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Risk Factors for Dyspareunia After First Childbirth

Natasha R. Alligood-Percoco, M.D.¹, Kristen H. Kjerulff, Ph.D.², and John T. Repke, M.D.³

¹Penn State Hershey Medical Center, Department of Obstetrics and Gynecology, Hershey, PA, USA

²Penn State Hershey College of Medicine, Departments of Public Health Sciences and Obstetrics and Gynecology, Hershey, PA, USA

³Penn State University College of Medicine, Penn State Hershey Medical Center, Department of Obstetrics and Gynecology, Hershey, PA, USA

Abstract

Objective—To investigate risk factors for dyspareunia among primiparous women.

Methods—This was a planned secondary analysis, using data from the 1 and 6 month postpartum interviews of a prospective study of women who delivered their first baby in Pennsylvania, 2009 to 2011. Participants who had resumed sexual intercourse by the 6 month interview (n = 2,748) constituted the analytic sample. Women reporting a big or medium problem with painful intercourse at 6 months were categorized as having dyspareunia. Multivariable logistic regression was used to evaluate the effect of patient characteristics, obstetric and psychosocial factors, and breastfeeding on dyspareunia.

Results—There were 583 women (21.2%) who reported dyspareunia at 6 months postpartum. Nearly a third of those breastfeeding at 6 months reported dyspareunia (31.5%), versus 12.7% of those not breastfeeding (adjusted odds ratio (adjusted OR) 2.89, 95% confidence interval (CI) 2.33–3.59, P < .001); 32.5% of those reporting a big or medium problem with perineal pain at 1-month reported dyspareunia at 6 months versus 15.9% of those who did not (adjusted OR 2.45, 95% CI 1.93–3.10, P < .001); 28.3% of women who reported fatigue all or most of the time at 1 month reported dyspareunia at 6 months versus 18.0% of those who reported fatigue less often (adjusted OR 1.60, 95% CI 1.30–1.98, P < .001); and 24.1% of those who scored in the upper third on the stress scale at 1 month reported dyspareunia at 6 months postpartum, compared to 15.6% of those who scored in the lowest third (adjusted OR 1.55, 95% CI 1.18–2.02, P = .001).

Conclusion—In this prospective cohort study we identified specific risk factors for dyspareunia in primiparous women that can be discussed at the first postpartum visit, including breastfeeding, perineal pain, fatigue and stress.

Corresponding author: NR Alligood-Percoco, MD, Department of Obstetrics and Gynecology, Penn State Milton S. Hershey Medical Center, 500 University Drive, MC: H103, Hershey, PA 17033.

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LEVEL OF EVIDENCE: III

INTRODUCTION

An estimated 17–36% of women report dyspareunia at 6 months postpartum.(1–4) Despite its prevalence, postpartum dyspareunia seems to be both underdiagnosed and undertreated. In a cross-sectional analysis of 796 primiparous women, Barrett et al. found that 69% had been counseled about postpartum sexual health, but that these discussions focused on contraceptive selection and timing to resumption of sexual intercourse. In the same study, among women who reported some form of postpartum sexual dysfunction, only 15% discussed the problem with their healthcare provider.(1)

Commonly reported risk factors for postpartum dyspareunia include perineal or genital trauma, episiotomy, and breastfeeding.(1, 3, 5) The majority of prior studies have been cross-sectional or retrospective, and therefore limited in their ability to identify factors in the early postpartum period that predict dyspareunia.(1, 3, 5–8) In addition, very few studies have investigated the effects of psychosocial factors in the postpartum period, such as stress and depression.(9)

In our study we sought to identify risk factors for dyspareunia that are evident in the first month after first childbirth, in order to assist clinicians in counseling women at the postpartum visit.

