

Université de Montréal

**L'image corporelle chez les femmes atteintes de vestibulodynie provoquée primaire et
secondaire : Une étude contrôlée**

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Essai doctoral présenté à la Faculté des études supérieures en vue de l'obtention du grade de
Docteur en psychologie (D.Psy.) en psychologie option clinique

Août 2013

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Résumé

Introduction. La vestibulodynie provoquée (VP) est un trouble de douleur génito-pelvienne qui est associé à des conséquences néfastes sur le bien-être psychologique et sexuel des femmes qui en souffrent. Des études suggèrent que les femmes atteintes de VP primaire (VP1) et secondaire (VP2) peuvent présenter des profils psycho-sexuels distincts. Une image corporelle (IC) significativement plus négative a été trouvée chez des femmes atteintes de VP1 en comparaison à des femmes souffrant de VP2, et chez les femmes atteintes de VP par rapport à des femmes asymptomatiques. Cependant, à ce jour aucune étude contrôlée n'a comparé l'IC des femmes atteintes de VP1 et de VP2. En outre, les liens entre l'IC et la satisfaction sexuelle, la fonction sexuelle et la douleur chez les femmes atteintes de VP n'ont pas été étudiés.

Objectifs. Les buts de la présente étude étaient 1) de décrire et comparer l'IC chez trois groupes de femmes (atteintes de VP1, VP2 et asymptomatiques) et 2) d'examiner les liens entre l'IC et la satisfaction sexuelle, la fonction sexuelle et la douleur durant les relations sexuelles.

Méthodologie. Vingt femmes atteintes de VP1, 19 femmes atteintes de VP2 et 18 femmes asymptomatiques, pour un total de 57 femmes (âge M = 25.72, SD = 4,93), ont pris part à un examen gynécologique pour confirmer leur diagnostic de VP ou leur statut de témoin. Les participantes ont complété des questionnaires d'IC (Échelle d'estime corporelle, Questionnaire sur l'exposition du corps durant les activités sexuelles et Échelle des attitudes envers les organes génitaux féminins), de satisfaction sexuelle (Mesure globale de l'Échelle de satisfaction sexuelle), de fonction sexuelle (Index de la Fonction Sexuelle de la Femme),

d'intensité de la douleur pendant les relations sexuelles (Échelle visuelle analogue de douleur) et de dépression (Inventaire de Dépression de Beck-II).

Résultats. En contrôlant pour la mesure de dépression pour toutes les analyses, les femmes atteintes de VP1 ont rapporté éprouver plus d'anxiété reliée à l'exposition de leur corps lors d'activités sexuelles que les femmes ayant de la VP2 et que les femmes du groupe contrôle $F(2,51) = 4,23, p = .02$. Plus d'anxiété reliée à l'exposition du corps lors d'activités sexuelles a été associée à une plus faible satisfaction sexuelle ($\beta = -0,45, p = .02$), une fonction sexuelle diminuée ($\beta = -0,39, p = .04$) et une intensité de douleur plus élevée lors des relations sexuelles ($\beta = 0,59, p = .004$). Une estime corporelle globale plus positive a été associée à un fonctionnement sexuel plus élevé ($\beta = 0,34, p = .05$).

Conclusion. Les résultats suggèrent que les femmes atteintes de VP1 présentent une IC plus négative lors d'activités sexuelles que les deux autres groupes de femmes. Puisqu'un niveau d'anxiété reliée à l'exposition du corps lors d'activités sexuelles plus élevé a été associé à une satisfaction sexuelle plus faible, une fonction sexuelle diminuée et une intensité de douleur plus élevée, les interventions ciblant l'IC lors des activités sexuelles pourraient aider à améliorer ces aspects de la sexualité des femmes atteintes de VP.

Mot-clés: dyspareunie, vestibulodynie provoquée, image corporelle, satisfaction sexuelle, fonctionnement sexuel, douleur, psychologie clinique

Abstract

Introduction. Provoked vestibulodynia (PVD) is a women's genito-pelvic pain condition that is associated with psychological and sexual impairments. Studies suggest that women with primary (PVD1) and secondary (PVD2) PVD might present different etiologic profiles. Body image (BI) has been found to be significantly different in women with PVD1 and PVD2, and in women with PVD compared to asymptomatic women. However, no controlled study to date has compared BI in women with PVD1 and PVD2. Further, the contribution of BI to sexual satisfaction, function and pain in women with PVD has not been investigated.

