Comparing self-reported pain during intercourse and pain during a standardized gynecological exam at 12- and 24-months postpartum

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Abstract

Background: There is limited information about the physical indicators and biopsychosocial predictors of self-reported pain during intercourse and pain during a gynecological examination at 12- and 24-months following childbirth.

Aim: This longitudinal study aimed to 1) Compare the findings from gynecological exams at 12- and 24-months postpartum for women with minimal vs. clinically significant pain during intercourse; 2) Assess the biomedical and psychosocial correlates predictors of self-reported pain during intercourse and the vestibular pain index (VPI) from the cotton-swab test at 12- and 24-months postpartum; 3) Establish the relationship between self-reported pain during intercourse and the cotton-swab test.

Methods: Women ($N = 97$ at 12 months postpartum and $N = 44$ at 24-months postpartum) recruited from a local women's hospital completed online surveys in their first trimester of pregnancy and at 12- and 24-months postpartum to assess pain during intercourse and biopsychosocial variables. Those with clinically significant (pain ≥ 4/10 on a visual analogue scale) were matched with those reporting minimal pain (pain < 3/10) and underwent a gynecological exam including a cotton-swab test. Descriptive analyses, multiple regressions, and bivariate correlations were conducted to address each of the study aims, respectively.

Main Outcome Measures: (1) Findings from the gynecological examination (2) Numerical rating scale for the VPI; (3) Visual analogue scale of pain during intercourse.

Results: The majority of women in both pain groups had normal physical findings in the gynecological exam. Greater sexual distress and pain catastrophizing at 12- and 24-months postpartum were significantly associated with greater pain during intercourse at each time-point, respectively. Greater pain catastrophizing at 12 months postpartum was significantly

associated with greater pain during the cotton-swab test at that time-point. Lower relationship satisfaction at 12 months postpartum was associated with greater VPI ratings at 24 months postpartum. Pain during intercourse and the VPI were moderately and positively correlated.

Clinical Implications: Addressing psychosocial variables may interrupt the maintenance of postpartum pain. Following an initial assessment, self-reported pain intensity may be a suitable proxy for repeated examinations.

Strengths & Limitations: This study is the first to describe the physical findings and psychosocial predictors of pain during intercourse and the VPI at 12- and 24-months postpartum. The homogenous and small sample may limit generalizability.

Conclusion: There were no observable physical indicators of clinically significant postpartum pain during intercourse. Psychosocial variables were linked to women's greater postpartum pain during intercourse and VPI ratings.

Keywords: postpartum pain; pain during intercourse; gynecological examination; cotton-swab test; biopsychosocial predictors

Postpartum pain during intercourse— often examined in the context of penile-vaginal penetration —is a common and distressing condition for many women.[1] The prevalence of this pain declines on average over the first year postpartum, however, this pain persists for up to 8-33% of women between 12-to-18-months,[1] with very limited data beyond this time-frame.[2] Pain during intercourse has consequences for women's quality of life[1] and sexual functioning (i.e., arousal, desire, lubrication, orgasm).[3] Pain during intercourse also serves as a risk factor for psychological distress including postpartum depression,[4,5] which has deleterious effects on maternal health and infant development (see Liu et al. 2017 for review).[6] Women who report persistent pain during intercourse to their physician typically undergo a gynecological examination for assessment of their external genitalia and internal structures, including the cotton-swab test (CST), a frequently used assessment to determine the vestibular pain index (VPI) during gynecological examinations.[7–9] Yet, there are no studies reporting the findings of these exams in relation to women's self-reported postpartum pain during intercourse.

In the current study, we aimed to compare the clinical findings (e.g., pain intensity, vulvar characteristics) from gynecological exams at 12- and 24-months postpartum for women with minimal ($\leq$ 3 out of 10 on a visual analog scale) and clinically significant self-reported pain during intercourse ($\geq$ 4 out of 10 on a visual analog scale).[10–12] We then compared biopsychosocial predictors of self-reported pain during intercourse and the VPI across these two time-points. Finally, we sought to establish the strength of the association between self-reported postpartum pain during intercourse and the VPI. Women who experience pain during intercourse outside of the perinatal period often have no pain-related physical findings.[13] However, in the postpartum period, issues such a

pelvic floor and perineal trauma from delivery and vulvovaginal atrophy resulting from lactational amenorrhea may contribute to pain during intercourse.[14–17] Examining whether physical findings differ between women with minimal and clinically significant pain may lead to the identification of anatomical indicators that could assist health care providers in distinguishing women at risk of developing persistent pain during intercourse.

The development and maintenance of postpartum pain during intercourse likely involves a complex interplay of biopsychosocial variables. Past research has focused on aspects of childbirth, such as perineal trauma and instrumental delivery, as well as the hormonal effects of breastfeeding, as risk factors for postpartum pain during intercourse (see Rosen & Pukall, 2017 for review).[1] Pre-existing non-genital chronic pain conditions (e.g., back pain) are also associated with genital and pelvic pain more broadly in the early postpartum period.[18] Although hormones and physical recovery from childbirth have typically stabilized after this point[19] and many women are no longer breastfeeding,[20] these biomedical variables have rarely been examined beyond the first year postpartum.[1] Furthermore, these variables have only been examined in relation to self-reported pain during intercourse and not with VPI ratings.

Pain during intercourse that extends beyond 12 months postpartum may instead relate to psychosocial variables, which are often persistent. Several psychosocial variables have been shown to predict pain during intercourse outside and within the perinatal period.[18,21,22] Pain catastrophizing – overly intensified and negative thoughts about anticipated or actual pain[23] – has been linked to an increased risk of pain during intercourse in the postpartum period.[18] Several studies have shown that greater postpartum depressive symptoms are associated with greater intensity of postpartum pain during intercourse.[24,25] Similarly, sexual distress – worries and concerns about sex[26] – has been identified as a key factor in exacerbating experiences of painful

intercourse.[27,28] Finally, greater postpartum sexual concerns has been associated with couples' lower relationship satisfaction.[29] Identifying how psychosocial characteristics relate to persistent postpartum pain during intercourse may elucidate risk factors that can be addressed at critical time periods.

Past research has used various singular pain assessment measures to examine postpartum pain during intercourse.[30] The Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) advises using at least two different measures when assessing pain in order to capture different facets of the pain experience.[31] In the broader literature, few studies have compared women's pain experiences using multi-method approaches.[32,33] One cross-sectional study examined the association between objective (i.e., vulvalgesiometer) and subjective (numerical rating scale; NRS) pain assessment tools and pain-related outcomes in women with pain during intercourse and found that psychological predictors were associated with the NRS only.[32] Self-reported pain during recalled experiences of intercourse via a Visual Analog Scale (VAS) is another common and well-validated pain assessment method.[34] Despite their frequent usage, our understanding of how various pain tools overlap in their measurement of pain is limited, particularly in the postpartum period. Moreover, it is unknown whether there are different biopsychosocial variables associated with different assessment tools. The context in which the pain is elicited – in a clinical setting vs. with their partners during intercourse – and the corresponding pain measurement tools may offer unique information about women's pain that furthers our understanding of effective assessment.

