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# Prevalence of Birth Trauma and Childbirth-Related Post-Traumatic Stress Disorder in UK Women: Results from the International Survey of Childbirth-Related Trauma

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## ABSTRACT

This study examined the prevalence of CBPTSD across the UK using the INTERSECT survey. Women (N=339) from 8 hospitals in England, Wales, and Scotland completed the survey 6–12 weeks postpartum. Results show 20.1% met DSM-5 Criterion A for a traumatic birth; of these, 5.9% met full CB-PTSD criteria, and 5% of these women had CB-PTSD with dissociative symptoms. CB-PTSD rates were highest in Scotland (15.8%) compared to England (4.5%) and Wales (5.0%). These rates exceed previous UK estimates. Differences across nations were not fully explained by demographics or birth factors, highlighting the need for further research.

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PTSD; birth trauma;  
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## Introduction

Childbirth is generally seen as a positive event in most cultures; however, research suggests that between 20 and 40% of women will find childbirth psychologically traumatic (Alcorn et al., 2010; Ayers et al., 2009; Creedy et al., 2000; Soet et al., 2003). A traumatic birth experience refers to “a woman’s experience of interactions and/or events directly related to childbirth that caused overwhelming distressing emotions and reactions, leading to short and/or long-term negative impacts on a woman’s health and wellbeing” (Leinweber et al., 2022, p. 691). A proportion of women who experience a traumatic birth, will go on to develop post-traumatic stress disorder (PTSD) following childbirth (Childbirth-related PTSD; CB-PTSD). Meta-analyses suggest CB-PTSD affects approximately 3.1 to 4.7% of women (Grekin & O’Hara, 2014; Heyne et al., 2022; Osório & Borges, 2024; Yildiz et al., 2017). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), a traumatic event is one in which people directly experience, witness or learn about an event where there was actual or threatened death, serious injury or sexual violence. PTSD is a trauma and stress related disorder characterized by re-experiencing symptoms such as flashbacks, avoidance of factors related to the event, negative mood and cognition and hyperarousal (DSM-5, American Psychiatric Association, 2013).

Prevalence of CB-PTSD appears to vary across countries (Adewuya et al., 2006; Bingol & Bal, 2020; Dikmen-Yildiz et al., 2017; Ghanbari-Homayi et al., 2019; Modarres et al., 2012) with a recent study of 31 countries reporting that prevalence ranged from 1 to 36% (Ayers et al., *Forthcoming*). This could be due to a wide variety of factors such as methodological differences, or differences in birth settings and maternity care, which may influence CB-PTSD. The prevalence of CB-PTSD in

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England appears to be relatively low, with studies finding a prevalence of between 2 and 3%. For example, a cross-sectional population-based survey of 16,000 women in England (Harrison et al., 2021), and a survey recruiting a community sample of women in England (Ayers et al., 2009), both reported a prevalence of 2.5%. Similarly, in a sample of women recruited from a large hospital in London, the prevalence of CB-PTSD was 2.8% (Ayers & Pickering, 2001).

The lower prevalence identified in England may be related to birth settings. In the England most women have free access to maternity care and antenatal care is usually carried out by midwives. Births are usually attended by midwives and most births (84%) take place in hospital (Office for National Statistics, 2021), with far less women giving birth in midwifery-led units (14%) (Walsh et al., 2018) or at home (2%) (Office for National Statistics, 2021).

However, sampling method is also likely to be a key factor in the prevalence of birth-related PTSD, as one study found a prevalence rate for CB-PTSD of 21% for women who were recruited online (Ayers et al., 2009). Furthermore, some of the previous studies of prevalence of CB-PTSD in the UK used stringent inclusion criteria, such as not including women who experienced perinatal loss (Harrison et al., 2021) or an elective cesarean section (Ayers et al., 2009), which may have affected the prevalence rates identified. In addition, previous studies focus on women living in England, thus are unlikely to provide an accurate representation of prevalence of CB-PTSD for the UK as a whole which comprises four devolved nations (England, Wales, Scotland and Northern Ireland).

There may be differences between devolved nations, due to differences in the funding structures and policies between the health systems in different nations. For example, in England, the NHS funds commissioners to contract providers of care, whereas health services in Wales and Scotland are organized in Health Boards that are directly responsible to the devolved governments (MS Trust, 2022). Furthermore, in previous years, spending per head was higher in Scotland and Northern Ireland, compared to England and Wales (Bevan et al., 2014).