Aim. The aims of the present study were to 1) describe and compare BI in three groups of women (PVD1, PVD2 and asymptomatic controls) and 2) examine the extent to which BI modulates sexual satisfaction, sexual function and pain during intercourse in women with PVD.

Methods. Twenty women with PVD1, 19 women with PVD2 and 18 control women, for a total of 57 women (M age = 25.72, SD = 4.93), took part in a gynaecologic examination to confirm their PVD diagnosis or control status. Participants completed measures of BI (Body Esteem Scale, Body Exposure during Sexual Activities Questionnaire and Attitudes Toward Women Genital Scale), sexual satisfaction (Global Measure of Sexual Satisfaction Scale), sexual function (Female Sexual Function Index), pain intensity during intercourse (Pain Visual Analog Scale) and depression (Beck Depression Inventory-II).

Results. Controlling for depression, women with PVD1 reported more body exposure anxiety during sexual activities than women with PVD2 and controls $F(2,51) = 4.23, p = .02$.

Controlling for depression, higher body exposure anxiety during sexual activities was associated with lower sexual satisfaction ($\beta = -0.45, p = .02$), lower sexual function ($\beta = -$

0.39, $p = .04$) and higher pain intensity during intercourse ($\beta = 0.59, p = .004$). More positive body esteem was associated with higher sexual function ($\beta = 0.34, p = .05$).

Conclusions. Findings suggest that women with PVD1 present a more impaired BI during sexual activities. Given higher body exposure anxiety during sexual activities was associated with lower sexual satisfaction, lower sexual function and higher pain during intercourse, interventions targeting BI during sexual activities may help improve these aspects of PVD women's sexuality.

Keywords: dyspareunia, provoked vestibulodynia, body image, sexual satisfaction, sexual function, pain, clinical psychology

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*À mes parents, Pierrette et Marc,
sources d'inspiration*

Remerciements

Plusieurs personnes m'ont permis de cheminer tout au long de mon doctorat afin que je puisse réussir cet accomplissement. Je souhaite les remercier de tout cœur pour l'impact qu'elles ont eu sur mon parcours doctoral.

Tout d'abord, merci à Sophie qui a été une directrice à l'écoute, généreuse et disponible. Merci pour nos rencontres stimulantes et de m'avoir encouragée depuis ma première session de doctorat à mener cette recherche, je t'en suis très reconnaissante.

Merci à mes collègues de laboratoire, Nayla, Katy et Serena, pour votre présence ensoleillée qui m'a fait apprécier les journées de travail de recherche. Nayla, merci d'avoir partagé avec moi tous les moments de joie et d'angoisse de ces trois années. Ton amitié précieuse m'a aidé à franchir toutes les étapes que nous traversons côte-à-côte. Katy, merci pour ton écoute sensible et nos rires partagés. Merci pour ton soutien continu qui a calmé mes inquiétudes et qui m'a permis à tout coup de retrouver le sourire. Serena, merci de ta vivacité d'esprit qui a nourri nos discussions et de ta patience de traductrice.

Merci à Pierre McDuff pour ton humour et ton aide inestimable pour mes analyses statistiques.

Merci à mes collègues du D.Psy. pour nos soirées de cohorte qui ont grandement agrémenté mon doctorat. Merci spécialement à Stéphanie, ma co-équipière préférée, pour nos échanges autant réconfortants qu'enrichissants.

Merci à la 229^e Notre-Dame-des-Neiges pour tous les moments uniques d'évasion que j'ai eu la chance de vivre.

Merci à mes ami-e-s de m'avoir rassurée dans mes moments de doute et de m'avoir changé les idées lorsque j'en avais besoin. En particulier, Lena, Aude, Seb et Samie, merci d'être là pour moi comme une deuxième famille.

Merci à mes parents de m'avoir donné envie d'apprendre et de poursuivre des études en psychologie. Pierrette et Marc, merci infiniment pour votre confiance en moi et votre soutien depuis toujours.

Merci à Antoine de m'épauler depuis ton arrivée dans ma vie. Merci de m'avoir lue, conseillée, écoutée et apaisée. Merci pour ta présence inspirante auprès de moi.

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

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Keywords: dyspareunia, provoked vestibulodynia, body image, sexual satisfaction, sexual
function, pain

Manuscrit soumis au *Journal of Sexual Medicine*

Abstract

Introduction. Provoked vestibulodynia (PVD) is a women's genito-pelvic pain condition that is associated with psychological and sexual impairments. Studies suggest that women with primary (PVD1) and secondary (PVD2) PVD might present different etiologic profiles. Body image (BI) has been found to be significantly different in women with PVD1 and PVD2, and in women with PVD compared to asymptomatic women. However, no controlled study to date has compared BI in women with PVD1 and PVD2. Further, the contribution of BI to sexual satisfaction, function and pain in women with PVD has not been investigated.