Taken together, the present study aimed to address several gaps in the literature using a longitudinal design to compare women's self-reported experiences of pain during intercourse to VPI ratings at 12- and 24-months postpartum. Our first objective was to develop a clinical profile

of women with minimal and clinically significant pain at 12- and 24-months postpartum as assessed through self-reports of pain during intercourse, the VPI, and gynecological exam findings. Our second objective was to examine biomedical (i.e., pre-existing chronic pain conditions, breastfeeding, and birth characteristics) and psychosocial (i.e., pain catastrophizing, depression, relationship satisfaction, and sexual distress) predictors of pain experienced during intercourse and VPI ratings at both 12- and 24-months postpartum. We examined biomedical predictors in an exploratory manner due to mixed past findings. Consistent with past literature, we hypothesized that greater pain catastrophizing, depression, sexual distress, and lower relationship satisfaction (measured at baseline during pregnancy, and at 12- and 24-months postpartum) would be associated with greater self-reported postpartum pain during intercourse. We did not have specific hypotheses about the associations between the psychosocial variables and VPI ratings given a lack of prior research, nor if these relationships would differ from those with self-reported pain during intercourse. The third objective was to determine the association between self-reported pain during intercourse and the VPI in a sample of women at 12- and 24-months postpartum. Results will enhance our understanding of the clinical profile and biopsychosocial risk factors associated with women's experience of persistent postpartum pain during intercourse, as well as the utility of two self-report measures of pain intensity beyond the first year postpartum.

Methods

Participants

Within a larger longitudinal study evaluating pain and sexuality across the transition to parenthood, pregnant women were recruited during their 18- to 24-week ultrasound appointment at the (*masked*) health care center from December 2015 to August 2017. Nulliparous women

aged 18 or older, fluent in English, and with an uncomplicated, singleton pregnancy were eligible to participate. Women were excluded if they self-reported a severe or unmanaged medical or psychiatric disease to a research assistant during the on-site screening.

For the current study, a sub-sample was recruited specifically to include a wide range of women's experiences with pain during intercourse, that is, to include women experiencing minimal (≤ 3 out of 10 on a visual analog scale) and clinically significant (≥ 4 out of 10 on a visual analog scale) pain at 12- and 24-months postpartum. Participants in the minimal and clinically significant pain groups were matched based on age (within 5 years in either direction), mode of delivery (vaginal or caesarean), and history of chronic pain (e.g., yes/no responses to migraine headaches, pain during intercourse, irritable bowel syndrome, fibromyalgia) as reported in their baseline survey. Matched women with minimal and clinically significant pain were then invited to undergo a standardized gynecological exam. Women were not contacted to participate in the exam if they indicated a subsequent pregnancy at either the 12- or 24-month postpartum time-points. At 12 months postpartum, from the full sample of women (n = 709), those who reported clinically significant pain during intercourse were invited to undergo the gynecological examination (n = 90 invited, n = 46 eligible and accepted). Then, matched participants with minimal pain were invited to undergo the gynecological exam (n = 119 invited, n = 51 eligible and accepted). The same process was repeated at 24 months postpartum. Out of the full sample of women (n = 682), those with clinically significant pain during intercourse were invited for the examination (n = 98 invited, n = 21 eligible accepted), and then matched participants were invited (n = 52 invited, n = 23 eligible and accepted). Women with minimal pain were invited until we obtained a matched sample to the number of women with significant pain who accepted to participate. There were no significant differences in each pain grouping between women who

declined a gynecological exam and women who agreed to participate (at either 12 or 24 months) for any of the sociodemographics or study variables (pain intensity, depression, sexual distress, or pain catastrophizing). In sum, a total of 97 women at 12 months postpartum and 44 women at 24 months postpartum underwent a gynecological exam. Of these participants, fourteen underwent examinations at both time-points. See Figure 1 and 2 for flow of recruitment at each time-point.

Measures

Sociodemographics and Biomedical Variables

Women reported their sociodemographic data, including age, education level, cultural background, relationship status, sexual orientation, and annual household income, in the baseline survey. This information is presented in Table 1. Birth characteristics drawn from a medical chart review, including mode of delivery, induction, episiotomy, vaginal or perineal tear, tear degree, and epidural were dichotomized as yes/no. Breastfeeding status at 12- or 24-months (from the respective self-reported surveys) and whether women endorsed a pre-existing, non-pregnancy related chronic pain condition was collected via the self-reported baseline survey and was also dichotomized as yes/no. This information is presented in Table 2.

Pain Catastrophizing

The 13-item Pain Catastrophizing Scale (PCS)[23] was used to measure exaggerated negative thoughts and feelings about pain at baseline, 12-, and 24-months postpartum. It is a reliable and valid tool assessing the key domains of catastrophizing, including rumination, magnification, and helplessness.[23] The PCS has been used in samples of women with pain during intercourse within the perinatal period.[18] Items are summed to produce a total score ranging from 0 to 52 with higher scores indicating greater pain catastrophizing. The PCS demonstrated strong

internal consistency in the current study (baseline Cronbach's α = 0.91, 12 months postpartum α = 0.93, 24 months postpartum α = 0.94).

Depression

The Edinburgh Postnatal Depression Scale (EPDS)[35] is a 10-item measure valid for assessing depression in pregnancy and postpartum. The EPDS has been shown to have very good psychometric properties,[35] and is the gold standard measure for the assessment of depressive symptoms in postpartum samples.[36] Item responses are summed to produce a total score ranging from 0 to 30. Higher scores indicate more depressive symptoms. The EPDS demonstrated strong internal consistency at all time points in the current study (baseline Cronbach's α = 0.83, 12 months postpartum α = 0.86, 24 months postpartum α = 0.88).

Relationship Satisfaction

The 4-item Couples Satisfaction Index (CSI-4)[37] was used to assess relationship satisfaction. The CSI-4 has previously demonstrated good psychometric properties,[37] including in samples of postpartum women and those coping with pain during intercourse outside the postpartum period.[21,38] The four items are summed to produce a total score ranging from 0 to 21, with higher scores reflecting greater relationship satisfaction. The CSI-4 demonstrated strong internal consistency at each time-point in the present study (baseline Cronbach's α = 0.92; 12 months postpartum α = 0.90; 24 months postpartum α = 0.96).

Sexual Distress

Women's distress related to their sex lives was assessed with the 13-item Female Sexual Distress Scale (FSDS).[26] The FSDS has good psychometric properties,[26] and has been previously used in samples of women who experience pain during intercourse.[28] Total scores ranging from 0 to 52 are calculated by summing the items. Higher scores indicate greater sexual distress, with

scores above 11 suggesting the presence of clinically significant sexual distress.[26] In the present study, the FSDS showed strong internal consistency at each survey time-point (baseline Cronbach's $\alpha = 0.94$, 12 months postpartum $\alpha = 0.96$, 24 months postpartum $\alpha = 0.96$).

