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THE CHILDBIRTH EXPERIENCE: A SYSTEMATIC REVIEW OF PREDICTORS AND OUTCOMES

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Problem: birth is often explored from either a positive or traumatic perspective, whereas the continuum of childbirth experiences (positive, neutral and traumatic birth experiences) is yet to be considered.

What is already known: traumatic and positive birth can be influenced by various factors such as perception of control during labour and the perceived support of the midwife. The influences of a traumatic birth are also well-known including depression, anxiety and post-traumatic stress disorder.

What this paper adds:

1. There is a focus on the impact and influences of traumatic birth, and further consideration to positive and neutral birth is needed.
2. When exploring birth experiences, the focus is on pathogenic factors such as ill-health, with less understanding of how salutogenic factors such as mental wellbeing impacts birth experiences.
3. The influencing factors for post-traumatic stress disorder and negative birth experiences are not necessarily the same and thus these two different issues should be explored separately.

Abstract

Background

Birth is often viewed as a pathological event, consequently, there has been an increase in literature focusing on predictors, experience and implications of traumatic childbirth and childbirth-related posttraumatic stress. However, to fully understand childbirth experiences a salutogenic perspective is required. This enables an understanding of what facilitates a positive childbirth experience besides what places women at risk of experiencing traumatic childbirth.

Objective

To identify the psychosocial factors that could contribute to or be influenced by women's subjective accounts of childbirth.

Method

An in-depth literature search across four databases was undertaken. Quality appraisal based on internal and external validity was conducted and a combined numerical summary and categorical description were undertaken.

Findings

Nineteen papers were included in the review and the variables grouped into three categories. The variables relate to 'Measures of labour and birth experience' (discussing the impact of events and perceptions during labour and birth). The second category discusses how 'support and relationships' can potentially shape the birth experience or be altered by it and finally, 'Psychological variables: influence and impact' is examined extensively.

Discussion

The results of the review highlight significant contradictory evidence of what influences birth experiences. The findings confirm the dearth of available literature concerning positive birth experiences and most variables identified were pathogenic. This review suggests that such factors for PTSD may differ from those that influence birth experiences and should be examined separately. An enhanced understanding of the range of experiences is required to support women's rights in achieving a positive birth.

Key words: systematic review, childbirth experience, psychological trauma, women, positive birth

Introduction

Childbirth is considered to be a '*significant event of powerful psychological importance in a woman's life*' (Nichols, 1996, p.71). Humenick (2006) claimed that birth can represent a 'flow experience' which challenges women to grow and change in a life-expanding manner. According to Csikszentmihalyi, (1990) flow experiences can make individuals feel in control and masters of their fate, providing a sense of exhilaration and a deep sense of enjoyment that becomes a landmark memory for what a peak life experience could be. However, recent literature has identified that some women can experience childbirth as a distressing, traumatic event, leading to post-traumatic stress disorder (PTSD) onset (Creedy et al., 2000) and other psychological morbidities (Skari et al., 2002; Elmir et al., 2010; Anderson et al., 2012; Grekin & O'Hara, 2014; Fenech & Thomson, 2014; Ayers et al., 2016; Yildiz et al., 2017).

It has been suggested that between 20% and 48% of women experience a traumatic birth (Ayers et al., 2009), with 4% and 18.5% of women in the community (i.e. low risk) and 'at risk' (e.g. history of mental illness) populations respectively develop PTSD following childbirth (Yildiz et al., 2017). There is some evidence which suggests that risk factors for childbirth trauma relate to unexpected medical problems; including an emergency operative or assisted delivery (Waldenstrom et al., 2004), unmet expectations (O'Donovan et al., 2014), poor perceived control in labour (Goodman et al., 2004) and trait anxiety and a history of sexual abuse (Boorman et al., 2014). The risk factors of PTSD have been explored further. A meta-analysis including 50 papers that focuses on the aetiology of PTSD following childbirth, indicates that pre-birth vulnerability factors most strongly associated with PTSD were depression, fear of childbirth, complications during pregnancy, and a history of PTSD and counselling, as well as having an operative or negative birth, and lack of support and dissociation during birth (Ayers et al., 2016). Furthermore, following a traumatic birth, women can develop post-traumatic stress symptoms (PTSS, Creedy et al., 2000), experience suicidal thoughts (Howard et al., 2011) and depression (Bener et al.,

2012). A traumatic birth can also influence subsequent pregnancies and childbirth due to tokophobia (Hofberg & Brockington, 2000; Waldenstrom et al., 2004). PTSD has been associated with dysfunctional defence mechanisms (Fenech & Thomson, 2014), parenting stress, poor parent-child relationships (McDonald et al., 2011), and relationship problems with partners (Ayers et al., 2007) including sexual dysfunction (Ayers et al., 2006). Some authors (Zeanah et al, 1999 in Benoit, 2004) also report that women suffering from PTSD may witness behavioural problems and emotional maladjustment in children.

As is apparent from the literature cited in this introduction, research in this area predominantly focuses on the pathogenic aspects of childbirth (Elmir et al., 2010; Anderson et al., 2012; Grekin & O'Hara, 2014; Fenech & Thomson, 2014; Ayers et al., 2016; Yildiz et al., 2017). In contrast, to date, there has been only one review that focused on positive birth experience (Hill & Firth, 2018). However, there is some evidence from individual studies that empowerment and support from health professionals (Nillson et al., 2013), personal control (Goodman et al., 2004), positive characteristics of the attending midwife, support and a positive attitude from the partner (Tarkka, Paunonen & Laippala, 2000) are associated with a positive childbirth experience. Crowe and van Baeyer, (1989) also identified some pre-birth factors which enhance the birth experience, including childbirth and parenting knowledge attained from childbirth education classes, higher confidence and less anxiety. Positive birth can represent a 'peak' experience (Thomson, 2010) and as a result has been associated with high postnatal functioning (Michels et al., 2013), self-esteem (Lundgren, Karlsdottir & Bondar, 2009) and parenting self-efficacy (Bryanton et al., 2008). Despite this evidence, comprehensive insights into what constitutes a positive birth experience and the sequelae of such is poorly understood.