Aim. The aims of the present study were to 1) describe and compare BI in three groups of women (PVD1, PVD2 and asymptomatic controls) and 2) examine the extent to which BI modulates sexual satisfaction, sexual function and pain during intercourse in women with PVD.

Methods. Twenty women with PVD1, 19 women with PVD2 and 18 control women, for a total of 57 women (M age = 25.72, SD = 4.93), took part in a gynaecologic examination to confirm their PVD diagnosis or control status. Participants completed measures of BI (Body Esteem Scale, Body Exposure during Sexual Activities Questionnaire and Attitudes Toward Women Genital Scale), sexual satisfaction, sexual function, pain intensity during intercourse and depression.

Main Outcome Measures. Dependent measures were the (1) Global Measure of Sexual Satisfaction Scale, the (2) Female Sexual Function Index, and the (3) pain Visual Analog Scale.

Results. Controlling for depression, women with PVD1 reported more body exposure anxiety during sexual activities than women with PVD2 and controls $F(2,51) = 4.23, p = .02$.

Controlling for depression, higher body exposure anxiety during sexual activities was associated with lower sexual satisfaction ($\beta = -0.45, p = .02$), lower sexual function ($\beta = -0.39, p = .04$) and higher pain intensity during intercourse ($\beta = 0.59, p = .004$). More positive body esteem was associated with higher sexual function ($\beta = 0.34, p = .05$).

Conclusions. Findings suggest that women with PVD1 present a more impaired BI during sexual activities. Given higher body exposure anxiety during sexual activities was associated with lower sexual satisfaction, lower sexual function and higher pain during intercourse, interventions targeting BI during sexual activities may help improve these aspects of PVD women's sexuality.

Introduction

Provoked vestibulodynia (PVD) is the most common form of genito-pelvic pain, or dyspareunia, with prevalence rates ranging from 12 to 15% for premenopausal women in the general population ¹. The International Society for the Study of Vulvovaginal Disease (ISSVD) defines PVD 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. PVD results in significant negative consequences, including impaired sexual and psychological functioning and quality of life ³. Women suffering from PVD report having fewer sexual activities, experiencing lower levels of sexual desire, subjective arousal and lubrication, and fewer orgasms ⁴⁻⁷. In addition, they report being less sexually satisfied and experiencing lower quality of sexual activities ⁶⁻⁸.

Several studies have been conducted regarding the psychological impairments related to PVD, although many are uncontrolled, limiting the conclusions that can be drawn from them ⁹. Nevertheless, it has been found that women with PVD have more symptoms of anxiety, lower self-esteem, ^{8, 10, 11}, and distress regarding their pain and their sexual functioning ^{3, 12}. One controlled study has shown that PVD may be associated with a more negative body image (BI) ¹³, yet no studies to date have examined the role of BI in the experience of pain and sexual dysfunction in this population. Furthermore, no controlled study has examined BI in women with lifelong (primary) versus acquired (secondary) PVD, whereas other psychosexual differences have been found between women suffering from these subtypes of PVD. Given that a negative BI has been associated with negative effects on the sexuality of women with other sexual dysfunctions or in samples of young women without

sexual difficulties (eg.,^{14,15}), a negative BI may contribute to a deterioration of the sexual satisfaction and function in women with PVD and modulates the experience of vulvovaginal pain. The present study aimed to examine the role of BI in PVD and to overcome some of the limitations of previous research by including a control group, distinguishing between primary and secondary PVD, and using validated measures of BI.

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 penetration attempt or pressure to the vulvar vestibule by other means. 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 condition¹⁶⁻¹⁸. Besides this difference regarding the onset of the pain, these two PVD profiles are associated with other sexual history and socio-demographic differences. First, women with PVD1 are younger (average of 5 years less) and more often single and nulliparous than women with PVD2¹⁹. They have also had, on average, their first intercourse 2.4 years later than women with PVD2, and remember this experience as more painful and less satisfying²⁰. They also report having had less sexual partners²⁰. As for the psychosexual differences between these two groups, few studies have been conducted and no controlled study has compared their profiles on this matter. Research published to date suggests that women with PVD1 have more symptoms of anxiety^{21,22}, depression, and are more avoidant of sexuality than women with PVD2²⁰. These studies highlight the possibility of distinct etiologies for these two subtypes of PVD. However, the extent to which PVD1 and PVD2 represent the endpoint of different pathways remains an empirical question which requires more controlled research. In particular, body image (BI) has not been investigated in a controlled manner in these two subtypes.

