



## A Systematic mixed studies Review of Women's Experiences of Perineal Trauma Sustained During Childbirth

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A Systematic Review of Women's Experiences of Perineal Trauma Sustained During Childbirth

**Impact Statement:**

- Perineal trauma is one of the most common obstetric complications to occur during childbirth, this review synthesises available research investigating the implications of various types of trauma to the perineum
- The literature, although sparse, suggests that perineal trauma can have wide-ranging negative implications for psychological and emotional wellbeing and future research should to clarify these effects in order to make recommendations for intrapartum/postpartum care
- Recommendations for future research: To clarify three essential areas
  - Impact of perineal trauma on birth experience
  - Perineal trauma and experience of/need for postpartum care
  - Impact of perineal trauma on psychological/emotional wellbeing

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**ABSTRACT**

**Aim(s)** To explore the quantitative/qualitative literature on women's experiences of perineal trauma sustained during childbirth and the **impact** it may have on psychological/emotional wellbeing

**Background:** Obstetric complications during childbirth can be a risk factor for postpartum psychological distress. Perineal trauma is one of the most frequent obstetric complications and it is important to understand any impact on psychological/emotional wellbeing

**Design** A convergent qualitative design using a hybrid deductive-inductive thematic synthesis approach to data transformation was used

**Data Sources** Web of knowledge, CINAHL, MEDLINE, AMED, PsyArticles, PsycInfo until May 2017

**Review methods** Stage 1: transforming findings from the qualitative, quantitative and mixed methods studies into themes using thematic synthesis. Stage 2: integrating themes from the quantitative studies into those derived from the qualitative studies

**Results** 2152 records found of which 11 qualitative 22 quantitative and 1 mixed methods were included in this review. Five themes were derived from thematic synthesis of qualitative studies '*The mystery of perineal trauma*', '*The misery of perineal suturing*', '*The postnatal perineum*', '*Normalisation and feeling dismissed*' and '*Adjusting to a new normal – Coping and compromise*' and 6 themes identified from the quantitative studies, experience of birth (N=4), Sexual functioning (N=12), Social functioning (N=2), Psychological health (N=8) and Quality of Life (N=5).

**Conclusion** Perineal trauma can have a negative impact on psychological/emotional wellbeing, however the literature is conflicted and in need of clarification. Future research should clearly describe the perineal status of the women in the sample, use validated measures, and consider the timing of such measures

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**SUMMARY STATEMENT**

**Why is this review needed?**

- Perineal trauma is one of the most frequent obstetric complications to occur during childbirth.
- Understanding how women experience perineal trauma and how it may impact on psychological/emotional wellbeing postnatally is crucial.
- Understanding our current knowledge of women's experiences of perineal trauma is necessary for making recommendations for future research in order to improve intrapartum and postpartum care.

**What are the key findings?**

- Experiencing perineal trauma during childbirth may negatively influence how women feel about their birth.
- A perceived lack of appropriate care postnatally may negatively influence psychological/emotional wellbeing.
- Due to various methodological limitations future research should clarify the **impact** of perineal trauma in order to inform the care provided to women and their families

**How should the findings be used to influence policy/practice/research/education?**

- Existing research on women's experience of perineal trauma is in need of clarification.
- Recommendations for future research: the use of validated measurement tools to assess psychological health, the timing of measurements, and clearly disclosing the perineal status of the women in the sample

**Keywords:** Perineal trauma, Severe perineal trauma, OASI, Episiotomy, Women's experiences, Vaginal birth, Systematic review, Health Psychology, Midwifery, Obstetrics and Gynaecology

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### MAIN TEXT

#### **Introduction**

Although childbirth is considered a normative occurrence that has never been safer in the western world (Walsh, 2010), adverse events can occur which may influence how a woman feels about her birth experience. Previous research has focused on identifying the risk factors associated with, a negative birth experience (Carquillat, Boulvain, & Guittier, 2016; Mei, Afshar, Gregory, Kilpatrick, & Esakoff, 2016) and the prevalence of maternal psychological distress in the postpartum period (Ayers, Bond, Bertullies, & Wijma, 2016; Yildiz, Ayers, & Phillips, 2016).

#### **Background**

Obstetric complications during childbirth can be risk factors for postnatal psychological distress (Ayers, Bond, Bertullies, & Wijma, 2016; Ayers, McKenzie-McHarg, & Slade, 2015). One of the most frequent obstetric complications during childbirth is perineal trauma (PT), defined as a spontaneous tear of varying severity (or an intentional cut known as an episiotomy) between the vagina and the anus. PT is classified numerically according to extent of damage to the tissues. A 1<sup>st</sup>/2<sup>nd</sup> degree tear or episiotomy does not involve any damage to the anal sphincter muscles, however a 3<sup>rd</sup>/4<sup>th</sup> degree tear does to a varying extent, with a 4<sup>th</sup> degree tear being the most extensive level of perineal trauma.

Recent NHS maternity statistics (2014-2015) revealed that 41.3% of women experienced a perineal laceration during childbirth (NHS maternity statistics, 2015). A national survey conducted between January 2009 and January 2010 also concluded that approximately 53% of women giving birth vaginally experienced PT with 96.9% needing to be repaired (Thiagamoorthy, Johnson, Thakar, & Sultan, 2014). With such a large proportion of women experiencing some degree of PT, it is important to understand the impact it may have on maternal psychological health and wellbeing.

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### **Aim(s)**

The aim of this review was to explore the quantitative and qualitative literature reporting on women's experiences of perineal trauma sustained during childbirth and the **impact** such injuries may have on psychological/emotional wellbeing.

### **Design**

A convergent qualitative design using a hybrid deductive-inductive thematic synthesis approach to data transformation was used (Pluye and Hong, 2014). A more detailed description of data abstraction and synthesis using this method was devised and is detailed below.

### **Search method**

Web of Knowledge, CINAHL, MEDLINE, AMED, PsycArticles, PsycInfo via the Ebscohost database were consulted to include refereed journal articles, published in English up to May 2017. Search terms were combinations of the following keywords: ((Birth OR Childbirth OR birth OR labour OR labor) AND (Pain OR Psychol\* OR Depressi\* OR Anxi\* OR Stress OR Emotion\* OR Wellbeing OR Well-Being) AND (Perineal OR Perineum OR Anal Sphincter OR Vaginal) AND (Tear OR Laceration OR Third OR Fourth OR Second OR episiotomy OR first OR Trauma\*)). Reference lists were also hand searched for relevant papers. Search terms/combinations of search terms were cross-checked with a multidisciplinary team including a Clinical Psychologist, urogynaecologist and specialist midwife. Quantitative papers were included if they consisted of some measure of psychological/emotional/social wellbeing, social functioning and/or quality of life. Qualitative papers were included if they explored women's experiences of PT sustained during childbirth. Papers investigating female genital mutilation, those including crude measures of sexual functioning (i.e. timing to resumption/dyspareunia) and those reporting on physiological outcomes were excluded. This process was checked with another researcher (PS).