The health of the population in each nation may also be important. For example, maternal age and weight impacts the risk status of women, and therefore recommended birth plans such as induction of labor (National Institute for Health and Care Research, 2023; Royal College of Obstetricians and Gynaecologists, 2018; Royal College of Obstetricians and Gynaecologists, 2013), which can in turn increase the risk of emergency cesarean (Butler et al., 2024; Hu et al., 2024) a known risk factor for CB-PTSD (Ayers et al., 2016; Kress et al., 2021). Maternal obesity is higher in Wales (32.0%; Welsh Government, 2023) compared to Scotland (27.7%; Public Health Scotland, 2024), Northern Ireland (27.4%; Public Health Intelligence Unit, 2023) and England (26.2%; UK Government, 2024), and the percentage of mothers over 40 is higher in Northern Ireland (4.6%; Public Health Intelligence Unit, 2023) compared to Scotland (4.0%; Public Health Scotland, 2022) and England (3.97%; NHS Digital, 2024). Furthermore, research shows different rates of emergency cesarean birth by devolved nation with the highest found in England (21.94%; Statista, 2023), Scotland (21.7%; (Public Health Scotland, 2024) and Wales (21.0%; Welsh Government, 2023), compared to Northern Ireland (16.6%; Public Health Intelligence Unit, 2023).

Overall there is some evidence to suggest that the prevalence of CB-PTSD may differ across the devolved nations, however this has yet to be examined. Therefore, the aim of this study was to examine the prevalence of birth trauma and CB-PTSD in England, Wales, Scotland and Northern Ireland. This research was part of an international study of CB-PTSD called INTERSECT (International Survey of Childbirth Related Trauma), which aims to understand how many women experience traumatic birth and CB-PTSD on a global level (Ayers et al., 2023).

## Method

### Design

A cross-sectional study of CB-PTSD and birth trauma, in women 6–12 weeks postpartum from devolved nations in the UK.

## Sample

Women were recruited through hospitals in England, Wales and Scotland. Northern Ireland was also part of the research and gained the necessary approvals but did not recruit any participants. Three hospitals based in London represent the English sample, three hospitals based in Glasgow represent the Scottish sample, and the Welsh sample is made up of women from a hospital in Powys and a hospital in Swansea. Recruitment sites for England and Scotland were all in urban locations, whereas one of the sites in Wales was urban, and one was rural. Women were eligible to take part if they were aged 16 (the legal age for consent in research studies in the UK; NHS Health Research Authority, 2024) or over, had a baby in the previous 6–12 weeks, and were able to provide informed consent. Women were not excluded based on their type of birth or maternal or infant outcomes (including infant death).

## Measures

The INTERSECT survey includes nine core measures with a total of 60 questions including questions about pregnancy and birth, birth satisfaction, birth trauma, CB-PTSD, depression and trauma history.

*Birth trauma* was assessed using the DSM-5 Criterion A questions: During the birth did you believe you would be injured? Did you believe you would die? Did you believe your baby would be injured? Did you believe your baby would die?

*CB-PTSD* was measured using the City Birth Trauma Scale (Ayers et al., 2018b) (City BiTS), which consists of 29 questions which map onto DSM-5 diagnostic criteria. Symptoms are rated for frequency over the last week and scored on a scale ranging from 0 (“not at all”) to 3 (“5 or more times”). Total symptom scores for Criteria B to E range from 0 to 60. A higher score indicates greater symptoms of CB-PTSD. Diagnostic criterion A items are scored on a yes/no scale. Distress, disability and potential physical causes are rated as yes/no/maybe. To meet DSM-5 diagnostic criteria for CB-PTSD, participants have to report a minimum of one re-experiencing symptom, one avoidance symptom, two symptoms of negative cognitions and mood, and two hyperarousal symptoms (i.e., a score of 1 or more). Distress and impairment were rated as yes/no/sometimes and coded as present if participants stated yes or sometimes. Duration criteria were that symptoms had to be experienced for at least one month. Factor analysis of the measure has consistently shown it to be made of two factors: Birth-Related Symptoms and General Symptoms (Ayers et al., 2018b; Handzelalts et al., 2018; Nakić Radoš et al., 2020). The scale has good reliability ( $\alpha=0.92$ ; Ayers et al., 2018b), convergent, divergent and discriminant validity (Fameli et al., 2023). The reliability in this sample was good ( $\alpha=0.92$ ).

