



Perinatal grief creates vulnerability to anxiety in subsequent pregnancy: the mediating role of bereavement-related guilt

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ABSTRACT

Aim: This study examines the associations among perinatal grief symptoms, bereavement-related guilt, and pregnancy-related anxiety in subsequent pregnancy within the framework of a hypothesised mourning model.

Method: Pregnant women with history of a perinatal loss were recruited using convenience sampling methods and completed a questionnaire set including the Perinatal Grief Scale, Bereavement Guilt Scale, and Pregnancy-related Anxiety Scale.

Results: Mediation analysis was performed to evaluate the hypothesised model in a sample of pregnant women with history of a perinatal loss ($N = 111$). The results indicated that bereavement-related guilt functions as a mediator in the relationship between perinatal grief severity and pregnancy-related anxiety experienced in subsequent pregnancies.

Conclusion: These findings were evaluated in light of previous studies, providing a bereavement-based perspective on the potential transmission of the mental effects of perinatal loss to subsequent pregnancy.

ARTICLE HISTORY

Received 18 October 2023

Accepted 16 March 2024

KEYWORDS

Perinatal loss; grief; bereavement; guilt; pregnancy-related anxiety; pregnancy

Pregnancy-related anxiety

Pregnancy-related anxiety is characterised by a diverse array of emotional, physical, cognitive, and behavioural symptoms such as concerns about loss of control, harm to the foetus, excessive preoccupation with the infant's well-being, nausea, vomiting, palpitations, diminished appetite, sleep disturbances, and irritability (Alderdice & Lynn, 2011; Bayrampour et al., 2016; Côté-Arsenault & Donato, 2011). Although mild to moderate level anxiety in pregnancy makes it easier to develop healthy habits and avoid harmful ones during pregnancy (Bayrampour et al., 2016; Charrois et al., 2022), severe anxiety is linked to adverse outcomes such as premature birth, low birth weight, diminished Apgar scores, challenges in attachment formation, maternal depression, heightened negative affect in infants, and developmental delays (Blair et al., 2011; Hunter et al., 2017; Kingston et al., 2012; Schetter & Tanner, 2012). In recent years, a growing body of evidence from meta-analyses and longitudinal studies has consistently demonstrated that mothers who have previously experienced

perinatal loss had more severe pregnancy-related anxiety during subsequent pregnancies, in contrast to those with no such history (e.g. Charrois et al., 2022; Herbert et al., 2022; Hunter et al., 2017; Mills et al., 2014). While it is established that heightened anxiety during pregnancy poses a risk to both mother and foetus, what remains uncertain is the mechanism by which grief symptoms in women who have experienced perinatal loss explain pregnancy-related anxiety during subsequent pregnancy, our aim.

Perinatal loss and grief

The term 'perinatal loss' describes infant losses that occur during pregnancy, childbirth, or within the first month of life (Hvidtjørn et al., 2018), categorised as miscarriage, stillbirth, and neonatal death, respectively. Despite advances in medical knowledge and technology, the prevalence of perinatal loss still ranges widely from 15% to 75% (August et al., 2011). Individuals who have lost a loved one may experience a range of symptoms, including guilt, yearning, preoccupation with the deceased, sadness, disbelief, anger, emotional numbness, meaninglessness, emptiness, avoidance, loneliness, and impairment in occupational and social functionality during the grieving process (Prigerson et al., 2021). These symptoms can also be experienced after perinatal losses, but guilt is more dominant and prolonged after perinatal losses (Frost & Condon, 1996, Gold et al., 2018; Slot et al., 2022). Moreover, it is noteworthy that bereavement-related guilt emerges as a primary risk factor that intensifies and impairs the grieving process (Cacciatore et al., 2013, Gold et al., 2017; Slot et al., 2022).