1 A Systematic mixed studies Review of Women's Experiences of Perineal Trauma Sustained  
2 During Childbirth

3 **Search outcome**  
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6 A total of 2152 papers were identified. Figure 1.1 depicts the screening and selection process.  
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8 After applying the inclusion/exclusion, 11 qualitative, 22 quantitative and 1 mixed methods  
9 paper remained. Papers were hand-searched for references of which none were deemed  
10 relevant for this review (see table 1.1 for overview of papers included, more detailed  
11 summaries of included papers can be found in supplementary S1 and S2 tables).  
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**[INSERT FIGURE 1.1 ABOUT HERE]**

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**Quality appraisal**

All papers were quality appraised for risk of bias using the Mixed Methods Appraisal Tool (MMAT: Pluye, Robert, Cargo, & Bartlett, 2011). The MMAT considers all study designs and has been shown to be a reliable tool (Pace et al., 2012). Although a numerical quality score can be calculated using the MMAT, this was not used in the present review as it is not overly informative (Pace et al., 2012). All 34 studies identified were included in the review as they provided data relevant to the impact perineal trauma may have on psychological/emotional wellbeing. Details of the appraisal can be found in table 1.2 (Quantitative appraisal) and table 1.3 (Qualitative appraisal)

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## A Systematic mixed studies Review of Women's Experiences of Perineal Trauma Sustained During Childbirth

### **Data abstraction and synthesis**

A convergent qualitative synthesis design (Pluye & Hong, 2014) was used to facilitate a qualitative thematic synthesis of all included studies. Firstly, qualitative findings were extracted and synthesised using a hybrid deductive-inductive approach (See table 1.4). This process consisted of initially becoming familiar with the themes presented in the original papers, and then revising these as necessary to represent all of the available evidence across the included studies. The techniques of reciprocal translation and refutational investigation described by Noblit and Hare, (1988) facilitated this process. Findings from the quantitative studies were then extracted and coded thematically based on their outcome variable(s). For example, studies measuring sexual functioning using relevant questionnaires were coded as sexual functioning, those measuring psychological health (e.g. depressive symptoms, posttraumatic stress symptoms), and those with any measurement relating to birth experience were coded as such.

When integrating the findings from the qualitative and quantitative studies, the themes generated by the thematic synthesis of the qualitative studies were used as a framework representing women's experiences of perineal trauma. The themes generated from the quantitative data were then integrated to identify where similarities/differences exist across the methodologies, and also to identify where qualitative findings may be generalizable using quantitative methodology. Each stage of the process including evidence for theme labels was discussed within a multidisciplinary research team consisting of a consultant clinical psychologist (PS), consultant urogynaecologist (GF) and a specialist midwife (CW).

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## A Systematic mixed studies Review of Women's Experiences of Perineal Trauma Sustained During Childbirth

### Results

Five themes were derived from the thematic synthesis of the included qualitative papers; *'The mystery of perineal trauma'*, *'The misery of perineal suturing'*, *'The postnatal perineum'*, *'Normalisation and feeling dismissed'* and *'Adjusting to a new normal – Coping and compromise'*. Within the quantitative literature 6 themes were identified to synthesise the outcome variables: Experience of birth and care (N=4), Sexual functioning (N=12), Social functioning (N=2), Psychological health (N=8) and Quality of Life (N=5).

#### The Mystery of Perineal Trauma

The general consensus demonstrated through women's accounts, is that perineal trauma is poorly understood, regardless of the extent of the injury. Women with OASI (Priddis, Schmied, & Dahlen, 2014) described how they sought to find an explanation for the cause of their injuries, and how being given little or no information, led to feelings of abandonment (Priddis et al., 2014a). Without an adequate explanation, beliefs about the cause of the tear were either internally focussed, (e.g. a defect in their anatomy/pushing incorrectly) or externally focussed (e.g. the actions of others/instruments used), (Priddis, Schmied, & Dahlen, 2014; Thompson & Walsh, 2015). Those with OASI who felt the cause of their tear was external, described how they felt *'let down by the system'* (Priddis, Schmied, Kettle, Sneddon, & Dahlen, 2014; Priddis et al., 2014a). Women also described a lack of knowledge about the different degrees of perineal trauma, believing that every tear is severe, as this was the only type of tear they heard about from others (Thompson & Walsh, 2015; Priddis et al., 2014a).

The majority of women with OASI described how they felt ill-informed about their injuries. However, a focus-group study of women with OASI who had access to specialist care within a dedicated perineal clinic, described how women were grateful for the information received about their injuries and despite citing areas they felt could be improved (timing and content of information), felt well-informed about their injuries, (Williams, Lavender, Richmond, & Tincello, 2005).

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### **The Misery of Perineal Suturing**

It is acknowledged by healthcare professionals that perineal repair following childbirth can be a painful and potentially traumatic experience for women (RCM, 2012). This review found that the majority of women's accounts of perineal suturing were negative in content. One of the first interview studies to explore women's experiences of perineal trauma found that the procedure was described as one to be '*got through*', and some of the women described their healthcare provider as '*brutal*' and '*cruel*' (Salmon, 1999). In a more recent study, women with OASI described how they felt like '*a piece of meat*', how their care providers talked about them and not to them and how they felt dissociated from the experience or attempted to use humour to engage their healthcare provider in order to cope with their distress (Priddis et al., 2014a).

Interactions with healthcare providers during such a vulnerable time seemed to shape women's experiences and have a long-lasting effect on women. Some described being able to recall facial expressions and negative interactions years after the event (Priddis et al., 2014a, 2014b; Salmon, 1999), whereas others described how their memories led to their avoidance of intimacy up to 5 years after the event (O'Reilly, Peters, Beale, & Jackson, 2009).

Acknowledging that the suturing procedure can be a painful and traumatic experience for women, a mixed-methods study found that women preferred a discursive (and therefore inclusive) communication style during the procedure and described the importance of compassion and communication (Briscoe, Lavender, O'Brien, Campbell, & McGowan, 2015)

### **Quantitative Evidence - Perineal Trauma and Experience of Birth**

*'The mystery of perineal trauma'* and *'the misery of perineal suturing'*, describe the lack of information surrounding perineal trauma and how perineal repair can be a traumatic experience. However, it is unclear from the accounts if this has an impact on experience of birth. One quantitative study compared birth experience in women who experienced OASI and those who did not and found no significant differences (Storksen et al., 2013). Similarly, another study reported that experiencing perineal lacerations (extent unknown) was not significantly associated with ratings of birth experience (Larsson, Saltvedt, Edman, Wiklund,



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& Andolf, 2011). These findings suggest that experiencing perineal trauma during childbirth may not impact on a woman's birth experience. Although this may be the case, a closer examination of the methodologies used in both studies suggests further research is warranted as the former had very unequal group sizes for their analysis and the latter does not detail the perineal status of the women in the study.

Although Larsson et al. (2011), did not find a significant relationship between perineal lacerations and experience of birth, they did report a significant negative correlation between perineal pain at 3 months postpartum and ratings of birth experience ( $t=-0.13$ ,  $n=443$ ,  $p=0.006$ ). This may suggest that a more complex relationship exists between perineal trauma, the experiencing of symptoms (pain and/or incontinence), and ratings of birth experience. In support of this theory, one study provided data exploring all three of these elements (Ejegard, Ryding & Sjogren, 2008). Their findings indicated that those who experienced an episiotomy experienced more pain at 12-18 months postpartum, reported feeling '*less strengthened*' by childbirth and described their delivery as worse than expected compared to age-matched controls who had not experienced an episiotomy. It should however be noted that this study did not control for mode of birth (amongst other variables significantly different between the groups) and this could have influenced the difference between the groups.