*Previous trauma.* This was measured using the Post-Traumatic Stress Diagnostic Scale (Foa et al., 1997) traumatic stressor checklist. This provided a list of previous traumatic events that women may have experienced, such as life threatening illness, physical assault, sexual assault and child abuse.

*Demographic and Obstetric Information.* Demographic and obstetric information comprised basic demographic (age, ethnicity, relationship status, living area (e.g., City, Town or Rural) and obstetric details (number of children, gestation, time since birth, type of birth (i.e., vaginal, assisted vaginal, emergency or elective cesarean), and maternal/infant complications).

## Procedure

Women were recruited by research and/or clinical midwives either during antenatal appointments, directly after birth, or during postnatal appointments. Women's details were transferred to the research team who then contacted women with the survey, six weeks after birth. The survey could be completed online, via survey host Qualtrics, or using pen and paper. Information sheets and consent forms were available on the online survey link or were sent to women who completed the survey by pen and paper. Women were reminded up to a maximum of 3 times to complete the survey. Women who completed the survey were entered into a prize draw to win one of four £50 gift vouchers.

## Data Analysis

Analyses were conducted using the statistical software SPSS (IBM Corp, 2023). Descriptive statistics were calculated for all demographic, birth-related and infant-related variables.

Diagnoses according to the City BiTS (Ayers et al., 2018b) were calculated according to the DSM-5 criteria (American Psychiatric Association, 2013), based on guidance provided by the City BiTS scoring information (Ayers et al., 2018a). The sums of subscales B–E were also calculated to give total symptom scores for re-experiencing, avoidance, negative cognitions and mood, and hyperarousal. Responses to stressor criteria were calculated, as were responses to questions about the onset of symptoms, duration, distress and impairment.

Non-parametric tests were carried out to identify if there were significant differences between devolved nations in terms of demographic and birth-related variables, as well as CB-PTSD diagnoses. Post-hoc tests with Bonferroni correction were also carried out to identify which devolved nations were driving any significant differences. Variables where statistically significant differences between devolved nations were found were put into a hierarchical logistic regression model, with CB-PTSD as the outcome variable. This was done in order to identify whether differences in CB-PTSD diagnoses between devolved nations were due to sample (block 1) and birth characteristics (block 2), as opposed to the devolved nation alone (block 3).

## Results

### Sample

Midwives sent a total of 1,342 women's details to the research team (England:  $n=1023$ ; Wales:  $n=220$ ; Scotland:  $n=99$ ; Northern Ireland:  $n=0$ ). Surveys were sent to 1,275 women (95.00%) (England:  $n=962$ ; Wales:  $n=217$ ; Scotland:  $n=96$ ). Reasons for not sending surveys included: women's details being sent by midwives to the research team 12 weeks after women had given birth ( $N=51$ , England:  $n=45$ ; Wales:  $n=3$ ; Scotland:  $n=3$ ); contact details not working (England:  $n=14$ ); women not meeting inclusion criteria (England:  $n=2$ ). Thirty-eight women withdrew from the study before completing the survey (England:  $n=33$ ; Wales:  $n=3$ ; Scotland:  $n=2$ ). A total of 494 women started the survey (38.75%), and 366 (28.71%) completed it. The final sample included 339 (26.59%) women who completed the survey within the correct time frame.

Out of the final sample, the majority of women completed the survey at 6 weeks postpartum (22.4%), and only 2.7% completed the survey toward 12 weeks after birth. Most women had given birth in England ( $n=198$ ), followed by Wales ( $n=100$ ), and Scotland ( $n=38$ ). Women were aged 32.12 on average ( $SD = 5.32$ ), and most women were White (56.0%) and born in the UK (72.4%). The majority of women had completed higher education (77.1%), lived in a household with an average income (55.8%) and were married (61.6%). Most women had a singleton pregnancy (98.5%). The majority of women (76.1%) gave birth at 37–40 weeks gestation (range of 33–43 weeks). The largest proportion of babies were born by unassisted vaginal birth (48.1%). Most women gave birth in hospital (85.0%), attended by midwives (68.4%) and most women gave birth where they had planned to give birth (82.0%). Half of women (50.1%) and most infants (82.3%) did not experience complications at birth (see Table 1 for more demographic details).

