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Love and Loss: Longitudinal Links Between Perinatal Grief and Sexual Well-Being for Couples After a Pregnancy Loss

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Abstract

Pregnancy loss disrupts couples' sexual well-being, which is crucial to health and relationship quality, yet it is unclear what predicts sexual well-being post-loss. Symbolic Interactionism Theory and prior literature point to perinatal grief as one potential predictor. Thus, our objective was to examine how perinatal grief of either couple member relates longitudinally to both couple members' sexual well-being after a pregnancy loss. We conducted multilevel structural equation modeling assessing whether fluctuations in perinatal grief were associated with fluctuations in sexual well-being for oneself and a partner among 109 couples who experienced a pregnancy loss in the last four months and who completed four monthly surveys. We also tested whether those with the highest average perinatal grief had the lowest average sexual well-being. When either partner reported greater than typical perinatal grief, both couple members reported lower than typical sexual satisfaction and sexual desire, and higher than typical sexual function problems and sexual distress. Those with the highest average perinatal grief had the lowest average sexual satisfaction and highest average sexual function problems and sexual distress. Higher perinatal grief may be a risk factor for lower sexual well-being. Couples who grieve effectively post-loss may better manage sexual challenges. Practitioners can screen couples for perinatal grief as they assess impacts to sexuality, refer them to grief resources to promote sexual well-being, and invite them to discuss how meanings around sex may have changed post-loss.

Keywords: sexual satisfaction, sexual function, perinatal grief, couples, spontaneous abortion

Love and Loss: Longitudinal Effects of Perinatal Grief on Sexual Well-Being for Couples After a Pregnancy Loss

"There is no greater agony than bearing an untold story inside you"—Maya Angelou.

Pregnancy loss can be one of life's most difficult experiences, the implications of which stretch to various facets of one's health and well-being. This experience is common; 25% of women lose a pregnancy (Diamond & Diamond, 2016). One challenge of pregnancy loss is maintaining sexual well-being. Sexual well-being—which includes sexual satisfaction (rewards of sex, like connection), sexual desire (interest in sexual activity), sexual function (e.g., no problems with orgasm, arousal, pain), and low sexual distress (concerns about the sexual relationship; see Dubé et al., 2020)—promotes overall health and relationship quality (Diamond & Huebner, 2012). However, sexual well-being is disrupted after a pregnancy loss for both affected partners (Allsop et al., 2023) and such declines may put health and relationships at risk. Indeed, women who have a pregnancy loss face increased risks of divorce and higher rates of depression and anxiety compared to women who do not (Herbert et al., 2022; Shreffler et al., 2012). Yet, it is unclear what factors predict sexual well-being post-loss. Perinatal grief, or grief after a pregnancy loss, may be one such factor. Scholars have suggested that grief-like symptoms such as guilt may interfere with sexual well-being and relationships (Jaffe & Diamond, 2011), but these connections have never been empirically tested. Theory-driven studies on the potential links between perinatal grief and sexual well-being would inform grief interventions to improve couples' sexual well-being post-loss. Thus, in the current study, we build on Symbolic Interactionism Theory (Blumer, 1969; LaRossa & Reitzes, 1993) to examine links between perinatal grief and sexual well-being using a longitudinal design.

Sexual Well-being After Pregnancy Loss

Sexual well-being encompasses more than a lack of dysfunction or disease (World Health Organization, 2010) by including multiple positive and negative domains of sexuality. Clinicians and researchers have theorized and tested the distinction between sexual domains: for instance, as considered in the interpersonal exchange model of sexual satisfaction, satisfaction with sex is the balance between rewards and costs in a sexual relationship (Lawrance & Byers, 1995); the incentive-motivation model of sexual desire suggests that desire emerges from arousal after exposure to meaningful sexual stimuli (Agmo & Laan, 2023); the biopsychosocial model of sexual function problems suggests that disruptions to sexual response are affected by biological, psychological, and social factors (Mitchell et al., 2022). Although correlated, empirical evidence also differentiates between the facets of sexual well-being. For example, population estimates show that low sexual satisfaction is more common that high sexual distress and that low desire is not necessarily experienced as distressing or unsatisfying (Mitchell et al., 2013).

Despite being few in number, studies do provide evidence that sexual well-being is disrupted after pregnancy loss. Compared to those with no history of pregnancy loss, women and men partners who experience multiple pregnancy losses reported lower levels of sexual intimacy, sexual satisfaction, and sexual function (e.g., Hasanpour et al., 2019; Zhang et al., 2016) and women also reported lower sexual desire (Francisco et al., 2014). These studies were limited in their focus on the rare experience of having three or more losses, only using data from one couple member, and focusing on only one or two aspects of sexual well-being. Allsop and colleagues (2023) addressed these limitations by comparing five aspects of sexual well-being between couple members who had a pregnancy loss in the last 4 months and control couples who had never had a pregnancy loss. They found that individuals in couples who had a recent pregnancy loss had lower sexual satisfaction compared to those in couples with no history of

loss. They did not find any differences in sexual desire or sexual frequency and found that sexual distress was in fact lower for partners of those who were pregnant compared to their control counterparts. However, when comparing partners to one another, women and gender diverse individuals who were pregnant before the loss had lower sexual desire than their partners, a difference which was not observed in the control couples—indicating a greater desire discrepancy between partners post-loss, which is itself a risk factor for lower sexual and relationship satisfaction (for review, see Girard, 2019). Taken together, there is evidence that pregnancy loss includes risks to unique sexual well-being domains, suggesting that considering each domain is essential to addressing sexuality in research and treatment post-loss.

Perinatal Grief and Sexual Well-being

The relationship between sexual well-being and pregnancy loss can be understood through Symbolic Interactionism Theory (Blumer, 1969; LaRossa & Reitzes, 1993). This theory has guided scholars when exploring meanings about pregnancy loss and sexual well-being separately (Hanna-Walker et al., 2021; Sawicka, 2017) and we argue it can be extended and applied to explore them together. A key assumption of Symbolic Interactionism Theory is that how one symbolizes the self motivates behavior (Smith & Hamon, 2012). A strong sense of self—where one's identity is not primarily dependent on a partner's desires, behaviors, or emotions and one can effectively self-regulate emotions, including when faced with relationship difficulties—empowers people to behave in ways that strengthen sexual relationships . In contrast, a weak sense of self may inhibit sexual well-being (Schnarch, 2009).