### **The Problematic Postnatal Perineum**

This theme describes the **impact** of pain and incontinence on women's experiences of becoming a new mother, relationships/intimacy and social life. The majority of the accounts originate from studies investigating women's experiences of OASI or ongoing symptoms of pain and/or incontinence. For women suffering from incontinence, they described how unexpected episodes negatively impacted upon previously taken for granted activities and placed restrictions on their social life (Herron-Marx, Williams, & Hicks, 2007; O'Reilly et al., 2009). They described the daily struggle to manage their symptoms and the isolation and loneliness they experienced when keeping incontinence hidden from others, particularly anal incontinence (Tucker, Clifton, & Wilson, 2014). Women described how they felt it was not culturally appropriate to talk about their difficulties with friends or family due to the social stigma of being incontinent and being perceived as dirty and/or lazy (Gillard & Shamley, 2010; Herron-Marx et al., 2007; Priddis et al., 2014; Tucker et al., 2014)

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Those with enduring symptoms described their guilt when they would have to put their needs before that of others and felt this contradicted their role as a good mother/partner (Tucker et al., 2014). Although some women felt that sexual contact was a necessary part of their romantic relationship, others felt it was simply a 'fulfilment of their duty' with an emphasis on being 'back to normal' by 6 weeks after the birth (Priddis et al., 2014). Sexual problems were frequently cited by women who experienced perineal trauma, especially those who experienced OASI (Priddis et al., 2014). Women described the fear of pain or episodes of incontinence as a reason for abstinence or delay of sexual intimacy (O'Reilly et al., 2009; Priddis et al., 2014; Tucker et al., 2014; Williams et al., 2005). Those with OASI described a fear of becoming pregnant and experiencing OASI again as a reason for abstinence (Priddis et al., 2014; Williams et al., 2005).

### **Quantitative Evidence – The impact of symptoms of perineal trauma on social and sexual functioning**

Within the qualitative literature women described how incontinence impacted on their social and sexual functioning. Two quantitative studies collecting data 5 and 10 years after birth found that women with OASI were significantly more likely to experience difficulties resuming their hobbies or engaging in social activities compared to those who did not experience OASI (Boij, Matthiesen, Krantz, & Boij, 2007; Evers, Blomquist, McDermott, & Handa, 2012).

Women's accounts in the qualitative literature suggest that sexual difficulties after experiencing perineal trauma are complex and multi-faceted. Twelve quantitative studies exploring the impact of perineal trauma on sexual functioning were identified by this review: 6 used the Female Sexual Function Index (De Souza et al., 2015; Khajehei et al., 2015; Leal, Lourenço, Oliveira, Carvalheira, & Maroco, 2013; Lurie et al., 2013; Otero et al., 2006; Safarinejad, Kolahi, & Hosseini, 2009) which is a brief measure of sexual functioning in women (FSFI: Rosen et al., 2000). Three of these studies found a negative effect of perineal trauma on sexual functioning in the first 12 months postpartum (De Souza et al., 2015; Leal et al., 2013; Safarinejad et al., 2009) and the remaining three found no significant effects

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(Khajehei et al., 2015; Lurie et al., 2013; Otero et al., 2006). These conflicting results may be due to the differences in comparison groups across the studies. Although two of the studies provide information on the perineal status of the women in their samples (De Souza et al., 2015; Leal et al., 2013), three are unclear in their descriptions (Khajehei et al., 2015; Lurie et al., 2013; Safarinejad et al., 2009) and one does not provide perineal status details for their control group.

Three of the 12 studies identified by this review used alternative validated scales to assess sexual functioning, (Jawed-Wessel, Schick, & Herbenick, 2013; Rikard-Bell, Iyer, & Rane, 2014; Rogers, Borders, Leeman, & Albers, 2009). One study found, when controlling for parity and education, those who had experienced a 2<sup>nd</sup>/3<sup>rd</sup>/4<sup>th</sup> degree tear expressed less desire for sexual contact than those with less severe trauma 3 months after the birth (Rogers et al., 2009). Two studies also found a negative effect of perineal repair on sexual functioning at 3 months and 12 months postnatal (Jawed-Wessel et al., 2013; Leeman, Rogers, Greulich, & Albers, 2007).

Although there were no qualitative studies providing data on women's experiences of sexual functioning after an episiotomy, two quantitative studies were identified that specifically assessed the effects of experiencing an episiotomy. One study, using the FSFI, reported that having an episiotomy negatively affected sexual functioning 3 months after the birth (Leal et al., 2013), however, another study using the McCoy Female Sexuality Questionnaire (McCoy, 2000), found no association at 12-18 months after the birth (Ejegård et al., 2008). Although the differences in findings may be the result of a difference in measurement tools, it may also suggest that although issues may arise initially (i.e. in the first initial postpartum months), these issues may resolve over time for the majority of women (De Souza et al., 2015). The remaining two studies assessing the effects of perineal trauma on sexual functioning used self-developed questionnaires and found no significant effects of perineal trauma on sexual functioning (Boij et al., 2007; Pastore, Owens, & Raymond, 2007).

### **Normalisation and being dismissed**

The perceived lack of adequate information for women following OASI seemed to extend further into the postpartum period for some women (Priddis et al., 2014a; Williams et al.,

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2005). A lack of information and education about the enduring symptoms associated with their injuries resulted in women feeling abandoned and surprised when they experienced the unexpected (Priddis et al., 2014a,b). When addressing their concerns with their healthcare providers, women described how their expectations were unfulfilled and their questions unanswered, leaving them feeling frustrated and projecting their healthcare provider in an unfavourable and unknowledgeable light (Priddis et al., 2014a; Williams et al., 2005). The majority of women described a '*professional silence*' from healthcare professionals which resulted in women feeling that their symptoms are not culturally acceptable to be discussed or were a normal consequence of childbirth (Herron-Marx et al., 2007; Tucker et al., 2014).

Women described their anger and frustration, specifically with a lack of information and availability of appropriate/specialised services (Priddis et al., 2014a; Tucker et al., 2014). In contrast, if support or advice was available then this seemed to alleviate the distress women experienced (Williams et al., 2005). These findings highlight a need for specialist services to be provided to women, especially those with OASI or on-going symptoms.

### **Quantitative evidence**

No quantitative studies providing data on perception/need for postpartum care after experiencing perineal trauma were identified by this review.

### **Adjusting to a new normal – Coping and Compromise**

Although not as 'data-rich' as the others, this theme describes how women adapt to the changes (i.e. pain/incontinence) imposed by their perineal trauma. It includes descriptions of how women adjust to their 'new kind of normal', and the consequences any symptoms may have on their psychological and/or emotional wellbeing.

Five studies describe women's accounts of adapting to the changes imposed by their symptoms, three of which included women with various levels of perineal trauma (Herron-Marx et al, 2007; O'Reilly et al, 2009; Way, 2012) and two investigated women's experiences of OASI (Priddis et al., 2014a; Tucker et al., 2014).