### Demographic, Birth-Related Factors and Infant-Related Factors by Devolved Nation

An analysis of differences in demographic factors between devolved nations was carried out. Women in England were older compared to women in Wales ( $F=3.661$ ,  $p = .027$ ). They were also more likely to be earning more than the average population ( $X^2(4) = 12.31$ ,  $p = .015$ ), and more likely to be married ( $X^2(8) = 27.83$ ,  $p < .001$ ). Compared to women living in Wales and Scotland, women living in England were less likely to be White ( $X^2(4) = 47.88$ ,  $p < .001$ ), less likely to be living in their country of birth ( $X^2(2) = 63.24$ ,  $p < .001$ ), and more likely to live in urban areas ( $X^2(4) = 182.01$ ,  $p < .001$ ).



**Table 1.** Sample characteristics by devolved nation.

	England	Wales	Scotland	
	M (SD)	M (SD)	M (SD)	<i>p</i> value, significance
<b>Age</b>	32.73 (5.32) <sup>a</sup>	30.99 (5.42) <sup>b</sup>	31.95 (4.61)	.027
	N (%)	N (%)	N (%)	
<b>Ethnicity</b>				<.001
Majority	88 (44.4) <sup>a</sup>	69 (69.0) <sup>b</sup>	31 (81.6) <sup>b</sup>	
Minority	61 (30.8) <sup>a</sup>	2 (2.0) <sup>b</sup>	2 (5.3) <sup>b</sup>	
Not sure	49 (24.7)	29 (29.0)	5 (12.2)	
<b>Country of birth</b>				<.001
No	87 (43.7) <sup>a</sup>	4 (4.0) <sup>b</sup>	2 (5.3) <sup>b</sup>	
Yes	112 (56.3) <sup>a</sup>	96 (96.0) <sup>b</sup>	36 (94.7) <sup>b</sup>	
<b>Living area</b>				<.001
City, urban	164 (82.8) <sup>a</sup>	13 (13.0) <sup>b</sup>	10 (26.3) <sup>b</sup>	
Town, sub-urban	30 (15.2) <sup>a</sup>	35 (35.0) <sup>b</sup>	22 (57.9) <sup>c</sup>	
Rural	4 (2.0) <sup>a</sup>	52 (52.0) <sup>b</sup>	6 (15.8) <sup>c</sup>	
<b>Education</b>				.274
None	3 (1.5)	4 (4.0)	1 (2.6)	
Primary	4 (2.0)	1 (1.0)		
Secondary	35 (21.2)	25 (25.0)	4 (10.5)	
Higher	156 (78.8)	70 (70.0)	33 (86.8)	
<b>Income</b>				.015
Below average	19 (9.6)	11 (11.0)	4 (10.5)	
Average	97 (49.2) <sup>a</sup>	68 (68.0) <sup>b</sup>	22 (57.9) <sup>c</sup>	
Above average	81 (41.1) <sup>a</sup>	21 (21.0) <sup>b</sup>	12 (31.6) <sup>c</sup>	
<b>Relationship status</b>				<.001
Married or civil partnership	139 (70.2) <sup>a</sup>	44 (44.0) <sup>b</sup>	24 (63.2) <sup>c</sup>	
Living with partner	33 (16.7) <sup>a</sup>	43 (43.0) <sup>b</sup>	12 (31.6) <sup>c</sup>	
In a relationship, but not living together	10 (5.1)	5 (5.0)	1 (2.6)	
Single	15 (7.6)	8 (8.0)	1 (2.6)	
Separated/divorced	1 (0.5)	0 (0.0)	0 (0.0)	
<b>Previous mental health diagnosis</b>				.004
No	164 (81.6) <sup>a</sup>	78 (78.0) <sup>a</sup>	21 (55.3) <sup>b</sup>	
Don't know	3 (1.5)	1 (1.0)	0 (0.0)	
Yes	34 (16.9) <sup>a</sup>	21 (21.0) <sup>a</sup>	17 (44.7) <sup>b</sup>	
<b>Current mental health problems</b>				<.001
No	177 (88.1) <sup>a</sup>	82 (82.0) <sup>b</sup>	24 (63.2) <sup>c</sup>	
Don't know	13 (6.5)	6 (6.0)	3 (7.9)	
Yes	11 (5.5) <sup>a</sup>	12 (12.0) <sup>b</sup>	11 (28.9) <sup>c</sup>	
<b>Previous trauma</b>				<.001
No	144 (71.6) <sup>a</sup>	63 (64.3) <sup>a</sup>	14 (37.8) <sup>b</sup>	
Yes	54 (27.3) <sup>a</sup>	35 (35.7) <sup>a</sup>	23 (62.2) <sup>b</sup>	
<b>Birth method</b>				<.001
Vaginal	92 (45.8) <sup>a</sup>	63 (63.0) <sup>b</sup>	8 (21.1) <sup>c</sup>	
Assisted vaginal	26 (12.9)	6 (6.0)	5 (13.2)	
Emergency cesarean	56 (27.9) <sup>a</sup>	12 (12.0) <sup>b</sup>	12 (31.6) <sup>a</sup>	
Elective cesarean	27 (13.4) <sup>a</sup>	19 (19.0) <sup>b</sup>	13 (34.2) <sup>c</sup>	
<b>Place of birth</b>				<.001
Labor ward	179 (89.1) <sup>a</sup>	72 (72.0) <sup>b</sup>	37 (97.4) <sup>a</sup>	
Birth center at hospital	21 (10.4)	9 (9.0)	1 (2.6)	
Free standing birth center	0 (0.0) <sup>a</sup>	7 (7.0) <sup>b</sup>	0 (0.0) <sup>a</sup>	
Home	1 (0.5) <sup>a</sup>	11 (11.0) <sup>b</sup>	0 (0.0) <sup>a</sup>	
Transport	0 (0.0)	1 (1.0)	0 (0.0)	
<b>Main health professional during birth</b>				.018
Obstetrician	29 (14.4) <sup>a</sup>	12 (12.1) <sup>a</sup>	12 (31.6) <sup>b</sup>	
Professional midwife	171 (85.1)	84 (84.8)	26 (68.4)	
Community health worker or nurse	0 (0.0)	2 (2.0)	0 (0.0)	
Other	1 (0.5)	1 (1.1)	0 (0.0)	