After a pregnancy loss, perinatal grief may disrupt the sense of self with ramifications to sexual well-being. Perinatal grief—that is, grief associated with a pregnancy loss—includes a variety of symptoms, such as depression, loneliness, fear, guilt, irritability, and feeling unsafe to

love (Potvin et al., 1989). This type of grief is uniquely challenging: it can be both ambiguous, where one questions who or what they are grieving for and how to grieve, and disenfranchised, where one's loss and grief is ignored or invalidated by health professionals, acquaintances, and family (Lang et al., 2011), potentially more so if the loss occurred at an earlier gestational age. In line with Attig (2011), the psychological difficulties of perinatal grief include relearning one's sense of self. And, as an individual's sense of self is disrupted post-loss through grief, their sexuality may invoke the clinically and empirically reported negative feelings and responses towards sex post-loss, such as emotional pain, fear and guilt, and self-denial of sex (Camacho-Ávila et al., 2023; Jaffe & Diamond, 2011). This path—between perinatal grief, disruptions to sense of self, and diminished sexual well-being—is presently theoretical only. It nevertheless supports the foundational step of testing for links between perinatal grief and sexual well-being.

Prior work sets the stage that higher perinatal grief may be related to lower sexual well-being. More intense perinatal grief relates to poorer health outcomes—including greater anxious and depressive symptoms and lower relationship satisfaction (Hutti et al., 2015). These outcomes have, in turn, been linked to poorer sexual well-being in contexts outside of pregnancy loss (Allsop et al., 2021; Bradford & Meston, 2006; Tran et al., 2015). Although direct links between perinatal grief and sexual well-being have not yet been established in quantitative studies, preliminary evidence has been found in a qualitative study. Specifically, Camacho-Ávila et al. (2023) noted a subtheme among fathers' (N = 11) experiences with grief and sexuality after a pregnancy loss, such that their sexual arousal and desire faded because of grief. However, this small study focused only on fathers in the broader context of their pregnancy loss experiences (i.e., only one question about sexuality), and participants were interviewed 8-months to 3-years after a pregnancy loss; thus, it is empirically unknown how perinatal grief relates to specific

domains of sexual well-being shortly after a loss and for both members of affected couples.

The Couple Context of Perinatal Grief and Sexual Well-Being

In line with Symbolic Interactionism Theory, the meaning and symbolism of one's self is formed in the context of a couple relationship (Schnarch, 2009). By implication, if a couple member feels hesitant or detached from their sexuality and sexual relationship because of grief following a pregnancy loss, this experience may relate to—or build upon—their partner's (already) diminished sense of self and ultimately lower a partner's sexual well-being. Alternatively, as grief diminishes one couple member's sexual well-being, it may detract from the sexual well-being of their partner given the dyadic context of sexuality. There have been no prior dyadic studies of perinatal grief and sexual wellbeing, to our knowledge; however, related studies provide evidence of the potential for cross-partner effects. For example, individuals in community samples with greater depression, lower emotional stability, and poorer emotion regulation—all aspects of perinatal grief (Potvin et al., 1989)—have been found to have partners with lower sexual satisfaction (Karakose et al., 2023), sexual function (Velten et al., 2019), and sexual desire (Dubé et al, 2023). Taken together, both theory and the limited prior research suggest that one's own perinatal grief may have implications for a partner's sexual well-being.

An inclusive approach to studying couple-level experiences with pregnancy loss is to distinguish members of a couple based on who was pregnant when the loss occurred (women and gender diverse individuals who were pregnant) and who was not (men, women, and gender diverse individuals who were not pregnant). This approach acknowledges that couples with diverse sexual and gender/sex identities report the same challenges of pregnancy loss (Wojnar, 2007) and recognizes that both members of a couple carry unique burdens. For example, those who were pregnant may face the physical demands of post-loss bleeding, surgery, and side

effects from treatment (Jurkovic et al., 2013) whereas those who were not pregnant may face feeling that their grief is less important or ignored (Camacho-Ávila et al., 2023). Given these distinct perspectives, it is possible that some links between perinatal grief and sexual well-being could be significant for one partner but not the other. Given the sparse nature of research on this topic, we did not make formal hypotheses about differences in the significance of these links.

Current Study

In the current study, we extended prior research on perinatal grief and sexual well-being by integrating associations across time, data from both members of a couple who had a recent pregnancy loss, and including multiple aspects of sexual well-being. Because perinatal grief is strongest in the first six months post-loss (Tseng et al., 2017), our sample focused on couples who had a pregnancy loss about two months prior (on average) and who we followed monthly for four months. Importantly, we considered two contexts. First, we considered the within-person level, where we compared people to themselves. By testing associations at this level, we could identify whether times of higher than usual perinatal grief in one's own life were linked with times of lower than usual sexual well-being for oneself and one's partner. We hypothesized (H1) that when individuals reported greater than typical levels of perinatal grief (i.e., relative to their own average across all time-points), they and they partners would report lower than typical levels of sexual satisfaction and sexual desire, and higher than typical levels of sexual function problems and sexual distress.

Second, we considered the between-person level to identify if people with higher levels of perinatal grief, relative to their peers, also reported lower sexual well-being. We hypothesized (H2) that when individuals reported greater overall levels of perinatal grief (i.e., relative to other people), they and their partners would have lower than average levels of overall sexual

satisfaction and sexual desire and higher than average levels of overall sexual function problems and sexual distress. As pregnancy loss occurs in the context of a variety of individual and couple factors that may be relevant to their sexual well-being—including weeks pregnant when the loss occurred, weeks since the loss, number of lifetime losses, the presence of other children, and age—we tested if our effects held when controlling for such covariates.