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For those who were specifically interviewed about enduring symptoms (O'Reilly et al., 2009; Williams et al., 2005), some described their symptoms as a minor inconvenience, whereas others described their symptoms as being more severe and impacting significantly upon their sexual and social functioning. Most women described resigning to their symptoms and adapting their lives accordingly (Herron-Marx et al, 2007; O'Reilly et al., 2009). However, for those with OASI, they described an overwhelming negative psychological response to the struggles of basic bowel control, referring to themselves as 'dirty' (Priddis, Schmied, & Dahlen, 2014), and some described their frustration at the loss of their social and sexual freedom (Tucker, 2014).

### **Quantitative evidence – Perineal trauma and psychological wellbeing**

This review found no quantitative studies surrounding the theme of adapting to symptoms resulting from perineal trauma. However, women's accounts suggest that there is an overarching theme relating to the psychological and/or emotional implications of experiencing perineal trauma during childbirth. This review identified 8 quantitative studies investigating the effects of perineal trauma on psychological/emotional wellbeing that could be considered to be relevant to women's accounts already described in this review.

### **Perineal trauma and symptoms of postnatal depression**

Three studies investigated the effects of perineal trauma on symptoms of depression using the Edinburgh Postnatal Depression scale (EPDS: Cox, 1987). Two of these studies investigated the effect of spontaneous perineal trauma (Dunn, Paul, Ware, & Corwin, 2015; Fleming, Hagen, & Niven, 2003), and one investigated the effects of undergoing an episiotomy (Ejegård et al., 2008). One of the studies found that those who experienced any degree of perineal trauma displayed higher scores 1 week postpartum than those with no perineal injuries, and those with a 2<sup>nd</sup> degree or more severe tear displayed higher scores at 1 and 3 months postpartum compared to those with less severe perineal trauma (Dunn et al., 2015). These findings suggest that experiencing any degree of perineal trauma is associated with a higher risk of experiencing depressive symptoms and that symptoms can be persistent for those with a 2<sup>nd</sup> degree or more severe tear. In contrast, the second study found no effect

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of sutured vs. unsutured 2<sup>nd</sup> degree tears on EPDS scores at 10 days and 6 weeks postpartum (Fleming et al., 2003). The differences in findings between the two studies may be due to differences in discomfort and healing. In the former study, scores for depressive symptoms were positively correlated with inflammatory markers analysed via blood samples, suggesting that inflammation, and possibly pain, is positively associated with experiencing more depressive symptoms. In the latter study, where no association was found, there were no significant differences in pain scores between those who were sutured and those who were not sutured. Only one study considered the effects of episiotomy on depressive symptoms (Ejegård et al., 2008), where it was found that in the immediate postpartum, those who received a restrictive episiotomy (performed only if absolutely necessary) experienced more depressive symptoms than those who had a routine episiotomy (in all cases of instrumental birth). Those in the restrictive group also experienced more physiological symptoms, such as urinary incontinence and pain and this may further suggest that it may be the pain associated with perineal trauma that contributes to psychological distress.

### ***Perineal trauma and other symptoms of psychological distress***

There is a paucity of quantitative research investigating other types of psychological difficulties. One study investigating the effects of OASI 18 years after the birth, found that those who had experienced OASI had a marginally lower mental health score than those who did not experience OASI (Otero et al, 2006). In contrast, another study found no significant differences in psychological health between those with vs. those without OASI at 5 years postpartum (Boij et al., 2007). One study investigating the prevalence of posttraumatic stress (PTS) symptoms in women who had given birth vaginally, found that 38.2% of those experiencing an episiotomy experienced PTS symptoms at 6-24 weeks after the birth compared to 28% of those without an episiotomy (Firouzkouhi Moghaddam, Shamsi, & Ghazihosseini, 2015). Within these studies the methodology used varied with regards to the perineal status of the women, the timing of measurements and the analyses used further clarification is needed with regards to the full range of psychological difficulties women may experience after perineal trauma.

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### Discussion

The results of this review suggest that experiencing perineal trauma during childbirth has the potential to influence a woman's experience of birth and psychological and emotional wellbeing in the longer term.

Women's accounts suggest that perineal trauma is a part of childbirth shrouded in mystery and uncertainty. Women seek explanations for the cause of their injuries and information about any potential impact on future functioning. The uncertainty surrounding perineal trauma and the negative descriptions of the suturing process, suggest that there may be some impact on a woman's experience of birth, however the results from the quantitative literature do not always reflect this. Future research should clarify the impact of perineal trauma on birth experience given the accounts in the qualitative literature. Unfortunately it may not be just birth experience that is negatively affected by experiencing perineal trauma during childbirth. Those who experienced persistent pain or incontinence described the negative impact this had on various aspects of their lives such as their sexual functioning. Again, the quantitative research did not always reflect women's accounts, possibly due to the various methodological issues already discussed (measurements, timing, perineal status comparison groups).

Throughout women's descriptions of their experiences, there was an overarching theme depicting the potential impact of perineal trauma on psychological health and wellbeing. Again, the quantitative literature did not always reflect this and was quite sparse and limited in its consideration of the different elements of psychological distress postnatally (i.e. no consideration of postnatal anxiety or adequate consideration of posttraumatic stress symptoms). In addition, no two studies used the same comparison groups or timing of measurement, and only three used the same measurement tool (EPDS). Previous research has examined the association between other birth events (i.e. medical interventions) during childbirth and maternal psychological health postnatally in order to better identify predictors of distress postnatally (Brummelte & Galea, 2016; Yildiz et al., 2016). Based on the accounts presented in this review, and the potential for long-term physical symptoms, future



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research may benefit from including perineal trauma when assessing predictors of psychological distress postnatally.

Future research should clarify the extent of the impact of perineal trauma and only then can this be used to inform care practices. Women's accounts of their experiences of postnatal care, especially when experiencing problems, suggests that postnatal care could be improved. It may also be helpful to clarify women's experiences of care, in a cross-cultural context as care provision may differ internationally. For example, in the United Kingdom (UK), the Royal College of Obstetricians and Gynaecologists (RCOG) provide guidelines on the classification, treatment and postnatal care provision for women with 3<sup>rd</sup> and 4<sup>th</sup> degree tears (Fernando, Williams, & Adams, 2007). The guidelines recommend the following-up of women within a dedicated perineal clinic, however given the accounts in the literature from women in the UK and Australia, it is unlikely that this level of care is routinely provided across the UK or indeed internationally. In addition to differences in care provision, it is also important to be mindful of the differences in the rates of perineal trauma internationally. For example, a study of the variation in rates of perineal trauma in 20 European countries found that the incidence of episiotomy ranged from 3% to 75%, and the occurrence of 3<sup>rd</sup>/4<sup>th</sup> degree tears ranged from 0.1%-4.9% (Blondel et al., 2016).

### Conclusion

Little research considers the diverse impact perineal trauma may have on psychological and emotional wellbeing following childbirth. Qualitative research suggests perineal trauma is poorly understood and when experienced, can create additional stress for women as they attempt to manage the physical and psychological consequences following the birth. The psychological impact of perineal trauma seems to be exacerbated by difficulties in navigating appropriate care.. Despite the diverse impact women describe perineal trauma having on their postnatal wellbeing, quantitative comparative studies do **not always reflect such an impact**, and this may be due to the various methodological limitations highlighted in this review.