Note. By row, where superscript letters match, there is not a significant difference between these columns.

The women who lived in Scotland were more likely to have a previous mental health diagnosis ( $X^2(4) = 15.15$ ,  $p = .004$ ) and have experienced previous trauma ( $X^2(2) = 17.270$ ,  $p < .001$ ) compared to women in England and Wales. The women living in Scotland were also more likely to have a current mental health diagnosis ( $X^2(4) = 20.67$ ,  $p < .001$ ) compared to the women living in England.

Mode of birth differed by devolved nation ( $X^2(8) = 46.64$ ,  $p < .001$ ). Women in Wales were less likely to have an emergency cesarean birth (12.0%) compared to women in England (27.9%) and



Scotland (31.6%). There were significant differences across all devolved nations in terms of vaginal births, with Wales having the highest rate (63.0%) and Scotland with the lowest rate (21.1%). Furthermore, women in Scotland (34.2%) were more likely than women in England (13.4%) to give birth via an elective cesarean section. There was also a significant difference in terms of place of birth ( $X^2(6) = 30.174, p < .001$ ). Women in Wales were less likely to give birth in a labor ward, and more likely to give birth in a freestanding birth center or at home compared to women in England and Scotland. Women in Scotland were also more likely to be looked after by an obstetrician (31.6%) compared to women in England (14.4%) and Wales (13.0%) ( $X^2(8) = 18.44, p = .018$ ). See [Table 1](#) for more details.

### Birth Trauma

Sixty-eight (20.1%) of women in this sample met criterion A for a traumatic birth (see [Table 2](#)).

### Birth Trauma and Devolved Nations

There was a near significant differences ( $p = .057$ ) between devolved nations in terms of birth trauma as measured by all four DSM-5 Criterion A questions. However, there was a significant difference between devolved nations for the question relating to women believing their baby would be seriously injured. Significantly fewer women in Wales (1.0%) believed this to be the case compared to England (10.9%) and Scotland (13.2%) (see [Table 2](#)).

### Diagnoses of PTSD

According to DSM-5 criteria, 20 out of 339 (5.9%, 95% CI: .04–.09) women met criteria for CB-PTSD and 17 (5.0%, 95% CI: .03–0.08) had CB-PTSD with dissociative symptoms. Most women had been experiencing symptoms for 1–3 months (31.9%) and 10.1% of participants said their symptoms caused them a lot of distress (see [Table 2](#)).