Intensity of Pain During Intercourse

A Visual Analogue Scale (VAS) was used to assess women's self-reported pain during intercourse in the last four weeks at baseline, 12-, and 24-months postpartum. The VAS is an IMMPACT recommended tool for assessing pain during intercourse.[34,39] Women indicated their average pain intensity during intercourse on a continuous scale from 0 (*no pain at all*) to 10 (*worst pain ever*). In accordance with IMMPACT guidelines and consistent with previous research with samples of women who experience pain during intercourse within and outside of the perinatal period, women's pain scores that were ≥ 4/10 on the survey self-report VAS were considered clinically significant pain (i.e., significant interference with daily functioning) and used to classify women into the minimal and clinically significant pain groupings.[10–12]

Standardized Gynecological Exam Assessment

Upon presenting to the exam, the gynecologist was masked to the participant's pain group, with the exception of five exams where the gynecologist learned of the participant's pain status. The gynecologist reported whether the clitoris, labia minora, interlabial sulcus, and vestibule presented normally or if there were notable anatomical pathologies. The clitoris was inspected for partial hooding or complete phimosis (i.e., adherence between clitoral prepuce and glans). The labia minora were examined for partial or complete fusion. The interlabial sulcus was inspected for an old fissure scar or active fissure. The vestibule was examined for erythema (i.e., redness), fissures, or synechia (i.e., fusion). The gynecologist recorded active or previous

infections and whether the participant was currently or had previously utilized a treatment for the infection. Any supplementary information related to vulvar characteristics was recorded.

The next part of the gynecological exam involved a CST, where pain ratings across vulvar locations are averaged to create the Vestibular Pain Index (VPI), the validated and most widely used metric for assessing pain during the CST.[9,40] A standardized protocol was followed whereby a cotton-swab is pressed perpendicular to the vestibular mucosa for two seconds in the following order: 3 o'clock, 6 o'clock, 9 o'clock, and 12 o'clock. The gynecologist recorded the participant's verbal rating of their pain on an NRS at each location with the anchors of 0 (*no pain at all*) and 10 (*worst pain ever*). After the CST, the gynecologist rated the degree of erythema present in the vestibule as normal, light, moderate, severe, or if a fissure and/or abrasion was present.

The vagina, uterus, adnexa, and posterior cul-de-sac were then palpated in order to describe any anomalies observed such as tenderness, abnormal uterine size, or adnexal masses. The gynecologist selected from a list of potential causes of pain, including vulvar dermatoses (lichen sclerosus, lichen planus), perineal inflammation/granulation, vulvovaginal atrophy, vulvar dermatitis, vulvodynia/vestibulodynia, infection (vaginal, cervical, uterine), adnexal pathology (e.g., ovarian cysts), endometriosis, uterine pathology (e.g., fibroids, adenomyosis), prolapse, or urinary tract disease. The gynecologist recorded any recommendations for the participant for follow-up. Following the examination, participants completed a single item (paper survey) about whether the pain they experienced during the CST recreated the pain they experience during intercourse (yes, no, maybe, or not applicable). The participant was instructed to fold the survey to keep the gynecologist masked to their pain group.

Procedure

As part of the larger longitudinal study, all participants completed online surveys in pregnancy (18-24 weeks pregnant) and the postpartum (2 weeks and 3-, 6-, 12-, and 24-months postpartum). As we were interested in persistent pain experiences, the current study utilizes data from the baseline (18-24 weeks pregnant), 12 months, and 24 months postpartum surveys only. Women reported their sociodemographic data in the baseline survey and completed measures of pain catastrophizing, postpartum depression, relationship satisfaction, sexual distress, and self-reported pain during intercourse at baseline, 12 months, and 24 months postpartum. This design allowed us to examine cross-sectional and longitudinal associations between pain during intercourse and these psychosocial variables. Surveys were completed online via a link emailed to their personal email accounts using Qualtrics survey software. Participants received a $5 Amazon.ca gift card for the baseline survey and a $10 Amazon.ca gift card for each postpartum survey. Birth records were reviewed by a research assistant to collect birth characteristics (i.e., mode of delivery, induction, episiotomy, vaginal or perineal tear and degree, and epidural).

Following completion of the 12- and/or 24-month postpartum surveys, all women with clinically significant pain and matched women with minimal pain were invited to participate in a standardized gynecological exam. The standardized gynecological exams were conducted by one of two collaborating gynecologists at the *(masked)* hospital or at the last-authors' laboratory-based gynecological exam room. For completion of a gynecological exam, women were compensated with a $20 Amazon.ca gift card and had their parking expenses or bus fare reimbursed. The study was approved by the Research Ethics Board at the (*masked).*

Data Analysis

Our first objective was to describe and compare the clinical profiles, obtained via gynecological exam, of women who reported clinically significant or minimal postpartum pain

during intercourse on the surveys at 12- and 24-months postpartum. We conducted descriptive analyses, including means, frequencies, and percentages across the two groups and two time-points.

Our second objective was to determine whether pregnancy and postpartum biomedical (i.e., pre-existing chronic pain conditions, breastfeeding status, and birth characteristics) and psychosocial (i.e., pain catastrophizing, depression, relationship satisfaction, and sexual distress) variables were associated with self-reported pain intensity experienced during intercourse and the VPI for both pain groups at both time-points. First, bivariate or point-biserial correlations were conducted between all potential predictors and the average pain intensity ratings during intercourse and the VPI at each time-point. Variables that were significantly correlated with pain intensity at 12- or 24-months postpartum were entered into a regression analysis separately for each time-point (i.e., four models total). Data points were deemed univariate outliers if they exceeded 1.5 interquartile range and multivariate outliers using Mahalanobis Distance. Two univariate outliers were identified for pain catastrophizing at 12- and 24-months. No other univariate outliers were found for the other psychosocial variables. For each model, all assumptions for multiple regression analysis were met. However, one multivariate outlier in the 12-month pain during intercourse model and four multivariate outliers in the 24-month pain during intercourse model were detected using Mahalanobis distance. In order to include as much of the sample as possible and to maximize our power for the analyses, the results are presented including outlier data points.[41] However, each model was conducted with and without outliers and any discrepancies are reported in Supplemental Materials. Discrepancies in the models as a result of retaining and/or removing outliers may reflect effects that are not as robust.

Our third objective was to ascertain whether self-reported pain intensity during intercourse was significantly correlated with the VPI. We conducted bivariate correlations between the two pain variables for each pain group at 12- and 24-months postpartum.

Results

12 Months Postpartum: Gynecological Exam Findings Across Minimal and Clinically Significant Pain Groups

Table 3 reports the findings from the standardized gynecological exam at 12 months postpartum across pain groups, including pain intensities (during intercourse and the VPI), vulvar presentations pre- and post-CST, internal anatomy, hypothesized causes of pain, and pain recreation. The majority of women had normal clitorises, labia minora, and interlabial sulci, with a similar number of women in both pain groupings demonstrating erythema on their vestibules prior to the CST. Only one participant in the clinically significant pain group had partial fusion of their labia minora and one had a vestibular fissure. After the CST, most women continued to have normal vestibules although some women in both pain groups developed light or moderate erythema. Following palpation of their vagina, uterus, adnexa, and posterior cul-de-sac, most participants in both groups were classified as having normal anatomy, although some women in each pain group experienced discomfort and/or tenderness during the exam (i.e., pelvic floor or vaginal tenderness). Three women in the clinically significant pain group were found to have anatomical anomalies including a large uterus and adnexa, an ovarian cyst, and vaginal erosion due to a menstrual cup. Only one woman in each pain group had been treated for a recent infection.

