcomes in women with PVD.

Methods

Participants

Women with PVD1 (35.1% of the participants) and PVD2 (33.3% of the participants) were recruited at the clinic of the coinvestigator gynecologist in a university hospital located in a large metropolitan city. These women were coming to the clinic for initial or follow-up appointments and were diagnosed by the gynecologist prior to their participation in the study. Some of these women had tried previous treatment for their pain and others not. Control women (31.6% of the participants) were recruited through advertisements placed at different universities in the city where the study was conducted. They were informed that women without genital pain were needed to participate in a study regarding sexuality and BI. A structured interview of 11 questions for the PVD groups and 9 questions for the control group was used to assess eligibility according to the following selection criteria. The inclusion criteria for the groups with PVD were (i) being aged between 18 and 45 years; (ii) having pain during sexual activities for the last 6 months in at least 75% of penetration attempts; (iii) vulvovaginal pain limited to vaginal penetration and others activities exerting pressure on the vulvar vestibule; (iv) the pain is a source of distress; and (v) having received a PVD1 or PVD2 diagnosis by the coinvestigator gynecologist. The exclusion criteria for all groups included (i) having vulvar pain not related to penetration or other pressure sources on the vulvar vestibule (e.g., bicycle); (ii) being pregnant; and (iii) having other gynecological, severe general health or severe psychiatric problems. The inclusion criteria for the control group were (i) being aged between 18 and 45 years; (ii) having no history of vulvovaginal pain or difficulty during sexual activities, gynecological exams, or tampon insertion; and (iii) being sexually active. All PVD participants were diagnosed by the coinvestigator gynecologist and the control participants took part in a gynecological examination performed by the same gynecologist to ensure the absence of PVD. The criteria during the physical examination were the presence or absence of vulvar pain, localized to the vulvar vestibule and provoked by pressure, at the cotton-swab test and finger insertion. Of the 74 women who were solicited to participate in our study, 9 did not meet eligibility criteria. Of the five women with PVD1 who were not eligible, three had pain in less than 75% of the penetration attempts, one was under 18 years of age, and one

had a diagnosis of major depression. Of the two women with PVD2 who were not eligible, one was suffering from a chronic illness and one had pain only on the labia and clitoris. Finally, two control women were not eligible; one had genital pain during intercourse and one had not registered yet into the country's free Medicare plan. Four women declined participation (three with PVD1 and one with PVD2), four women of the control group did not attend the gynecological examination, and one woman with PVD2 did not send back her questionnaires. The final sample was comprised of 20 women with PVD1, 19 women with PVD2, and 18 control women, resulting in a final sample size of 57 participants.

Measures

BI

BI was measured using the three following self-report questionnaires. First, the Body Esteem Scale was used to assess the global BI of participants [40]. Items consist of a list of 35 body parts or functions divided into three subscales (sexual attraction, weight concern, physical condition). Participants rated how they felt about each body part or function on a Likert scale ranging from 1 (*strongly negative feelings*) to 5 (*strongly positive feelings*), a higher score corresponding to a better BI. This instrument has good internal consistency for the three subscales (alpha = 0.78, 0.87, and 0.82) and presents good validity [41]. In the current study, the Cronbach alpha coefficient for the three subscales combined was 0.92.

The Body Exposure during Sexual Activities Questionnaire was used to assess BI in the context of sexual activities. It measures anxious attentional focus and avoidance regarding exposure of the body during sexual activities. The items consist of 28 thoughts or behaviors occurring during sexual activities, for which participants had to indicate the frequencies on a Likert scale from 0 (*never*) to 4 (*always or almost always*). This instrument presents excellent psychometrics properties (alpha = 0.96) [42]. In the present study, the Cronbach alpha coefficient was 0.94.