BI is a multidimensional construct defined as an individual's experience of her body, including affective, perceptual and evaluative components. The concept of BI includes self-esteem, satisfaction, investment, attitudes and concerns that a person can have towards her body. BI can be contextual, in that it may vary depending on the context in which it is being assessed (e.g. sexual intimacy versus friendship), and also has a behavioural component, such as hiding one's body or eating less²³. A negative BI has been related to intrapersonal difficulties, like social anxiety and eating disorders, as well as interpersonal struggles such as insecure adult attachment, fear of romantic intimacy and lower marital satisfaction²⁴⁻²⁷. Yet, little research has examined the links between BI and sexuality, especially in the context of PVD.

BI has been studied in women without genital pain, in relation to sexual satisfaction, functioning and behaviours, as well as the perception of oneself as a sexual partner. Indeed, women who perceive themselves as good sexual partners are less concerned about the appearance of their bodies in a context of physical intimacy. Also, women who rate their body and face more positively assess themselves as a better sexual partner^{28,29}. Regarding sexual satisfaction, research has highlighted associations between a more positive perception of female genitalia and BI and a higher sexual satisfaction^{30,31}. Conversely, other studies found no link between BI, genital self-perception and sexual satisfaction^{14,32-34}. These diverging results could be explained by the use of different samples and questionnaires focusing on distinctive facets of BI, enhancing discrepancies between outcomes. With respect to sexual functioning, the most consistent finding across studies is the positive association between BI and sexual desire, a less positive BI being related to lower levels of sexual desire^{15,32,34}. This result is interesting considering the significant decrease in desire reported by women suffering

from PVD³⁵. As for sexual behaviors, women with a more negative BI report a lower frequency of sexual activities^{25, 28, 31, 34, 36, 37}. These women also tend to adopt avoidant behaviors toward sexuality, such as avoiding to initiate or to continue sexual interactions^{28, 36, 37}. In sum, in populations of 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 activities.

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 BI¹⁰. Subsequently, Sackett and colleagues¹¹ found that 73% of their sample of women with PVD reported feeling less sexually desirable and 49% felt less feminine, according to their home-made questionnaire. Qualitative analyses of open questions revealed that these women had experienced a negative change in BI since the onset of their pain condition. In a more recent controlled study, women with PVD showed lower BI scores than women in a control group. 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 and PVD2 and used only one measure of global BI, that was not specific to a sexual context¹³. 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 have a negative impact on BI. However, the absence of a control group and validated BI questionnaires in addition to the small number of women with PVD (N = 7) limit the conclusions that can be drawn from this study³⁸. Only one study compared the BI scores of women with PVD1 and PVD2. Results

found that women with PVD1 presented more anxiety and self-awareness with exposure of their bodies during sexual activity in comparison to women with PVD2²¹. This is the only study to date that has compared the psychosexual profiles, including BI, of women with PVD1 and PVD2. However, it did not include a control group of women without PVD.

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, 28, 34}, BI represents a variable of interest to improve our knowledge of both types of PVD. A better understanding of the mechanisms that negatively influence pain and sexuality in these women may help develop and guide therapeutic interventions. From a methodological standpoint, studies that have examined BI in relation to PVD present limitations such as the use of unvalidated measures to assess BI^{10, 11, 38} and the absence of a control group^{10, 11, 21, 38}. Finally, given the multidimensional nature of BI, the use of questionnaires targeting various facets of this construct is essential to its measurement. This study proposes to overcome some of these limitations. Specifically, the aims of the present study were to 1) describe and compare BI in three groups of women (PVD1, PVD2 and asymptomatic controls) and 2) examine the extent to which BI modulates sexual satisfaction, sexual function and pain during intercourse. 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 vulvo-vaginal pain did not allow us to formulate a specific hypothesis for the second aim, although based on research in women with other sexual difficulties, we expected that a more negative BI would be associated with worse sexuality outcomes in women with PVD.