This review has found that there are currently no studies comparing various levels of perineal trauma longitudinally with clearly disclosed perineal status information for each comparison group. Further research should be mindful of the methodological limitations of previous research and focus on clarifying the impact of perineal trauma on experience of birth,



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experience of care and psychological and emotional wellbeing after childbirth. Once these fundamental steps are taken to clarify the impact of perineal trauma, recommendations for improvements to care can be made.

### **Limitations of this review**

The highly subjective nature of thematic synthesis used in this review is acknowledged. This process is clearly detailed in the methodology and relevant tables as indicated. The process was grounded in the themes used across the qualitative papers by the original authors and the outcome variables of the quantitative studies to minimise extrapolation/inference beyond the data provided in each study. Themes generated from both types of data were cross-checked with another researcher to enhance rigor. Another limitation was the inclusion of papers only published in English, however due to the unavailability of a translator inclusion of other papers was not possible.

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Figure 1.1. PRISMA flow diagram depicting screening and selection process

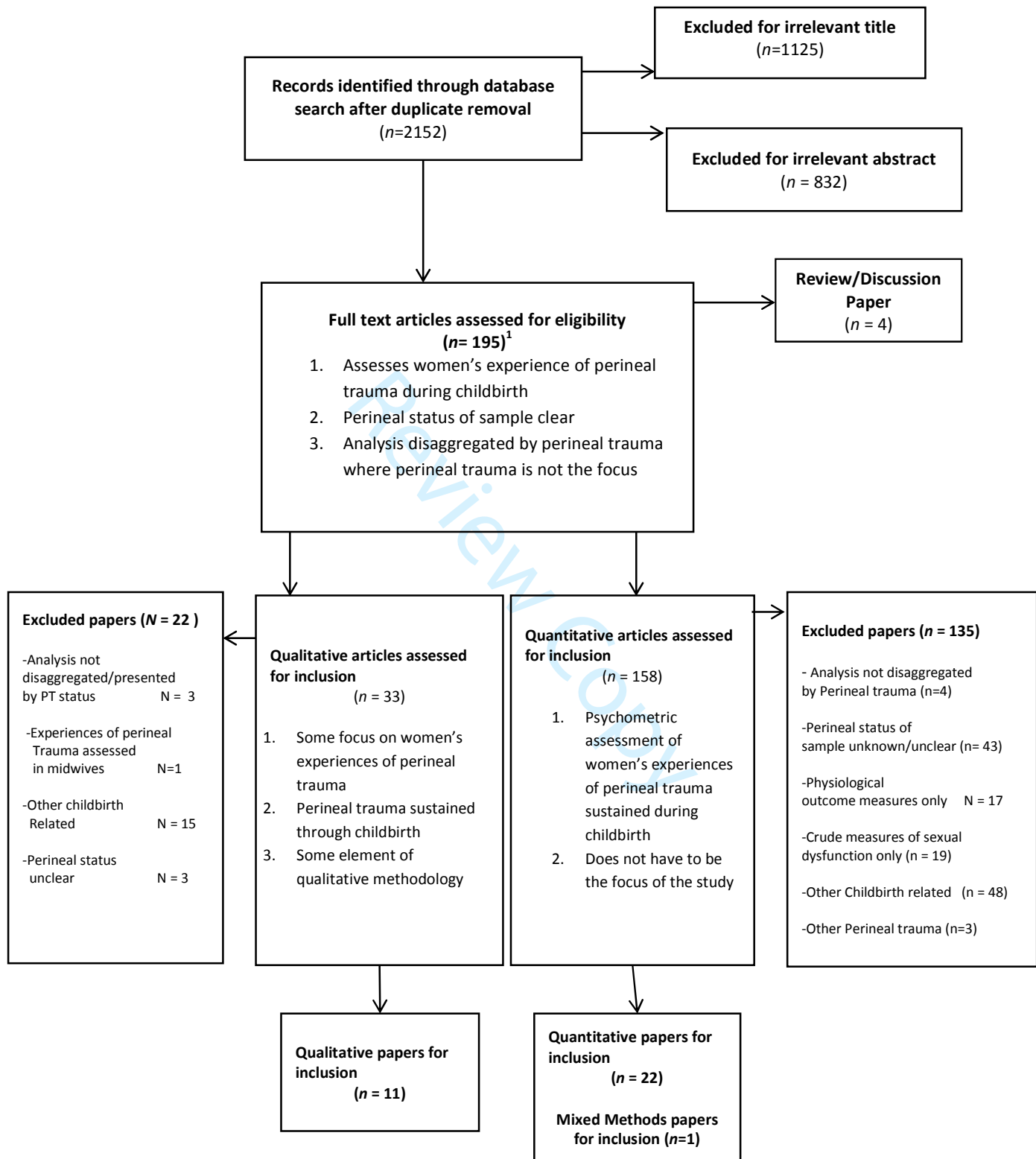


Table 1.2 Table of Included studies (All study types)

Author (Year) Country	Participants	Measurement tool(s)/ Timing	Analysis
<b>Quantitative Studies</b>			
<b>Boij et al., (2007) Sweden</b>	38 with OASI, 34 without OASI	Author developed (body image, social problems, aftercare, perineal problems, SF, thoughts about future pregnancies) 5 years PP	Chi-Square ( $p<0.05$ )
<b>De Souza et al., (2015), Australia</b>	286/437 completed all three time points	FSFI AN, 6 months and 12 months PP	Linear Mixed Modelling for perineal status ( $p<0.05$ )
<b>Dunn et al., (2015) USA</b>	155 women 32% with 2 <sup>nd</sup> degree PT or more severe	EPDS and PSS AN, 1 and 2 weeks PP and 1,2,3 and 6 months PP	Independent <i>t</i> tests and Chi-Square ( $p<0.05$ )
<b>Ejegard et al., (2008) Sweden</b>	111 episiotomy, 153 controls	MFSQ and self-developed questionnaire (Sjogren, 1998) at 12-18 months PP	<i>t</i> tests, chi-square, spearman rank correlations ( $p<0.05$ )
<b>Evers et al., (2012), USA</b>	449, 48 OASI, 146 non OASI, 255 C-section	EPIQ, CRAIQ-7 10 years PP	Fisher exact, Kruskal-Wallis, Logistic Regression ( $p<0.05$ )
<b>Moghaddam et al., (2015) Iran</b>	400 women	PSS-I, author developed questions to assess DSM-IV criteria for PTSD (A1 and A2)	<i>t</i> -test, Chi-square Pearson's correlation ( $p<0.05$ )
<b>Fleming et al., (2003)</b>	74 women randomised	EPDS at 1, 10 and 6 days PP	Mann Whitney <i>U</i> test, Logistic regression ( $p<0.05$ )
<b>Jawed-Wessel et al., (2013) USA</b>	213, 42 with episiotomy, 128 sutured PT	SFQ-MIS and PSS up to 1 year PP	Exploratory Factor Analysis and ANOVA ( $p<0.05$ , 0.01, 0.001)
<b>Khajehei et al., (2015) Australia</b>	325 women	FSFI, PHQ-8 and RAS up to 12 months PP	Chi-Squared, Independent <i>t</i> -test, Multiple logistic regression ( $p<0.05$ )
<b>Larsson et al., (2011) Sweden</b>	541 women, 460 experienced PT	W-DEQ-B, Experience of birth VAS (Rated with negative to positive anchors) 3 and 9 months PP	Kendall's Tau, Logistic Regression ( $p<0.05$ )
<b>Leal et al., (2013) Portugal</b>	108 during pregnancy 93 3 months PP	FSFI AN and 3 months PP	Paired <i>t</i> -test ( $p<0.05$ )
<b>Lurie et al., (2013) Portugal</b>	79 women, 16 without episiotomy, 14 with episiotomy, 16 instrumental birth, 19 EmCs	FSFI at 6, 12 and 24 weeks PP	Kruskal-Wallis, Repeated measures GLM ( $p<0.05$ )
<b>Macleod et al., (2013)</b>	198 randomised -98 restrictive, 100 routine episiotomy	EPDS =Baseline AN, 6 weeks and 1 year PP	M <sup>c</sup> nemar's test, <i>t</i> -test ( $p<0.05$ )