Guilt experienced after perinatal losses is a complex experience that includes holding oneself responsible for the baby's death, attributing the loss experience to one's own mistakes or flaws, shame, self-hatred, failure, powerlessness, and worthlessness (Cacciatore et al., 2013; Li et al., 2014). During pregnancy, due to shifts in neurotransmitter (e.g. dopamine, serotonin and norepinephrine) and hormone levels (e.g. oxytocin, progesterone), mothers have a natural inclination to protect their children, which can lead them to self-blame and guilt (Buckley, 2015; Feldman et al., 2007). Additionally, societal expectations place a substantial burden on mothers, emphasising their responsibility for ensuring a healthy childbirth and upbringing of the child (Adebayo et al., 2019; Markin & Zilcha-Mano, 2018). There are even superstitions that view perinatal losses as a punishment from God for the sinfulness of the mother (Omar et al., 2019). Furthermore, healthcare providers may bring up maternal physical conditions (such as maternal infection, preeclampsia, abruptio placenta) when discussing infant loss with grieving parents (Cacciatore, 2010; Lawn et al., 2011). These factors collectively contribute to the perception that perinatal losses are not a natural part of life but rather disruptions that could potentially have been controlled or prevented. Consequently, mothers frequently grapple with self and others-imposed blame for the loss (Cacciatore, 2010; Lawn et al., 2011). Research findings have confirmed this demonstrating that guilt is the most severe and prevalent grief symptom among women facing perinatal loss (Gold et al., 2017; Slot et al., 2022). Furthermore, perinatal loss-related guilt was found to be the strongest predictor of anxiety and depression in the subsequent pregnancy (Cacciatore et al., 2013; Slot et al., 2022).

The current study

Existing research has established that women who have experienced perinatal loss in the past tend to experience more pronounced anxiety during subsequent pregnancies when compared to those who have not faced such loss (see Charrois et al., 2022; Herbert et al., 2022). However, the precise mechanisms underlying how perinatal grief contributes to anxiety in subsequent pregnancies remain unclear. In this context, we aim to propose and test a theoretical model investigating the role of guilt as a mediator in the relationship between symptoms of perinatal grief and anxiety experienced during subsequent pregnancy (see Figure 1). We hypothesise that as the intensity of perinatal grief symptoms increase, so does the pregnancy-related anxiety in the subsequent pregnancy. Additionally, we hypothesise that guilt, which is one of the dominant symptoms associated with perinatal loss and grief, plays a mediating role in this relationship.

Method

Procedure

There are different opinions in the literature regarding the perinatal period. For example, The American College of Obstetricians and Gynaecologists classifies the period between the 22nd week of pregnancy and the first 28 days after birth as the perinatal period. Some other examples classify perinatal losses as losses from the 14th week of pregnancy, losses during birth, and losses in the first 4 weeks after birth (Hvidtjørn et al., 2018). However, there are also opinions stating that it does not matter in which week of pregnancy loss occurs and type of loss, and regardless of these characteristics, it is a significant loss experience for the expectant woman (e.g. O'Leary, 2004). By converging these criteria, we decided to include currently pregnant women who experienced loss at any stage of pregnancy, during birth, or within the first 28 days after birth. We decided to include all currently pregnant women who had experienced a miscarriage, abortion in cases in which the foetus had not appropriately formed or had died, termination of pregnancy due to anomalies, stillbirth, or postpartum death (within the first 28 days) without specifying any exclusion criteria in terms of the type of loss. The current data set is part of a larger study in which we examine prenatal bonding to the foetus, and the bonding of pregnant women to the developing baby in the womb increases significantly by the 2nd trimester (Armstrong, 2004; Mehran et al., 2013). Therefore, being at the 13th –14th weeks of the subsequent pregnancy period was an inclusion criterion. Thus, the inclusion criteria were

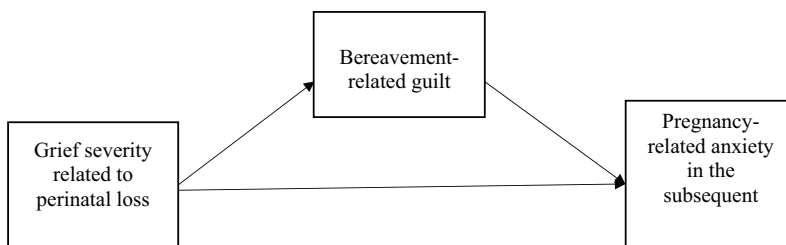


Figure 1. The proposed mediation model.

a history of at least one perinatal loss at any point in a previous pregnancy and/or neonatal loss within the first month after giving birth, being at least 18 years old, being pregnant again at the time of data collection, and being in at least the 13th week of the current pregnancy.