Methods

Participants

Women with PVD were recruited at the clinic of the co-investigator gynecologist (68.4%) in a university hospital located in a large metropolitan city. Control women were recruited through word of mouth (26.3%) and advertisements placed on the Internet and at the university (5.3%). A structured interview was used to ensure that participants were eligible according to the following selection criteria. The inclusion criteria for the groups with PVD were: (1) being aged between 18 and 45 years old, (2) having pain during sexual activities for the last 6 months in at least 75% of penetration attempts, (3) vulvo-vaginal pain limited to vaginal penetration and others activities exerting pressure on the vulvar vestibule, (4) the pain is a source of distress and (5) having received a PVD1 or PVD2 diagnosis by the co-investigator gynecologist. The exclusion criteria for all groups included 1) having vulvar pain not related to penetration or other pressure sources on the vulvar vestibule (e.g. bicycle), 2) being pregnant, 3) having other gynecological, severe general health or psychiatric problems. The inclusion criteria for the control group were (1) being aged between 18 and 45 years old, (2) having no history of vulvo-vaginal pain or difficulty during sexual activities, gynecological exams or tampon insertion and (3) being sexually active. All PVD participants were diagnosed by the co-investigator gynecologist and the control participants took part in a gynecological examination performed by the same gynecologist to ensure the absence of PVD. Of the 74 women who were solicited to participate in our study, 10 did not meet eligibility criteria (6 with PVD1, 2 with PVD2 and 2 asymptomatic women), 4 declined participation (3 with PVD1 and 1 with PVD2) and two women of the control group did not present themselves for the gynecological examination. The final sample was comprised of 20 women with PVD1, 19

women with PVD2 and 18 control women, one woman with PVD2 having not sent back her questionnaires, resulting in a final sample size of 57 women in total.

Measures

Body image

Body image was measured using the three following self-report questionnaires. First, the Body Esteem Scale (BES) was used to assess the global body image of participants³⁹. Items consist of a list of 35 body parts or functions divided into three subscales (sexual attraction, weight concern, physical condition). Respondents had to choose their appreciation of 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 body image. This instrument has a good internal consistency for the three subscales ($\alpha = .78, .87$ and $.82$) and presents good validity⁴⁰. In the current study, the Cronbach alpha coefficient for the three subscales was $.92$. The Body Exposure during Sexual Activities Questionnaire (BESAQ) was used to assess body image in the context of sexual activities. It measures the anxious attentional focus and the avoidance regarding the exposure of the body during sexual activities. The items consist of 28 thoughts or behaviors occurring during sexual activities of 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 ($\alpha = .96$)⁴¹. In the present study, the Cronbach alpha coefficient was $.94$. Finally, the Attitudes Toward Women's Genital Scale (ATWGS)⁴² measures women's personal attitudes towards women's genitalia. Participants had to indicate the degree to which they agree 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 ($\alpha = .85$) and good convergent validity and stability in time ($.93$ ($p < 0,001$))⁴³. In the

current study, the Cronbach alpha coefficient was .89. The use of three different questionnaires to measure the body image of participants helped capture the multidimensional aspects of the body image 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*⁴⁴. Participants respond on a 7-point Likert scale to the five items, 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 = .90) and test-retest reliability ($r = .84$)⁴⁴. In this study, the Cronbach alpha coefficient was .94.

Sexual Function

Sexual functioning was measured using the Female Sexual Function Index (FSFI)³⁵. The FSFI evaluates five dimensions of sexual functioning (desire, arousal, lubrication, orgasm, satisfaction and pain) with 19 items. This questionnaire has excellent psychometric properties (internal consistency: .82; test-retest reliability: $r = .79$ to .86) and good discriminant validity⁴⁵. In the current study, the Cronbach alpha coefficient was .97. Some items were reverse scored so higher scores indicate greater sexual functioning for all items. 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 the pain Visual Analog Scale (VAS). Women were asked by the research assistant doing the recruitment to rate the

intensity of their current pain during intercourse on a scale from 1 to 10, 10 being the higher intensity possible. This instrument presents excellent psychometrics properties as evaluated in chronic pain studies ⁴⁶.

Depression

Depression, as a covariate, was measured using the Beck Depression Index II (BDI-II) ⁴⁷. The BDI-II is a 21 items questionnaire that assess attitudes and symptoms of depression. This instrument presents very good reliability (internal consistency: .86) and high discriminant validity ⁴⁸. The Cronbach alpha in the present sample was .91.

Socio-demographics

Socio-demographic data (age, nationality, culture, language, religion, education) were collected using a home-made questionnaire of 7 items, which we have used successfully in previous studies.

Procedure

At the gynecology clinic, women with vulvo-vaginal 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. For the women of the control group, the consent form was explained and signed before their gynecological examination. The gynecologist completed the same standardized gynecological form for all participants. All the participants completed the questionnaires (socio-demographics, body image, 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 two 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 the completion of their participation. The present study was approved by Institutional Review Boards of the hospital and university where the research was conducted.