Table 1.3 Continued

Author(Year) Country	Participants	Measurement tool(s)/ Timing	Analysis
Otero et al., (2006) Switzerland	197 OASI, 200 non OASI	SF-12 and FSFI 18 years PP	Chi-Square, <i>t</i> -test, Wilcoxon rank sum ( $p<0.05$ )
Pastore et al., (2007) USA	113 at 4 months PP 99 at 12 months PP	Author Developed Questionnaire to address sexuality concerns in	Kruskal-Wallis ( $p<0.05$ )
Rikard-Bell et al., (2014) Australia	766 women 79% PT, 60% spontaneous, 19% episiotomy	PFDI-20, PISQ-12 at least 6 months PP	ANOVA ( $p<0.05$ )
Rogers et al., (2009) USA	276, 83 no PT, 1 <sup>st</sup> Unsutured PT/ 193 2 <sup>nd</sup> /3 <sup>rd</sup> /4 <sup>th</sup>	IRS 3 months PP	<i>t</i> -tests, fisher exact, Wilcoxon rank sum ( $p<0.05$ )
Safarinejad et al., (2009) Iran	184 SVD, 182 VDE, 180 OVD, 182 PCS, 184 ECS	FSFI 24 <sup>th</sup> week of pregnancy, every month up to 12 months PP	<i>t</i> -test, ANOVA, Mann-Whitney U, multiple regression ( $p<0.05$ )
Storksen et al., (2013) Norway	51 women with OASI	W-DEQ, Hopkins symptom checklist, EPDS, NRS measuring experience of birth from 0 'very good' to 10 'extremely bad'	Chi-square, logistic regression ( $p<0.05$ )
Symon & Dobb (2011) UK	34 women AN and 19 PN	MGI & GHQ 28-36 weeks AN and 6 weeks PP with and a series of questions about support during labour and birth asked at 6 weeks PP	<i>t</i> -tests, Stepwise regression ( $p<0.05$ )
Thompson & Miller (2015) Australia	3542 women, 424 experienced episiotomy	Having a Baby in Queensland Survey, 2010 developed by authors	Descriptive statistics (%)
Wegnelius & Hammarstrom (2011) Sweden	136 OASI, 211 vaginal without OASI, 121 EICs	Author developed questionnaire to assess long-term effects of OASI on pelvic floor, attitude to future deliveries and second delivery	Logistic Regression 95% Confidence intervals
Briscoe et al., (2015) UK	40 women, 21 interviewed all experienced perineal suturing	MCPQ-SF, HADS given on the same day as birth, Semi-Structured face to face interviews between 0-9 days PP	Quant: Kendall's Tau, Kruskal Wallis Qual: Thematic analysis and integrated using Framework Analysis

Table 1.3 continued

Qualitative Studies			
Author(Year) Country	Participants	Measurement tool(s)/ Timing	Analysis
Gillard & Shamley (2010) UK	10 PP women 2 sustained 2 <sup>nd</sup> degree, 7 a 3 <sup>rd</sup> degree and 1 a 4 <sup>th</sup> degree tear	Semi-structured interviews – questions based on the Health Belief Model	Thematic analysis
Herron-Marx et al., (2007) Birmingham	20 interviewed (7 - 2 <sup>nd</sup> degree tear, 4-episiotomy, 1-3 <sup>rd</sup> degree tear, 1-intact perineum and 1- C-section	Semi-structured interviews at 12-18 months PP, response grids based on interview data (n=14)	Thematic analysis
O'Reilly et al., (2009) Australia	10 women with pelvic injuries from childbirth	Conversational interviews (narrative data) 6 weeks to 5 years PP	Thematic analysis using Van Manen's (1997) phenomenological reflection
Priddis et al., (2014)a Australia	12 women with OASI	Semi-structured interviews 7 weeks to 12 years PP	Thematic analysis with a feminist perspective
Priddis et al., (2014)b Australia	12 women with OASI	Semi-structured interviews 7 weeks to 12 years PP	Thematic analysis with a feminist perspective
Salmon (1999) UK	6 women with PT (unspecified degree)	Unstructured interview (time since birth unspecified)	Guided by an 'established framework' (Burnard, 1991)
Stramrood et al., (2012)Netherlands	3 women with PTS symptoms	EMDR, descriptions of assessment and outcome presented	N/A
Thompson (2015) UK	11 women, 10 with 2 <sup>nd</sup> degree tear	Unstructured interviews within 1 month PP	Thematic content analysis
Tucker et al., (2014) Australia	10 women with OASI and symptomatic of AI	Semi-structured interviews (time since birth unspecified)	Van Manen's thematic analysis
Way (2012) UK	11 women – 4 no PT, 4 =varying PT, 3=episiotomy	Diaries for 10 days PP and interviews within 2 weeks of collecting diary	Grounded theory
Williams et al., (2005) UK	10 women with OASI attending a specialist clinic	Focus group 1 (n=6): 3 <sup>rd</sup> degree tear in index pregnancy , Focus group 2 (n=4): Women who had given birth following 3 <sup>rd</sup> degree tear	Grounded theory

RCT = Randomised Controlled Trial, OASI=Obstetric Anal Sphincter Injury, SF=Sexual functioning, PP=Postpartum, FSFI = Female Sexual Functioning Index, EPDS = Edinburgh Postnatal Depression Scale, PSS=Perceived Stress Scale, AN=Antenatally, PT = Perineal trauma, N.S = Non-significant MFSQ:McCoy Female Sexuality Questionnaire, EPIQ: Epidemiology of Prolapse and Incontinence Questionnaire, CRAIQ-7: Colorectal-Anal Impact Questionnaire, DSM = Diagnostic and Statistical Manual of mental disorders., PTSD = Post Traumatic Stress Disorder, SFQ-MIS: sexual function questionnaire medical impact scale, PSS-I: PTSD symptom scale-Interview, ANOVA = Analysis of Variance, PHQ-8:Patient Health Questionnaire , RAS: Relationship Assessment Scale, W-DEQ-B: Wijma Delivery Expectation Questionnaire Section B, EmCs = Emergency Caesarean section, SF-12: Short form Health survey, PFDI-20: Pelvic floor distress inventory, PISQ-12: Prolapse urinary incontinence questionnaire, IRS: Intimate relationship scale, MGI: Mother Generated Index, GHQ: General Health Questionnaire, SVD= spontaneous vaginal delivery without perineal injuries, VDE = vaginal delivery with episiotomy or laceration, OVD = Operative delivery, PCS = planned caesarean section, ECS = emergency caesarean section, NRS = numeric rating scale, PN = postnatal, MGI = Mother Generated Index, GHQ = General Health Questionnaire, EICs = Elective Caesarean section, PTS = Posttraumatic stress, AI = Anal Incontinence