This study was reviewed and approved by the Ethics Council of Social Sciences and Humanities Research of XXXX University (Decision No: 16320). The data collection process lasted about one year between 2021 and 2022. Two data collection modes were applied in this study. We prepared both an online survey link and a hard-copy set of the scales. Regarding online survey procedure, voluntarily participating pregnant women with history of a perinatal loss who participated online were recruited to the study via the online platforms of relevant social media groups, email lists of associations helping women with perinatal loss experiences, and the announcements of midwives, doulas, and gynaecologists who shared study information flyer among their relevant online contacts. Regarding hard-copy set procedure, voluntarily participating pregnant women with history of a perinatal loss who filled out the hard-copy set of the scales were recruited to the study by a nurse working in the obstetrics department of a state hospital. Graduate students in the clinical psychology master programme also distributed the hard-copy set of scales to their acquaintances who met the inclusion criteria.

Finally, a total of 143 women gave informed consent to participate and completed the scales. After screening the data for the inclusion criteria, 19 women were excluded from the study due to the current pregnancy having not yet reached 13 weeks, 12 women due to the loss experience after birth later than 28th day, and finally 1 woman due to the selected abortion experience only.¹ Thus, a total of 111 pregnant women with history of a perinatal loss ($n = 29$ filled out hard-copy scale set, $n = 82$ filled out online scale set) constituted our final sample. Participants were informed that a total of five randomly selected individuals would be given a gift card as compensation.

Measures

A *Demographics Form* collected information on sociodemographic and perinatal loss (such as the loss type and the time elapsed since the loss) characteristics of the participants. Perinatal grief symptoms were evaluated with the *Perinatal Grief Scale* (Toedter et al., 1988), adapted for a Turkish sample (Köneş et al., 2017). Bereavement-related guilt feelings and cognitions were evaluated with the *Bereavement Guilt Scale* (Li et al., 2017), adapted for a Turkish sample (Keser, Ar Karci, et al., 2022) and edited for the suitability to perinatal loss by the present authors. Pregnancy-related anxiety levels of expectant mothers were evaluated with the *Pregnancy-related Anxiety Scale* (R. J. Brunton et al., 2018), adapted for a Turkish sample (Kurt & Arslan, 2021).

Data analysis

We conducted preliminary analyses for data screening, descriptive analyses of the study variables, and main analysis with IBM SPSS Statistics 28.0. There were no univariate outliers in the dataset according to the z-score criterion of ± 4.00 (Mertler & Vannatta Reinhart, 2005). Skewness and kurtosis values of the study variables were in the acceptable range of ± 2 (Field, 2013). We then tested the direct and indirect associations in

proposed mediation model (see [Figure 1](#)) with Process Macro for SPSS (see Model 4 for diagram, Hayes, 2022). The simple mediation analysis, by using Model 4, based on 5000 bootstrapped samples allows the testing of direct and indirect association of an independent variable (perinatal grief severity) with a dependent variable (pregnancy-related anxiety in the subsequent pregnancy) while modelling a process in which the independent variable predicts mediator variable (bereavement-related guilt), which in turn predicts the dependent variable (Hayes, 2022). The hypothesised direct and indirect associations are significant in process models if bias-corrected confidence intervals (CI) do not include zero (Hayes, 2022). In mediation analysis with small sample size, the bias-corrected bootstrap CI was likely to be more powerful than other methods of testing (Hayes & Scharkow, 2013).

Results

The mean age of the participating pregnant women who experienced loss during previous pregnancy ($N = 111$) was 29.77 ($sd = 4.99$). Eleven of these women additionally suffered a loss during childbirth or within 28 days of birth. Of the final sample, 70.6% reported a perinatal loss experience of miscarriage, 24.8% abortion as a medical necessity, 3.7% stillbirth, and 0.9% neonatal loss. Participants were all married. At the time of data collection, participants' mean duration of pregnancy was 24.50 weeks ($sd = 8.31$, range = 13–40). On average, the elapsed time since the previous perinatal loss was 30.91 months ($sd = 32.15$). Further details of the demographic characteristics of the sample are presented in [Table 1](#).

We first examined correlations of socio-demographic variables (age, educational status, income, number of living children) and of loss-related variables (time elapsed since the perinatal loss, type of the perinatal loss, gestation week of the perinatal loss, and the gestation week of the subsequent pregnancy) with perinatal grief severity, bereavement-related guilt, and pregnancy-related anxiety. Socio-demographic and loss-related variables did not correlate with the study variables except the gestational week of the subsequent (current) pregnancy. Thus, only this variable was statistically controlled in the mediation analysis.