After the examination, the gynecologist selected what they believed to be a potential cause of the participant's pain (if any) from a checklist. For some women, the gynecologist

selected more than one potential cause of pain. More causes of pain were selected for women in the clinically significant pain group compared to the women in the minimal pain group. Across both groups, similar causes were identified such as perineal inflammation and vulvodynia. Follow-up recommendations were provided to women in both groups, which predominately included referrals to their family physician and specialists (e.g., urogynecologists, ultrasounds, post-childbirth recovery clinics). When asked if the pain they experienced during intercourse was similar to the VPI ratings, the majority of women in the minimal pain group endorsed that the pain was either not recreated, maybe recreated, or that this question was not applicable (as they did not experience pain during intercourse). Women in the clinically significant pain group were mixed in their responses as a similar number reported that the pain did and did not recreate the pain during intercourse.

24 Months Postpartum: Gynecological Exam Findings Across Minimal and Clinically Significant Pain Groups

Table 4 reports the findings from the standardized gynecological exam at 24 months postpartum across pain groups. The majority of women had normal clitorises, labia minora, and interlabial sulci, with the exception of a few women in the clinically significant pain group with partial hooding of their clitoris or fusion of their labia minora, and one woman in the minimal pain group who had an active fissure on their interlabial sulcus. Before the CST, most women in both groups demonstrated normal vestibules, with a similar number of women across groups with erythema and one woman in the clinically significant pain group with a fissure. After the CST, most women continued to have a normal vestibule with some women in both groups exhibiting light to moderate erythema. Following palpation of their vagina, uterus, adnexa, and posterior cul-de-sac, the majority of women in both groups were classified as having normal

anatomy. More women in the clinically significant pain group reported discomfort during the exam than those in the minimal pain group. One woman in the clinically significant pain group had a cervix that was flush with her vagina. Two women in the clinically significant pain group had been treated for a recent infection.

More causes of pain were selected for women in the clinically significant pain group compared to the women in the minimal pain group. Across groups, similar causes were again identified, such as perineal inflammation and vulvodynia. Follow-up recommendations were provided to women in both groups, which included referrals to their family physician. When asked if the pain they experienced during intercourse was similar to the VPI, the majority of women in the minimal pain group endorsed that this question was not applicable (as they did not experience pain). The majority of the women in the clinically significant pain group reported that the pain did recreate pain during intercourse.

Factors Associated with Self-Reported Pain During Intercourse

In this study, no biomedical variables (i.e., pre-existing chronic pain condition, breastfeeding status, birth characteristics) were significantly correlated with pain during intercourse at either 12- or 24-months postpartum (see Supplemental Table 1). Of note, only 22 women in the full sample across pain groupings and time-points indicated a pre-existing pain condition, with only one woman in the clinically significant pain group endorsing pain during intercourse prior to pregnancy. Table 5 reports the correlations amongst all psychosocial variables and pain intensity during intercourse at 12- and 24-months postpartum. There was no evidence of multicollinearity among the study variables. At 12 months postpartum, greater sexual distress and greater pain catastrophizing were significantly associated with greater pain intensity during intercourse. At 24 months postpartum, greater sexual distress at 12- and 24-

months postpartum, greater depressive symptoms at 12 months postpartum, and greater pain catastrophizing at 12- and 24-months postpartum were associated with greater pain during intercourse.

When entered into a multiple regression analysis (see Table 6), the overall model was significant (F (2,109) = 17.33, p <.001, R^2 =.24), with greater sexual distress at 12 months postpartum and greater pain catastrophizing at 12 months postpartum significantly associated with greater pain intensity during intercourse at 12 months postpartum. When entered into a multiple regression analysis, the overall model was significant (F (5,90) = 9.54, p < .001, R^2 =.35), with greater sexual distress and pain catastrophizing at 24 months postpartum associated with greater pain intensity during intercourse at 24 months postpartum.

Factors Associated with Gynecological Exam Pain Intensity

As with self-reported pain during intercourse, no biomedical variables (i.e., pre-existing chronic pain conditions, breastfeeding status, birth characteristics) were significantly correlated with gynecological exam pain intensity at either 12- or 24-months postpartum (see Supplemental Table 1). Table 5 reports the correlations amongst all psychosocial variables and pain intensity during the gynecological exam at 12- and 24-months postpartum. Greater pain catastrophizing at 12 months postpartum was associated with greater VPI ratings at 12 months postpartum. Greater depressive symptoms at baseline and 12 months postpartum were associated with higher VPI ratings at 24 months postpartum. Poorer relationship satisfaction at 12 months postpartum was associated with higher VPI ratings at 24 months postpartum.

When entered into a linear regression (Table 6), the overall model was significant (F (1,94) = 4.673, p = .03, R^2 =.05), with greater pain catastrophizing at 12 months postpartum significantly associated with greater VPI ratings at 12 months postpartum. When entered into a

multiple regression analysis, the overall model was significant (F (3,35) = 3.81, p = .02, R^2 =.25), with only lower relationship satisfaction at 12 months postpartum uniquely associated with higher VPI ratings at 24 months postpartum.

Association Between Pain During Intercourse and the Vestibular Pain Index

In relation to Objective 3, the VPI and self-reported pain intensity during intercourse at both 12- and 24-months postpartum were significantly, moderately, and positively correlated (Table 5).

Discussion

In this longitudinal study, we were the first, to our knowledge, to compare physical findings from a gynecological exam in women with minimal and clinically significant postpartum pain during intercourse at 12- and 24-months postpartum. We also explored biomedical and psychosocial factors associated with pain experienced during intercourse and the VPI and examined the relationship between these two common pain assessment tools. Overall, we found that there were no distinguishing gynecological features between women in the clinically significant and minimal pain during intercourse groups at 12- and 24-months postpartum. Moreover, psychosocial variables emerged as predictors of pain during intercourse and the VPI. A significant and positive association between pain assessment tools was also evidenced, pointing towards both shared and unique contributions to postpartum pain measurement. This study adds to the limited literature on persistent postpartum pain during intercourse by utilizing a multimethod approach to assess persistent postpartum pain 12- to 24-months following childbirth.