This lack of knowledge and understanding of what promotes health is to such an extent that childbirth is sometimes viewed as a pathological event (Davis & Walker, 2013). However, to fully understand childbirth, factors that promote positive experiences and risk factors for traumatic birth both need to be explored. Health needs to be explored systematically along the health continuum, which eliminates the distinct dichotomy of being in a state of health or disease. Similarly, to obtain a thorough understanding of childbirth experiences, negative childbirth cannot be explored by itself, but positive childbirth experiences require equal attention. This relates to Antonovsky's concept of salutogenesis in which he explained that by taking a salutogenic orientation and focusing on the origins of health, instead of disease and pathology alone, health professionals will be able to explore why individuals are located at the positive end of the health ease/dis-ease continuum or why they move towards the positive end of the continuum. It enables one to think in terms of factors which promote movement towards the healthy end of the continuum and opens the way for considering stressors which have positive health consequences (Antonovsky, 1987).

The salutogenic framework (Mittelmark et al., 2007) provides a useful lens to obtain a thorough understanding of women's subjective birth experiences. Thus, both positive and traumatic childbirth experiences need to be explored. This will create an understanding of what facilitates a positive childbirth experience (protective factors) and equally, an understanding of what places women at risk of experiencing traumatic childbirth (risk factors).

1.1 Aims and objectives

The review aimed to identify the psychosocial factors that could contribute to, or be influenced by women's subjective accounts of childbirth (i.e. positive, traumatic).

The objectives were:

1. To identify psychosocial variables which have been reported to predict women's perceptions (i.e. positive, traumatic) of childbirth
2. To identify which postnatal psychosocial variables have been shown to be influenced by women's perceptions of the birth experience

For this study, it was considered vital to include studies that examined psychosocial variables concerning PTSD since it is highly likely that women who develop PTSD following childbirth had a negative birth experience. For the purpose of this paper, childbirth includes any mode of delivery, i.e. vaginal, instrumental or surgical. While complications during childbirth such as instrumental birth were considered in this paper, only women with no pregnancy complications and a healthy foetus/infant were considered as it is recognised that women who experience a fetal or neonatal loss, are expecting a compromised infant or experience NICU admissions, and experience pregnancy complications are likely to suffer from psychological morbidities such as anxiety and depression (Georgsson Öhman et al., 2006; Kelley & Trinidad, 2012; Downe et al., 2013; Hsieh, Chao & Shiao, 2013) which can subsequently influence childbirth experiences.

2 Methods

A systematic review was undertaken for this study.

2.1 Search strategy

The initial searches were undertaken between April and June 2015, and repeated in December 2018, in CINAHL, MEDLINE, PsychINFO and COCHRANE, with no date restrictions. The PEO (population, exposure and outcome) framework was used to guide the search strategy as opposed to the PICO (population, intervention, comparison, outcome) since the purpose of this review was not to explore specific interventions (Bettany-Saltikov, 2012). Outcomes were selected by identifying psychosocial outcome terms available from each database. Search terms (Table 1), were piloted (i.e. any search terms that

yielded no results were removed) and adjusted according to the subject terms available for each database before formal searches being undertaken.

	Terms
Population	wom?n, mother*, maternal
Exposure	pregnan*, antenatal, expecting, childbearing, puerperium, postnatal, postpartum, childbirth, birth, parturition, lab?r, delivery, intrapartum
Outcome	life events, personality traits, sense of coherence, psycho*, anxiety, depression, post-traumatic stress disorder, PTSD, trauma*, social support, stress, relation*, attachment, bonding, emotional, behavi?r, tokophobia, sexual*, *feeding, quality of life, cognitive

Table 1 - Search terms used

Wildcard symbols and truncations were used in line with database requirements. MESH terms were used for MEDLINE where appropriate.

2.2 Inclusion and exclusion criteria

Table 2 sets out the inclusion and exclusion criteria.

	Inclusion Criteria	Exclusion Criteria
Participants	Women with no pregnancy complications who are	Women who are expecting a compromised baby or had preterm,

	expecting or had a healthy term baby	stillbirth or a baby who was admitted to the Neonatal Intensive Care Unit (NICU) • Women's partners and family members (when included on their own) • Women with pregnancy complications
Exposure	• Study includes mostly* valid and reliable quantitative tools to assess psychosocial variables and the childbirth experience	• Study includes mostly quantitative tools which have not been validated • Study only includes interviews, narrative accounts or observations • Effectiveness studies of drugs or therapy to influence psychosocial variables
Outcome	• Psychosocial wellbeing across the perinatal period in relation to the birth experience and/or PTS	• Focus only on physical health during pregnancy and postnatally • Focus only on physical implications/outcomes of labour and childbirth • Cause and effect studies assessing the association between specific intrapartum events (such as type of birth) on psychosocial wellbeing across the perinatal period

		• The experience of childbirth
Type of Study	• Quantitative studies (primary or systematic reviews), published or unpublished dissertations	• Qualitative studies, opinion articles, editorials or meta-syntheses
Language and Setting	• English and Maltese language • Any country	• Other languages which were foreign to the authors