[Tables 2 and 3](#) presents means and standard deviations of and correlations among the study variables.

The results indicated that perinatal grief severity was positively associated with bereavement-related guilt ($B = 0.23$, $SE = .04$, $p = .000$, 95% CI [0.163, 0.305]) and bereavement-related guilt was positively related to pregnancy-related anxiety in the subsequent pregnancy ($B = 0.53$, $SE = .11$, $p = .000$, 95% CI [0.311, 0.756]). The testing of indirect association using the bias-corrected CIs of the bootstrap approach indicated that bereavement-related guilt mediated the relationship between perinatal grief severity and pregnancy-related anxiety in the subsequent pregnancy ($B = 0.13$, Boot $SE = 0.04$, 95% Boot CI [0.057, 0.194]). Furthermore, although the total effect model indicated a significant association between perinatal grief severity and pregnancy-related anxiety in the subsequent pregnancy ($B = 0.19$, $SE = .05$, $p < .001$, 95% CI [0.095, 0.278]), the direct association of perinatal grief severity with pregnancy-related anxiety in subsequent pregnancy in the presence of the mediator was not significant ($B = 0.06$, $SE = .05$, $p = .217$, 95% CI [-0.037, 0.159]). The proposed and tested model explained 30%

Table 1. Sociodemographic characteristics of the study participants.

Characteristics	Mean (<i>sd</i>)	
Age (years)	29.77 (4.99)	
Week of the subsequent (current) pregnancy	24.50 (8.31)	
Gestational week at which perinatal loss occurred in the previous pregnancy	9.21 (5.03)	
Elapsed time since perinatal loss (months)	30.91 (32.15)	
	n	%
Educational status		
Primary school	7	6.3
Middle school	24	21.6
High school	33	29.7
Vocational school	7	6.3
Undergraduate degree	35	31.5
Graduate student	1	0.9
Graduate degree	4	3.6
Employment status		
Working outside the home	30	27
Not working outside the home	81	73
Perceived income status		
Low	10	9
Middle	93	83.8
High	8	7.2
Type of conception for current pregnancy		
Natural	106	95.5
Assisted reproduction	5	4.5
Number of perinatal losses in previous pregnancies		
1	86	78.2
2	13	11.8
≥3	11	9.9
Number of perinatal losses in neonatal period		
1	13	86.7
2	2	13.3
Reasons for perinatal loss*		
Miscarriage	77	70.6
Abortion as a medical necessity	27	24.8
Stillbirth	4	3.7
Neonatal loss	1	0.9
Number of living children**		
1	44	62
≥2	27	38

*Considering the most recent loss in the event of more than one perinatal loss experience.

**Out of n = 72 who reported that they had a child excluding the subsequent (current) pregnancy.

Table 2. Mean scores, standard deviations, and clinical cut-off values of the study variables.

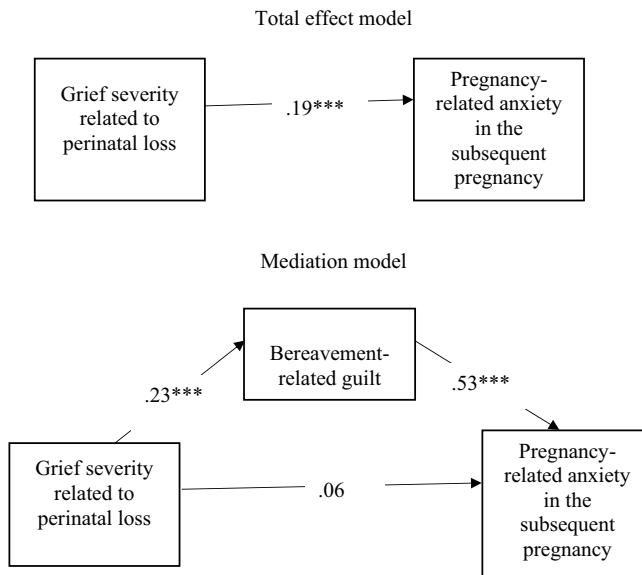
	Mean (<i>sd</i>)	Sample total range (min-max)	Scale total range (min-max)	Suggested clinical cut-off	Source for clinical cut-off
Perinatal Grief Severity	70.46 (28.89)	33–158	33–165	91	Toedter et al. (2001)
Bereavement-related Guilt	24.90 (12.68)	14–65	14–65	Not available	-
Pregnancy-related Anxiety	62.73 (13.81)	32–97	31–124	75.50	Brunton et al. (2018)

of the variance in pregnancy-related anxiety levels in subsequent pregnancies. In summary, an increase in perinatal grief severity was associated with an increase in the bereavement-related guilt, which was in turn associated with an increase in the pregnancy-related anxiety level in the subsequent pregnancy (see [Figure 2](#)).