MATERIALS AND METHODS

The First Baby Study was a prospective cohort study designed to evaluate the effect of mode of delivery on subsequent childbearing, with patients enrolled from 78 participating hospitals throughout the state of Pennsylvania. Our study represents a planned secondary analysis of First Baby Study data. Recruitment methods included study brochures and posters placed in obstetric clinics, ultrasound departments, and low-income health centers; newspaper ads and hospital intranet postings; targeted mailings to eligible women enrolled in Medicaid; and brochure distribution at childbirth education classes and hospital tours. The recruitment period extended from January 2009 through April 2011, with a final sample size of 3,006 women who completed the baseline (30–42 weeks gestational age) and 1 month postpartum interview. This study was approved by the Institutional Review Boards of all hospitals and facilities involved with participant recruitment. Details of the study design and sample representativeness have been described previously.(10)

Strict inclusion criteria included nulliparous women with a singleton pregnancy, ages 18–35 years at the time of the baseline interview, English or Spanish speaking, telephone access, and planning to deliver in a Pennsylvania hospital. Women were excluded if they planned to deliver at home, or in a birthing center not associated with a hospital, or planned to have a sterilization procedure during their childbirth hospitalization. Women were also excluded if they planned for the infant to be adopted. Trained study personnel completed the informed consent for study participation. Women in more remote regions of Pennsylvania underwent an Institutional Review Board-approved telephone and mailing consent process (N=265, 8.8%). Baseline interviews occurred between 30–42 weeks gestational age, including questions assessing maternal health history, pregnancy complications, mode of delivery

preference, relationship factors, psychosocial factors, and sociodemographic factors. The 1-month postpartum telephone interview focused on the labor and delivery experience, in hospital and post-discharge complications, and the health of the baby and mother. Additional interviews were conducted at 6, 12, 18, 24, 30 and 36 months postpartum.

The presence of dyspareunia was assessed at the 6-month postpartum interview by the question: *“To what extent have you had a problem with painful intercourse? Has it been a big problem, medium problem, small problem, or no problem?”* Only women who reported that they had had sexual intercourse since childbirth were asked about dyspareunia. We used response options ranging from “big problem” to “no problem” because previous studies measuring similar quality of life concepts have found that patients can easily report the extent to which a particular symptom is problematic in their lives.(11, 12) Frequency calculations revealed that when limiting dyspareunia to responses including “medium problem” and “big problem”, the rate of dyspareunia at 6 months was 21.2% of those who were sexually active, which was comparable to prior studies.(1–3) When including those with a “small problem”, “medium problem”, and “big problem”, the rate rose to 54.1%, considerably higher than reported in prior studies. Sensitivity analyses were performed to assess the relationship between the two definitions, and known risk factors for postpartum dyspareunia. These analyses confirmed that the definition of dyspareunia as a “medium problem” or “big problem” had a greater association with known risk factors for postpartum dyspareunia. Therefore we defined dyspareunia in this study population as a self-reported “medium problem” or “big problem”, as reported at the 6-month interview.

Four inventories were administered as part of the 1-month postpartum interview. These included measures of social support for new mothers, fatigue, stress, and depression. We used 5 items from the Medical Outcome Study Social Support Survey(13) to measure 4 types of social support: emotional, tangible, affectionate, and positive social interaction. Total scores on the Social Support for New Mother’s Scale ranged from 8 to 40 and were categorized into tertiles based on the distribution of scores: 8–32 (low), 33–37 (medium) and 38–40 (high).

The stress measure, adapted from Misra, O’Campo et al. (2001), was a 12-question inventory evaluating for potential sources of stress, such as money worries, family concerns, and work problems.(14) Response options to the 12 items were “No stress”, “Some stress”, “Moderate stress” and “Severe stress.” Total scores ranged from 12 (no stress) to 48 (severe stress) and were grouped into tertiles, based on the distribution of scores: 12–16 (low stress), 17 to 20 (medium stress), and 21 and above (high stress).

Depression was assessed through the 10-question Edinburgh Postnatal Depression Scale, adapted form Cox, Holden et al. (1987).(15) Each answer was scored on a scale of 0–3, with a score of 3 indicating the most severe depressive symptoms; thus total scores could range from 0–30. Higher total scores indicated worse depressive symptoms. We used a cut-off of 12 or greater indicating probable depression, as recommended in a systematic review of studies of the Edinburgh Postnatal Depression Scale.(16)

As part of the 1 month interview participants were asked to report the extent to which they were having a problem with a “Painful perineum” (tissue between the vagina and anus), using the scale “Big problem”, “Medium problem”, “Small problem” or “No problem”. Women reporting a “big problem” or “medium problem” were categorized as having perineal pain at 1 month postpartum. With regards to fatigue, participants were also asked how they had been feeling in the past few days, and specifically “Have you been tired from lack of sleep?”, with response options of “All of the time”, “Most of the time”, “Some of the time”, “A little of the time” and “None of the time”. Those women reporting fatigue “all of the time” or “most of the time” were categorized as having fatigue at 1 month postpartum.