Table 2 - Inclusion and exclusion criteria

**defined as over 50% for this review*

The initial stage of the literature selection process was carried out by members of the author team, all having previous review experience. All abstracts were assessed for inclusion and when all criteria were met or if this could not be determined from the abstract, the full text was obtained for a full assessment. Studies which met the inclusion criteria had their citations and references checked for additional relevant papers. Any studies selected for full-text review or excluded based on one criterion were double-checked by another team member to ensure agreement. When research papers were not available or their compliance with the selection criteria remained unclear, the authors were contacted. Research studies for which the full text was unobtainable after this process or if their compliance could not be determined (ex: due to language barrier) were excluded from the analysis, but classified as a 'potentially relevant study'. All studies that met the inclusion criteria proceeded to quality appraisal.

2.3 Quality appraisal

Sanderson et al (2007) in a review to assess tools available for observational studies despite making no suggestions of specific tools, recommended that *'tools should (i) include a small number of key domains; (ii) be as specific as possible (with due consideration of the particular study design and topic area); (iii) be a simple checklist rather than a scale and (iv) show evidence of careful development, and of their validity and reliability'* (pg.674). The National Institute for Health and Care and Excellence (NICE) checklist for quantitative studies reporting correlations and associations which was built on the Graphic Appraisal Tool for Epidemiological studies (GATE) framework (Jackson et al, 2006) was adopted for quality appraisal as it was suitable for observational studies and met all of Sanderson et al's (2007) criteria. The NICE checklist tool used generated a quality score for internal validity (++, +, -) and a separate score for external validity (++, +, -). To ensure consistency and transparency throughout the appraisal process, a single rating ('A' to 'D') was created by the authors from the two quality scores (Table 3). The internal validity score is based on three separate sections with nine questions [as opposed to one section with three questions examining external validity], thus the internal validity was given a stronger bearing when creating the table.

Internal Validity	++	+	-
External Validity			
++	A	B	C
+	A	B	D
-	B	C	D

Table 3 - Quality appraisal scores based on internal and external validity

++ All or most of the checklist criteria have been fulfilled, where they have not been fulfilled the conclusions are very unlikely to alter.

+ Some of the checklist criteria have been fulfilled, where they have not been fulfilled, or not adequately described, the conclusions are unlikely to alter.

- Few or no checklist criteria have been fulfilled and the conclusions are likely or very likely to alter.

After an initial pilot appraisal of 10% of the studies undertaken by two study authors to ensure accuracy, full appraisal was carried out on all the included papers. Papers graded 'A' to 'C' were included in the review. Studies rated 'D' were independently reviewed by a second author before exclusion to ensure rigour.

2.4 Analysis and synthesis

As this review contained non-randomised control trials, a meta-analysis was not appropriate. A combined numerical summary and categorical description were undertaken **to address the objectives**.

The variables that measured similar/related issues were grouped into categories, and the number of papers that reported on the variables documented. The results presented in this paper categorise and discuss which independent variables (e.g. personality traits, parity, social support, the birth experience) predict (or not) the dependent variables (e.g. the birth experience, postnatal depression, couple's relationship).

3 Results

3.1 Study selection and characteristics

The PRISMA diagram (Figure 1) provides an overview of the search strategy. Overall, 10,115 hits were identified, and nineteen papers met all the review criteria and were included (Table 4). The studies were published between 2000 and 2014, were undertaken in high-income countries, and explored 28

different variables. A total of 8,775 individuals participated in the studies and included primiparous and multiparous women, women from diverse ethnic/educational backgrounds and with varying relationship status. The time frame of data collection differed with data collected at varying points during the pregnancy (as early as 18 weeks) and postnatally (i.e. one day to five years post-natal). Methods were largely cohort studies, and the quality was variable, with the main quality issues relating to minimising risk of bias as potential confounders were not controlled for and lack of generalisability to the source population.