**Table 2.** PTSD stressor and criteria by devolved nation.

	England	Wales	Scotland		Total
	Yes N (%)	Yes N (%)	Yes N (%)	<i>p</i>	Yes N (%)
During the birth did you believe you would be injured?	31 (15.4)	8 (8.0)	6 (15.8)	.180	45 (13.3)
Did you believe you would die?	20 (10)	4 (4.0)	4 (10.5)	.182	28 (8.3)
Did you believe your baby would be injured?	22 (10.9)a	1 (1.0)b	5 (13.2)a	.007	28 (8.3)
Did you believe your baby would die?	16 (8.0)	4 (4.0)	4 (10.5)	.307	24 (7.1)
Criteria A (stressors)	47 (23.4)	12 (12.0)	9 (23.7)	.057	68 (20.1)
Criterion B (re-experiencing)	128 (63.7)a	44 (44.0)b	26 (68.4)a	.002	198 (58.4)
Criterion C (avoidance)	57 (28.4)a	17 (17.0)b	14 (36.8)c	.028	88 (26.0)
Criterion D (negative cognitions and mood)	92 (46.0)a	49 (49.0)b	26 (68.4)c	.040	167 (49.4)
Criterion E (hyperarousal)	95 (47.3)a	55 (55.6)b	28 (73.7)c	.009	178 (52.7)
Criterion Dissociation	40 (19.9)a	25 (25.0)b	16 (42.1)c	.013	81 (23.9)
Criterion F (duration)	65 (32.3)	45 (45.0)	16 (42.1)	.081	126 (37.2)
Criterion G (distress or impairment)	82 (41.0)	48 (49.0)	23 (60.5)	.062	153 (45.5)
Exclusion criteria (symptoms due to drugs, medication, alcohol, illness)	5 (2.5)	3 (3.0)	2 (5.3)	.654	10 (3.0)
DSM-5 PTSD	9 (4.5)	5 (5.0)	6 (15.8)	.023	20 (5.9)
DSM-5 PTSD with dissociative symptoms	7 (3.5)	5 (5.0)	5 (13.2)	.043	17 (5.1)

Note. By row, where superscript letters match, there is not a significant difference between these columns.

### Diagnoses of CB-PTSD by Devolved Nation

There was a significant difference between diagnoses of CB-PTSD ( $X^2(2) = 7.57, p = .023$ ), and CB-PTSD diagnoses with dissociative symptoms ( $X^2(2) = 6.28, p = .043$ ), depending on which devolved nation women gave birth in. A higher percentage of women had CB-PTSD diagnoses in Scotland (15.8%, 95% CI: .06–.31), compared to England (4.5%, 95% CI: .02–.09) and Wales (5.0%, 95% CI: .02–.11). The same pattern was found for CB-PTSD with dissociative symptoms (Scotland: 13.2%, 95% CI: .04–.28; England: 3.5%, 95% CI: .01–.07; Wales: 5.0%, 95% CI: .02–.11).

### Multivariate Analysis on Difference between Devolved Nations

To identify whether differences in CB-PTSD diagnoses between devolved nations were due to sample and birth characteristics, a hierarchical logistic regression was run to control for statistically significant demographic factors (age, ethnicity, country of birth, living area, income, relationship status, previous mental health problem, current mental health problem, previous trauma) added into block 1, and birth-related factors (birth method, place of birth, and main health professional) added to block 2. Block 3 was the devolved nation women gave birth in (see Table 3).

Block 1 of demographic factors was not statistically significant ( $X^2(17) = 21.243, p = .216$ ) and explained only 6.3 (Cox & Snell)–17.0% (Nagelkerke) of the variance. Variables that significantly contributed to the model were having a previous diagnosis of a mental health problem ( $B = -2.096, Beta = .123, p = .041$ ), women being unsure if they have a current mental health problem ( $B = 2.353, Beta = 10.515, p = .007$ ), or women having a current mental health problem ( $B = 2.893, Beta = 18.041, p = .014$ ).

Block 2 adding birth-related factors was statistically significant ( $X^2(11) = 31.505, p < .001$ ) and explained between 14.8 (Cox & Snell) – 40.3% (Nagelkerke) of the variance. Significant predictors in this block were age ( $B = -.137, Beta = .972, p = .048$ ), women not sure if they have a current mental health problem ( $B = 3.127, Beta = 22.80, p = .005$ ) having an emergency cesarean birth ( $B = 2.089, Beta = 8.077, p = .006$ ).

