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Psychological implications of attending a birth review: A pre-post observational study of birth experience and post-traumatic stress symptoms

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ABSTRACT

Background: Birth reviews provide a space to talk about birth experiences. Women report finding them helpful, but their specific psychological impact has not been explored. This study investigated whether childbirth experience, perception of birth as traumatic, post-traumatic stress symptoms, shame, and self-compassion changed following a birth review. Psychological flexibility was also examined as a potential predictor of any changes.

Method: Women in the postnatal period (N = 211), who had been referred or self-referred for a birth review, were invited to participate in a pre-post observational study. Birth reviews were completed by midwives from the maternal mental health service trained in the five-step model for listening to women after childbirth. Birth reviews form part of an integrated childbirth trauma service with potential for psychological referral. Eighty-five participants completed baseline measures examining childbirth experience, post-traumatic stress symptoms, shame, self-compassion, and psychological flexibility before their birth review. Two to six weeks after their birth review, 70 participants repeated the same measures. Pre-post comparisons from 70 women were analysed, as well as conducting intention-to-treat analyses.

Results: Perception of the birth as traumatic significantly reduced, and perception of childbirth experience, levels of shame, and post-traumatic stress symptoms all significantly improved following birth review. There was no significant change in total self-compassion. Psychological flexibility did not predict post-review scores when controlling for baseline levels.

Conclusions: Midwifery birth reviews using the presented model may improve perceptions of childbirth and reduce traumatic birth perception, post-traumatic stress symptoms, and trauma-related shame. A randomised controlled trial is now required.

Statement of significance

Problem Background

Birth reviews happen across the United Kingdom. However, little is known about the psychological implications of attending a birth review appointment.

What is already known

Birth reviews are reportedly helpful, however, presently they are not standardised and have been developed and implemented into practice in the absence of evaluation.

What this paper adds

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Utilising the standardised five-step model of listening to women after childbirth, under the supervision of clinical psychologists, improves perceptions of childbirth, and reduces perception of birth as traumatic, post-traumatic stress symptoms, and trauma-related shame.

The narrative surrounding childbirth has shifted significantly in recent decades. Once framed almost exclusively through the lens of a 'positive experience', there is now a broader recognition of the potential for traumatic birth experiences and the subsequent development of birth-related post-traumatic stress disorder (PTSD). The International Statistical Classification of Diseases and Related Health Problems (ICD-11) defines PTSD as the result of "exposure to a trauma described as an extremely threatening or terrifying event or series of events" [1].

In the context of childbirth, the term 'birth trauma' refers to the subjective experience of distress during or following labour and delivery [2]. Importantly, the way a woman perceives her birth experience is a stronger predictor of trauma and PTSD than objective indicators such as mode of delivery [3]. This perception can significantly influence psychological well-being.

While an estimated 34–47 % of women describe their birth as traumatic, only around 1–6 % meet criteria for PTSD 4–6 weeks postpartum [4]. Many women recall stress during childbirth but do not experience the intense fear required for a PTSD diagnosis and are able to reflect on their birth relatively openly [5]. However, for some, the experience is deeply distressing and leads to persistent symptoms. Risk factors for PTSD after birth include medical complications, perceived lack of control, pain, and negative emotional appraisals [6]. Among these, the perception of threat and how the woman's concerns are responded to during labour are considered the most significant predictors of PTSD onset [7].

One intervention used to address trauma responses is psychological debriefing [8], a semi-structured discussion aimed at processing distressing events. Introduced in the 1990s into United Kingdom (UK) maternity services, postnatal debriefing drew on the principles of critical incident debriefing [9]. However, despite its theoretical underpinnings, there has been a lack of clarity and consistency in how debriefing is delivered in practice [7].

Research on the effectiveness of debriefing is mixed. In non-perinatal contexts, early meta-analyses suggested that debriefing could worsen PTSD symptoms by disrupting natural recovery processes [10]. Within the perinatal context, findings are inconsistent, with some research showing no effect [11], while a more recent randomised controlled trial found a significant reduction in PTSD symptoms postpartum [12]. Nonetheless, a Cochrane review concluded that the evidence for effectiveness remains limited and of low quality [8], and current maternity guidelines do not recommend structured debriefing. Instead, a more flexible, unstructured form of postnatal discussion—commonly referred to as a 'birth review'—is advised [13,14].

Qualitative research underscores the importance of providing women with a space to reflect on their birth [15]. Without this opportunity, women may experience increased psychological distress and difficulty adjusting in the postnatal period [15]. A meta-ethnographic review further revealed that discussing birth experiences with maternity professionals helps many women process feelings of guilt and shame [16]. In the UK, listening services have developed in response to this need. Earlier studies found that many National Health Service (NHS) maternity units offer such services, though their structure and resourcing vary widely [9]. Despite being valued by women, these services are often underfunded and lack systematic evaluation.