Results

Sample characteristics

Descriptive statistics for the sociodemographic, BI, sexual satisfaction, sexual function pain and depression variables of the sample are listed in Table 1.

Zero-Order Correlations

No sociodemographic variables were significantly correlated with the study variables. Higher body esteem was significantly associated with lower depression ($r = -0.36, p = .01$). More positive attitudes towards women's genitalia was significantly associated with lower depression ($r = -0.28, p = .05$). More body exposure anxiety during sexual activities was significantly associated with higher depression ($r = .45, p = .01$). Hence, only depression was included as a covariate and controlled for in the analyses.

The intercorrelations between the study variables are presented in Table 2. Higher body esteem was significantly associated with less body exposure anxiety during sexual activities ($r = -0.5, p = .01$), higher sexual satisfaction ($r = .53, p = .01$) and higher sexual function ($r = .45, p = .01$). More positive attitudes towards women's genitalia was significantly associated with less body exposure anxiety during sexual activities ($r = -0.5, p = .01$), higher sexual satisfaction ($r = .41, p = .01$) and higher sexual function ($r = .32, p = .05$). More body exposure anxiety during sexual activities was significantly associated with lower

sexual satisfaction ($r = - 0.6, p = .01$), lower sexual function ($r = - 0.5, p = .01$) and higher pain intensity during intercourse ($r = .44, p = .01$).

Multivariate Analysis of Covariance

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 body image measures $F(6,100) = 2,16, p = .05$. Univariate analyses showed that body exposure anxiety during sexual activities was the only variable that accounted for the significance of the model $F(2,51) = 4,23, p = .02$. Post-hoc comparisons between groups indicated that for body exposure anxiety during sexual activities, women with PDV1 reported significantly more anxiety than women with PVD2 and than women in the control group.

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 relative contributions of the three measures of BI to 1) sexual satisfaction, 2) sexual function, and 3) pain intensity during intercourse in women with diagnosed PVD1 or PVD2 (Tables 3, 4, 5). 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 ($\beta = - 0.45, p = .02$), higher sexual function ($\beta = - 0.39, p = .04$) and less pain intensity during intercourse ($\beta = 0.59, p = .004$). More positive body esteem was also significantly related to higher sexual function ($\beta = 0.34, p = .05$). Body image measures accounted for 24 % of variance in sexual satisfaction, 25% in sexual function and 17% in pain intensity during intercourse.

Discussion

The aim of this study was two-fold: (1) to compare BI in women with PVD1, PVD2 and asymptomatic controls, and (2) to explore how BI is associated with sexual satisfaction, sexual function, and pain during intercourse in women with PVD. Consistent with our hypothesis, women with PVD1 reported a more negative BI during sexual activity than women with PVD2 and those without pain. However, the three groups were not significantly different on measures of global body esteem and attitudes towards women's genitalia. BI during sexual activity is described as self-consciousness, anxious focus, and exposure avoidance of one's body while engaging in sexual activity⁴¹. As expected, a more negative BI during sexual activity was associated with less sexual satisfaction, worse sexual function and more pain in women with PVD. A more positive global BI was also related to higher sexual function.

Results concerning differences in BI during sexual activity between women with PVD1 and PVD2 corroborate those of previous research: women with PVD1 present a more negative BI than women with PVD2²¹. However, this study is the first to show that women with PVD1 present more anxiety related to their body exposure during sexual activity than women with PVD2 and 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 to women who have never experienced pain during sexual intercourse, or to 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 about their bodies. These women report feeling “broken”, “abnormal” and “useless” in a sexual context^{49, 50}. Hence, a pain-free period during which a woman could

have positive and pleasurable sexual experiences might be a protective factor to keep a more positive BI during sexual activities after the onset of the pain. Global BI and attitudes towards women's genitalia were not significantly different between the three groups of participants. Hence 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 non-sexualized contexts (i.e. without genito-pelvic pain), women with PVD can experience their bodies in positive ways, as for asymptomatic women, and therefore present similar levels of global BI. Pazmany et al.⁵¹ have recently found that women with dyspareunia reported a more negative genital BI than pain-free controls. Women with genital pain during intercourse may have positive attitudes regarding women's genitalia in general, but negative feelings or resentment towards their own genitals, perceiving their own as less beautiful or attractive, possibly due to 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. Results are consistent with previous research on women's sexual functioning in a sample of participants without PVD⁵²⁻⁵⁴. Two useful theoretical frameworks to understand these findings when taken together are 1) spectating during sexual activity and 2) self-objectification of the female body. Masters and Johnson⁵⁵ explained the process by which an individual takes an observer standpoint during sexual activity, having distractive thoughts not related to the physical sensations and the actual sexual experience. This phenomenon called *spectating* refers to the act of being a spectator instead of an actor during sexual activity. Women with PVD might be particularly at risk of spectating, being not only distracted by their pain but also by their higher body self-consciousness during sexual activity.