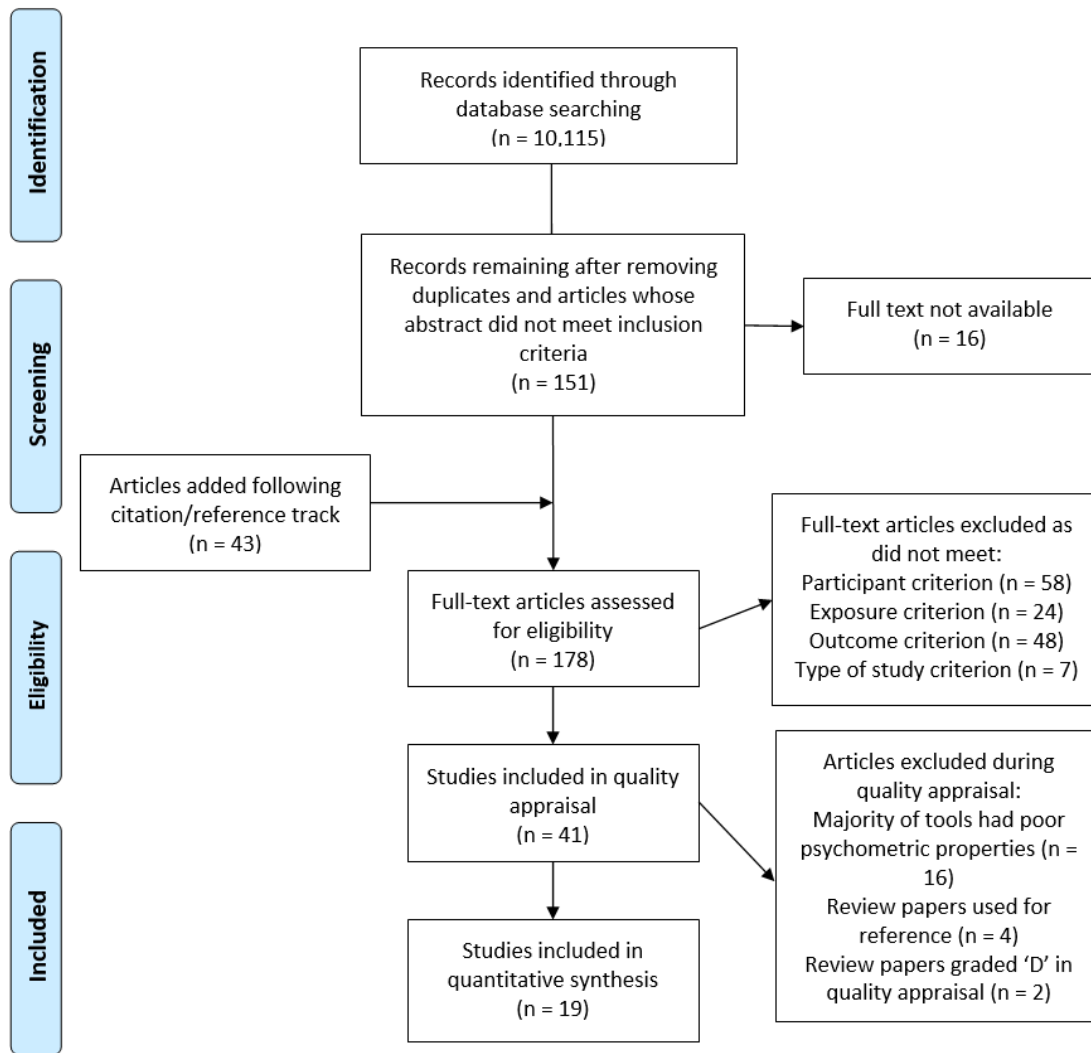


Figure 1 - Prisma Diagram

Authors (Year)	Country	Study design	Sample	Quality
Ayers, Wright & Wells (2007)	England	Retrospective, cohort, correlational study	64 couples	C
Ayers et al (2014)	England	Prospective, longitudinal study	57 women	C
Bennington (2010)	USA	Retrospective, cross-sectional, correlational study	300 women	C

Boorman et al (2014)	Australia	Cross-sectional exploratory study	890 women	B
Bryanton et al (2008)	Canada	Prospective cohort study	175 women	B
Carlander et al (2014)	Sweden	Prospective cohort study	451 women	A
Cohen et al (2004)	Canada	Correlational cohort study	200 women	C
Creedy, Shochet & Horsfall (2000)	Australia	Prospective cohort study	592 women	B
Czarnocka & Slade (2000)	England	Exploratory study	264 women	C
Davies et al (2008)	England	Exploratory study	211 women	B
Edworthy et al (2014)	England	Prospective cohort study	121 women	B
Ford, Ayers & Bradley (2010)	England	Longitudinal cohort study	138 women	B
Goodman, Mackey & Tavakoli (2004)	USA	Correlational descriptive study	60 women	B
Larsson et al (2011)	Sweden	Cohort study	541 women	B
Leeds & Hargreaves (2008)	Wales	Retrospective correlational study	102 women	B
Lukasse et al (2010)	Norway	Cross-sectional study	2,365 women	A
Olde et al (2005)	Netherlands	Correlational study	140 women	A
White et al (2006)	Australia	Cohort study	261 women	B

Weisman et al (2010)	Israel	Cohort study	1,844 women	B
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Table 4 - Key features of included studies

3.2 Findings

Twenty-five of the 28 variables explored by the studies were psychosocial and therefore relevant to the aims and objectives of this review. The studies explored the psychosocial variables as either predictors or outcomes, dependent on the design and methodology of each study. Eight studies focused on predictor variables, five studies on outcome variables and six studies made use of both.

Only one study examined the relationship between psychosocial variables and women's experiences of labour and birth in relation to a positive birth experience. The rest of the included studies adopted a more pathogenic perspective. Six explored psychosocial variables in relation to a negative birth experience (either being pre-defined by the participants or characterised as negative for women who scored less than or equal to 5 on a 10-point likert scale rating their birth experience) and 12 examined the relationship between psychosocial variables and the development and maintenance of PTSS. The included studies made use of various analytical methods ranging from simple descriptive statistics to more complex regression analyses.

From the outset, it was evident that there were limited positive factors explored in the included studies. Additionally, some factors appeared to play a role across different time frames of the childbearing period. Thus, the findings were presented into categories relating to the event, social and psychological factors to avoid unnecessary complications. This includes: '*Measures of labour and birth experience*',

'Outcomes of support and relationships' and *'Psychological variables: influence and impact'*. The first category focused on factors relating to the time and event of the birth itself, the second category focused on social factors and the third category on psychological factors. Within each category predictor and outcome, variables were identified. An overview of the variables explored within each category is presented in Table 5 and the tools used to examine such variables is presented in Table 6.