One innovative approach to meeting this need is the Birth in Mind (BiM) service — a collaborative model developed by midwifery and clinical psychology teams in the UK [17]. BiM uses a stepped-care pathway tailored to the clinical needs of each woman. The initial step is a structured birth review with a trained midwife. This offers an opportunity to explore the birth experience, review clinical notes, clarify uncertainties, and address unresolved feelings [17]. This five-step, psychology-informed model includes rapport building, narrative exploration, emotional reflection, and trauma screening [18], with midwives receiving specific training and ongoing supervision from clinical psychologists. If needed, a birth review can be followed by referral to the same clinical psychologists for trauma-focused intervention.

Although these services are being implemented, their psychological impact remains under-researched. Existing studies suggest that postnatal psychological outcomes are influenced by a complex interplay of emotional factors. For example, many women report feelings of shame following a difficult birth, especially if they believe they failed to meet expectations of being a 'good mother' [19,20]. Such feelings of guilt and inadequacy can increase vulnerability to postnatal depression (PPD) [21]. In contrast, higher levels of self-compassion are associated with lower levels of PPD and PTSD symptoms [22,23]. Self-compassion also promotes psychological flexibility (PF), an adaptive trait linked to greater resilience and emotional regulation [24]. Low PF, by contrast, is correlated with increased anxiety, pain, and postnatal trauma symptoms [25,26]. PF may therefore be an important psychological mechanism both before and after childbirth. Lower PF levels may play a role in the development and severity of shame, self-compassion, and appraisal of the birth experience.

This study aimed to explore the possible psychological implications of attending a birth review where the approach adopts a specific, replicable model of care. First, the study investigated whether attending a birth review is associated with changes in perceptions of the birth experience (including whether this was perceived as traumatic) and post-traumatic stress symptoms and a reduction in shame and/or an increase in self-compassion. Secondly, we explored whether individual differences in psychological flexibility played a role in predicting any changes.

We hypothesised that 1) birth experience would be viewed more positively, perception of birth as traumatic and post-traumatic stress symptoms would be reduced, shame would be lower, and self-compassion would be increased, after the birth review; and 2) that psychological flexibility would predict post-review scores of childbirth experience, post-traumatic stress symptoms, shame, and self-compassion, when controlling for pre-review measures.

Methods

Design

A longitudinal pre-post observational design was adopted with participants assessed at two time points: the first time before attending their birth review appointment (Time 1), on average about 6 months postpartum with a range of 4 weeks to 373 weeks (M = 25.14 weeks and SD = 50.14 weeks) and the second 2–6 weeks post-birth review appointment (Time 2).

Setting

The BiM service is a maternal mental health service established to support women and birthing people who are 'coming to terms with' their experience of childbirth, embedded across the South Yorkshire Integrated Care System[3] (ICS). Midwives administering birth reviews as part of South Yorkshire ICS are based across four sites: Sheffield, Barnsley, Doncaster, and Rotherham. Women and birthing people can self-refer or be referred for a birth review because of self-identified

[3] In the UK, ICS is a term commonly used to refer to the local integration of health services including general practitioners (doctors who provide first line care in a locality), hospitals, mental health services typically provided by the NHS, and social care.

distress concerning their childbirth experience from approximately six weeks postpartum.

Participants

Participants were recruited across the BiM service. At Time 1, women were eligible if they were aged 18 or over and had been offered a birth review appointment at the BiM service. Women were excluded if they had already attended their birth review appointment or if they reported experiencing baby loss during birth or serious illness whereby their baby remained in the Neonatal Intensive Care Unit longer than 72 hours. Participants who did not attend their birth review appointment were not eligible to take part in completing Time 2 measures. To determine the required sample size, an a priori sample size calculation was conducted for a hierarchical multiple regression analysis. The power analysis indicated that a minimum sample size of 67 participants would be required to detect a medium effect size ($f^2 = 0.15$) with an alpha of 0.025 and 80 % power [27]. A total of three variables were controlled for in the initial power calculation when accounting for the potential covariates and psychological flexibility.

Procedure

A participant poster and information sheet were attached to all birth review appointment letters, which provided potential participants with the study aims and procedures. Those interested scanned a QR code which took them directly to the consent form. Participants then provided demographic information and completed six measures assessing childbirth experience, birth trauma, trauma-related shame, self-compassion, post-traumatic stress symptoms, and psychological flexibility, which were administered via the online survey platform Qualtrics. At Time 2, participants received a follow-up email from the researchers, which provided a link to the same set of measures. Recruitment ran from June 2022 to January 2024. Ethical approval was granted by the NHS Ethics Committee in February 2022, REC 23/WM/0009. Fig. 1 displays participant recruitment information.