Block 3 adding devolved nation was also significant ( $X^2(2) = 6.480, p = .039$ ), and explained between 16.5 (Cox & Snell) – 44.8% (Nagelkerke) of the variance. Significant predictors in the final model were age ( $B = -.164, Beta = .848, p = .028$ ), women not being sure if they have a current mental health problem ( $B = 3.327, Beta = 27.864, p = .002$ ); an emergency cesarean birth ( $B = 2.316, Beta = 10.139, p = .004$ ) and giving birth in Scotland ( $B = 2.754, Beta = 15.699, p = .016$ ) (see Table 3).

**Table 3.** Regression model of predictors of CB-PTSD.

Predictor	Wald	<i>p</i>	B	Beta
Step 1				
Age	4.858	<b>.028</b>	–.164	.848
Ethnicity	5.803	.055		
Country of birth	.838	.360	–.775	.461
Living area (city, town, rural)	1.356	.508		
Household income	.717	.699		
Relationship status	3.113	.539		
Previous mental health difficulty	0.00	.999		
Current mental health difficulty	9.143	.010		
Don't know	9.143	<b>.002</b>	3.327	27.86
Yes	0.00	.995	19.061	189633013
Previous trauma	.556	.456	–.657	.519
Step 2				
Birth method	11.786	.008		
Assisted vaginal	.005	.941	–.089	.914
Emergency cesarean	8.262	<b>.004</b>	2.316	10.139
Elective cesarean	.732	.392	–1.281	.278
Where did you have your baby?	.110	.999		
Who provided most of your care?	.723	.948		
Step 3				
Devolved nation	6.155	.046		
Wales	1.435	.231	1.365	3.918
Scotland	5.842	<b>.016</b>	2.754	15.699

## Discussion

### Summary of Key Findings

The aim of this study was to examine the prevalence of birth trauma and CB-PTSD in a sample of women from England, Wales, Scotland and Northern Ireland. Northern Ireland did not recruit any women therefore this study was not able to assess prevalence in this devolved nation. Results showed that 20.1% of women met stressor criteria A for a traumatic birth. Results also showed that 5.9% of women met criteria for CB-PTSD and 5% of women also met criteria for CB-PTSD with dissociative symptoms. A higher percentage of women had CB-PTSD diagnoses in Scotland (15.8%), compared to England (4.5%) and Wales (5.0%). The same pattern was found for CB-PTSD with dissociative symptoms (Scotland: 13.2%; England: 3.5%; Wales: 5.0%). The regression model showed that the difference between devolved nations was not completely accounted for by other variables, so it is not clear what is driving this relationship.

### Interpretation of Results

The results showed that nearly all women with CB-PTSD diagnoses had CB-PTSD with dissociative symptoms. In a meta-analysis about PTSD prevalence, it was found that approximately 45.5% of people with PTSD diagnoses also have dissociative symptoms (White et al., 2022). In our sample, most (17/20) women who had CB-PTSD also had dissociative symptoms. A review of the literature of PTSD and PTSD with dissociative symptoms in other populations found that dissociative PTSD tends to be associated with more complex trauma and higher levels of comorbid psychiatric disorders. It is important to consider the fact that, the questions that measure dissociative symptoms ask about feelings of being detached or in a dream and feeling as if things are distorted and not real. These symptoms are common in tiredness and sleep deprivation (Selvi et al., 2015; Waters et al., 2018), therefore it could be the context of being a new parent that leads to the dissociative symptoms, rather than the trauma itself. More research is needed to ascertain the reasons behind the higher rates of PTSD with dissociative symptoms in this sample than in previous research.

The prevalence of CB-PTSD of 5.9% across the UK, and 4.5% for women in England, is higher than in previous studies of CB-PTSD carried out in England, which identified a prevalence of between 2.5 and 2.8% (Ayers et al., 2009; Ayers & Pickering, 2001; Harrison et al., 2021). One possible reason for this could be the age of the previous data, for example two of the studies were published in the 2000s (Ayers et al., 2009; Ayers & Pickering, 2001) and the population-based survey used data that was collected in 2020 (Harrison et al., 2021). Although only 5 years ago, there may have been a significant deterioration in the quality of maternity services over the past five years. For example, according to the Care Quality Commission, who rate the standards of healthcare in England, in 2023, 18% of maternity services were rated as *inadequate* and 39% were rated as *requiring improvement* (Care Quality Commission, 2023). This is considerably poorer than in 2019/2020 when no maternity services were rated as *inadequate* (Care Quality Commission, 2017). These changes in the quality of care may be associated with increased CB-PTSD through known risk factors such as less support, and/or increased interventions during labor and birth (Ayers et al., 2016; Harris & Ayers, 2012; NHS Digital, 2020, 2024).