	Boij et al.,(2007)	Briscoe et al., (2015) *	De Souza et al., (2015)	Dunn et al.,(2015)	Ejegard et al., (2008)	Evers et al., (2012)	Moghadam et al., (2015)	Jawed-Wessell et al., (2003)	Khajehei et al., (2015)	Larsson et al., (2011)	Lurie et al., (2013)	Otero et al., (2006)	Pastore et al., (2006)	Riakrd-Bell et al., (2014)	Rogers et al., (2009)	Safarnejad et al., (2009)	Storksen et al., (2012)	Wegnelius & Hammerstrom (2010)	Fleming et al., (2003)	Macleod et al., (2013)	Leal et al., (2013)	Symon & Dobb (2011)	Thompson & Miller (2014)		
<b>Quantitative non-randomised</b>																									
8																									
9	Are there clear research questions/ objectives?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
10	Do the collected data address the research question?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
11	Are participants recruited in a way that minimises selection bias?	Y	X	Y	Y	Y	X	N	N	Y	Y	Y	N	Y	Y	Y	Y	Y							
12	Are the measurement tools used appropriate?	Y	Y	Y	Y	Y	X	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y							
13	Comparison groups are comparable/differences between groups controlled for/considered?	Y	N	N	Y	N	N	Y	N	Y	Y	N	X	N	Y	Y	Y	N							
14	Complete outcome data (80% and above) and uptake rate of 60% or above?	Y	Y	Y	Y	Y	X	Y	Y	Y	N	N	N	N	Y	Y	Y	Y							
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16	<b>Quantitative Randomised Controlled Trials</b>																								
17																									
18	Is there a clear description of the randomisation?																			Y	Y				
19	Is there a clear description of the allocation concealment/blinding?																			Y	N/A				
20	Are there complete outcome data 80% or above?																			Y	Y				
21	Are there low withdrawal/attrition below 20%?																			X	N				
22																									
23	Is the sampling strategy relevant to address the quantitative research question?																						Y	Y	Y
24	Is the sample representative of the population under study?																						X	X	N
25	Are measurements appropriate?																						Y	Y	Y
26	Acceptable response rate of 60% or above?																						Y	N	N

34 Y=Yes, N=No, X=Can't tell , \* = mixed methods study see also qualitative appraisal table for qualitative and mixed appraisal items

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Table 1.3 Quality Appraisal of qualitative studies using the MMAT

	Briscoe et al., (2015)*	Gillard & Shamley (2010)	Herron-Marx., (2007)	O'Reilly et al., (2009)	Priddis et al., (2014a)	Priddis et al., (2014b)	Salmon (1999)	Stramrood et al., (2012)	Thompson (2015)	Tucker et al.,(2014)	Way (2012)	Williams et al., (2005)
Are there clear qual/quant/mixed research questions/objectives?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Does the collected data address the research question/objective?	Y	Y	Y	Y	Y	Y	Y	X	Y	Y	Y	Y
Are the sources of qualitative data relevant to address the research question?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Is the process for analysing qualitative data relevant to address the research question/objective?	Y	Y	Y	Y	Y	Y	Y	N/A	Y	Y	Y	Y
Is appropriate consideration given to how findings relate to context?	Y	Y	N	N	N	Y	N	Y	Y	Y	Y	Y
Is appropriate consideration given to how findings relate to researcher's influence e.g. through their interactions with participants?	Y	N	N	N	Y	Y	N	X	Y	Y	N	Y
<b>MIXED METHODS</b>												
Is the mixed methods research design relevant to address the research question?	Y											
Is the integration of qualitative and quantitative data/results relevant to address the research question?	Y											
Is appropriate consideration given to the limitations associated with this integration?	N											

Y= yes, N=no, X= can't tell \* = mixed methods study, see also quantitative appraisal table

**Table 1.4. Relationship between the themes derived from thematic analysis and themes in qualitative papers**

	The Mystery of Perineal Trauma	The Misery of Perineal Suturing	The Postnatal Perineum	Normalisation and Feeling Dismissed	Adjusting to a New Normal
Briscoe et al., (2015)		1, 2			
Gillard & Shamley (2010)	1		2, 3		
Herron-Marx et al., (2007)	4, 5		2, 3, 4, 5	1, 3, 4, 5	4,
O'Reilly et al., (2009)			1, 2,	2, 3, 4	2
Priddis et al., (2014a)	1b, 2c, 3	1a,b,	2a,c,d,	1c, 2d, 3	3
Priddis et al., (2014b)*	2	3		4	
Salmon (1999)		1		2, 3	
Thompson & Walsh (2015)	1, 3	1	2	3	
Tucker et al., (2014)			1a,b,c, 2a,c, 3a	2a, b,c,	3b
Way (2012)	2		1, 2, 3, 4,		1, 4, 5, 6
Williams (2005)	2, 5		4, 5, 6,	1, 3, 5	

\* Study uses data from interviews in former study by same authors

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**Supplementary 1. Qualitative papers included in the systematic review**

Author	Method	Focus	Sample/Perineal Status	Themes
Briscoe et al., (2015) Liverpool, UK	Mixed methods - Observations of perineal suturing, interviews with women, HADS and MPQ-SF questionnaire	Women’s experiences of pain during suturing	40 women, most with a 2 <sup>nd</sup> degree tear, episiotomy, mean age 28.7 21 women interviewed - all had undergone perineal suturing	1. Previous experience and psychological distress 2. Style of communication during suturing
Gillard & Shamley (2010) UK	Cross-sectional, retrospective interview study within 6-10 weeks of giving birth	Determining what motivates women to adhere to pelvic floor exercises	10 women, mean age 32.8, 6 were primiparous 2 sustained 2 <sup>nd</sup> degree, 7 a 3 <sup>rd</sup> degree and 1 a 4 <sup>th</sup> degree tear	1. Knowledge and understanding of perineal injury and PFMEs 2. Personal experience of symptoms and motivation for PFMEs 3. Fear of experiencing symptoms 4. Perceived self efficacy for PFMEs
Herron-Marx et al., (2007) Birmingham, UK	Retrospective Q methodology - Postal response grid and use of interviews	Examining women’s experiences of enduring perineal morbidity	20 women 12-18 months postnatal (interview), 14 in the response grid stage - 7 had a 2 <sup>nd</sup> degree tear, 4 had an episiotomy, 1 had a 3 <sup>rd</sup> degree tear, 1 had an intact perineum and 1 had a caesarean section	1. A Morbidity of minor inconvenience 2. Insufficient support and services 3. The taboo of perineal morbidity 4. Normalising perineal morbidity 5. Isolation of perineal morbidity
O’Reilly et al., (2009) NSW, Australia	Phenomenology using narrative data from in depth interviews (symbolic drawings presented elsewhere)	Women’s experiences of recovery from childbirth in the presence of pelvic problems	Purposive sample of 10 mothers 6 weeks to 5 years postnatal who had experienced persistent pelvic problems, 5 primiparous and 5 multiparous	1. Fearing intimacy 2. Managing an unpredictable body 3. Being resigned 4. Feeling devalued and dismissed