Measures

Childbirth experience. The Childbirth Experience Questionnaire – CEQ 2.0 – measures aspects of women's satisfaction with their experience of childbirth [28]. The questionnaire consists of 22 items that assess four domains: Own Capacity, Professional Support, Perceived Safety, and Participation. Nineteen of the items are responded to using a four-point Likert scale ('totally agree' to 'totally disagree'). The remaining three items are responded to using a visual analogue scale. A total score can be calculated across domains. Higher scores indicate a more positive childbirth experience. The CEQ 2.0 total had good levels of internal consistency in this study (Cronbach's $\alpha = .90$).

Post-traumatic stress symptoms. The Impact of Events Scale-Revised – IES-R – measures post-traumatic stress symptoms (PTSS), specifically intrusion, avoidance, and hyperarousal [29]. Within the scale, there are five response categories (0 = not at all, 1 = a little bit, 2 = moderately, 3 = quite a bit and 4 = extremely). Higher scores reflect greater post-traumatic stress (scores between 24 and 32 are suggestive of sub-diagnostic levels of PTSD; scores of 33 or above represent probable diagnosis of PTSD). Total scores are possible to obtain by looking across the subscales of this measure. The event was pre-specified as the childbirth experience. The IES-R has good reliability in perinatal samples [31], taking into consideration appraisal, a key predictor of PTSS after childbirth [32]. The IES-R total had excellent internal consistency in this study ($\alpha = .95$).

Whether childbirth was traumatic. Perceptions of whether childbirth was viewed as a traumatic experience were also gathered using two questions assessing the presence or absence of birth trauma [33]. Participants were asked if during childbirth or any time after the birth whilst in hospital they 1) experienced horror or helplessness about what was happening, and 2) felt really frightened about their own or their baby's wellbeing. These questions were derived from the DSM-IVR criteria for PTSD, developed in liaison with the Birth Trauma Association. Participants who responded yes to both questions were considered to have experienced a traumatic birth.

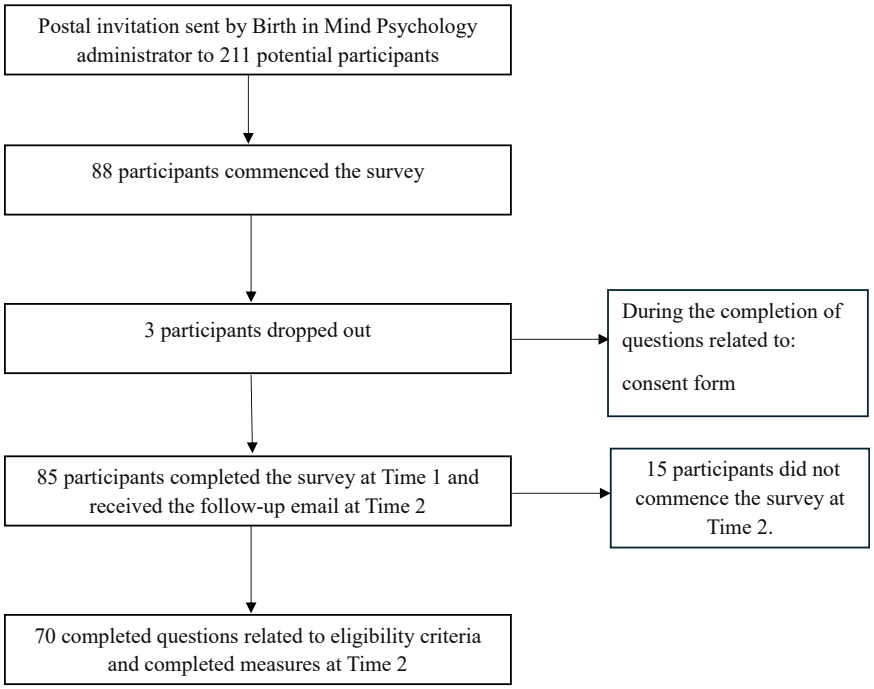

Fig. 1. Participant Recruitment Flowchart.

Shame. The Trauma-Related Shame Inventory (TRSI) is a 24-item self-report measure and was used to assess internal and external trauma-related shame [34]. Items are responded to using a 4-point Likert scale ('never true' to 'always true'). Higher scores indicate higher levels of trauma-related shame. Total scores are possible to obtain by looking across the subscales of this measure. The TRSI total had good levels of internal consistency in this study (α =.93).