Method

Participants and Procedure

We recruited couples who experienced a pregnancy loss in the last four months from Canada, the U.S., the U.K., Australia, and New Zealand. Individuals were eligible to participate if they and their partner (1) had internet access, an email, a device to complete surveys and were fluent in English, (2) were at least 18 years or age, (3) had been in a relationship for at least a year, (4) had one member of the couple experience a pregnancy loss in the last four months of their first contact with our research team, (5) knew about the pregnancy before the loss, (6) did not have their pregnancy end because of an elective, non-medically recommended abortion, (7) did not have their pregnancy result in a live birth (i.e., no signs of life after delivery), (8) did not have their sexual functioning impaired by a self-reported major untreated mental or physical illness, and/or the treatment of that illness while participating, and (9) were not undergoing fertility treatment when the loss occurred or while participating in the study. Although one member of the couple had to physically experience the pregnancy loss, people of all bodies, gender identities, and sexual orientations were otherwise eligible. Of the 280 couples screened for eligibility, we enrolled 109 who met our criteria (see Transparency and Openness section and Supplemental Figure 1). Sociodemographics for the sample are in Table 1.

Data collection was part of a larger study on pregnancy loss and sexual relationships.

Prior manuscripts from this dataset (*masked*) examined sexual well-being differences between couples with and without a recent pregnancy loss and growth models of sexual well-being and perinatal grief. The current manuscript focused on associations between perinatal grief and sexual well-being; the studies overlap in the sexual well-being and perinatal grief measures used. We collected data for the current study in full between July 1, 2021, and February 1, 2023; the required sample size was determined by an a priori power analysis (see supplemental materials on Open Science Framework (OSF) page, https://tinyurl.com/osf-material2). Given our sample size of 109 couples, and an α of .05, we estimated we had 93% to 95% power to detect medium-sized, within-person actor effects of $\beta = .20$, and 87% to 90% power to detect small-sized, within-person partner effects of $\beta = .18$ (Acock, 2014). We also estimated that we had 90% power to detect medium-sized, between-person actor or partner effects of $\beta = .26$ (Acock, 2014). Thus, we had high power to detect small-to-medium size standardized regression effects.

We recruited participants online (e.g., Facebook, Instagram, Reddit) and in-person (e.g., posters at medical facilities and in the community, reviewing patient charts). Research assistants first screened interested individuals to confirm their eligibility, either through a phone call or a survey hosted on Qualtrics (with a follow-up phone call if further information was required). Then, eligible participants provided informed consent and independently completed validated, online questionnaires sent via email that were also hosted on Qualtrics. Participants had one month to complete their surveys and received reminders via phone and email. Participants completed four monthly surveys. Only the survey responses where a couple continued to meet eligibility criteria (e.g., not pregnant, not undergoing fertility treatment) were included in the analysis; however, because all couples met eligibility criteria in their first surveys, we used at least some data from all 109 couples. For example, if a couple member reported they were

pregnant in their third survey, only data from the first and second surveys for both couple members were included in the analysis, data from their third surveys were marked as missing, and missing data from both members' third and fourth surveys were subsequently handled via full-information-maximum-likelihood (FIML). Retention was, respectively, 89.9%, 78.0%, and 68.8% for the second through fourth surveys. (Retention equaled one minus the cumulative number of couples who did not continue to meet eligibility criteria divided by the total number of couples). We compensated couples up to $178 CDN ($89 individually) in gift cards or electronic cash payments for their participation. The research ethics board at (*masked*) approved the study.

Table 1. *Sociodemographic Characteristics of the Sample (N = 109 couples)*

		N (%) or *M* (*SD*; actual range)	
Variable		Women and GDI who were pregnant	Men, women, and GDI who were not pregnant
Age (years)		31.58 (4.19; 20–41)	33.03 (4.73; 23–46)
Sex	Male	0 (0.0)	98 (89.9)
	Female	105 (96.3)	5 (4.6)
	Indeterminant or intersex	0 (0.0)	1 (0.9)
Gender[a]	Man	0 (0.0)	100 (91.7)
	Woman	101 (92.7)	1 (0.9)
	Non-binary	3 (2.8)	2 (1.8)
	Additional gender identities	0 (0.0)	2 (1.8)
Transgender identity	Transgender	2 (1.8)	4 (3.7)
	Cisgender	96 (88.1)	93 (85.3)
	Additional/unsure/prefer not to answer	6 (5.5)	7 (6.5)
Relationship status[a,b]	Married	84 (77.1)	81 (74.3)
	Engaged	11 (10.1)	9 (8.3)
	Dating	2 (1.8)	0 (0.0)
Race/Ethnicity[a,c]	White	48 (44.0)	45 (41.3)
	English Canadian	35 (32.1)	37 (33.9)
	American	35 (32.1)	27 (24.8)
	Western/Eastern European	14 (12.8)	14 (12.8)
	Australian	5 (4.6)	7 (6.4)
	South/East/Southeast Asian	5 (4.6)	4 (3.7)
	Black/African American	5 (4.6)	2 (1.8)

	Additional race/ethnicities[c]	8 (6.8)	9 (8.3)
Country of residence	Canada	50 (45.9)	
	United States	39 (35.8)	
	United Kingdom	9 (8.3)	
	Australia	6 (5.5)	
	New Zealand	1 (0.9)	
Household Income[d]		6.45 [~$100,000 to $119,999] (2.72; 1–11)	
Relationship length (years)		7.67 (4.22; 1.08–19.13)	
Number of children		0.60 (0.95; 0–6)	
Couple relationship type	Same-sex (female–female)	5 (4.6)	
	Mixed-sex (female–male)	97 (89.0)	
	Mixed-sex (female–indeterminant or intersex)	1 (0.9)	
Weeks pregnant when loss occurred[e]	2 to 5	14 (12.8)	
	6 to 10	51 (46.8)	
	11 to 15	26 (23.9)	
	16 to 20	2 (1.8)	
	21 to 25	5 (4.6)	
	26 to 30	3 (2.8)	
	36 to 40	3 (2.8)	
Weeks since loss[e]		9.83 (5.59; 1.14–24.86)	
Pregnancy losses in last three months[e]	1	95 (87.2)	
	2	8 (7.3)	
	4	1 (0.9)	
Pregnancy losses in lifetime[e]	1	58 (53.2)	
	2	26 (23.9)	
	3	7 (6.4)	
	4	8 (7.3)	
	5 or more	6 (5.5)	