Table 3. Bivariate Pearson correlations among the study variables.

	1	2	3	4
1. Perinatal Grief Severity	-	.56**	.39**	-.28*
2. Bereavement-related Guilt		95% CI [.37, .76]	95% CI [.17, .60]	95% CI [-.44, -.09]
3. Pregnancy-related Anxiety			.54**	-.25*
4. Gestational week of the current pregnancy			95% CI [.37, .69]	95% CI [-.42, -.07]
				-.16
				95% CI [-.35, .04]
				-

** $p < .001$, * $p < .01$; CI = Confidence interval.

**Figure 2.** The tested mediation model. *** $p < .001$

Discussion

This study has investigated the relationship between perinatal grief severity and pregnancy-related anxiety in subsequent pregnancy with a focus on the mediating role of bereavement-related guilt. Supporting our hypotheses, the increase in perinatal grief symptoms was associated with an increase in pregnancy-related anxiety in the subsequent pregnancy. Additionally, bereavement-related guilt mediated this relationship.

In the current study, the mean scores for perinatal grief, pregnancy-related anxiety, and guilt were 70.46, 62.73, and 24.90, respectively. Despite our study having a limited sample size, these mean scores were similar to findings from previous research. For instance, Toedter et al. (2001) conducted a review of 22 studies involving 2485 participants from four countries, revealing Perinatal Grief Scale scores ranging between 75 and 90 (see also Mergl et al., 2022). The fact that the mean value in the current study was lower than this range may be related to the possible ameliorating nature of the participants' subsequent pregnancy on grief symptoms. Consistent with our investigation, the average score for pregnancy-related anxiety usually falls within the range of 55 to 65, as observed in studies by R. Brunton et al. (2021), Kurt and Arslan (2021), and Weigl et al. (2023). Finally, although

literature commonly reports the degree of guilt in people who lost a family member or loved one, our study is the first, as far as we know, to provide data for the general nature of guilt in a sample of pregnant women including various types of perinatal losses.

The findings of the present study strongly align with prior research, demonstrating that mothers with history of a perinatal loss exhibit higher levels of anxiety during subsequent pregnancies compared to those without such a history. Comprehensive meta-analysis (Hunter et al., 2017) and meta-synthesis (Mills et al., 2014) studies have demonstrated that women with perinatal loss history experience fewer positive emotions and more anxiety during subsequent pregnancies. Pregnant women with a history of perinatal loss have been observed to be in a state of hyperarousal, often interpreting various natural bodily sensations of pregnancy as potential indicators of a new loss (Côté-Arsenault, 2007).

It is not feasible to establish definitive cause-and-effect relationships that conclusively demonstrate perinatal loss as a direct cause of increased anxiety in subsequent pregnancies, as experimental research cannot be conducted in this context. Nevertheless, we proposed that a connection between guilt and anxiety can be established by drawing upon the findings and theoretical frameworks present in the existing literature. Pregnant women with history of a perinatal loss often contend with heightened anxiety regarding the prospect of another loss (O'Leary, 2009; Thomas et al., 2021). This heightened anxiety is accompanied by increased levels of arousal, vigilance, and a heightened need for control (Mainali et al., 2023; Slot et al., 2022). In our supported expectation, these experiences would increase as the intensity of grief symptoms related to a previous loss increase.