Insurance coverage information was measured using the hospital discharge data. Gestational age, birthweight and newborn gender were obtained from the birth certificate data. Mode of delivery was ascertained by self-report and verified from the birth certificate and hospital discharge data. Maternal age, race, education, marital status, and breastfeeding were provided by maternal self-report. Degree of perineal laceration was measured using the International Classification of Diseases-9 diagnosis codes 664.0 (first degree), 664.1 (second degree), 664.2 (third degree) and 664.3 (fourth degree). Diagnosis codes were chosen over chart review in assessing perineal laceration in order to provide consistency in reporting across the 78 participating hospitals.

The study variables were categorized by frequency counts and percentages. Chi-square analyses were used to investigate the bivariate relationships between the independent variables and the primary outcome (self-reported dyspareunia at 6-months postpartum). We used a multivariate logistic regression model to examine the association between the independent variables (maternal characteristics, obstetric factors, psychosocial factors and symptoms) and dyspareunia at 6-months postpartum, controlling for confounders. All maternal characteristics, obstetric factors, psychosocial factors and symptoms that were significantly associated with dyspareunia at $p < .05$ in the chi-square analyses were included in the logistic regression model. Statistical analyses were performed using SPSS software version 22.

RESULTS

There were 2,911 women who participated in the 6 months postpartum interview, representing 96.8% of the original study group. Among these women, 2,748 (94.4%) reported that they had resumed sexual relations by the time of the 6 month interview. Therefore, the analytic sample of this study of dyspareunia included only these 2,748 women who were sexually active. The majority of these participants were white (85%), college educated (58.2%), married (73.2%), with private insurance (78.8%), and below the age of 30 (66.6%) (Table 1). Almost half (45.4%) were still breastfeeding at 6 months postpartum. Among the women who had resumed sexual intercourse at 6 months postpartum, the overall prevalence of dyspareunia was 21.2%. Chi-square analyses indicated that instrumental delivery, perineal laceration and breastfeeding were significantly associated with dyspareunia. Forceps assisted delivery was not significantly associated with dyspareunia, although this may be due to the overall small number of women who delivered

by forceps in this study. Vacuum assisted delivery was significantly associated with dyspareunia.

As seen in Table 2, all four of the psychosocial measures (depression, fatigue, social support and stress) administered at 1 month postpartum were associated with the presence of dyspareunia at 6 months postpartum. In addition, the symptom of painful perineum at 1 month postpartum was associated with dyspareunia at 6 months.

We analyzed risk factors at baseline, 1 month postpartum, and 6 months postpartum that were associated with dyspareunia at 6 months postpartum. All of the maternal characteristics (baseline survey), obstetric factors (1-month survey), psychosocial factors and perineal pain symptoms (1-month survey), and breastfeeding (6-month survey) were included in the multivariable logistic regression equation, except for forceps assisted delivery (Table 3).

When analyzing baseline characteristics, we found that pre-pregnancy obesity was associated with a decreased risk of dyspareunia. Additionally, we found that married women reported higher levels of dyspareunia than unmarried women.

Compared to women having instrumented vaginal delivery, women having spontaneous vaginal delivery were significantly less likely to experience dyspareunia at 6 months postpartum (adjusted OR 0.67, 95% CI 0.48–0.94). There was no significant difference in dyspareunia rates between women having spontaneous vaginal delivery and women having cesarean section (either planned or unplanned).

32.5% of women experiencing perineal pain at 1 month postpartum reported dyspareunia at 6 months postpartum, versus 15.9% of those who did not (adjusted OR 2.45, 95% CI 1.93–3.10). 28.3% of women who reported fatigue all or most of the time at 1 month postpartum reported dyspareunia at 6 months postpartum, versus 18.0% of those who reported fatigue less often (adjusted OR 1.60, 95% CI 1.30–1.98). Among the other three psychosocial factors analyzed at 1 month postpartum, only stress was associated with dyspareunia in the logistic regression model. To make certain this was not due to collinearity between these three measures we also constructed logistic regression equations with each of the psychosocial measures alone. Neither depression nor social support were independently associated with dyspareunia, controlling for the maternal characteristics, obstetric factors, and symptoms.