Finally, the Attitudes Toward Women's Genital Scale [43] measures women's personal attitudes toward women's genitalia, globally. Participants had to indicate the degree to which they agreed with the 10 statements of the questionnaire on a Likert scale from 1 (*strongly disagree)* to 4 (*strongly agree*). This questionnaire presents a high internal consistency (alpha = 0.85) and good convergent validity and stability in time (0.93 [$P < 0.001$]) [44]. In the current study, the Cronbach alpha coefficient was 0.89. The use of three different questionnaires to measure the BI of participants helped capture the multidimensional aspects of the BI construct.

Main Outcome Measures

Sexual Satisfaction

Women's sexual satisfaction was assessed with the Global Measure of Sexual Satisfaction Scale from the Interpersonal Exchange Model of Sexual Satisfaction Questionnaire [45]. Participants responded on a seven-point Likert scale to the five following dimensions: good–bad, pleasant–unpleasant, positive–negative, satisfying–unsatisfying, valuable–worthless, for a total score ranging from 5 to 35, a higher score corresponding to a higher sexual satisfaction. This instrument has good internal consistency (alpha = 0.90) and test–retest reliability (r = 0.84) [45]. In this study, the Cronbach alpha coefficient was 0.94.

Sexual Function

Sexual functioning was measured using the Female Sexual Function Index (FSFI) [46]. The FSFI evaluates 6 dimensions of sexual functioning (desire, arousal, lubrication, orgasm, satisfaction, and pain) with 19 items. This questionnaire has excellent psychometric properties (internal consistency: 0.82; test–retest reliability: r = 0.79 to 0.86) and good discriminant validity [47]. In the current study, the Cronbach alpha coefficient was 0.97. The pain subscale was removed from the total score of the FSFI to avoid redundancy in measures.

Pain Intensity During Intercourse

Women's pain intensity during intercourse was assessed with a pain numerical rating scale. Women were asked by the research assistant doing the recruitment to rate the intensity of their current pain during intercourse on a scale from 0 to 10, 0 being no pain and 10 being the highest intensity possible. This instrument is widely used in chronic pain studies and presents excellent psychometrics properties [48,49].

Depression

Depression, as a covariate, was measured using the BDI-II [50]. The BDI-II is a 21-item questionnaire that assesses symptoms of depression. The total score was entered as a continuous variable.

This instrument presents very good reliability (internal consistency: 0.86) and high discriminant validity [51]. The Cronbach alpha in the present sample was 0.91.

Socio-Demographics

Socio-demographic data (age, nationality, culture, language, religion, education) were collected using a researcher-developed questionnaire of seven items.

Procedure

At the gynecology clinic, women with vulvovaginal pain diagnosed with PVD1 or PVD2 were directed toward the research assistant who was present during clinic hours. The study, questionnaires, and consent form were then explained to the potential participant by the research assistant. If the woman agreed to participate in the study, a take-home envelope containing the questionnaires and two copies of the consent form were given to her—one for her files and one to send back with her questionnaires. For control participants, the consent form was explained and signed before they took part in their gynecological examination for the study. The gynecologist completed the same standardized gynecological form for all participants. All the participants completed the questionnaires (socio-demographics, BI, sexual satisfaction, sexual function, depression) at home and sent them back with a signed copy of the consent form for the women of the PVD groups. Follow-up phone calls were made every 2 weeks (up to a maximum of 6) to answer participants' questions if needed and to facilitate the return of the questionnaires. A financial compensation of $30 was given to the women after completion of their participation. The present study was approved by institutional review boards of the hospital and university where the research was conducted.

Data Analytic Plan

Based on the aims of the study, two types of analyses were conducted. First, a multivariate analysis of covariance (MANCOVA), with depression as a covariate and post hoc tests for group comparisons, was used to compare the three groups of participants (PVD1, PVD2, and controls) on BI measures. Second, the associations between BI measures and the outcome measures of sexual satisfaction, sexual function, and pain intensity during intercourse in women with PVD were examined using linear regression analyses.