Women in the clinically significant pain during intercourse group reported greater VPI ratings relative to women with minimal pain, however, findings from the gynecological exam

revealed that the majority of women in both pain groups had normal physical findings (i.e., normal vulvas and internal structures). When anomalies did exist (e.g., erythema, fissures), they were in comparable frequencies between groups. The current findings are consistent with the broader pain during intercourse literature, whereby there are many potential causes and no consistent physical abnormalities.[13]

In the current study, no biomedical variables were associated with pain during intercourse or the VPI at 12- or 24-months postpartum. Prior research has found that pre-existing pain conditions are often associated with pain during intercourse outside the postpartum period.[18,42,43] Notably, a limited number of women endorsed a pre-existing pain condition, with only one participant in the clinically significant pain group indicating pain during intercourse prior to pregnancy. It is possible that our smaller sample size precluded us from establishing this relationship in the postpartum period. Our findings are consistent with the understanding that hormonal and physical recovery from childbirth have typically stabilized by one year postpartum and thus there may be minimal influence on pain experiences.[19]

Indeed, psychosocial factors in the postpartum period did emerge as relevant to women's persistent pain experiences. None of the baseline psychosocial variables assessed in pregnancy were associated with pain intensity ratings during intercourse or the VPI at either postpartum time-point. The salience of psychosocial variables may change over time, particularly following repeated pain experiences. As hypothesized, greater sexual distress and pain catastrophizing at 12- and 24-months postpartum were significantly associated with greater pain during intercourse at 12- and 24-months, respectively. Greater pain catastrophizing at 12 months was associated with greater VPI ratings at 12 months postpartum and lower relationship satisfaction at 12 months was associated with greater VPI ratings at 24 months postpartum. Thus, both cognitive-

affective and relational variables were linked to women's pain experiences, highlighting the importance of assessing psychosocial variables. As most of our findings were cross-sectional, it is possible that there may be a bidirectional association between pain during intercourse and the psychosocial variables, whereby greater postpartum pain during intercourse precipitates greater pain catastrophizing and/or sexual distress. However, we also found emerging longitudinal evidence suggesting a link between relationship satisfaction and depressive symptoms at 12 months postpartum and the VPI ratings at 24 months postpartum. Establishing these cross-sectional and preliminary longitudinal associations will inform future longitudinal research to further examine the direction of these effects.

Our findings are consistent with theoretical models such as the Fear-Avoidance Model of Pain.[44] Pain catastrophizing is thought to generate fear and hypervigilance of pain, leading to avoidance of potentially painful activities (e.g., sexual activity), distress, reduced arousal, and subsequently greater pain.[45] Moreover, increased sexual distress may interfere with sexual function, including arousal and vaginal lubrication, perpetuating the pain experience.[46] We also found that lower relationship satisfaction at 12 months was associated with greater pain during intercourse at 24 months postpartum. This finding is consistent with prior research implicating relationship dynamics in the reinforcement of pain experienced during intercourse.[22,47] Indeed, dyadic influences on women's pain experiences outside of the perinatal period have been established (e.g., partner responses to pain).[22] However, there is a very limited understanding of how partner factors are associated with women's experience of *postpartum* pain during intercourse,[48] which may differ given the changes to their sexual relationship during this period.[49] More research is needed to replicate these preliminary findings and to parse out the individual and dyadic underpinnings of these unique relationships with pain outcomes.

We found that there was a significant positive association between self-reported pain during intercourse and VPI ratings at both time-points. These findings are consistent with the few prior studies examining the relationships between various pain assessment tools in samples of women with pain during intercourse and adds to the literature by examining these associations in the postpartum period.[32,50] Consistent with previous research,[7] the VPI was lower than the pain reported during intercourse. Furthermore, the majority of women in the clinically significant pain group indicated that the CST did not replicate the pain they experienced during intercourse. Pain during intercourse may be heightened due to the dynamic nature of the stimulation (e.g., increased friction, stretching, and more active movements)[a] as well as other contextual and relationship factors (e.g., intimacy with a partner), which are not recreated by the CST.[1] Following an initial gynecological examination to rule out any pathology, and given that pain ratings tend to be higher for self-reported pain during intercourse and have greater ecological validity, self-reported pain may be a suitable proxy for repeated uncomfortable and painful examinations.[7,32] When further physical examinations are necessary, clinicians might consider longer appointments to allow for consideration of psychosocial issues and an educational pelvic exam.[7,51]

This study was the first to our knowledge to examine and compare gynecological exam findings in women with clinically significant and minimal postpartum pain during intercourse 12- and 24-months after childbirth. Moreover, we extend our understanding of the importance of

[a] A reviewer inquired whether there were differences in pain experiences between penetrative and non-penetrative sexual activities. Women in the clinically significant pain groups at both timepoints were asked if other activities (i.e., urinating after intercourse, masturbation, manual or oral stimulation by their partner, and insertion of a finger, dildo, or vibrator) recreated the pain they experienced during intercourse. Our data indicates that, for the vast majority of participants, these activities did not trigger the same pain experienced during intercourse. Since these data were not collected from women in the minimal pain grouping, and the purpose of the study was to compare minimal and clinically significant pain, we opted to include this information in supplementary material only (see Supplemental Table 2).

psychosocial variables in the experience of persistent postpartum pain, with longer follow-up time-points than typically found in the literature. We are also the first to compare two recommended pain assessment tools for the measurement of postpartum pain during intercourse.

There are also several limitations to these findings. Recruitment was conducted via a local ultrasound clinic in a city with a predominantly White population. Thus, our sample was primarily composed of White, heterosexual, [country masked for review] women who were highly educated and financially secure, limiting the generalizability of our findings. Notably, genital pain experienced by individuals in racial minority groups is more often underdiagnosed and undertreated compared to White individuals.[52] Furthermore, data suggests that women from racial minority groups often experience higher rates of birth complications[53] and interventions such as Caesarean sections[54] and episiotomies[55] than White women. Additionally, racial differences have been identified in pain catastrophizing[56,57] and postpartum depression,[58] which could affect the strength of the effect size that we found and suggest that race might be an important moderator to examine in future research. Taken together, future research should expand recruitment sources to include greater racial, cultural, and gender diversity, as well as a range of socioeconomic backgrounds. In addition, the acceptance rate for participating in the gynecological exam was low. Thus, our smaller sample size may have limited our statistical power to detect effects. Future research should replicate our findings in a larger and more diverse sample.

Previous research has predominantly focused on pain experienced during penile-vaginal pentration.[1] One study reported that penile penetration is the most pain-triggering activity for women with genital and/or pelvic pain postpartum compared to penetration with a digit or sex toy, or via non-penetrative sexual activities.[43] However, women who do not engage in penile-

vaginal intercourse, such as women who have sex with women, may have unique pain experiences. Indeed women in same-sex relationships appear to report less pain during sex than heterosexual women.[59] In future studies, the measurement of self-reported pain during intercourse should be adapted to encompass a broader range of sexual activities that may or may not involve penetration with a penis, as is suggested by the term "intercourse," to better understand the nuances of these experiences. Finally, the VPI is the most widely used and validated approach to assessing pain during the CST; however, clinicians might also consider the highest pain rating across vulvar locations (e.g., site of an episiotomy), which may better capture the severity of pain and its interference.

Our findings indicate that in our sample, observable physical indicators of pain did not differentiate women who reported pain during intercourse from those who did not report this pain, via self-report or during a gynecological exam. Although biomedical factors may still be involved in the development of this pain for some women (especially in light of our small sample size), our findings suggest that in our sample, psychosocial variables may be more important factors in pain maintenance. Psychosocial variables including pain catastrophizing, sexual distress, and relationship satisfaction are associated with both self-reported pain during intercourse and the VPI at 12- and 24-months postpartum. Clinicians might offer referrals to evidence-based interventions that target these psychosocial variables, such as cognitive behavioural therapy.[60] The enduring nature of this pain for some women suggests that postpartum pain during intercourse should not be readily perceived as a condition that will resolve on its own. It is crucial that clinicians identify, act upon, and monitor pain experienced during intercourse following childbirth.