Note. M = mean. *SD* = standard deviation. *GDI* = gender diverse individuals. % = percentage of sample. Total of percentages may be less than 100% (and total of counts may be less than 109) due to missing data. [a]Multiple select item; [b]Partners may have reported different relationship statuses due to missing data or disagreement; [c]Includes the following (each was endorsed less than 1.9% of the time): Québécois or French Canadian; Indigenous, First Nations, Métis, or Inuit, African; Middle Eastern/Central Asian; Latin American; Hispanic; Biracial/Multiracial; and write-in categories; [d]Options included 1 *($0–$19,999*), 2 (*$20,000–$39,999*), 3 *($40,000–$59,999*), 4 *($60,000–$79,000*), 5 *($80,000–$99,999*), 6 *($100,000–$119,999*), 7 (*$120,000–$139,999*), 8 *($140,000–$159,999*), 9 (*$160,000–$179,999*), 10 (*$180,000–$199,999*), and 11 (*$200,000 and over*); [e]Reported by women and GDI who were pregnant.

Measures

Perinatal Grief

We assessed perinatal grief using the short Perinatal Grief Scale (PGS; Potvin et al., 1989). Participants rated 32 items on perinatal grief (e.g., "I am grieving for the baby") on a 5-

point Likert (0 = *strongly agree,* 5 = *strongly disagree*). We modeled the construct as a latent variable, and higher scores reflected greater grief. The short PGS has been validated (Setubal et al., 2021), and we found evidence of excellent reliability: respective ω for participants who were and were not pregnant = .98 and .98 (within-person) and .97 and .98 (between-person).

Sexual Satisfaction

We assessed sexual satisfaction with the Global Measure of Sexual Satisfaction (GMSEX; Lawrance & Byers, 1995). Participants answered "How would you describe your overall sexual relationship with your partner during the last 4 weeks?" on a 7-point Likert scale for five bipolar pairs of words (e.g., *very bad* to *very good*). We modeled the construct as a latent variable, and higher scores reflected greater satisfaction. The GMSEX has strong psychometric properties (Mark et al., 2014), and excellent reliability: respective ω for participants who were and were not pregnant = .91 and .91 (within-person) and .99 and .99 (between-person).

Sexual Desire

We assessed sexual desire using the Dyadic Sexual Desire subscale of the Sexual Desire Inventory (SDI-2; Spector et al., 1996). This subscale includes seven items on desire for partnered sexual activity (e.g., "During the last month, how often would you have liked to engage in sexual activity with a partner"). Participants rated items on 8- or 9-point scales, where low anchors indicated low sexual desire (e.g., *not at all*, *no desire*) and high anchors indicated high sexual desire (e.g., *more than once a day*, *strong desire*). We modeled the construct as a latent variable, and higher scores reflected greater desire partnered sexual activity. The SDI-2 has shown strong psychometric properties (Allsop et al., 2023), and we found evidence of good reliability: respective ω for participants who were and were not pregnant = .89 and .90 (within-person) and .91 and .93 (between-person).

Sexual Function Problems

We assessed sexual function problems using the Problem Distress subscale of the Sexual Function Evaluation Questionnaire (SFEQ; Mitchell et al., 2022). We modeled the construct as a latent variable and higher scores reflected greater distressing sexual function problems. Given this measure is relatively new, published psychometric properties outside of its initial validation study are not available; however, it displayed good psychometric properties in its initial validation, such as correlating as expected with clinician diagnoses of sexual dysfunctions (Mitchell et al., 2022). We found evidence of good reliability: respective ω for participants who were and were not pregnant = .87 and .87 (within-person) and .96 and .96 (between-person).

Sexual Distress

We assessed sexual distress using the Sexual Distress Scale–Short Form (SDS-SF; Santos-Iglesias et al., 2020), which includes five items on the frequency of distressing sexual problems in the last four weeks (e.g., "How often did you feel worried about sex?"). Participants rated items on a 5-point scale (0 = *never* to 4 = *always*). We modeled the construct as a latent variable and higher scores reflected greater sexual distress. The SDS-SF has shown strong psychometric properties (Allsop et al., 2023), and we found evidence of excellent reliability: respective ω for participants who were and were not pregnant = .95 and .95 (within-person) and .97 and .99 (between-person).

Covariates

We assessed potential covariates with single items including number of weeks pregnant when the loss occurred, the number of weeks since the pregnancy loss (at the start of the study), whether a couple has child(ren) or not (1 = yes, 0 = no), the number of lifetime pregnancy losses experienced by women and GDI who were pregnant, and age of the participant.

Data Analysis

We used multilevel structural equation modeling to analyze our data in Mplus (Muthén & Muthén, 1998-2017). We distinguished dyads based on who was pregnant when the loss occurred (i.e., women and gender diverse individuals who were pregnant) and who was not pregnant (i.e., men, women, and gender diverse individuals who were not pregnant). Descriptive statistics are in Table 2.