Results

Sample Characteristics

Descriptive statistics for the socio-demographic, BI, sexual satisfaction, sexual function, pain intensity during intercourse, and depression variables of the sample are listed in Table 1. There were no significant differences between groups for age $F(2,54) = 2.24$, $P = 0.12$ and years of education $F(2,54) = 2.36$, $P = 0.10$ as determined by one-way analysis of variance (ANOVAS). Significant differences between groups were found for sexual satisfaction $F(2,50) = 18.18$, $P < 0.001$ and sexual

Table 1 Descriptive statistics of the sample

	PVD1 M (SD)	PVD2 M (SD)	Controls M (SD)	*P*
Characteristic				
Age (years)	23.9 (3.7)	27 (5.9)	26.4 (4.7)	0.12
Duration of pain (months)	73.9 (44.6)	37.5 (24.3)	—	0.03*
Education level (years)	15.3 (3)	16.9 (3.1)	17.2 (2.8)	0.10
Independent variables				
Attitudes toward genitalia	27.1 (6.1)	27.8 (4.5)	30.6 (3.8)	0.33
Body exposure anxiety	36.1 (15.8)	24.2 (17.9)	16.2 (8.3)	0.02*
Body esteem	116.4 (18.3)	114.5 (20.7)	131.9 (15.1)	0.10
Dependent variables				
Sexual satisfaction	17.7 (6.2)	21.5 (7.8)	30.5 (4.6)	0.00**
Sexual function	12.8 (7.8)	15.4 (6.9)	20.3 (4.8)	0.002**
Pain intensity during intercourse	7.1 (2.2)	5.4 (2.6)	—	0.02*
Covariate				
Depression	3.5 (1.6)	3 (1.3)	1.7 (1.6)	0.001**

*$P < 0.05$; **$P < 0.01$

Attitudes toward genitalia = Attitudes Toward Women's Genital Scale; body esteem = Body Esteem Scale; body exposure anxiety = Body Exposure during Sexual Activities Questionnaire; depression = Beck Depression Inventory II; pain intensity during intercourse = visual analog scale; sexual function = Female Sexual Function Index without Pain subscale; sexual satisfaction = Global Measure of Sexual Satisfaction Scale

M = mean; PVD = provoked vestibulodynia; SD = standard deviation

Table 2 Correlations between body image measures (global body esteem, attitudes toward women's genitalia, and body exposure anxiety in a sexual context), sexual satisfaction, sexual function, pain intensity during intercourse, and depression (N = 57)

	Attitudes toward genitalia	Body exposure anxiety	Sexual satisfaction	Sexual function	Depression	Pain intensity during intercourse
Body esteem	0.47**	–0.5**	0.53**	0.45**	–0.36**	–0.25
Attitudes toward genitalia	—	–0.5**	0.41**	0.32*	–0.28*	–0.25
Body exposure anxiety	—	—	–0.6**	–0.5**	0.44**	0.45**
Sexual satisfaction	—	—	—	0.68**	–0.35*	–0.6**
Sexual function	—	—	—	—	–0.29*	–0.43**
Depression	—	—	—	—	—	0.33*

*$P < 0.05$; **$P < 0.01$
Attitudes toward genitalia = Attitudes Toward Women's Genital Scale; body esteem = Body Esteem Scale; body exposure anxiety = Body Exposure during Sexual Activities Questionnaire; depression = Beck Depression Inventory II; pain intensity during intercourse = visual analog scale; sexual function = Female Sexual Function Index without Pain subscale; sexual satisfaction = Global Measure of Sexual Satisfaction Scale

function $F(2,54) = 6.80$, $P = 0.002$. Post hoc comparisons between groups indicated that women with PVD1 and PVD2 were not significantly different on these measures but both reported significantly lower levels of sexual satisfaction and function than control participants. Depression was significantly different between groups as determined by one-way ANOVA $F(2,52) = 7.49$, $P = 0.001$. Post hoc comparisons between groups indicated that women with PVD1 and PVD2 were not significantly different on the depression variable but were both reporting significantly more depressive symptoms than asymptomatic controls.