Among those women who had resumed intercourse at 6 months postpartum, nearly a third of those breastfeeding reported dyspareunia (31.5%), versus 12.7% of those not breastfeeding (adjusted OR 2.89, 95% confidence interval (CI) 2.33–3.59). (Table 3). This represented the single strongest risk factor in our study.

DISCUSSION

In this secondary analysis of a large-scale prospective interview study, more than a fifth of sexually active primiparous women reported a big or medium problem with painful intercourse 6 months after childbirth, providing an incidence of postpartum dyspareunia that is consistent with prior studies.(1–3)

Our finding that breastfeeding was a strong risk factor for dyspareunia is consistent with prior studies.(1–3) The endocrine changes of breastfeeding result in a generally hypoestrogenic state, which may result in changes to the vaginal epithelium, vaginal lubrication, and delay healing from childbirth. This suggests that there may be a role for the treatment of breastfeeding-related postpartum dyspareunia in a manner similar to that used in postmenopausal women experiencing atrophy-related dyspareunia, with vaginal lubricators, moisturizers, and local estrogen replacement.(17)

Our finding that the married women in our study were significantly more likely to report dyspareunia than the unmarried women, even after controlling for multiple confounders, was puzzling. We have no explanation for these findings.

Fatigue and stress at 1 month postpartum were found to have a significant association with dyspareunia. These are important findings because they open the door for a dialogue about dyspareunia at the first postpartum visit, which generally occurs within the first couple of months postpartum, and often prior to the resumption of sexual activity.

Perineal pain was assessed at 1 month postpartum, and found to be associated with the presence of dyspareunia at 6 months postpartum, even when controlling for maternal and obstetrical confounders. This “warning sign” may assist clinicians in screening patients at risk for dyspareunia at the postpartum visit, when many patients have not yet resumed sexual intercourse.

A major strength of this study is its large scale, with over 2,700 respondents at 6 months postpartum. The prospective design allowed the investigators to assess the extent to which psychosocial factors, maternal factors, and perineal pain in the early postpartum period were associated with the subsequent development of dyspareunia at six months postpartum.

The baseline (third trimester), 1-month, and 6-month survey timelines were beneficial to our study design. This provides direct clinical translation, in that the first postpartum clinic visit typically occurs at 1–2 months, at which time women undergo routine screening for postpartum depression and mood disturbance.(18) Findings of this study also suggest clinicians should consider screening for stress and perineal pain in the early postpartum period.

For this study we developed a measure of dyspareunia, which was associated with commonly reported risk factors for dyspareunia such as instrumental delivery and breastfeeding, evidence to support the validity of this measure. However, it is a limitation of this study that we used a 1-item measure of dyspareunia. Some studies of postpartum dyspareunia measure this problem using multiple items to address a constellation of factors including vaginal dryness, lack of desire and sexual satisfaction.(5–7) It is likely that different risk factors lead to different patterns of dyspareunia-related symptoms. Better understanding of specific symptoms would have been beneficial to our study design, as it would have allowed the investigators to correlate specific symptoms with specific risk factors.

The demographics of our study population included women that were generally older, and more likely to be college educated, Caucasian, privately-insured, and married than women delivering their first child in the state of Pennsylvania as a whole. However, we controlled for participant characteristics in the logistic regression analyses - including maternal age, race, education, insurance coverage and marital status – which would likely decrease the potential for bias in the study results.

Perhaps the most significant weakness of our study is the lack of a dyspareunia measure in the baseline (third trimester) survey. Pre-existing dyspareunia has been identified as being associated with postpartum dyspareunia in several studies.(6, 9)

This was a prospective cohort study of women after first childbirth. This creates an inherent limitation in that we were unable to compare postpartum patients to a control group of women who had not recently given birth.