Step 1: Measurement Models

First, we constructed separate dyadic measurement models (see diagram in supplemental materials) for each of our primary constructs (i.e., perinatal grief, sexual satisfaction, sexual desire, sexual function problems, sexual distress) to eliminate measurement error (see Supplemental Figure 2). We modeled constructs separately, as it was not feasible given our sample size to combine the many model parameters across outcomes into a single model. We modeled latent factors for each partner at within- and between-person levels, and used latent-mean centering to center observed variables (Asparouhov & Muthén, 2018). Thus, we obtained unbiased estimates of within-subject effects (i.e., monthly fluctuations) and between-person effects (i.e., average levels across four months; these are analogous to random intercepts). We tested for and found that all measures met or exceeded metric measurement invariance between partners, based on the criteria that CFI does not decline more than .01 between different stages of measurement models (Leitgob et al., 2023). Thus, we could attribute differences in unstandardized regression coefficients between partners to structural differences rather than measurement differences (Leitgob et al., 2023). On average across all time points and variables, 74% of data were present (range = 65% to 100%). We handled missing data via full-information maximum likelihood (FIML) and included a principal component auxiliary variable in the model

generated through the PcAux package (Version 0.0.0.9014; Lang et al., 2020) in R (Version 4.2.0; R Core Team, 2022). Our models adequately fit the data (see Supplemental Material).

Table 2. *Standard Deviations, Intraclass Correlations (Diagonal), and Correlations Among Factor Scores at Within-Person (Below Diagonal) and Between-Person Levels (Above Diagonal)*

Variable	1	2	3	4	5	6	7	8	9	10
1. Satisfaction-P	.34	.79**	.65**	.22*	-.75**	-.61**	-.73**	-.66**	-.51**	-.31**
2. Satisfaction-NP	.70**	.54	.47**	.24*	-.60**	-.65**	-.47**	-.51**	-.36**	-.18
3. Desire-P	.73**	.63**	.61	.02	-.47**	-.27**	-.56**	-.40**	-.28**	-.15
4. Desire-NP	.40**	.48**	.38**	.74	-.14	-.24*	-.12	-.09	-.10	-.01
5. Function P-P	-.75**	-.66**	-.67**	-.41**	.28	.78**	.70**	.54**	.57**	.30**
6. Function P-NP	-.65**	-.67**	-.58**	-.48**	.69**	.26	.44**	.47**	.38**	.04
7. Distress-P	-.70**	-.63**	-.65**	-.35**	.73**	.53**	.29	.69**	.62**	.48**
8. Distress-NP	-.61**	-.64**	-.57**	-.45**	.63**	.66**	.69**	.36	.44**	.52**
9. Grief-P	-.73**	-.65**	-.74**	-.46**	.77**	.67**	.73**	.65**	.63	.45**
10. Grief-NP	-.72**	-.73**	-.66**	-.49**	.69**	.68**	.66**	.70**	.73**	.55
Within-person										
SD	0.89	0.79	0.73	0.44	0.61	0.51	0.57	0.51	0.39	0.35
Between-person										
SD	0.64	0.85	0.91	0.75	0.38	0.30	0.36	0.38	0.51	0.39

Note. * $p < .05$; ** $p < .01$. *N* within-person = 436 monthly observations; *N* between-person = 109 couples. *SD* = standard deviation, Satisfaction = sexual satisfaction, desire = sexual desire, Function P = sexual function problems, Distress = sexual distress, Grief = perinatal grief, P = women and gender diverse individuals who were *P*regnant, NP = men, women, and gender diverse individuals who were *N*ot *P*regnant. Means are at or near zero (.00–.01) because they were specified as centered, latent variables, thus they are not included in this table; however, a table with means derived from averaged, non-latent scores is included in Supplemental Table 1.

Step 2: Structural Models

We tested our hypotheses in step two of our analysis, where we modeled associations between perinatal grief and all sexual well-being outcomes together simultaneously in structural models (see Supplemental Figure 3) informed by the actor-partner interdependence model (Kashy & Kenny, 2000). Model 1 included perinatal grief as a predictor and, at the within-person level, time since the loss, which we included to detrend the data (McNeish & Hamaker, 2020). Model 2 added our covariates as predictors at the between-person level (because our covariates only varied between-person, we did not included them at the within-person level); given both partners' ages were highly correlated ($r = .70$, $p < .001$), we used a common-fate approach to model averaged couple age (Galovan et al., 2016) to avoid introducing multicollinearity into the

models. In both Model 1 and 2, we used factor scores that were extracted from measurement models in place of latent variables to reduce the number of parameters to enable model convergence (Yang et al., 2010). We used Asparouhov and Muthén's (2022) selective procedure to incorporate random slopes into our models[1]. We estimated the structural models via Bayesian estimation given the models' complexity (Asparouhov & Muthén, 2017; Muthén, 2010)[2]. We considered regression coefficients (*B*) to be significant if their 95% credibility intervals (CI's) did not include zero. At the within-person level, a significant coefficient indicated that month-to-month fluctuations in an outcome and predictor varied together. At the between-person level, a significant coefficient indicated that variations in average levels (across the four surveys) of an outcome and predictor varied together. To compare the strength of effects between partners, we created new parameters in Mplus via the "Model Constraint" command that indicated the differences in the sizes of couple members' coefficients (Allsop et al., 2023).

Transparency and Openness

We report how we determined our sample size, all data exclusions, all manipulations, and all measures in the study (see OSF). All measures, data, analysis code, and output are on the OSF. Data were analyzed in Mplus 8.6 (Muthén & Muthén, 1998-2017). The study's design and analysis were not pre-registered.

Results

Model 1 (No Covariates at Between-Person Level)

[1] Ultimately, we kept one random slope in our final models—the association between the perinatal grief of participants who were pregnant and their own sexual desire—given it was the only random slope to have meaningful slope variance, where the z-value of its variance was greater than three (Asparouhov & Muthén, 2022).

[2] Fit indices, including the Posterior Predictive P-Value (PPP), which is a common Bayesian model fit index, are not currently available in Mplus for our models. However, the PPP was available from a baseline model we constructed, with no random slopes, that we based our final models on. The PPP of this baseline model was .329, which indicated good model fit as it exceeded .050 (Asparouhov & Muthén, 2017). Given our final models closely resembled this well-fitting baseline model, we had confidence that they adequately fit the data.