Zero-Order Correlations

None of the socio-demographic variables (age, years of education) were significantly correlated with the study variables (BI measures, sexual satisfaction and function, and pain intensity during intercourse). The intercorrelations between the study variables are presented in Table 2. Lower depression scores were significantly associated with higher body esteem ($r = –0.36$, $P = 0.01$), more positive attitudes toward women's genitalia ($r = –0.28$, $P = 0.05$), and less body exposure anxiety during sexual activities ($r = 0.45$, $P = 0.01$). Hence, depression was included as a covariate and controlled for in the analyses. Higher body esteem was significantly associated with less body exposure anxiety during sexual activities ($r = –0.5$, $P = 0.01$), higher sexual satisfaction ($r = 0.53$, $P = 0.01$), and higher sexual function ($r = 0.45$, $P = 0.01$). More positive attitudes toward women's genitalia were significantly associated with less body exposure anxiety during sexual activities ($r = –0.5$, $P = 0.01$), higher sexual satisfaction ($r = 0.41$, $P = 0.01$), and higher sexual function ($r = 0.32$, $P = 0.05$). More body exposure anxiety during sexual activities was significantly associated with lower sexual satisfaction ($r = –0.6$, $P = 0.01$), lower sexual function ($r = –0.5$, $P = 0.01$), and higher pain intensity during intercourse ($r = 0.44$, $P = 0.01$). Body esteem and attitudes toward women's genitalia were not significantly associated with pain intensity during intercourse.

MANCOVA

To compare participants with PVD1, PVD2, and controls, a MANCOVA with depression as a covariate and post hoc tests for group comparisons were conducted. Multivariate analysis indicated that the three groups were significantly different on BI measures $F(6,100) = 2.16$, $P = 0.05$. Univariate analyses showed that body exposure anxiety during sexual activities was the only variable that accounted for the significance of the model $F(2,51) = 4.23$, $P = 0.02$. Post hoc comparisons between groups indicated that for body exposure anxiety during sexual activities, women with PVD1 reported significantly more anxiety than women with PVD2 and than control participants. No significant difference was found between women with PVD2 and control participants for body exposure anxiety during sexual activities, body esteem, and attitudes toward women's genitalia.

Body Exposure Anxiety During Sexual Activities as a Predictor of Sexual Satisfaction, Sexual Function, and Pain During Intercourse

Linear regression analyses were conducted to examine the associations of the three measures of BI with (i) sexual satisfaction; (ii) sexual function; and (iii) pain intensity during intercourse in women diagnosed with PVD1 and PVD2. The two groups of women with PVD were combined

for these analyses in order to answer our second aim and because the small size of each sample (PVD1 and PVD2) precluded conducting separate analyses. The covariate, depression, was chi-square transformed to have a normal distribution. After controlling for depression, less body exposure anxiety in the context of sexual activities was significantly related to higher sexual satisfaction ($\beta = -0.45$, $P = 0.02$), higher sexual function ($\beta = -0.39$, $P = 0.04$), and less pain intensity during intercourse ($\beta = 0.59$, $P = 0.004$). More positive body esteem was also significantly related to higher sexual function ($\beta = 0.34$, $P = 0.05$). BI measures accounted for 24% of the variance in sexual satisfaction, 25% in sexual function, and 17% in pain intensity during intercourse.

Discussion

The aims of this study were (i) to compare BI in women with PVD1, PVD2, and asymptomatic controls and (ii) to explore whether BI was associated with sexual satisfaction, sexual function, and pain during intercourse in women with PVD. Consistent with our hypothesis, women with PVD1 reported more body exposure anxiety during sexual activities than women with PVD2 and those without pain. However, the three groups were not significantly different on measures of body esteem and attitudes toward women's genitalia. Body exposure anxiety during sexual activities is described as self-consciousness, anxious focus, and exposure avoidance of one's body while engaging in sexual activities [42]. More negative body exposure anxiety during sexual activities was associated with less sexual satisfaction, worse sexual function, and more pain in women with PVD. Higher body esteem was also related to higher sexual function in women with PVD.