Self-compassion. The Self-Compassion Scale Short Form (SCS-SF) was used to assess self-compassion. This 12-item scale measures six components of self-compassion [35], namely self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification. Higher scores indicate greater levels of self-compassion. Total scores are possible to obtain by looking across the subscales of this measure. The SCS-SF total had good levels of internal consistency in this study (α =.88).

Psychological flexibility. The Psy-Flex is a six-item self-report measure used to assess an individual's level of PF. PF is conceptualised as a trait unless it is being targeted through a specific intervention [36]. The questionnaire measures the six interrelated facets that comprise PF: Cognitive defusion, acceptance, contact with the present moment, self-as-context, values, and committed action [37]. Items are worded to assess the presence of the specific competencies and are responded to using a 5-point Likert scale from 'very often' to 'very seldom'. Higher scores indicate greater levels of PF. Total scores are possible to obtain by looking across the subscales of this measure. The Psy-Flex total had good levels of internal consistency in this study (α =.87).

Statistical analysis. To address Hypothesis 1, two paired samples t-tests were used to evaluate the mean scores of self-compassion and childbirth experience between Time 1 and Time 2. As the data for post-traumatic stress and trauma-related shame was non-normally distributed, the nonparametric Wilcoxon Signed Rank Test was run to compare scores between Time 1 and Time 2 for these outcomes. The McNemar Change test was used for proportions reporting traumatic birth (pre- and post-birth review).

To test Hypothesis 2, hierarchical regression analyses were conducted (separately for shame, self-compassion, post-traumatic stress symptoms, and childbirth experience) to explore whether psychological flexibility predicted post-birth review scores of shame, self-compassion, post-traumatic stress symptoms, and childbirth experience when controlling for baseline measures and covariates.

Hierarchical regression analyses were performed in two steps. In the first step, demographic/obstetric information associated with the outcome variable was entered, as well as baseline measures completed before the birth review for self-compassion, shame, childbirth experience, and post-traumatic stress symptoms respectively for the relevant analysis. In step 2, the baseline psychological flexibility score was added. The amount of variance explained by each predictor was evaluated using the change in R^2.

Demographic background and obstetric experience. A series of one-way ANOVAs, independent samples t-tests, Mann-Whitney U tests, Kruskal Wallis tests, and Spearman/Pearson correlations were conducted to assess relationships between demographic and obstetric variables and levels of self-compassion, trauma-related shame, post-traumatic stress symptoms, and childbirth experience. These tests were conducted to identify variables to be controlled for within the regression models.

Results

Table 1 outlines the sample characteristics of the final sample. The analysis consisted of data from a participant sample of $n = 85$ who completed all measures at time point 1. N = 15 participants did not complete measures at time point 2, thus a conservative intention-to-treat analysis was completed with baseline measures brought forward for the 15 women who had not completed time point 2 . Table 2 shows the sample's obstetric characteristics.

Table 1
Demographic Data of the ITT Population (N = 85).

	Total N	%
Age		
18–24	7	8.20
25–34	55	64.70
35–44	23	27.10
Gender identity		
Woman	85	100.00
Ethnicity		
White	83	97.70
Mixed	2	2.30
Marital status		
Single	4	4.70
Married	45	52.90
Living with partner	32	37.70
Other	4	4.70
Educational attainment		
GCSE or vocational qualification	32	37.60
Bachelor's degree or above	53	62.40
Previous mental health history		
Yes	38	44.70
No	47	55.30
If yes, who did they see?		
Primary care	13	34.20
GP	9	23.70
Psychological Wellbeing Practitioner	4	10.50
Secondary care	25	65.80
Cognitive Behavioural Therapist	11	29.00
Counsellor	11	29.00
Psychologist	2	5.20
Psychiatrist	1	2.60

Descriptive statistics

Descriptive statistics for all measures are reported in Table 3. Measures of whether the birth experience was perceived as traumatic indicated that, at Time 1, 83.53 % of participants experienced horror or

Table 2
Obstetric Data of the ITT Population (N = 85).

	N	%
Place of delivery		
Hospital	82	96.50
Home	3	3.50
Mode of delivery		
Vaginally	23	27.10
Vaginally with assistance or forceps or ventouse	13	15.30
Emergency caesarean section	41	48.20
Planned caesarean section	8	9.40
Perceived complications		
Yes	47	55.30
No	38	44.70
Seen by an obstetrician or fetal medicine specialist in pregnancy		
Yes	30	35.30
No	55	64.70
Parity		
1	74	87.05
2	9	10.59
3	2	2.36
Singleton or multiple births		
Singleton	84	98.82
Twin	1	1.18
Location of birth review appointment		
Sheffield	30	35.30
Doncaster	39	45.90
Barnsley	9	10.60
Rotherham	7	8.20

Table 3
Descriptive Statistics N = 85.