While grieving after any loss is a very natural, healthy, and expected phenomenon (Prigerson et al., 2021; Shear et al., 2011), it is paradoxical that grief symptoms in mothers who have experienced perinatal loss are associated with negative outcomes, such as anxiety and depression, in the subsequent pregnancy. Such findings should not be interpreted as implying pathologizing of the mourning process. Grieving is expected, natural, adaptive, and has the potential to lead to subsequent growth (Alvarez-Calle & Chaves, 2023; Freedle & Oliveira, 2024). Therefore, it is critical to distinguish which components of grief, a natural phenomenon, are associated with negative outcomes in subsequent pregnancies. The findings of the current study indicate that guilt, as a maladaptive component of the grief process, might be responsible for these negative outcomes, specifically for anxiety. It has been known since Freud's (1917) 'Mourning and Melancholia' article that guilt is a variable that can play a role in the normal mourning process becoming abnormal. Recent studies have corroborated that one of the most important risk factors for ordinary grief to become chronic and turn into psychopathology is guilt (Barr, 2004; Keser, Ar-Karci, et al., 2022; Li et al., 2019).

Perinatal loss-related guilt may involve thoughts about mistakes made during pregnancy and a perception of imperfection regarding one's own body or femininity (Burden et al., 2016; Cacciatore et al., 2013; Leppert & Pahlka, 1984). For example, individuals attempting to comprehend the reasons for the loss may blame themselves for various factors, such as not maintaining a healthy diet, inadequate exercise, missing routine doctor check-ups, smoking or consuming alcohol, exposure to stress, or catching a cold. Furthermore, they may believe that their own body is insufficient to give birth to a healthy child. These thoughts can be reinforced by societal norms and the explanations and suggestions of healthcare professionals (Cacciatore, 2010; Frøen et al., 2011; Lawn et al.,

2011). Consequently, mothers may remain constantly vigilant, striving to avoid repeating the same mistakes in subsequent pregnancies. They may interpret ordinary symptoms as indicators of impending disaster, leading to intense anxiety. This context is believed to elucidate the mediating role of guilt in the relationship between the increase in grief symptoms and anxiety in subsequent pregnancies. However, it should be noted that pregnancy-related anxiety may have multiple risk factors, and the proposed mechanism may not be applicable in all cases.

Limitations and future directions

The present research was conducted with a cross-sectional method. Therefore, cause-and-effect relationships cannot be deduced. Another limitation lies in the assessment of the constructs of the study with self-report measurement tools that can be affected by memory biases and moods. Furthermore, the small sample size limits the power of our study and the generalisability of the findings. The majority of our sample included women with perinatal experience of miscarriage. Even though varying perinatal loss types are generally included in individual studies and samples are generally heterogeneous in the relevant literature (see Mergl et al., 2022), future research focusing on the psychological reactions and responses after a particular perinatal loss such as miscarriage, abortion, and stillbirth ext. would be valuable.

As a devastating and debilitating life event, perinatal loss can lead not only to perinatal grief symptoms, but also to symptoms of other psychological phenomena such as depression and post-traumatic stress, depending on the person's susceptibility. Therefore, it is possible that pregnancy-related anxiety is affected by symptoms of other psychological structures. In addition, factors-related to current pregnancy health status (e.g. complications, health of the foetus and mother) and personality traits of bereaved individuals, such as trait anxiety, neuroticism, coping strategies, attachment styles, may also be variables associated with pregnancy-related anxiety. To better understand pregnancy-related anxiety, it is recommended that future studies evaluate these variables in addition to perinatal grief symptoms.

Clinical implications

We recommend that clinicians working with pregnant women inquire about their history of perinatal loss and their emotions surrounding it. It should be taken into consideration that women who attribute perinatal loss to their own mistakes, flaws, incompetence, sins, or bad habits may worry about experiencing a similar loss in a new pregnancy.

The feelings of guilt experienced by women with a history of perinatal loss who also encounter pregnancy-related anxiety in subsequent pregnancy should be handled empathetically. Heightened perceptions of responsibility and cognitive distortions can be addressed through evidence-based interventions such as psychoeducation, reconstructing erroneous cognitions, normalisation, imagery rescripting, and fostering self-compassion (Kersting et al., 2011; Markin, 2017; Young et al., 2021). However, addressing guilt does not guarantee the complete elimination of pregnancy-related anxiety, and it may require addressing other cognitions, emotions, and behaviours beyond guilt.

Note

1. During the recruitment process, our exclusion criteria did not specify the exclusion of selective abortion, thus we did not specifically exclude women with a selected abortion experience. In the data set, there was one participant with selected abortion experience. In light of a reviewer's contribution, we excluded this participant to clarify the definition of perinatal loss.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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