In summary, our study provides a large prospective analysis of risk factors for dyspareunia in first time mothers, analyzing maternal, obstetric, and psychosocial factors. Our data confirms that postpartum dyspareunia is a common disorder with identifiable risk factors. The authors strongly advocate for the routine screening for dyspareunia at the first postpartum clinic visit among women who have resumed sexual intercourse. For those women who have not yet resumed intercourse, we recommend that clinicians counsel those women at increased risk, including women with perineal pain, women exhibiting signs of stress or fatigue, women with vaginal or instrumented vaginal deliveries, and women who are breastfeeding.

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Table 1

Maternal Characteristics and Obstetric Factors by Dyspareunia at 6 Months Postpartum

Variable	Overall	Dyspareunia		P
		Yes	No	
	2748	583 (21.2)	2165 (78.8)	
Maternal age (y)				< .001
18 – 24	690 (25.1)	109 (15.8)	581 (84.2)	
25 – 29	1140 (41.5)	262 (23.0)	878 (77.0)	
30 – 36	918 (33.4)	212 (23.1)	706 (76.9)	
Race/ethnicity				.001
White non-Hispanic	2335 (85.0)	516 (22.1)	1819 (77.9)	
Black non-Hispanic	179 (6.5)	19 (10.6)	160 (89.4)	
Hispanic	139 (5.1)	22 (15.8)	117 (84.2)	
Other	94 (3.4)	25 (26.6)	69 (73.4)	
Education				< .001
HS degree or less	419 (15.2)	57 (13.6)	362 (86.4)	
Some college or technical school	731 (26.6)	133 (18.2)	598 (81.8)	
College grad or higher	1598 (58.2)	393 (24.6)	1205 (75.4)	
Insurance				< .001
Private	2165 (78.8)	496 (22.9)	1669 (77.1)	
Public	582 (21.2)	87 (14.9)	495 (85.1)	
Marital status				< .001
Married	2012 (73.2)	487 (24.2)	1525 (75.8)	
Not married	735 (26.8)	96 (13.0)	640 (87.0)	
Preconception BMI (kg/m ²)				< .001
Normal/underweight	1560 (56.8)	383 (24.6)	1177 (75.4)	
Overweight	609 (22.2)	120 (19.7)	489 (80.3)	
Obese	577 (21.0)	80 (13.9)	497 (86.1)	
Breastfeeding (6 Months)				<.001
Yes	1247 (45.4)	393 (31.5)	854 (68.5)	
No	1501 (54.6)	190 (12.7)	1311 (87.3)	
Mode of delivery				< .001
Planned cesarean	143 (5.2)	27 (18.9)	116 (81.1)	
Unplanned cesarean	649 (23.6)	118 (18.2)	531 (81.8)	
Spontaneous vaginal	1716 (62.4)	361 (21.0)	1355 (79.0)	
Instrumental vaginal	240 (8.7)	77 (32.1)	163 (67.9)	
Forceps				.316
Yes	69 (2.5)	18 (26.1)	51 (73.9)	
No	2679 (97.5)	565 (21.2)	2114(78.9)	
Vacuum				.001
Yes	232 (8.4)	69 (29.7)	163 (70.3)	
No	2516 (91.6)	514 (20.4)	2002 (79.6)	

Variable	Overall	Dyspareunia		<i>P</i>
		Yes	No	
Forceps, vacuum or both				< .001
Yes	290 (10.6)	85 (29.3)	205 (70.7)	
No	2458 (89.4)	498 (20.3)	1960 (79.7)	
Perineal laceration				.004
None	1206 (43.9)	240 (19.9)	966 (80.1)	
1st/2nd degree	1412 (51.4)	301 (21.3)	1111 (78.7)	
3rd/4 th degree	118 (4.3)	39 (33.1)	79 (3.7)	
Episiotomy				.024
Yes	431 (15.7)	109 (25.3)	322 (74.7)	
No	2317 (84.3)	474 (20.5)	1843 (79.5)	

Data are n (%)

Table 2

Psychosocial Factors and Symptoms at 1 Month Postpartum by Dyspareunia at 6 Months