Another perspective is that of objectification theory. According to this theory, women are constantly faced with the use of the female body or parts of their body as sexual objects (e.g., images transmitted through advertising). By internalizing this external point of view about their body, women are prone to self-objectification, which results in looking at their body from an observer perspective, and viewing it as an object that must meet unrealistic beauty and sexual performance ideals rather than a conduit for their bodily experiences. One might consider embodiment as the opposite of an objectified state – embodiment is described as having a holistic feeling and being the subject of one’s body ^{56, 57}. Higher anxious focus on their body in a sexualized context may prompt women with PVD to more self-objectification. Women with PVD already describe their body as an object not performing well sexually because of the pain ⁴⁹; being more critical towards their body during sexual activities might reinforce this self-objectification. In addition, women with PVD are less likely to have engaged in positive sexual experiences that could favor embodiment, thus increasing their external positioning of self-objectification. Hence, having a more negative BI during sexual activity might bring women with PVD to be less centered on their pleasure and to experience decreased sexual function and satisfaction, and higher pain intensity during intercourse due to more body-related cognitive distractions and a heightened attention on their body from an external point of view rather than from an embodied one.

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 activity have been linked to more cognitive distractions related to body dissatisfactions, which can lead to spectating and potentially less sexual satisfaction in women without PVD ⁵⁸⁻⁶⁰. Further, studies examining body objectification and sexual satisfaction 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 ^{61, 62}. Similar processes might take place in women with PVD, such that they may experience their bodies not only as not beautiful, sexy or thin enough, but also as not performing well sexually. In addition, they experience an anxious focus on their body exposure during sexual activity. These cognitive distractions related to their BI during sexual activity 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 a more negative global BI were also associated with worse sexual functioning. Cognitive distractions are known to impede sexual functioning. According to studies conducted among female students without PVD, BI concerns were one of the most anxiety-provoking distracting thoughts present during sexual activity ^{58, 63, 64}. Also, a negative BI was the most important predictor of BI-related cognitive distractions ⁶³. In addition, BI-related thoughts were found to predict poorer sexual functioning ^{58, 65} and, in a recent study, negative genital self-image was found to be significantly related to a decreased sexual function in women with dyspareunia ⁶⁶. Knowing that women with PVD present a more negative BI during sexual activity than asymptomatic women, we can assume that distracting thoughts about their body are more present and thus these cognitive processes would apply even more to them. Steer and Tiggemann ⁵³ found that self-objectification led to more self-surveillance, and in turn to heightened body shame and appearance anxiety, which are related to more sexual self-consciousness and poorer sexual functioning. Body shame was also found to predict lower sexual arousal and pleasure, with higher self-consciousness acting as a mediator ⁶⁷. The authors of the latter study suggested that restorative experiences with a

partner (e.g., sexually pleasurable experiences) could help improve BI in the context of sexual intimacy. 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, we found that a more negative BI during sexual activity was related to higher pain intensity during intercourse. Women with PVD tend to be hypervigilant about their pain ⁶⁸ and to focus their attention on non-erotic stimuli ⁶⁹. Additionally, in the present study, women with pain reported more anxiety regarding their body during sexual activity compared to no-pain controls. If women with PVD are more focused on seeing their body as a non-performing 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 ⁷⁰.

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 activity 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 and change 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 what aspect of BI might be impaired. Finally, assessing body self-objectification in women with PVD would be of interest, this phenomenon having been linked to sexual function and satisfaction in women without pain.

Despite these limitations, the present study sheds light on psychological aspects that are rarely studied in women suffering from PVD, such as BI. This is the first controlled study to compare BI in women with PVD1 and PVD2 in order to improve our knowledge of the different etiologic profiles of each group. Moreover, the results of this study hold clinical implications regarding the development of targeted psychological interventions to improve BI during sexual activity, which might enhance sexual satisfaction and function in women with PVD, as well as reduce their pain.

Conclusion

Findings of the present controlled study indicate that BI during sexual activity is the most impaired facet of BI in women with PVD. Specifically, women with PVD1 are more impaired than those with PVD2 and controls. In addition, lower BI during sexual activity is associated with increased pain and reduced sexual function and satisfaction in women with PVD. Findings suggest that this aspect of BI may warrant closer attention in psychological interventions for PVD.