Category	Results (number of studies that explored listed variable)
<i>Measures of labour and birth experience</i>	Correlation: Perception of pain (n=5) with the birth experience; Dissociation (n=1) with PTSD; Contradictory: Perception of care (n=3); Perceived control during labour (n=4); Emotions during labour (n=5);
<i>Outcomes of support and relationships</i>	Correlation: Maternal-infant attachment (n=3) with birth experience; Perception of infant (n=2); Contradictory: Social support (n=10); No correlation: Couple's relationship (n=1); Parenting (n=1)
<i>Psychological variables: influence and impact</i>	Correlation: Pre-birth schemas (n=3) including impaired limits, dysfunctional attitudes and worrying; Adult attachment style (n=1) with PTSD; Personality traits (n=1) with birth experience; PTSD (n=3); Postnatal anxiety (n=2); Fear of childbirth (n=1); PND (n=8); Contradictory: History of mental illness (n=3); Previous traumatic events (n=6); Expectations for labour and birth (n=4); Subsequent pregnancies (n=2); Parity (n=5) No correlation: History of sexual abuse (n=2)

Table 5 - Overview of findings within each category

Variable	Questionnaire	Used in
History Of	The PTSD Diagnostic Scale	Ford et al., (2010)
Traumatic	The National Comorbidity Survey	Cohen et al., (2004)
Experiences And	The Revised Conflicts Tactics Scale	Cohen et al., (2004)
Abuse	Abuse Assessment Screen	Cohen et al., (2004)

	Canadian Violence Against Women Survey	Cohen et al., (2004)
Expectations	The Perceptions of Labour and Delivery Questionnaire	Leeds & Hargreaves, (2008); Czarnocka & Slade, (2000)
	The Experience of Birth Scale	Ayers et al., (2007)
Perceptions of Pain	McGill Pain Questionnaire	Goodman et al., (2004)
	The Perceptions of Labour and Delivery Questionnaire	Czarnocka & Slade (2000)
	The Experience Of Birth Scale	Ayers et al., (2007)
	The Perceptions Of Labour and Delivery Questionnaire	Czarnocka & Slade (2000); Leeds & Hargreaves, (2008)
	The Peritraumatic Emotions List	Olde et al., (2005)
Care During Labour	The Perception Of Care Questionnaire	Creedy et al.,(2000)
	The Perceptions Of Labour and Delivery Questionnaire	Czarnocka & Slade (2000); Leeds & Hargreaves, (2008)
Dissociations	The Peritraumatic Dissociative Experiences Questionnaire – Self Report Version	Olde et al., (2005)
	Somatoform Dissociation Questionnaire – Peritraumatic	Olde et al, (2005)
Perceptions Of Control	The Perceived Control Scale	Czarnocka and Slade, (2000)
	The Labour Agency Scale	Goodman et al., (2004)
	Experience of Birth Scale	Ayers et al., (2007)
	The Perceptions Of Labour and Delivery Questionnaire	Leeds and Hargreaves, (2008)
Social Support	The Significant Others Scale – Version A	Edworthy et al., (2010)
	Support And Control During Birth Questionnaire	Ayers et al., (2014)
	The Medical Outcomes Social Support Survey	Ford et al., (2010)
	The Perception Of Care Questionnaire	Creedy et al.,(2000)

	The Perceptions Of Labour and Delivery Questionnaire	Leeds and Hargreaves, (2008)
	Experience of Birth Scale	Ayers et al., (2007)
Pre-Birth Schemas	The Young Schema Questionnaire – Short Form	Edworthy et al., (2010)
	The Self-Efficacy Scale	Ford et al., (2010)
	The Dysfunctional Attitude Scale	Ford et al., (2010)
History Of Mental Illness	State And Trait Anxiety Inventory	Czarnocka and Slade, (2000)
Attachment Style	Adult Attachment Questionnaire	Ayers et al., (2014)
Personality	The Karolinska Scales Of Personality	Larsson et al., (2011)
Maternal-Infant Attachment	Maternal Postnatal Attachment Scale	Davies et al., (2008)
	Self-Report Version Of The Betlehem Mother-Infant Interaction Scale	Ayers et al., (2007)
	The Maternal-Attachment Inventory	Bennington (2010)
Maternal Perception Of The Infant	Mothers Object Relations Scale – Short Form	Davies et al., (2008)
	Infant Characteristics Questionnaire	Davies et al., (2008)
	The Maternal Adjustment And Maternal Attitudes Questionnaire	Weisman et al., (2010)
Couple's Relationships	The Dyadic Adjustment Scale	Ayers et al., (2007)
Parenting	The Parent Expectations Survey	Bryanton et al., (2008)
Post-Traumatic Stress Disorder	Impact Of Event Scale –Revised	Edworthy et al., (2014)
	The Impact of Event Scale	Czarnocka and Slade, (2000)
	The Post-traumatic Stress Disorder Questionnaire	Czarnocka and Slade, (2000)

	Post-traumatic Stress disorder Checklist	Leeds and Hargreaves, (2008)
Postnatal Depression	The Beck Depression Inventory	Weisman et al; (2010)
	The Edinburgh Postnatal Depression Scale	Czarnocka and Slade (2000); Cohen et al., (2004); White et al., (2006); Edworthy et al., (2008); Davies et al., (2008); Leeds and Hargreaves, (2008); Boorman et al., (2014)
	Depression, Anxiety And Stress Scale 21 Short Form	Boorman et al., (2014)
Postpartum Anxiety	Depression, Anxiety And Stress Scale 21 Short Form	Boorman et al., (2014)
	State And Trait Anxiety Inventory	Czarnocka and Slade, (2000)

Table 6 - Overview of tools used to examine each variable

Measures of labour and birth experience

Five predictor variables were included in this category, relating to women's perceptions of pain during labour, their emotions during the birth, the care they received during labour, and their perception of control and dissociation during labour.