Within-Person Effects: Monthly Fluctuations in Perinatal Grief and Sexual Well-Being

In support of hypothesis one, when participants who were pregnant (P) or participants who were not pregnant (NP) reported greater than typical perinatal grief (i.e., their grief was higher at one month relative to the average across all four months), they and partners reported lower than typical sexual satisfaction and sexual desire, and higher than typical sexual function problems and sexual distress (see Table 3). The effect from one's own elevated perinatal grief to one's own elevated sexual function problems was significantly stronger (more positive) for participants who were pregnant compared to participants who were not pregnant. Effects from one's own elevated perinatal grief to (1) a partner's lower than typical sexual satisfaction and (2) a partner's lower than typical sexual desire were significantly stronger (more negative) for participants who were not pregnant compared to the effects for participants who were pregnant. No differences between couple members in paths from perinatal grief to sexual distress were observed (see OSF for coefficients). Per Sullivan and Feinn (2012), variations in both partners' perinatal grief and time since the loss explained medium to large proportions of variance in fluctuations in outcomes.

Table 3. *Results of Multilevel Structural Equation Model with Perinatal Grief Predicting Sexual Well-Being at the Within-Person and Between-Person Levels*

	Within-person							
	Satisfaction		Desire		Function Problems		Distress	
	P	NP	P	NP	P	NP	P	NP
Perinatal grief								
P	**-1.00*** **[-1.19 -.78] (-.44)**	**-.50*** **[-.69 -.31] (-.25)**	**-1.02*[a] [-1.22 -.84] (-.51)**	**-.26*** **[-.41 -.12] (-.23)**	**.87*** **[.74 1.02] (.56)**	**.47*** **[.33 .60] (.36)**	**.81*** **[.67 .95] (.55)**	**.40*** **[.28 .53] (.30)**
NP	**-1.00*** **[-1.23 -.78] (-.39)**	**-1.23*** **[-1.45 -1.03] (-.54)**	**-.51*** **[-.70 -.33] (-.27)**	**-.39*** **[-.41 -.12] (-.31)**	**.48*** **[.34 .63] (.28)**	**.59*** **[.45 .73] (.40)**	**.43*** **[.28 .57] (.26)**	**.70*** **[.56 .84] (.47)**
Weeks since loss	.00 [-.01 .01] (.02)	.00 [-.01 .01] (.02)	.00 [-.01 .00] (-.02)	.00 [-.01 .00] (-.03)	.00 [-.01 .00] (-.04)	.00 [-.01 .00] (-.06)	**.01*** **[.00 .01] (.08)**	.00 [-.01 .01] (.01)

R^2	.60 [.54 .66]	.56 [.50 .63]	.57 [.51 .63]	.26 [.19 .33]	.63 [.56 .68]	.52 [.45 .59]	.57 [.50 .63]	.53 [.46 .59]
	Between-person							
	Satisfaction		Desire		Function Problems		Distress	
	P	NP	P	NP	P	NP	P	NP
Perinatal grief								
P	**-.58*** **[-.82 -.35]** **(-.44)**	**-.61*** **[-.95 -.26]** **(-.34)**	**-.49*** **[-.87 -.08]** **(-.26)**	-.19 [-.55 .17] (-.12)	**.41*** **[.27 .55]** **(.52)**	**.27*** **[.14 .40]** **(.43)**	**.36*** **[.23 .48]** **(.48)**	**.20*** **[.05 .34]** **(.25)**
NP	-.16 [-.48 .15] (-.09)	-.02 [-.49 .42] (-.01)	-.06 [-.56 .45] (-.02)	.10 [-.36 .54] (.05)	.06 [-.13 .24] (.05)	-.13 [-.29 .04] (-.15)	**.23*** **[.08 .39]** **(.24)**	**.40*** **[.22 .58]** **(.39)**
R^2	.25 [.12 .39]	.13 [.04 .26]	.08 [.01 .20]	.02 [.00 .10]	.31 [.16 .46]	.16 [.05 .30]	.40 [.25 .54]	.30 [.17 .45]

* $p < .05$. Standardized coefficients in parenthesis; 95% credibility intervals in brackets. Significant coefficients bolded. *N* within-person = 436 monthly observations; *N* between-person = 109 couples. P = women and gender diverse individuals who were *P*regnant, NP = men, women, and gender individuals who were *N*ot *P*regnant. [a] Modeled as a random slope.

Between-Person Effects: Comparing People to Other People

In support of hypothesis two, we observed that when participants who were pregnant reported higher average perinatal grief across the study period, they and their partners, as compared to those in other couples who reported lower average perinatal grief, reported lower average sexual satisfaction, and higher average sexual function problems and sexual distress. Also, when participants who were pregnant reported higher average perinatal grief, they reported lower average sexual desire. In contrast, we observed fewer significant associations for participants who were not pregnant. Their own higher average levels of perinatal grief were related to higher average sexual distress for themselves and their partners but was unrelated to all other facets of sexual well-being. Per Sullivan and Feinn (2012), both partners' average perinatal grief explained small to medium proportions of variance in average levels of our outcomes.

Model 2 (Covariates at Between-Person Level)

Below, we present the results of Model 2 examining the same associations as Model 1 but adding controls at the between-person level (see Supplemental Table 2). Because no controls

were added at the within-person level from Model 1 to Model 2, the within-person results are the same between models. At the between-person level, we found that three of the nine significant between-person associations were no longer significant when we included covariates in the between-person model. Specifically, the average perinatal grief of participants who were pregnant was no longer significantly related to their own average sexual desire; the average sexual satisfaction of their partners; nor the average sexual distress of their partners. Thus, the other six associations from Model 1 remained statistically significant in Model 2 when covariates were included. In sum, after including covariates in our model, we found at the between-person level that greater average perinatal grief of participants who were pregnant, and to a lesser extent average perinatal grief of participants who were not pregnant, related to one or both partners' lower average sexual satisfaction, and greater sexual function problems or sexual distress. The effect from one's own perinatal grief to one's own sexual function problems was significantly stronger (more positive) for participants who were pregnant compared to those who were not pregnant. No other differences in couple members' paths were observed (see OSF).