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Figure 1

Flow of recruitment at 12-months postpartum for each pain group.

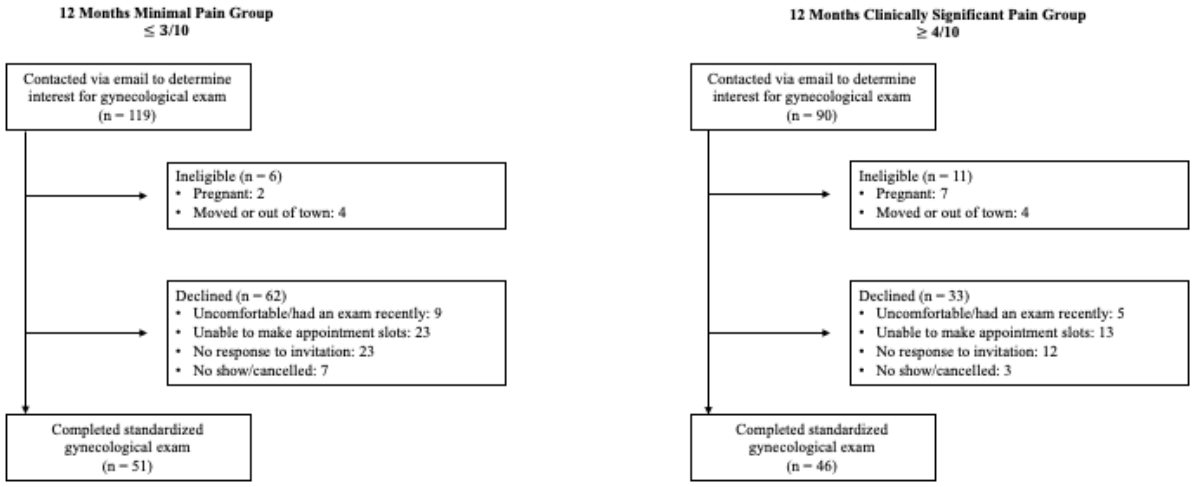

Figure 2

Flow of recruitment at 24 months postpartum for each pain group.

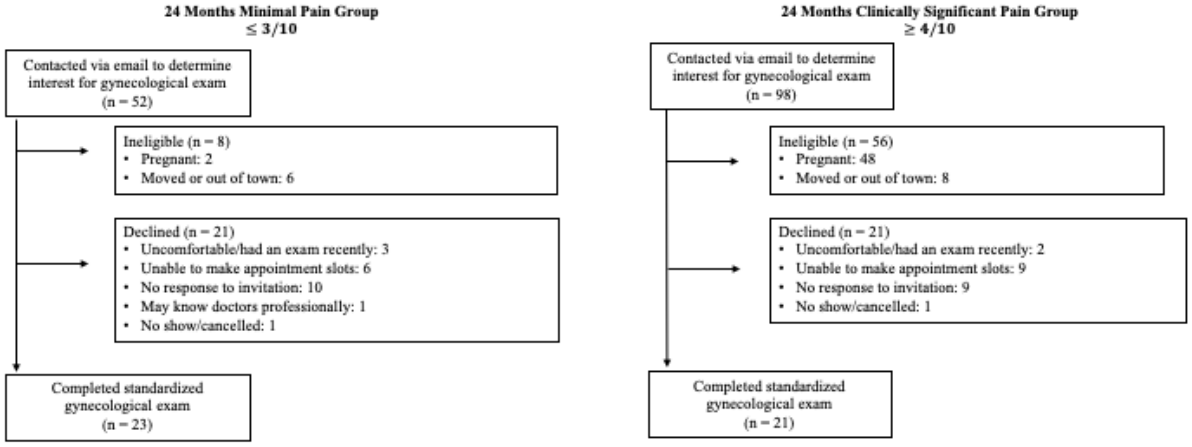

Table 1.

Sociodemographic characteristics of women who completed the standardized gynecological exam at 12- and 24-months postpartum.

	12 months postpartum *(n = 97)*			**24 months postpartum** *(n = 44)*		
	M* (range) or *N	***SD***	**%**	***M* (range) or *N***	***SD***	**%**
Age	30.37 (22-38)	3.45	-	29.16 (20-35)	4.18	-
Education level						
High school diploma or GED	8		8.2	5		11.4
Community college or diploma	20		20.6	7		15.9
University degree or higher	69		71.1	32		72.7
Culture (Background)						
[a]Canadian	90		92.8	40		91.0
[b]Other	7		2.1	4		0
Relationship status (12-month *n* = 96)						
Married	72		75.0	26		59.1
Common-law/Living with a partner	17		17.7	10		22.7

In a relationship	5	5.2	4	9.1
Separated/divorced	1	1.0	1	2.3
No regular partner	1	1.0	3	6.8
Sexual orientation				
Heterosexual/straight	85	87.6	41	93.2
Lesbian/gay	3	3.1	-	-
Bisexual	8	8.2	3	6.8
Questioning	1	1.0	-	-
Annual household income (12-month *n* = 95)				
$0-$29,999	4	4.2	3	6.8
$30,000-$59,999	12	12.6	12	27.2
$60,000-$89,999	28	29.5	7	15.9
$90,000 and over	51	53.7	22	50.0

[a]12 month postpartum "Canadian" refers to English Canadian (*n* = 85), French Canadian (*n* = 3), African Canadian (*n* = 2). 24 month postpartum "Canadian" refers to English Canadian (*n* = 38), African Canadian (*n* = 1), First Nations Canadian (*n* = 1).

[b]12 month postpartum "other" refers to: Western European (*n* = 3), American (*n* = 2), English Canadian/Inuit (*n* = 1) and Metis (native)/African Canadian/White (*n* = 1). 24 month postpartum "other" refers to: American (*n* = 1), Asian (*n* = 1) Middle Eastern (*n* =

1), and Caribbean (*n* = 1)

Table 2.

Breastfeeding status, birth characteristics, and pre-existing chronic pain conditions of women by pain group at 12- and 24-months postpartum.