	Time 1				Time 2				
Variable	**Mean (SD)**	**Median (IQR)**	**Range of scores**	**Possible range of scores**	**Mean (SD)**	**Median (IQR)**	**Range of scores**	**Comparison statistic (*t*/*z*)**	***p***
Childbirth experience									
Own Capacity	16.73 (4.04)	17.00 (5.00)	8.00–30.00	8.00–32.00	17.32 (4.61)	17.00 (7.00)	9.00–31.00		
Perceived safety	12.85 (4.37)	12.00 (6.00)	6.00–23.00	6.00–24.00	13.82 (4.34)	14.00 (7.00)	6.00–24.00	4.45	.035
Professional Support	15.27 (4.02)	16.00 (6.00)	5.00–20.00	5.00–20.00	15.56 (4.06)	17.00 (6.00)	5.00–20.00		
Participation	8.36 (2.44)	8.00 (3.00)	3.00–12.00	3.00–12.00	8.56 (2.61)	9.00 (4.00)	3.00–12.00		
Total	13.30 (2.98)	13.50 (4.88)	8.00–20.00	5.50–22.00	13.70 (3.20)	14.00 (4.63)	6.50–20.25	−.26	.009
Self-compassion									
Self-kindness	2.54 (0.90)	2.50 (1.00)	1.00–4.50	1.00–5.00	2.78 (0.96)	3.00 (1.50)	1.00–5.00	−3.02	.003
Self-judgment	2.80 (1.20)	2.50 (1.50)	1.00–5.00	1.00–5.00	2.83 (1.11)	2.50 (1.50)	1.00–5.00		
Common Humanity	2.49 (1.07)	2.50 (2.00)	1.00–5.00	1.00–5.00	2.67 (0.95)	2.50 (1.50)	1.00–5.00		
Isolation	2.65 (1.14)	3.00 (2.00)	1.00–5.00	1.00–5.00	2.69 (1.13)	2.50 (1.30)	1.00–5.00		
Mindfulness	2.98 (0.90)	3.00 (1.00)	1.00–5.00	1.00–5.00	3.02 (0.95)	3.00 (1.30)	1.00–5.00		
Over-Identification	2.51 (1.11)	2.50 (1.50)	1.00–5.00	1.00–5.00	2.56 (1.15)	2.50 (1.80)	1.00–5.00		
Total	2.66 (0.80)	2.58 (1.09)	1.00–4.92	1.00–5.00	2.77 (0.74)	2.67 (1.04)	1.50–5.00	−1.97	.052
Shame									
Internal	6.43 (7.18)	4.00 (8.00)	0.00–31.00	0.00–36.00	4.94 (6.62)	2.00 (8.00)	0.00–29.00	−2.29	.022
External	2.19 (3.78)	1.00 (2.00)	0.00–19.00	0.00–36.00	1.34 (2.80)	0.00 (2.00)	0.00–13.00		
Total	8.62 (10.44)	5.00 (11.00)	0.00–50.00	0.00–72.00	6.28 (4.61)	3.00 (9.00)	0.00–42.00	−2.25	.025
Post-traumatic stress symptoms									
Intrusions subscale	14.18 (8.17)	15.00 (14.00)	1.00–29.00	0.00–32.00	9.76 (7.79)	8.00 (10.50)	0.00–32.00	−5.00	< .001
Hyperarousal subscale	6.52 (6.23)	4.00 (11.00)	0.00–20.00	0.00–24.00	4.59 (5.87)	2.00 (5.00)	0.00–23.00	−3.66	< .001
Avoidance subscale	12.61 (7.83)	12.00 (11.00)	0.00–31.00	0.00–32.00	9.38 (7.87)	7.00 (12.50)	0.00–31.00	−4.16	< .001
Total	33.30 (19.82)	30.00 (35.00)	2.00–76.00	0.00–88.00	23.73 (19.55)	19.00 (29.00)	0.00–77.00	−4.89	< .001
Psychological flexibility									
Total	20.56 (4.64)	22.00 (6.00)	8.00–30.00	6.00–30.00	21.46 (4.26)*	22.00 (5.00)	12.00–30.00		
		Time 1			**Time 2**		**Comparison statistic (X^2)**		***p***
		N	**%**		**N**	**%**			
Perceived Birth Trauma									
Horror or helplessness		71.00	83.53		65.00	76.47			
Frightened for wellbeing		72.00	84.70		65.00	76.47			
Met both criteria		66.00	77.60		59.00	69.41	4.45		.035

Note: * = Not included in the analyses

helplessness about what was happening during birth, and 84.70 % felt frightened about their own or their baby's wellbeing. Seventy-eight percent of the sample experienced both aspects of birth trauma.