Exploratory Analyses[3]

To provide insight into the temporal order of perinatal grief and sexual well-being, we tested for lagged associations in exploratory analyses. Using random-intercept cross-lagged panel models—which maintained our focus on within- and between-person associations—we examined whether elevated levels of perinatal grief or sexual well-being at one time point predicted scoring above or below an individual's usual level of these same two constructs at a subsequent time point (i.e., after controlling for lagged associations). Given the complexity of these models relative to our sample size, we looked at associations between perinatal grief and

[3] These exploratory analyses were requested during the review process.

the domains of sexual well-being (and vice-versa) separately for each couple member (eight total models). Elevated perinatal grief was not significantly related to subsequent higher or lower than typical levels of any domain of sexual well-being after controlling for lagged associations. Likewise, elevated levels in sexual well-being variables were not significantly related to subsequent higher or lower than typical perinatal grief after controlling for lagged associations. Such trends held across both couple members (see Supplemental Tables 3 and 4).

We also tested if perinatal grief predicted sexual well-being controlling for relationship satisfaction (Couples Satisfaction Index; Funk & Rogge, 2007). All 16 within-person associations remained significant, as did six of nine significant between-person associations; the associations that were no longer significant included links between perinatal grief of participants who were pregnant to their own sexual desire and to their partner's sexual satisfaction and sexual distress. These results altogether suggest that there are unique links between perinatal grief and sexual well-being above and beyond relationship satisfaction (see Supplemental Table 5).

Discussion

Guided by Symbolic Interactionism Theory (Blumer, 1969; LaRossa & Reitzes, 1993), we tested the associations between perinatal grief and sexual well-being using dyadic, longitudinal data. At the within-person level, we found all possible actor and partner links between higher than typical perinatal grief (relative to an individual's own average across four months) and lower than typical sexual satisfaction and sexual desire, and higher than typical sexual function problems and sexual distress. At the between-person level, we found that women and gender diverse individuals who were pregnant who had the highest average perinatal grief levels had the lowest average sexual satisfaction levels, the highest sexual function problem levels for them and their partner, and the highest average sexual distress levels; men, women,

and gender diverse individuals who were not pregnant who had the highest average perinatal grief levels had the highest average sexual distress levels for them and their partner. Whereas prior scholars have found qualitative evidence that men who were not pregnant reported negative effects on their sexuality due to perinatal grief (Camacho-Ávila et al., 2023), our study extends this literature by being the first to (1) empirically test associations between perinatal grief and sexuality, (2) consider such links for multiple domains of sexual well-being, (3) use longitudinal data, (4) focus on recent pregnancy losses, and (5) include data from both couple members. Our study also (6) illustrates for scientists and practitioners how Symbolic Interactionism Theory can link fundamental, yet distinct, areas of family life (i.e., sexuality and grief), which may serve as a springboard for future research and practice. We provide the first empirical basis for targeting perinatal grief to potentially benefit couples' sexual relationships after a pregnancy loss.

Links Between Perinatal Grief and Sexual Well-Being

As hypothesized, regarding monthly fluctuations, we found that greater than typical perinatal grief—both for women and gender diverse individuals who were pregnant and for men, women, and gender diverse individuals who were not pregnant—related to both partners' lower than typical sexual satisfaction and sexual desire, and higher than typical sexual function problems and sexual distress. These associations were strong, with fluctuations in perinatal grief explaining large proportions of variance in fluctuations in both partners' sexual well-being and the associations remained significant when controlling for relationship satisfaction. Compared to the other couple member, one's own elevated perinatal grief was more strongly linked to one's own elevated sexual function problems for women and gender diverse individuals who were pregnant, while it was more strongly linked to a partner's lower than typical sexual satisfaction and sexual desire for men, women, and gender diverse individuals who were not pregnant. That

we found all possible actor and partner effects, and that the size of some effects differed between couple members, emphasizes involving both couple members in treatment (Jaffe & Diamond, 2011).

Also in line with our hypotheses, after controlling for relevant traits (i.e., weeks pregnant at loss, weeks since loss, if a couple has children or not, number of lifetime losses, and age), we found that those who were pregnant with the highest levels of perinatal grief had the lowest sexual satisfaction, the highest levels of sexual function problems for themselves and their partners, and had partners with the highest levels of sexual distress. We found that partners who were not pregnant with the highest levels of perinatal grief had the highest levels of sexual distress and so did their partners. We found one partner difference in effect size between partners at this between-person level: the size of the link between one's own perinatal grief and one's own sexual function problems was significantly larger for those who were pregnant compared to their partners. Separately, we also found that those with the highest levels of perinatal grief still had the lowest levels of certain sexual well-being aspects for them and their partners after controlling for relationship satisfaction. Potentially, physical and psychological tolls from losing a pregnancy in one's own body may exacerbate emotions of perinatal grief and strengthen its link to sexual function problems. Altogether, our between-person findings provide evidence that perinatal grief is a risk factor for lower sexual satisfaction and for higher sexual function problems and sexual distress, which aligns with pregnancy loss being a risk factor for poorer mental health (Herbert et al., 2022) and divorce (Shreffler et al., 2012). Because the link between perinatal grief of participants who were pregnant and their own sexual desire was non-significant after adding controls related to the pregnancy loss (weeks pregnant, weeks since loss) and the couple (lifetime losses, presence of children, age), there may be an indirect link where such

factors relate to average perinatal grief levels, and then to average sexual desire levels.