Negative affective states such as horror, powerlessness, embarrassment and guilt (Olde et al., 2005; Ayers, Wright & Wells, 2007); fear for self (Czarnocka & Slade, 2000) or fear for baby (Leeds & Hargreaves, 2008); and blame (Czarnocka & Slade, 2000) were risk factors for PTSD onset post-birth, but not for negative birth experiences. Olde et al., (2005) also explored the relationship between peritraumatic dissociation and postpartum PTSD. Two types of dissociations; psychoform phenomenon (dissociative amnesia and identity fragmentation) or somatoform phenomenon (dissociative symptoms

that phenomenologically involve the body such as the inability to speak or move) were examined and concluded that both types of dissociation significantly predicted PTSD symptoms.

While poor perceived control in labour (Goodman et al., (2004) and higher perceived pain levels (Goodman et al., 2004; Weisman et al., 2010; Larsson et al., 2011) were associated with a negative childbirth experience, no relationship with PTSS was identified (Czarnocka & Slade, 2000; Cohen et al., 2004; Ayers et al., 2007; Leeds and Hargreaves, 2008). Perception of care during labour and its impact on PTSS was also contradictory (Creedy et al., 2000; Czarnocka and Slade, 2000; Leeds and Hargreaves, 2008). Unfortunately, these findings are difficult to interpret as the majority of papers (Creedy et al., 2000; Cohen et al., 2004; Ayers et al., 2007; Leeds and Hargreaves, 2008; Weisman et al., 2010; Larsson et al., 2011) made use of tools which have not been validated.

Social support and relationships

The second category explored how support and relationships can potentially both influence or are influenced by women's birth appraisals and PTSD onset. One predictor variable; social support and four outcome variables; maternal-infant attachment, the mother's perception of the infant; the couple's relationship; and their parenting self-efficacy were identified in this category.

The papers included in this review suggest that PTSS and a negative birth experience negatively influence women's perception of their infant; viewing them as less warm (Davies et al., 2008) and having more negative emotions towards them (Weisman et al., 2010) respectively. However, neither parenting (Bryanton et al., 2008) nor the couple's relationship (Ayers et al., 2007) were impacted. It is also

suggested that while the birth experience may have a positive influence on the mother-infant bond, (even though further research was recommended, Bennington, 2010), PTSD does not (Ayers et al., 2007; Davies et al., 2008). While a few authors suggest that lack of support from health professionals (Czarnocka & Slade, 2000; Larsson et al., 2011) or partners (Creedy et al., 2000; Czarnocka & Slade, 2000) place women at a higher risk of negative birth experience or PTSS, others (Cohen et al., 2004; Ayers et al., 2007; Edworthy et al., 2008; Ayers et al., 2014) reported that this was not the case. However, the fact that some studies did not use validated scales, and had wide variations in sample sizes may explain the contradictory data.

Psychological variables: influences and impact

The predictor variables in this category included the impact of parity, history of mental illness, previous experiences of trauma and abuse, expectations, pre-birth schemas, and attachment and personality traits on the birth experience and PTSD. The outcome variables of subsequent pregnancies, fear of childbirth, anxiety, PTSD and postnatal depression (PND) and how they were influenced by the birth experience [and PTSD] following childbirth were also explored.

The included papers strongly suggest that pre-birth schemas such as impaired limits (the inability to cooperate or form commitments with others or to meet personal goals) (Edworthy et al., 2008), dysfunctional attitudes (Ford et al., 2010) and worrying during pregnancy (Larsson et al., 2011) put women at increased risk of developing PTSS and negative birth experience. Avoidant attachment (Ayers et al., 2014) and irritation personality trait (Larsson et al., 2011) also pose the same risks. A history of sexual abuse did not influence PTSS onset (Cohen et al., 2004; Boorman et al., 2014). Apart from a traumatic birth being identified as a risk factor for PTSS onset (Czarnocka & Slade, 2000; Edworthy et al., 2008; Leeds & Hargreaves, 2008), it was also found to be associated with postnatal depression and

anxiety (Weisman et al., 2010; Boorman et al., 2014), and fear of childbirth (Lukasse et al., 2010). Other authors (Czarnocka & Slade, 2000; Cohen et al., 2004; White et al., 2006; Davies et al., 2008; Edworthy et al., 2008; Leeds & Hargreaves, 2008) also report significant comorbidity between PND and PTSD.

Contradictory evidence was identified regarding other variables in this category. While there were differences between the studies in regard to the impact of a history of mental illness, the response rate could be an explanation. Studies (Czarnocka & Slade, 2000; Cohen et al., 2004; Boorman et al., 2014) that found a positive correlation with a history of mental illness, all report a response rate above 74%, whereas other studies (Edworthy et al., 2008; Leeds and Hargreaves, 2008 respectively) which report no correlation had a response rate below 35%. Contradictory evidence was also identified regarding the influence of childbirth expectations on women's birth experience (Czarnocka & Slade, 2000; Ayers et al., 2007; Leeds and Hargreaves, 2008; Goodman et al., 2014). Methodological issues were found when examining the impact of previous traumatic experiences. Most of the studies (Cohen et al., 2004; Edworthy et al., 2008; Leeds & Hargreaves, 2008; Ford et al., 2010) collected data by asking women to select possible traumatic events from a pre-defined list which assumes that the event was associated with a trauma-related response. Finally, contrary evidence in the relationship between parity (Czarnocka & Slade, 2000; Cohen et al., 2004; Olde et al., 2005; Davies et al., 2008; Boorman et al., 2014) and subsequent pregnancies (Czarnocka & Slade, 2000; Carlander et al., 2014), with women's subjective perception of birth and PTSS was evident. These findings thereby suggest that factors which influence the birth and PTSS may differ or that other important factors were not assessed.