Per IES-R classification guidelines [30], 40 women (47.05 %) scored above the clinical threshold for a diagnosis of PTSD (score ≥ 33) before attending their birth review appointment. A further 14 (16.47 %) met the sub-diagnostic threshold (score ≥ 24). After attending their birth review, 25 participants (29.41 %) scored above the clinical threshold, and a further 12 (14.11 %) met the sub-diagnostic threshold. The mean total score for IES-R was 33.30 (SD = 19.82) before attending a birth review appointment, compared to 23.73 (SD = 19.55) after attending a birth review appointment. After attending a birth review appointment, the average IES-R score thus fell below the threshold for PTSD.

Table 4
Correlations Among Variables at Time 1 and Time 2.

Time 1						**Time 2**				
Variable	PsyFlex	SCS-SF	TRSI	IES-R	CEQ	PsyFlex	SCS-SF	TRSI	IES-R	CEQ
PsyFlex	–					–				
SCS-SF	.569**	–				.500**	–			
TRSI	−.309**	−.546**	–			−.243*	−.369**	–		
IES-R	−.320**	−.125	.464**	–		−.179	−.367**	.609**	–	
CEQ	.215	.094	−.318**	−.587**	–	.229	.243*	−.493**	−.567**	–

Note: PsyFlex = psychological flexibility, SCS-SF = self-compassion short form, TRSI = trauma-related shame, IES-R = post-traumatic stress symptoms, CEQ = childbirth experience,* = $p < .05$, **$p < .001$, (2-tailed).

Bivariate correlations

Intercorrelations among all continuous variables are presented in Table 4. After attending a birth review appointment, a more positive birth was associated with higher levels of self-compassion. Furthermore, at both time points, a more positive birth experience was linked to lower trauma-related shame and lower post-traumatic stress symptoms.

The measure of self-compassion was also significantly positively correlated with psychological flexibility across both time points, while greater levels of self-compassion were associated with lower levels of trauma-related shame and post-traumatic stress symptoms.

The measure of trauma-related shame was significantly negatively correlated with psychological flexibility across both time points, meaning that greater levels of psychological flexibility were associated with lower levels of trauma-related shame, while greater levels of post-traumatic stress symptoms were associated with higher levels of trauma-related shame.

Pre to post birth review changes

To test hypothesis 1, a series of paired-samples t-tests and Wilcoxon signed rank tests were conducted.

Women perceived childbirth experiences significantly more positively after attending their birth review appointment ($M = 13.70$, $SD = 3.20$) compared to pre-birth review ($M = 13.30$, $SD = 3.20$), $t(84) = -2.68$, $p = .009$, with a small effect size ($d = -.29$, [95 % CI: −.70, −.23]). Further exploration of the four subscales showed that perceived safety was significantly greater post-birth review, $p < .001$. Moreover, women were significantly less likely to perceive their birth as traumatic after attending their birth review (69 %), compared to before their birth review (77 %), $\chi 2(84) = 4.45$, $p = .035$.

Self-compassion scores post review ($M = 2.77$, $SD = .74$) were not significantly different, ($t(84) = -1.97$, $p = .052$, $d = -.24$ [95 % CI: −.43,.002]), compared to pre-review scores ($M = 2.66$, $SD = .80$), but exploration of the six subscales showed that self-kindness was significantly greater post-birth review ($t(84) = -3.028$, $p = .003$, $d = -.33$ [95 % CI: −.54, −.11]).

Trauma-related shame scores were significantly lower following the birth review (Mdn = 3.00, $n = 85$) compared to pre-birth review (Mdn = 5.00, $n = 85$, $z = -2.25$, $p = .025$), with a small effect size ($d = .25$). Further exploration of the two subscales showed that only internal shame was significantly different post-birth review, $z = -2.295$, $p = .022$.

Lastly, post-traumatic stress symptoms were significantly lower after attending a birth review appointment (*M*dn = 19.00, $n = 85$) compared to pre-birth review (*M*dn = 30.00, $n = 85$), $z = -4.89$, $p < .001$, with a small effect size, $d = 0.49$. Examining all subscales separately, avoidance ($z = -4.165$, $p < .001$) intrusion ($z = -5.001$, $p < .001$), and hyperarousal ($z = -3.667$, $p < .001$) were all significantly reduced post birth review.