It is likely that this is due to reduced staffing levels, with midwifery staffing at crisis point (Royal College of Midwives, 2024). For example, a recent report on maternity services in Scotland reported that half of the health professionals who responded felt that there was rarely safe staffing levels in their workplace (Royal College of Midwives, 2022b). This may have led to poorer care which has been previously associated with CB-PTSD (Harris & Ayers, 2012). Furthermore, there are similar reports for maternity care in England, citing the NHS being unable to retain older, experienced staff, a national midwifery shortage (Royal College of Midwives, 2023) and 58.3% of midwives reporting that they often or always feel burnt out because of their work (Royal College of Midwives, 2022a).

Possibly the most notable findings relate to the significant differences in CB-PTSD across the devolved nations, but it is not clear what this finding is due to. Differences between devolved nations could be due to differences in sample characteristics, obstetric intervention rates, or maternity care.

For example, the Scottish sample had higher rates of women with previous mental health difficulties, current mental health difficulties and previous trauma compared to England and Wales. These are all known risk factors for CB-PTSD (Ayers et al., 2016).

Another known risk factor for CB-PTSD is emergency cesarean section (Ayers et al., 2016; Kress et al., 2021). Emergency cesarean was a predictor of CB-PTSD in this sample and the cesarean section rate was high in the Scottish sample at 31.6%, which is significantly higher than WHO recommended rates for cesarean section (World Health Organization, 2015). However, the results also show that there was not a statistically significant difference between emergency cesarean section rates between England and Scotland, thus suggesting cesarean rates are not the only factor influencing higher CB-PTSD prevalence in Scotland.

It is also important to note that the relationship could be explained by confounding variables that were not examined in this study. Therefore, future research should look at CB-PTSD rates in a wider sample of women in Scotland and other devolved nations.

### **Strengths and Limitations**

This article has provided a prevalence rate of birth trauma and CB-PTSD in a community-based sample in the UK. The strengths of this paper are the recruitment method, which included recruiting women from eight hospitals across England, Wales and Scotland. Another strength is that this article is part of the INTERSECT study where multiple different countries used the same validated measures, meaning the results from this paper can be compared with other countries on an international level. However, there are some limitations of this research. One is the significant differences in the English, Welsh and Scottish sample. Despite controlling for demographic variables in the analyses, age and current mental health difficulties still remained a significant predictor of CB-PTSD, therefore it is not possible to fully disentangle whether the findings related to CB-PTSD and devolved nations were due to differences in sampling, or differences in maternity outcomes and care in devolved nations. Furthermore, the response rate for this research was low (38.75% of women started the survey), the sample from Scotland was small ( $n=38$ ), and no one was recruited from Northern Ireland which may have impacted the findings. However, 38.75% is a similar response rate to other UK surveys about maternity care (Care Quality Commission, 2024). Furthermore, we did not exclude women who had experienced perinatal loss. Whilst complex grief and PTSD are distinct conditions, they are often co-morbid (Simon et al., 2020), so this may have acted as a confounding factor with regards to CB-PTSD diagnostic criteria.

### **Conclusion**

Overall, this article found a CB-PTSD prevalence of 20.1% of traumatic births and 5.9% of CB-PTSD in a community-based sample of women in the UK. Results from this study provide an additional step in establishing the disease burden of traumatic birth and CB-PTSD across the UK. Results also show there are significant differences in CB-PTSD across devolved nations, not fully explained by demographic or birth-related factors. Therefore, future research is urgently required to understand the reasons the differences in CB-PTSD prevalence rates across devolved nations.

### **Author contributions**

CRediT: **Rebecca Webb**: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Writing – original draft, Writing – review & editing; **Nazihah Uddin**: Investigation, Project administration, Resources, Writing – review & editing; **Georgina Constantinou**: Conceptualization, Methodology, Project administration, Resources, Writing – review & editing; **Helen Cheyne**: Writing – review & editing; **Susan Ayers**: Conceptualization, Methodology, Supervision, Writing – review & editing.

### **Disclosure Statement**

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

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## Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to participants agreeing to their anonymous data being stored on a secure server, and that researchers can request permission to carry out further analyses on these data in the future.

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