The associations between perinatal grief and sexual well-being can be understood through Symbolic Interactionism Theory (Blumer, 1969; LaRossa & Reitzes, 1993). After a pregnancy loss, sex can become a painful, fear-inducing reminder of the loss (Camacho-Ávila et al., 2023; Jaffe & Diamond, 2011); negative changes in the meaning of sex could occur as one's sense of self, which shapes sexuality and sexual relationships (Schnarch, 2009), becomes disoriented when grieving (Attig, 2011). This shift may be exacerbated during times of heightened perinatal grief, which could then relate to poorer well-being in each domain of sexuality, though the mechanisms for affecting each domain may be distinct. Per the interpersonal exchange model of sexual satisfaction (Lawrance & Byers, 1995), perinatal grief may increase the costs of sex by incorporating reminders of the loss into sexuality such that they outweigh the benefits of sex, and ultimately diminish sexual satisfaction. In line with the Sexual Incentive Motivation Model (Agmo & Laan, 2023), perinatal grief could draw thoughts toward the psychological and emotional difficulties of the loss, thus making it more difficult to attend to sexual cues that would stimulate arousal and subsequent desire. Perinatal grief could diminish sexual function because it is characterized by emotional instability, a factor which itself is related to poorer sexual function outside of pregnancy loss contexts (Velten et al., 2019). Finally, in line with Camacho-Ávila et al. (2023) as couple members view sex more negatively potentially due to perinatal grief, and anticipate negative feelings and memories about the loss arising when they consider or engage in sexual activity, they may become more distressed about sex. Altogether, these strong, negative links between perinatal grief and multiple domains of sexual well-being could have negatively impact health and relationship quality (Diamond & Huebner, 2012).

When comparing people to other people, we found five significant associations (both

actor and partner) between the perinatal grief of women and gender diverse individuals who were pregnant and both partners' sexual well-being, but only two such associations for the perinatal grief of partners who were not pregnant. These findings contrast with what we found regarding monthly fluctuations, where we observed all possible actor and partner associations. Whereas the highs of perinatal grief and the lows of sexual well-being that occur month-to-month may be experienced widely, those with the highest perinatal grief were not always those who had the lowest sexual well-being. In terms of our finding more effects for the partner who was pregnant at the between-person level relative to the partner who was not pregnant, it is possible that gender could play a role here given that most participants in our sample who were pregnant identified as women and their partners identified as men. Per Meana and Nunnink (2006), who found that women have greater levels of cognitive distraction during sex than men (Cohen's d = .28), intrusive thoughts of the loss during sex may distract from pleasure and bonding after a pregnant loss more so for women than men. In turn, such intrusive thoughts for women may manifest in broader risks to sexuality and sexual relationships for couples as women and/or their partners potentially view sex as more negative, experience emotional instability, and worry about their sexuality. Importantly, Meana and Nunnink's data were from a non-clinical, college-based sample of individuals rather than couples, underscoring the need for future work in this area.

Our exploratory analyses were inconclusive regarding prospective associations. We did not find that greater than typical levels of perinatal grief predicted subsequent lower than typical levels of sexual well-being, or vice versa. Thus, the associations between perinatal grief and sexual well-being after a pregnancy loss may exist more proximally (as per our within-person results) and on average (as per our between-person results). At first blush, our lack of cross-lagged findings contradicts theory (Attig, 2011; Blumer, 1969; Jaffe & Diamond, 2011; LaRossa

& Reitzes, 1993) and prior qualitative research (Camacho-Ávila et al., 2023) that provide evidence that perinatal grief precedes declines in sexual well-being. Our time interval—months—may have been too wide to capture temporal ordering. Further, our sample size and number of time intervals may have been insufficient for capturing lagged effects, which are often small. Diary studies (see McNeish & Hamaker, 2020) may better suit such investigation.

Clinical Implications

Clinicians should assess for levels of perinatal grief, as well as clinical levels of depression and anxiety and posttraumatic stress, with both couple members after a pregnancy loss. Indeed, post-loss mental health difficulties can develop rapidly (Zisook et al., 2012). Our results suggest that such screening should also include discussing impacts of pregnancy loss to sexual well-being. We found links between perinatal grief and sexual well-being among couples with any number of losses and after we controlled for the number of losses; thus, practitioners should provide couples with grief resources regardless of how many pregnancy losses they have had. Therapists could take a symbolic interactionism perspective (Blumer, 1969; LaRossa & Reitzes, 1993) by inviting couple members to share with one another if (and how) meanings around sex have changed. Such discussion may help them recognize changes in themselves and their relationship and promote healing via emotional intimacy. Therapists could also use cognitive strategies to assist couples in reappraising their sexual relationship as a symbol of coping with pain and loss via pleasure and bonding, rather than sex symbolizing pain and loss.

Although we are not aware of any empirically supported couple-based approaches for grief and sexuality following pregnancy loss, an approach adapted from Cognitive-Behavioral Couple Therapy (CBCT) for Post-Traumatic Stress Disorder (Brown-Bowers et al., 2012) may hold promise given phenomenological overlap in symptoms (e.g., intrusive thoughts, numbing,

difficulty making meaning of the event). This approach, together with CBCT for sexual problems (e.g., Bergeron et al., 2021; Bouchard et al., 2024), may be fruitful. Ultimately, interventions must be tested in clinical trials to confirm their efficacy after a pregnancy loss.

Limitations and Future Directions

First, our sample had few same-gender/sex couples and gender/sex diverse individuals, came from English-speaking countries (especially Canada and the USA), was relatively affluent, and had few individuals who identified as Black, Indigenous, or people of color (BIPOC). Thus, the generalizability of our findings is limited; more work on perinatal grief and sexual well-being in the contexts of inequitable healthcare access and discrimination would inform care for those at marginalized intersections of identity (Institute of Medicine, 2003). Second, we focused on associations between sexual well-being and general perinatal grief rather than the specific domains of active grief, difficulty coping, and despair (Potvin et al., 1989). Studying how specific aspects of perinatal grief relate to sexual outcomes could illuminate what parts of grief experiences to target post-loss. Third, we used a convenience sampling approach; those with more difficult recoveries post-pregnancy-loss may have been less willing to participate. Finally, we theorized that change in sense of self (i.e., symbolism) mediates associations between perinatal grief and sexual well-being. A crucial next step is to empirically test this pathway.

Conclusions

We found that higher perinatal grief related to four different facets of lower sexual well-being. Both fluctuations in perinatal grief from typical levels and experiencing higher perinatal grief on average across four months related to less positive and more negative sexual outcomes for both members of a couple experiencing a recent pregnancy loss. Such results can inform better support for couples' sexual relationships post-loss.

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