The role of psychological flexibility

To test hypothesis 2, a series of hierarchical multiple regression analyses were conducted separately for childbirth experience, self-compassion, trauma-related shame, and post-traumatic stress symptoms to explore the role of psychological flexibility on post-birth review scores. While baseline measures (and pre-existing factors that are associated with outcomes) were significantly associated with post-birth review measures across self-compassion, trauma-related shame, post-traumatic stress symptoms, and childbirth experience, psychological flexibility did not explain additional variance, and therefore hypothesis 2 was not supported (see Table 5).

The Previous Mental Health problems (PMH) variable was dummy coded (0 = no; 1 = yes) and controlled for in the regression analyses where SCS-SF was the dependent variable. PMH problems were not

Table 5
Hierarchical Regression Predicting Outcome Variables.

Variable	Childbirth Experience					Post-Traumatic Stress Symptoms					Trauma-Related Shame					Self-Compassion				
	Cumulative R^2 change	*F*-change	Simultaneous β	*SE*	*p*	Cumulative R^2 change	*F*-change	Simultaneous β	*SE*	*p*	Cumulative R^2 change	*F*-change	Simultaneous β	*SE*	*p*	Cumulative R^2 change	*F*-change	Simultaneous β	*SE*	*p*
Step 1																				
Baseline measure	.289	*F* (1,83) = 33.73	.235	.202	< .001	.421	*F* (1,83) = 60.29	.649	.082	< .001	.327	*F* (1,83) = 40.30	.557	.077	< .001	.629	*F* (2,82) = 69.48	.760	0.072	< .001
Previous Mental Health			-	-	-			-	-	-			-	-	-			.062	.115	.433
Step 2																				
Baseline PF	.000	*F* (1,82) = .011	.010	.135	.915	.000	*F* (1,82) = .016	−.011	.378	.900	.002	*F* (1,82) = .230	−.046	.185	.632	.000	*F* (1,81) = .059	−.021	.013	.808

associated with any other outcome variables.

Per-protocol analysis

Per-protocol is a less conservative analysis than intention-to-treat analysis. When this process (per-protocol) was implemented to not include the 15 women without Time 2 scores, findings completely mirrored those of the intention-to-treat results (see Supplementary Materials).

Discussion

The present study aimed to investigate whether childbirth experience, perception of birth as traumatic, levels of shame, self-compassion, and post-traumatic stress symptoms changed following a birth review. The study also explored whether psychological flexibility was a predictor of change across these outcomes.

In support of our first hypothesis, results indicated that after attending a birth review, women's perception of childbirth experience was more positive, and women were less likely to fulfil criteria for a 'traumatic birth'. An important dimension of the childbirth experience that significantly improved post review was 'perceived safety' in relation to the birth. This finding indicates that the model adopted by this birth review service (i.e., having an opportunity to clarify concerns, receive more information about the birth, and have their experiences validated) had a favourable impact on how women relate to their experience postnatally.

We also found that after attending a birth review, post-traumatic stress symptoms were significantly reduced. It is of interest that the median IES-R score across the sample fell below the threshold for PTSD after attending a birth review. However, it must be noted that the pre-birth review sample mean was only just above threshold for caseness of PTSD symptoms. Moreover, levels of trauma-related shame also significantly reduced after the birth review. Such psychological implications have not previously been explored in women following a birth review, and our results extend findings from previous research that has examined the effects of postnatal debriefing and its positive impact on post-traumatic stress symptoms [11,12]. Importantly, self-compassion levels did not change from pre- to post- birth review, though the dimension of self-kindness did significantly improve for women post birth review, suggesting that they responded to themselves in a more gentle, supportive, and understanding manner. Nevertheless, as the study was not powered to explore the subscales, this result should be interpreted tentatively.

Regarding correlations amongst measures, a positive association was found between more negative childbirth experiences and trauma-related shame, which aligns with previous research indicating that women's positive perception of birth may be protective over maternal shame [25]. Unsurprisingly, we found that the more negatively participants appraised their birth experience, the higher their levels of post-traumatic stress symptoms. These results support the existing literature in predicting the risk factors for postpartum post-traumatic stress symptoms [38], which emphasise negative appraisal during childbirth as one of the strongest predictors of PTSS [7].

Lastly, we explored whether psychological flexibility (reported at baseline) predicted perception of childbirth experience, post-traumatic stress, self-compassion, and trauma-related shame after attending a birth review appointment. In accordance with the definition of psychological flexibility [39], theoretically, people with higher levels of PF would be more able to shift their perspective of the birth experience, rather than become 'fused' to their interpretation of the event. Contrary to this idea and hypothesis 2, however, our results revealed that psychological flexibility did not predict Time 2 scores of childbirth experience, post-traumatic stress symptoms, self-compassion, or trauma-related shame, after controlling for baseline measures and identified covariates.