Variable	Overall	Dyspareunia		<i>P</i>
		Yes	No	
	2748	583 (21.2)	2165 (78.8)	
Depression (1 month)				.006
Positive (12+)	138 (5.0)	42 (30.4)	96 (69.6)	
Negative (0–11)	2607 (95.0)	539 (20.7)	2068 (79.3)	
Social support (1 month)				<.001
Low (9–36)	835 (30.4)	206 (24.7)	629 (75.3)	
Medium (37–41)	841 (30.6)	192 (22.8)	649 (77.2)	
High (42–48)	1071 (39.0)	184 (17.2)	887 (82.8)	
Stress (1 month)				<.001
Low (12–13)	836 (30.5)	130 (15.6)	706 (84.4)	
Medium (14–15)	826 (30.1)	191 (23.1)	635 (76.9)	
High (16+)	1083 (39.5)	261 (24.1)	822 (75.9)	
Painful perineum (1 month)				<.001
Big problem	290 (10.6)	114 (39.3)	176 (60.7)	
Medium problem	583 (21.2)	170 (29.2)	413 (70.8)	
Small problem	564 (20.5)	92 (16.3)	472 (83.7)	
No problem	1311 (47.7)	207 (15.8)	1104 (84.2)	
Fatigue (1 month)				<.001
All of the time	260 (9.5)	68 (26.2)	192 (73.8)	
Most of the time	600 (21.8)	175 (29.2)	425 (70.8)	
Some of the time	1381 (50.3)	260 (18.8)	1121 (81.2)	
A little of the time	363 (13.2)	63 (17.4)	300 (82.6)	
None of the time	143 (5.2)	16 (11.2)	127 (88.8)	

Data are n (%)

Table 3

Associations between Maternal Characteristics, Obstetric Factors, Psychosocial Factors and Symptoms and Dyspareunia *

Risk Factor	Adjusted OR (95% CI)	P
Maternal age (y)		
18 – 24	Ref	
25 – 29	1.00 (0.72–1.4)	.990
30 – 36	1.06 (0.74–1.53)	.738
Race/ethnicity		
White non-Hispanic	Ref	
Black non-Hispanic	0.64 (0.37–1.10)	.106
Hispanic	0.83 (0.49–1.40)	.478
Other	1.19 (0.71–1.96)	.512
Education		
HS degree or less	Ref	
Some college or technical	0.96 (0.65–1.40)	.822
College grad or higher	0.93 (0.62–1.39)	.716
Insurance		
Private	0.87 (0.60–1.25)	.441
Public	Ref	
Marital status		
Married	1.50 (1.07–2.11)	.020
Not married	Ref	
Preconception BMI (kg/m ²)		
Normal/underweight	Ref	
Overweight	0.76 (0.55–1.06)	.103
Obese	0.64 (0.48–0.86)	.002
Breastfeeding (6 Months)		
Yes	2.89 (2.33–3.59)	< .001
No	Ref	
Mode of delivery		
Instrumental vaginal	Ref	
Spontaneous vaginal	0.67 (0.48–.94)	.021
Planned cesarean	0.85 (0.45–1.61)	.623
Unplanned cesarean	0.83 (0.50–1.37)	.467
Perineal laceration		
None	Ref	
1st/2nd degree	0.856 (0.62–1.18)	.338
3rd/4 th degree	1.04 (0.63–1.71)	.874
Episiotomy		
Yes	Ref	
No	0.93 (0.68–1.28)	.644

Risk Factor	Adjusted OR (95% CI)	P
Depression (1 month)		
Positive (12+)	Ref	
Negative (0–11)	0.76 (0.46–1.26)	.288
Social support (1 month)		
Low (9–36)	1.10 (0.86–1.42)	.450
Medium (37–41)	1.08 (0.84–1.38)	.558
High (42–48)	Ref	
Stress (1 month)		
Low (12–13)	Ref	
Medium (14–15)	1.43 (1.09–1.86)	.009
High (16+)	1.55 (1.18–2.02)	.001
Perineal pain (1 month)		
Big or medium problem	2.45 (1.93–3.10)	< .001
Little or no problem	Ref	
Fatigue (1 month)		
All or most of time	1.60 (1.30–1.98)	< .001
Some, a little or none of Time	Ref	

Adjusted OR, adjusted odds ratio

* All variables shown were included in the multivariable logistic regression model.