Results concerning differences in BI during sexual activities between women with PVD1 and PVD2 corroborate those of previous research: women with PVD1 present more body exposure anxiety during sexual activities than women with PVD2 [20]. The present findings show that women with PVD1 also present more anxiety related to their body exposure during sexual activities than asymptomatic women. It may be that women with PVD1 never had the opportunity to develop a positive view of their body during an activity that brought them pain and negative emotions, compared with women who have never experienced pain during sexual intercourse, or with women who developed pain after a period of pain-free intercourse (i.e., PVD2). Qualitative research conducted in women with dyspareunia highlights their negative attitudes toward their bodies. These women report feeling "broken," "abnormal," and "useless" in a sexual context [22,52]. A pain-free period during which a woman could have positive and pleasurable sexual experiences might protect against the deterioration of BI during sexual activities after the onset of the pain. Global body esteem and global attitudes toward women's genitalia were not significantly different between the three groups of participants. The pattern of results suggests that the aspect of BI that is the most impaired in women with PVD1 is contextual to sexual activity. It may be that in nonsexualized contexts (i.e., without genito-pelvic pain), women with PVD can experience their bodies in positive ways, and therefore present levels of global BI similar to those of asymptomatic women. Pazmany and colleagues have recently found that women with dyspareunia reported a more negative genital BI than pain-free controls [53]. Women with pain during intercourse may have positive attitudes regarding women's genitalia in general, but have negative feelings or resentment toward their own genitals, perceiving their own as less beautiful or attractive, possibly because of the repeated negative experience of painful intercourse.

Higher body exposure anxiety in a sexual encounter was associated with less sexual satisfaction, worse sexual function, and higher pain intensity during intercourse in women with PVD. Results are consistent with previous research on women's sexual functioning in a sample of participants without PVD [42,54,55]. Two useful theoretical frameworks to understand these findings when taken together are (i) spectatoring during sexual activity and (ii) self-objectification of the female body. Spectatoring during sexual activity refers to the process by which an individual takes an observer standpoint during sexual activity, having distracting thoughts unrelated to the actual sexual experience [56]. Women with PVD might be particularly at risk of spectatoring, given the pain can be an important distraction from sexual pleasure.

Self-objectification of the female body can be understood as the internalization by women of an external and evaluative perspective toward their body, viewing it as an object that must meet unrealistic beauty and sexual performance ideals [57,58]. Women with PVD already describe their body as an object not performing well sexually because of the pain [22]. In addition, women with PVD are less likely to have engaged in positive

sexual experiences that could favor embodiment or the holistic experience of one's body.

Specifically, higher body exposure anxiety during sexual activities was associated with less sexual satisfaction. In previous research, more negative global and genital BI during sexual activities have been linked to more cognitive distractions related to body dissatisfactions, which can be associated with spectatoring and potentially less sexual satisfaction in women without PVD [59–61]. Further, studies have found that more self-objectification is related to more body surveillance, itself linked to higher body shame and less sexual self-esteem, two factors associated with less sexual satisfaction [62,63]. Similar processes might take place in women with PVD, such that they may experience their bodies not only as not beautiful enough but also as not performing well sexually. By assessing their body negatively from an external point of view, women with PVD may not be attending to internal positive feelings that would enhance sexual satisfaction. In addition, results suggest that they experience more anxious focus on their body exposure during sexual activities. Cognitive distractions related to their BI during sexual activities combined with their sense of selves as defective sexual objects may contribute to a reduced sexual satisfaction, preventing them from being connected to their pleasurable sensations.