	Minimal Pain (*n* = 47)	**Clinically Significant Pain** (*n* = 44)	**Minimal Pain** (*n* = 21)	**Clinically Significant Pain** (*n* = 18)
	***N* (%)**	***N* (%)**	***N* (%)**	***N* (%)**
Breastfeeding (*n* = 16^)				
Exclusively breastfed	10 (21.3)	20 (45.5)	5 (23.8)	6 (33.3) ^
Exclusively bottle-fed with breastmilk	4 (8.5)	-	-	-
Exclusively bottle-fed with formula	9 (19.1)	5 (11.4)	5 (23.8)	-
Bottle and breastfed breastmilk/formula	24 (51.1)	19 (43.2)	11 (52.4)	10 (88.9) ^
Mode of delivery				
Vaginal delivery	30 (63.8)	24 (54.5)	12 (57.1)	9 (50.)
Instrumental delivery: forceps	2 (4.3)	2 (4.5)	-	1 (5.6)
Instrumental delivery: vacuum extraction	6 (12.8)	7 (15.9)	-	3 (16.7)

Caesarean section	9 (19.1)	11 (25)	9 (42.9)	5 (27.8)
Delivery tear				
Yes, first-degree tear	8 (17)	6 (13.6)	2 (9.5)	3 (16.7)
Yes, second-degree tear	21 (44.7)	17 (38.6)	10 (47.6)	9 (50.0)
Yes, third-degree tear	6 (12.8)	5 (11.4)	-	-
Yes, fourth-degree tear	-	-	-	-
Yes, degree not specified	1 (2.1)	-	-	1 (5.6)
No	1 (2.1)	5 (11.4)	-	-
Unsure/do not know	1 (2.1)	-	-	-
N/A	9 (19.1)	11 (25)	9 (42.9)	5 (27.8)
Induced				
Yes	18 (38.3)	14 (31.8)	11 (52.4)	4 (22.2)
No	29 (61.7)	24 (54.5)	9 (42.9)	13 (72.2)
N/A (e.g., planned Caesarean section)	-	6 (13.6)	1 (4.8)	1 (5.6)
Epidural				
Yes	33 (70.2)	33 (75)	14 (66.7)	16 (88.9)

No	14 (29.8)	11 (25)	7 (33.3)	2 (11.1)
Episiotomy				
Yes	8 (17)	8 (18.2)	1 (4.8)	2 (11.1)
No	30 (63.8)	23 (52.3)	11 (52.4)	11 (61.1)
Unsure/do not know	-	1 (2.3)	-	-
N/A	9 (19.1)	12 (27.3)	9 (42.9)	5 (27.8)
Pre-existing chronic pain condition[a]				
Yes	8 (17)	9 (20.5)	3 (14.3)	4 (22.2)
No	39 (83)	35 (79.5)	18 (85.7)	14 (77.8)

[a]Twenty-two women in the full sample endorsed a pre-existing chronic pain condition. Although the sample size in the table reflects a total of 24 women endorsing a pain condition, the difference in sample sizes is attributable to (1) four women completing the gynecological exam at both time-points and their data being accounted for twice and (2) three women who were not included in pain groupings at a particular time point due to not having a pain intensity score to categorize.

Table 3.

Gynecological exam findings at 12 months postpartum.

	Minimal Pain *(n* = 47)	**Clinically Significant Pain** *(n* = 44)
	***M* (range; *SD*)**	***M* (range; *SD*)**
Pain Intensity - Survey	.70 (0-3; *.98*)	5.02 (4-8; *1.23*)
Pain Intensity - CST	1.24 (0-6.25*; 1.55*)	1.98 (0-5.75; *1.61*)
	***n* (%)**	***n* (%)**
[a]**Description of the vulva: Clitoris**		
Normal	47 (100.0%)	44 (100.0%)
Description of the vulva: Labia minora		
Normal	47 (100.0%)	43 (97.7%)
Partial fusion	0 (0%)	1 (2.3%)
Description of the vulva: Interlabial sulcus		
Normal	47 (100.0%)	43 (97.7%)
[b]Other	0 (0%)	1 (2.3%)

Description of the vulva: Vestibule (before CST)		
Normal	38 (80.9%)	33 (75.0%)
Erythema	9 (19.1%)	10 (22.7%)
Fissure	0 (0%)	1 (2.3%)
Description of the vulva: Vestibule (after CST)		
Normal	31 (66%)	30 (68.2%)
Light erythema	10 (21.3%)	6 (13.6%)
Moderate erythema	6 (12.8%)	8 (18.2%)
Internal anatomy exam		
Normal	42 (89.4%)	33 (75.0%)
Discomfort/tenderness	5 (10.6%)	8 (18.2%)
Anatomical anomaly	0 (0%)	3 (6.8%)
Use of treatment for infection (n = 46[#])		
[c]Yes	1 (2.1%)[#]	1 (2.3%)[#]
Potential cause(s) of pain selected by examiner?		
Yes	27 (57.4%)	33 (75.0%)

[d]Checklist item(s) selected as potential cause of pain		
Perineal inflammation/granulation	18 (62.1)%)	15 (41.7%)
Vulvodynia/vestibulodynia	6 (20.7%)	10 (27.7%)
Vulvovaginal atrophy	1 (3.45%)	5 (13.9%)
Vulvar dermatoses (e.g., lichen sclerosis or lichen planus)	0 (0%)	1 (2.8%)
Pain related to healing of perineal tear	0 (0%)	3 (8.3%)
Pelvic floor dysfunction	2 (6.85%)	1 (2.8%)
Uterine pathology (e.g., fibroids, adenomyosis)	1 (3.45%)	0 (0%)
[e]Other	1 (3.45%)	1 (2.8%)
[g]VPI recreates pain during intercourse (*n* = 45^)		
Yes	7 (14.9%)^	15 (34.1%)
No	13 (27.7%)^	17 (38.6%)
Maybe	13 (27.7%)^	9 (20.5%)
Not applicable	12 (25.5%)^	3 (6.8%)

[a]During examination of the vulva, the gynecologist recorded supplementary information for two participants in the minimal pain group (Bartholin's cyst (not associated with pain) and erythema on the labia majora) and four participants in the clinically significant

pain group (copper IUD, dry skin near episiotomy site, vaginal odour since delivery, and pale vaginal mucosa/low lubrication).

[b]"Other" refers to someone with "right erythema/lichenification.

[c]Minimal pain: unspecific infection treated with Diflucan; Clinically significant pain: treated with antibiotics for mastitis.

[d]For some participants, the examiner selected more than one potential cause of pain from the checklist. Therefore, the percentage was calculated based off the total number of selections for those who were deemed to have a potential cause of pain.

[e]Minimal pain: "other" not specified; Clinically significant pain: "other" related to concurrent breastfeeding.

Note. Six women who completed the gynecological exam did not provide a self-report pain intensity during their survey. As such, they could not be correctly categorized into the clinically significant or minimal pain groups and their gynecological characteristic data could not be reported.

Table 4.

Gynecological exam findings at 24 months postpartum.

	Minimal Pain *(n = 21)*	**Clinically Significant Pain** *(n = 18)*
	M* (range) *SD	***M* (range; *SD*)**
Pain Intensity - Survey	.81 (0-3; *.1.08*)	5.33 (4-9; *1.57*)
Pain Intensity – CST (n = 20[#])	.59 (0-3*; 0.89*)[#]	2.14 (0-5.50; *1.59)*
	***n* (%)**	***n* (%)**
[a]Description of the vulva: Clitoris		
Normal	21 (100.0%)	17 (94.4%)
Partial hooding	0 (0%)	1 (5.6%)
Description of the vulva: Labia minora		
Normal	21 (100.0%)	17 (94.4%)
Partial fusion	0 (0%)	1 (5.6%)
Description of the vulva: Interlabial sulcus		
Normal	20 (95.2%)	18 (100.0%)

Active fissure	1 (4.8%)	0 (0%)
Description of the vulva: Vestibule (before CST)		
Normal	17 (81.0%)	13 (72.2%)
Erythema	4 (19.0%)	4 (22.2%)
Fissure	0 (0%)	1 (5.6%)
Description of the vulva: Vestibule (after CST)		
Normal	15 (71.4%)	13 (72.2%)
Light erythema	4 (19.0%)	3 (16.7%)
Moderate erythema	2 (9.50%)	2 (11.1%)
Internal anatomy exam		
Normal	19 (90.5%)	10 (55.6%)
Discomfort/tenderness	2 (9.50%)	7 (38.9%)
Anatomical anomaly	0 (0%)	1 (5.5%)
Use of treatment for infection		
[b]Yes	0 (0%)	2 (11.1%)
Potential cause(s) of pain selected by examiner?		