4 Discussion

This review aimed to identify the psychosocial factors that could contribute to, or be influenced by women's subjective accounts of childbirth. Following careful analysis of the included studies, it appears that there are some vulnerability factors in pregnancy and risk factors during birth which can increase the likelihood of experiencing a negative birth or develop PTSS (predictor variables). Furthermore, this review has identified that some implications in the postnatal period are possible following a negative birth experience or as a cause of PTSD (outcome variables). There also appears to be some protective factors identified during pregnancy or in labour (predictor variables) which promote a more positive childbirth experience.

Predictor variables

Predictor variables which represent a vulnerability for a negative birth, development of PTSS or promote a positive birth identified in this review include past traumatic experiences and sexual abuse, social support, expectations and a history of mental illness. However, contradictory evidence regarding these variables was identified which may be attributed to different sample sizes, retention rates, and measurement tools. Other vulnerability factors in pregnancy which were explored include traits such as impaired limits schema, dysfunctional attitudes, adult attachment style, and personality traits. These were all correlated with the birth experience and/or with the onset of PTSS. However, only one study examined each of these variables indicating that these findings should be interpreted with care. Risk and protective factors which occur during the birth that have been identified in this review include emotions during the birth, perception of pain, care during labour, and perceptions of control and dissociation. While emotions during labour and dissociation appear to be important in the appraisal of the birth experience, perception of control, pain and care during labour all had contradictory data. This could be

attributed to differences in sample sizes and retention rates. Despite the contradictory evidence identified in this review regarding the importance of perception of control and care during labour, qualitative literature suggests that these are important influencing factors that can promote a positive birth (Karlstrom et al., 2015; Melender, 2006). The role of the midwife during labour has long been known to be a key factor in the promotion of positive birth experiences, particularly with regards to the concept of continuity of care during labour (Wiegers, 2009; Dahlberg & Aune, 2013). However, due to the contradictory data presented in this review, the presence or continuity of care from a midwife may not be as important as the quality of care and the relationship built during labour and birth (Perdok et al., 2018). This may suggest that while it is important having continuity of care during labour, the continuous presence of the midwife to provide enhanced quality care may be more important for women.

Associations between women's subjective experiences of birth and development of PTSD due to childbirth have been identified previously (Ayers et al., 2016). This may imply that risk factors for both a traumatic birth experience and for PTSS are similar since childbirth trauma is a precursor to PTSD. A number of the risk factors for PTSD following childbirth identified in this review have also been highlighted in two meta-analyses (Grekin & O'Hara, 2014, Ayers et al., 2016). Similar to this review, highlighted risk factors for PTSD in community samples discussed by Grekin and O'Hara (2014) included support from staff during labour, pregnancy psychopathology and history of psychopathology, increased level of pain during labour, a history of trauma and decreased level of perceived control during labour. Ayers et al., (2016) report that depression during pregnancy, a history of PTSD and counselling during pregnancy, lack of support during birth and dissociation were the factors with the strongest associations with PTSD.

Outcome variables

The most commonly examined outcome variable in the selection of studies from this review is PND. This review found that a negative birth experience increases the risk of PND and that a high degree of comorbidity exists between PTSD and PND. This is similar to reports by Grekin and O'Hara (2014) and Ayers et al., (2016) whom both indicated that PND had the strongest association with PTSD among all variables. Other psychological outcome variables which were less commonly examined include PTSD, anxiety in the postnatal period and fear of childbirth. This review suggests that women who have a negative birth experience are at an increased risk of developing these psychiatric morbidities and other psychological concerns.

Social outcome variables were also examined, and different findings were reported. Studies in this review indicate that women's subjective interpretation of the birth experience can influence both maternal-infant attachment and the perception of the infant. In contrast, PTSD was not found to affect maternal-infant attachment (Ayers et al., 2007). The couple's relationship and parenting were not considered to be influenced by either the birth experience or PTSD. However, the quality of the couple's relationship was not measured prior the birth, therefore, subtle changes in quality as a result of the birth and/or PTSD onset may have been missed. Finally, while one study (Czarnocka & Slade, 2000) suggests that PTSD may influence the decision to have future children, women's perception of the birth experience appears to play no role (Carlander et al., 2014). The postnatal care that women receive may alter these findings, and hence, the context of the studies should be considered before reaching conclusions.

Findings reported in this review also resonate the **available qualitative literature**. A meta-synthesis by Fenech and Thomson (2014) into the psychosocial implications of a traumatic birth Identified how women were tormented by intense negative emotions, nightmares and flashbacks; experienced shattered relationships with their infant and partner, and experienced a sense of loss as they decided not to have future children due to fear of childbirth. Elmir et al., (2010) similarly report how the traumatic birth left women experiencing a roller-coaster of emotions including anxiety, depression, and suicidal thoughts, felt trapped due to the nightmares and flashbacks they had to endure and suffered disrupted relationships both through disconnection with their baby and not wanting to be touched by their partner again.