A more negative BI during sexual activities and more negative body esteem were also associated with worse sexual functioning in women with PVD. Cognitive distractions have been shown to impede sexual functioning [64]. According to studies conducted among female students without PVD, BI concerns were one of the most anxiety-provoking distracting thoughts present during sexual activity [59,65,66]. Also, a negative BI was the most important predictor of BI-related cognitive distractions [65]. In addition, BI-related thoughts were found to be associated with poorer sexual functioning [59,67] and, in a recent study, negative genital self-image was found to be significantly related to decreased sexual function in women with dyspareunia [68]. Moreover, in a student sample, body shame was found to predict lower sexual arousal and pleasure, with higher self-consciousness acting as a mediator [69]. The pathway by which body esteem and BI during sexual activities are associated with sexual function might also include heightened self-consciousness during sexual activities. Restorative experiences with a partner (e.g., sexually pleasurable experiences) could help improve BI in the context of sexual intimacy [69]. For women with PVD, it may be more difficult to access such potential body shame-reducing experiences, given their pain and avoidance of sexual activity [9].

Moreover, a more negative BI during sexual activities was associated with higher pain intensity during intercourse. Women with PVD tend to be hypervigilant about their pain [70] and to focus their attention on nonerotic stimuli [71]. In the present study, women with PVD1 reported more anxiety regarding their body during sexual activities compared with no-pain controls. One possible interpretation is that if women with PVD are more focused on seeing their body as a nonperforming sexual object and on their discomfort with being naked or body exposure during sexual activities, it might reinforce their attending to non-arousing stimuli related to their body, including the pain. Paying more attention to the pain paired with less focus on the arousing elements of the sexual context may contribute to a heightened pain experience [72].

The associations between BI and sexual outcomes in women with PVD could also be understood via a reverse pathway, whereby more negative sexual experiences due to pain could alter their perception of their body and enhance their anxiety toward its exposure during sexual activities. This possibility could be investigated in further longitudinal work assessing the evolution of BI over time in women with PVD. The pain might also be the initial distraction from sexual pleasure, which could then lead to other preoccupations and distracting thoughts, such as those concerning BI. Future prospective studies could clarify the direction of the associations between BI, sexual satisfaction and function, and pain intensity in women with PVD.

This study presents limitations that must be taken into account. First, the size of the sample was sufficient for the exploratory purposes of this study but results need to be replicated using a larger sample. Second, the cross-sectional design did not allow us to establish causal links between BI and outcome measures, or to determine whether or not BI during sexual activities was lower in women with PVD prior to their first intercourse or whether it decreased following the onset of the pain. A prospective design would permit a more in-depth understanding of the evolution of BI in women with PVD. Third, a measure of personal genital BI would be helpful in future studies comparing women with PVD1 and PVD2 to specify which aspect of BI might be

impaired. Fourth, the description of the study given to potential control participants might have biased their recruitment. A more general statement about the study may have avoided this issue.

Despite these limitations, the present study sheds light on the associations between BI and the different aspects of PVD, namely, pain, sexual function, and sexual satisfaction. The inclusion of a group of women without genito-pelvic pain is a strength of this study, as the standardized gynecological examinations for all participants and the multiple measures of BI. Moreover, results highlight the need for further research assessing the impact of targeted psychological interventions to improve BI during sexual activities, which might enhance sexual satisfaction and function in women with PVD, as well as reduce their pain.

Conclusions

Findings of the present study indicate that BI during sexual activities is more impaired in women with PVD1 than those with PVD2 and no-pain controls. No group differences were found for global body esteem and general attitudes toward women's genitalia. These two facets of BI were not significantly associated with sexual satisfaction and pain intensity during intercourse. However, lower BI during sexual activities was associated with reduced sexual satisfaction and function and increased pain in women with PVD, and lower body esteem was associated with their poorer sexual function. Findings suggest that these aspects of BI should be studied further in treatment trials of psychological interventions for PVD.

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