Yes	10 (47.6%)	15 (83.3%)
[c]Checklist item(s) selected as potential cause of pain		
Perineal inflammation/granulation	3 (18.75%)	4 (15.4%)
Vulvodynia/vestibulodynia	4 (25%)	9 (34.62%)
Vulvovaginal atrophy	2 (12.5%)	3 (11.54%)
Vulvar dermatoses (e.g., lichen sclerosis or lichen planus)	1 (6.25%)	1 (3.84%)
Urinary tract disease	1 (6.25%)	2 (7.7%)
Pelvic floor dysfunction	2 (12.5%)	1 (3.84%)
Adnexal pathology (e.g., ovarian cysts)	0 (0%)	1 (3.84%)
Infection (vaginal, cervical, or uterine)	0 (0%)	1 (3.84%)
Endometriosis	1 (6.25 %)	1 (3.84%)
[d]Other	2 (12.5%)	3 (11.54%)
VPI recreates pain during intercourse (n = 20)[±]		
Yes	4 (20.0%)[±]	9 (50.0%)
No	3 (15%)[±]	4 (22.2%)

Maybe	1 (5.0%)[±]	5 (27.8%)
Not applicable	12 (60%)[±]	0 (0%)

[a]During examination of the vulva, the gynecologist recorded supplementary for two participants in minimal pain group (yeast in groins and mild atrophy) and five participants in the clinically significant pain group (atrophy and erythema of vestibule, Mirena IUD in, mild erythema of labia majora bilaterally, pallor of the vagina, and pale vaginal mucosa).

[b]Clinically significant pain: UTI and BV treatment (Flagyl).

[c]For some participants, the examiner selected more than one potential cause of pain from the checklist. Therefore, the percentage was calculated based off the total number of selections for those who were deemed to have a potential cause of pain.

[d]Minimal pain: "other" related to concurrent breastfeeding and the strings of an IUD not being visible; Clinically significant pain: pain at episiotomy site, UTI, and vaginismus.

Note. Five women who completed the gynecological exam did not provide a self-report pain intensity during their survey. As such, they could not be correctly categorized into the clinically significant or minimal pain groups and their gynecological characteristic data could not be reported.

Table 5.

Descriptive statistics and bivariate correlations among the psychosocial study variables and pain outcomes.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. SEX12M	-	.35**	.29**	.54**	-.04	-.12	-.10	.01	.44**	.15	-.02	.16	.20*	.13	.39**	.13
2. SEX24M	-	-	.26*	.57**	-.03	-.12	-.11	.08	.29**	.39**	.16	.29**	.15	.02	.25**	.49**
3. VPI12M	-	-	-	.43	-.04	-.02	.06	.13	.14	.10	.07	.15	-.12	.04	.22*	.15
4. VPI24M	-	-	-	-	.03	-.34*	-.28	-.03	.10	.13	.34*	.37*	.18	.17	.16	.21
5.CSIBL	-	-	-	-	-	.51**	.45**	-.25**	-.14	.00	-.22*	-.05	.01	-.10	-.29**	.10
6.CSI12M	-	-	-	-	-	-	.61**	-.30**	-.36**	-.18	-.13	-.30**	-.04	-.09	-.21*	.05
7.CSI24M	-	-	-	-	-	-	-	-.25**	-.28**	-.28**	-.28**	-.31**	-.40**	-.16	-.30**	-.16
8.FSDSBL	-	-	-	-	-	-	-	-	.57**	.48**	.36**	.41**	.15	.21*	.25**	.22*
9.FSDS12M	-	-	-	-	-	-	-	-	-	.53**	.14	.44**	.28**	.15	.42**	.13
10.FSDS24M	-	-	-	-	-	-	-	-	-	-	.26**	.34**	.30**	.09	.22*	.31**
11.EPDSBL	-	-	-	-	-	-	-	-	-	-	-	.53**	.43**	.30**	.35**	.38**
12.EPDS12M	-	-	-	-	-	-	-	-	-	-	-	-	.55**	.06	.43**	.31**
13.EPDS24M	-	-	-	-	-	-	-	-	-	-	-	-	-	.12	.28**	.39**

14.PCSBL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.35**	.22*
15.PCS12M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.39**
16.PCS24M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mean	2.48	1.86	1.54	1.38	17.98	15.01	14.74	12.72	14.24	12.58	5.56	5.60	6.15	10.25	4.27	4.27
SD	2.35	2.15	1.59	1.50	2.78	4.01	4.28	9.36	11.08	11.00	3.94	4.54	4.79	8.09	6.49	6.56
Range	0-8	0-9	0-6.25	0-5.5	4-21	0-21	0-21	0-41	0-52	0-52	0-18	0-19	0-24	0-37	0-33	0-35

Note. BL = baseline, 12M = 12 months, 24M = 24 months, SEX = pain intensity during intercourse, VPI = vestibular pain index, CSI = Couples Satisfaction Index, FSDS = Female Sexual Distress Scale, EPDS = Edinburgh Postnatal Depression Scale, PCS = Pain Catastrophizing Scale

Sample sizes varied across each measure between $n = 14 – 127$

*$p < .05$, ** $p < .01$

Table 6.

Psychosocial predictors of pain intensity during CST and intercourse at 12- and 24-months postpartum.

Variable	*B*	*SE B*	*β*	*t*	95% CI [LL, UL]
Pain Intensity During Intercourse at 12 Months Postpartum					
Sexual Distress (12M)	.09	.02	.33	3.62**	[.03, .12]
Pain Catastrophizing (12M)	.07	.04	.24	2.63*	[.02, .16]
Pain Intensity During Intercourse at 24 Months Postpartum					
Sexual Distress (12M)	.02	.02	.10	.77	[-.03, .06]
Sexual Distress (24M)	.05	.02	.22	2.10*	[.00, .10]
Depression (12M)	.05	.05	.12	1.06	[-.05, .12]
Pain Catastrophizing (12M)	-.02	.04	-.05	-.46	[-.09, .06]
Pain Catastrophizing (24M)	.16	.05	.43	4.50***	[.09, .22]
Pain Intensity During CST at 12 Months Postpartum					
Pain Catastrophizing (12M)	.05	.02	.22	2.16*	[.00, .10]
Pain Intensity During CST at 24 Months Postpartum					

Relationship satisfaction (12M)	-.11	.05	-.30	-2.04*	[-.21, .00]
Depression (BL)	.07	.05	.22	1.28	[-.04, .18]
Depression (12M)	.06	.05	.21	1.21	[-.04, .17]

Note. BL = baseline, 12M = 12 months, 24M = 24 months.

*$p < .05$, ** $p < .01$, $p < .001$