Strengths and limitations

The study was appropriately powered, and attrition was very low with 82.35 % retention. The study sample was reflective of the diversity of those who access the BiM service; however, the limited diversity across the sample demographics is noted, with the majority identifying as white, having accessed higher-level education, being married, being aged 25–34, and having an emergency caesarean section, which may suggest a sample bias in terms of access to birth review services. However, similar majorities within the sample's demographic characteristics were found in the characteristics of respondents in national maternity surveys [40].

As there was no control group in this study, we do not know the impact of time, and therefore it could be that changes were a consequence of natural resolution. A control group would also allow to control for other effects such as placebo effects. However, when exploring the associations between duration after birth and birth review, there were no significant associations, suggesting that regardless of when the birth review was accessed, outcome variables across the study were not influenced by time elapsed. Future research could utilise a cluster-randomised controlled design to compare services where women have access to a birth review to a control group where services do not offer birth reviews to those within their care to investigate between-group differences.

Clinical implications

The prevalence of birth trauma was high across the sample (80 %), with previous earlier estimates across research indicating an incidence of traumatic birth from 20 to 69 percent [41,42]. This finding indicated, therefore, that women who access a birth review appointment are more likely to be those who have had a negative birth experience. Women accessing a birth review were those who had perceived their birth as traumatic, and were therefore at an increased risk of experiencing postpartum mental health difficulties. The five-step model for listening to women after childbirth, in which midwives are trained to support exploration of the birth experience, clarify meaning, and explain the rationale behind clinical decisions made during labour is a promising approach to care [18]. Following the NHS England implementation plan, there has been a rapid development of maternal mental health services (MMHS), which bring together maternity and psychology services to support women experiencing mental health problems as a result of loss or trauma following their maternity experience [43]. Currently, listening services are frequently provided across the UK in an unspecified way, without supporting evidence [9]. Therefore, in the absence of higher-quality evidence, healthcare organisations may wish in the interim to utilise the evidence presented in this paper to replicate this approach as introduced in BiM.

The timing regarding when a birth review is accessed postnatally did not significantly impact its effectiveness in this study. Therefore, birth reviews could be established within a pathway where women have autonomy over when they access the service and, in turn, promoting individualised care.

Conclusion

Attendance at a birth review utilising the five-step model to listening to women after childbirth, with midwives trained and supported by clinical psychologists, may have a positive impact on women's perceptions of the childbirth experience, perceptions of birth as traumatic, post-traumatic stress symptoms, and trauma-related shame, demonstrating its potential value in postnatal maternity care. However, no evidence was found for changes in self-compassion, apart from significantly higher levels of self-kindness. Psychological flexibility was also not found to predict outcomes. The potentially positive effects of the specially-structured birth review may therefore suggest that if this

model was adopted more widely, this might reduce the need for referral to maternal mental health services for PTSD or other psychological distress such as shame following negative birth experiences. However, randomised controlled trials are needed to assess the impact of birth reviews with a more robust design.

Ethical approval

The study was approved by the West Midlands - South Birmingham Research Ethics Committee (IRAS ID: 321964) on the 08/02/2023. Informed consent was obtained from all women to participate in the study. All methods were carried out in accordance with relevant guidelines and regulations.

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CRediT authorship contribution statement

Lucy Jones: Conceptualization, Methodology, Resources, Formal analysis, Investigation, Data curation, Writing – Original Draft, Writing – Review & Editing, Visualization, Project Administration. **Emma Williamson:** Conceptualization, Methodology, Resources, Writing – Review & Editing, Supervision. **Hannah Twiddy:** Conceptualization, Methodology, Writing – Original Draft, Writing – Review & Editing, Supervision. **Charlotte Krahé:** Methodology, Formal analysis, Writing – Original Draft, Writing – Review & Editing, Supervision. **Ali Brodrick:** Conceptualization, Resources, Writing – Review & Editing. **Pauline Slade:** Conceptualization, Methodology, Formal analysis, Data curation, Writing – Original Draft, Writing – Review & Editing, Visualization, Supervision.

Author declaration

The authors declare:

- that the article is the author(s) original work
- the article has not received prior publication and is not under consideration for publication elsewhere
- that all authors have seen and approved the manuscript being submitted
- the author(s) abide by the copyright terms and conditions of Elsevier and the Australian College of Midwives

Declaration of Generative AI and AI-assisted technologies in the writing process

AI was not used in the preparation of this work.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.wombi.2025.102110.

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