Apart from the complex and contradictory data identified within the predictor and outcome variables, which make it difficult to draw conclusions, additional insights are prominent from this review. First of all, the review highlights a scarcity of literature that explores positive or even neutral childbirth experiences; with the majority of literature focusing on risk factors and outcomes of negative and traumatic birth, and PTSD. The pathological focus within the research literature echoes wider socio-cultural messages, such as negative portrayals of childbirth in visual media and social networks, including portrayals of the female body as one that is inferior and requires technology to birth (Morris & McInenrey, 2010) and a focus on birth as risky, dramatic and painful (Luce et al., 2016). Shifting towards wellbeing ('salutogenic') perspective for psychological studies of childbirth could enable a more comprehensive understanding of how women can stay in good health despite a distressing birth experience. While some evidence such as support and increased control during labour has already been identified as influences of positive childbirth experiences (Goodman et al., 2004), other elements such as positive personality traits and wellbeing have not been explored.

Secondly, most of the variables, including personality traits, which have been highlighted in this review are negative and do not capture the range of emotions, beliefs, characteristics and experiences that women can experience during the perinatal period. A salutogenic perspective is required to have a more thorough understanding of how women can stay in good health despite a distressing birth experience. Studies with a salutogenic focus in the general health literature have demonstrated that individuals with an above-average sense of coherence (SOC) significantly mitigate the influence of a stressful life event on their self-reported health (Richardson & Ratner, 2005). Therefore, exploring women's SOC could help to enhance our understanding of how positive factors impact on the birth experience and women's subjective interpretations of such, as well as their association with outcomes. SOC enables women to make life events meaningful, comprehensible and manageable through the use of a range of general resistance resources (GRRs) at their disposal. Several links between the variables identified in this review and GRRs can be identified, namely through identity (personality traits), social support and family ties (relationships), knowledge and intelligence (expectations) and commitment (control). Therefore, due to the associations present between these GRRs (or the lack of) and negative birth experiences and PTSD, it is only vital that their presence is explored in light of more positive aspects of the birth. Additionally, further GRRs can be explored that can potentially influence women's subjective appraisal of the birth experience, such as a preventative health orientation (positive mental well-being). An in-depth understanding of how SOC and GRRs impact women in their subjective appraisal of the birth and the outcomes of such will further enable health professionals to adopt more appropriate, individually centred care.

Finally, this review identified that there are different influencing factors between PTSD and negative or traumatic birth experience. For instance, parity, having unmet expectations, increased pain perception and loss of control were associated with a traumatic birth but not with the development of PTSD

(Czarnocka & Slade, 2000; Cohen et al., 2004; Goodman et al., 2004; Ayers et al., 2007; Leeds and Hargreaves, 2008; Weisman et al., 2010; Larsson et al., 2011). Following the birth of their baby, the attention of women may shift from their expectations of birth to coping with a newborn and the stressors of motherhood (Ayers et al., 2016), which may explain why expectations do not appear to influence PTSD. Therefore, while some factors may be increasingly important in the women's appraisal of the birth experience, following birth the same factors may not have such a pivotal role in PTSD onset. This could imply that such factors are important in women's subjective appraisal of birth but are not causative factors of PTSD. Furthermore, it was reported that not all of the women who had a self-reported traumatic/negative birth developed PTSD (Czarnocka & Slade, 2000; Cohen et al., 2004; White et al., 2006; Ford et al., 2010). This suggests that other associated factors may help prevent or cause PTSD onset. Therefore, even though the birth experience and PTSS are significantly correlated (Ayers et al., 2016), separate and more thorough exploration and understanding of the birth experience is still warranted.

4.1 Strengths and limitations

This study is based on a robust review protocol and a rigorous literature search. The quality, validity, generalisability and the strength of evidence of each included study were also considered when interpreting the findings and synthesising the results.

A key limitation is the inclusion of studies which focus on PTSD, on the premise that women who develop PTSD, would have experienced a traumatic birth (Yildiz et al., 2017). However, it became apparent that it is possible that these women were misdiagnosed and were suffering from PND, anxiety and postpartum stress, particularly since an important criterion of PTSD (whether women experienced actual or threatened death or serious injury and experienced intense fear, helplessness, or horror) was

not examined. This could imply that women who were misdiagnosed with PTSD never had a traumatic birth, making their inclusion in this study inappropriate. This also makes it difficult to determine the identified predictors are caused by trauma or an effect of PTSD. Additionally, not all language studies were included as the translation of such studies was not possible due to time constraints. Due to the different psychometric properties of the tools that were used in the included studies, certain findings need to be interpreted with caution as comparisons were made between outcomes from validated and non-validated tools. Finally, as the majority of the studies which met the inclusion criteria took a pathological lens, it is difficult to obtain a more coherent picture to understand childbirth experiences.

4.2 Recommendations

This review presents some recommendations for research. Primarily, further research is required to understand different birth experiences since currently, the focus is on negative and traumatic birth. Secondly, this review has highlighted that the risk factors and implications of traumatic birth and PTS are correlated but not necessarily the same, as such, these should be explored separately. Additionally, since not all women who report a negative or traumatic birth develop PTSD, it is worth exploring what is preventing these women from developing PTSD and identify the protective factors involved.

5 Conclusion

This review has identified psychosocial variables which have been used by authors to assess associations with women's subjective perceptions of their birth experience. Contradictory evidence has been identified which make it difficult to draw meaningful conclusions, although tools and methodologies may play a role. The dearth of literature exploring positive childbirth experiences and the different contributing factors of birth experiences are a cause for concern as they limit understanding of the birth experience and, therefore, warrant further exploration. Additionally, the comorbidity which exists

between post-traumatic stress disorder and postnatal depression and the differences which exist between post-traumatic stress disorder and traumatic birth have also been highlighted in this review and require further consideration. What is evident is that there is a multitude of factors which are potentially linked with birth experiences and these need to be explored both from a pathogenic and salutogenic perspective.

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