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Annexe A

Table 1. Descriptive statistics of the sample.

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

Body esteem = Body Esteem Scale; Attitudes towards genitalia = Attitudes Towards Women

Genital Scale, Body exposure anxiety = Body Exposure during Sexual Activities

Questionnaire; Sexual Satisfaction = Global Measure of Sexual Satisfaction; Sexual Function

= Female Sexual Function Index without Pain subscale; Pain intensity during intercourse =

Visual Analogue Scale; Depression = Beck Depression Inventory II.

Annexe B

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

	Attitudes towards genitalia	Body exposure anxiety	Sexual satisfaction	Sexual function	Depression	Pain intensity during intercourse
Body esteem	.47**	- 0.5**	.53**	.45**	- 0.36**	- 0.25
Attitudes towards genitalia	-	- 0.5**	.41**	.32*	- 0.28*	- 0.25
Body exposure anxiety	-	-	- 0.6**	- 0.5**	.44**	.45**
Sexual satisfaction	-	-	-	0.68**	- 0.35*	- 0.6**
Sexual function	-	-	-	-	- 0.29*	- 0.43**
Depression	-	-	-	-	-	.33*

** $p < .01$; * $p < .05$

Body esteem = Body Esteem Scale; Attitudes towards genitalia = Attitudes Towards Women Genital Scale, Body exposure anxiety = Body Exposure during Sexual Activities Questionnaire; Sexual Satisfaction = Global Measure of Sexual Satisfaction; Sexual Function = Female Sexual Function Index without Pain subscale; Pain intensity during intercourse = Visual Analogue Scale; Depression = Beck Depression Inventory II.

Annexe C

Table 3. Results of linear regression analysis for body exposure anxiety during sexual activities predicting women's sexual satisfaction ($N = 34$).

	<i>B</i>	<i>SE B</i>	β
Step 1			
Depression	-0.56	0.88	-0.11
Step 2			
Depression	0.68	0.83	0.14
Body esteem	0.09	0.06	0.24
Body exposure anxiety during sexual activities	-0.18	0.07	-0.45*
Attitudes towards women genitalia	0.08	0.24	0.05

* $p < .05$

Note. $R^2 = 0.013$ for Step 1; $\Delta R^2 = 0.32$ for Step 2

Body esteem = Body Esteem Scale; Attitudes towards genitalia = Attitudes Towards Women Genital Scale, Body exposure anxiety = Body Exposure during Sexual Activities Questionnaire; Sexual Satisfaction = Global Measure of Sexual Satisfaction; Depression = Beck Depression Inventory II.

Annexe D

Table 4. Results of linear regression analysis for body exposure anxiety during sexual activities predicting women's sexual function ($N = 37$).

	<i>B</i>	<i>SE B</i>	β
Step 1			
Depression	-1.02	0.84	-0.2
Step 2			
Depression	0.15	0.81	0.03
Body esteem	0.13	0.06	0.34*
Body exposure anxiety during sexual activities	-0.16	0.07	-0.39*
Attitudes towards women genitalia	-0.08	0.24	-0.06

* $p < .05$

Note. $R^2 = 0.04$ for Step 1; $\Delta R^2 = 0.29$ for Step 2

Body esteem = Body Esteem Scale; Attitudes towards genitalia = Attitudes Towards Women Genital Scale, Body exposure anxiety = Body Exposure during Sexual Activities Questionnaire; Sexual Function = Female Sexual Function Index without the pain subscale; Depression = Beck Depression Inventory II.

Annexe E

Table 5. Results of linear regression analysis for body exposure anxiety during sexual activities predicting women's pain intensity during intercourse ($N = 35$).

	<i>B</i>	<i>SE B</i>	β
Step 1			
Depression	-0.16	0.25	-0.11
Step 2			
Depression	-0.37	0.25	-0.26
Body esteem	0.03	0.02	0.24
Body exposure anxiety during sexual activities	0.07	0.02	0.59**
Attitudes towards women genitalia	0.01	0.07	0.03

** $p < .01$; * $p < .05$

Note. $R^2 = 0.01$ for Step 1; $\Delta R^2 = 0.26$ for Step 2

Body esteem = Body Esteem Scale; Attitudes towards genitalia = Attitudes Towards Women Genital Scale, Body exposure anxiety = Body Exposure during Sexual Activities Questionnaire; Pain intensity during intercourse = Visual Analogue Scale; Depression = Beck Depression Inventory II.