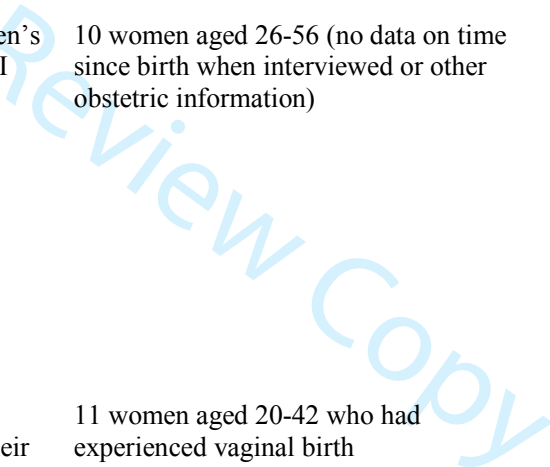
**Supplementary 1 Continued**

Author	Method	Focus	Sample/Perineal Status	Themes
Priddis et al., (2014a) Australia	Qualitative interviews with an interpretive feminist perspective	Explore how women make meaning of living with OASI	Self-selected sample 12 women from 7 weeks postnatal to 12 years , 11 women experienced a 3 <sup>rd</sup> degree tear and 1 a 4 <sup>th</sup> degree tear  Snowball sampling also used	<ol style="list-style-type: none"> <li>1. The abandoned mother               <ol style="list-style-type: none"> <li>a. Vulnerable and exposed I feel like a piece of meat</li> <li>b. If only they told me</li> </ol> </li> <li>2. The fractured fairytale               <ol style="list-style-type: none"> <li>a. A broken body</li> <li>b. Achieving a vaginal birth</li> <li>c. The contaminated uncontrolled body</li> <li>d. They lived happily ever after</li> </ol> </li> <li>3. A completely different normal               <ol style="list-style-type: none"> <li>a. Defining a new sense of self</li> </ol> </li> </ol>
Priddis et al., (2014b) Australia	Semi-structured interviews (method cited in Priddis et al.,2013)	Describe current health service provided to women with OASI	12 women who had sustained OASI (Method in Priddis et al., 2014a)	<ol style="list-style-type: none"> <li>1. Patchwork of policy and process</li> <li>2. Beliefs about causes of OASI</li> <li>3. Attitudes of health professionals</li> <li>4. Falling through the gaps</li> <li>5. Continuity of carer</li> </ol>
Salmon (1999) UK	In-depth, unstructured interviews analysed using feminist analysis	Provide an account of womens experiences of perineal trauma immediately post birth	Snowball sample of 6 women who had experienced some degree of perineal trauma (Not specified) All white British aged 25-40, all employed	<ol style="list-style-type: none"> <li>1. Experiences of interpersonal relationships during suturing</li> <li>2. The experiences of social support and interpersonal relationships during healing</li> <li>3. Feelings associated with coming to terms with perineal trauma</li> </ol>
Stramrood et al., 2012 Netherlands*	Use of EMDR to reduce PTS symptoms during pregnancy	Case studies of women with PTS symptoms following childbirth		N/A

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**Supplementary 1 Continued**

<b>Author</b>	<b>Method</b>	<b>Focus</b>	<b>Sample/Perineal Status</b>	<b>Themes</b>
Thompson (2015) UK	Interviews with a phenomenological methodology	Women’s perceptions of perineal repair	11 women were interviewed within 1 month of giving birth, 10 sustained a 2 <sup>nd</sup> degree tear	<ol style="list-style-type: none"> <li>1.</li> <li>2. The mystery of perineal repair</li> <li>3. Perineal repair and transition to motherhood</li> <li>4. Midwife facilitated repair a completely normal experience</li> </ol>
Tucker, Clifton & Wilson (2014) Australia	Interviews Interpretive phenomenological study	Describing women’s experiences of AI after a history of OASI	10 women aged 26-56 (no data on time since birth when interviewed or other obstetric information)	<ol style="list-style-type: none"> <li>1. Grieving for loss               <ol style="list-style-type: none"> <li>a. Near the edge</li> <li>b. Loss of young adulthood</li> <li>c. Loss of middle adulthood</li> </ol> </li> <li>2. Silence               <ol style="list-style-type: none"> <li>a. Keeping silent</li> <li>b. Professional silence</li> <li>c. Breaking the silence</li> </ol> </li> <li>3. Striving for normality               <ol style="list-style-type: none"> <li>a. Retreating inside</li> <li>b. Compromise</li> </ol> </li> </ol>
Way (2012) UK	Interviews and diaries Analysed using constant comparative method	Women’s experiences of their perineum following childbirth	<p>11 women aged 20-42 who had experienced vaginal birth 6 primiparous women and 5 multiparous women</p> <p>4 women had an intact perineum, 4 had a spontaneous tear and 3 experienced an episiotomy</p>	<ol style="list-style-type: none"> <li>1. Striving for normality</li> <li>2. Preparing for the unknown</li> <li>3. Experiencing the unexpected</li> <li>4. Adjusting to reality</li> <li>5. Getting back to normal</li> <li>6. Recovery of self</li> </ol>





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Williams et al., (2005) UK	Focus groups	Explore the views and experiences of women in the PP period after experiencing a 3 <sup>rd</sup> degree tear	FG 1 - women from 7 months to 21 months postpartum – 6 women mean age 31.5 all primips FG 2 – 30 months to 42 months postpartum 4 women pregnant after experiencing OASI mean age 32	<ol style="list-style-type: none"><li>1. Apprehension</li><li>2. Information/communication</li><li>3. Support</li><li>4. Physical impact</li><li>5. Emotional Impact</li><li>6. Sexual relationships</li><li>7. Lack of involvement in decision for subsequent delivery</li></ol>
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\*Case Study

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*Supplementary 2. Quantitative papers included in the systematic review*

Author	Focus	Sample	Method/Measures	Findings of interest	Outcome variables
<b>Boij et al., 2007 Sweden</b>	The effects of sphincter injuries on women's Sexual Functioning (SF), wellbeing and thoughts on future pregnancies	38 women with OASI/control group of 34 women without OASI -5 years after birth	25 item <b>author-developed</b> YES/NO or VAS based questionnaire	OASI more likely to not have resumed 6 months postpartum (12 vs. 3, $P<0.05$ ). Having a more positive/negative attitude towards body image and increased/decreased self-esteem N.S OASI more likely to hesitate becoming pregnant again (14 vs. 5, $p=0.05$ ) citing fear of physiological problems. OASI more likely to experience difficulties resuming hobbies (15 vs. 5 $p= 0.05$ ). Women OASI felt information was inadequate and did not know where to seek help	<b>Sexual functioning</b> <b>Psychological Health</b> <b>Social Functioning</b>
<b>De Souza et al., 2015 Australia</b>	Effects of mode of birth and perineal trauma on SF	286/437 completed all three time-points	<b>FSFI</b> antenatally, 6 months PP and 12 months PP	Sexual function, desire, arousal, orgasm and pain were all negatively affected by perineal injury with deterioration seen at 6 months PP ( $p<0.05$ ). Subsequent improvement to baseline levels by 12 months PP with no difference in overall SF between women with an intact perineum or who sustained any type of injury ( $p>0.05$ )	<b>Sexual Functioning</b>
<b>Dunn et al., (2015) USA</b>	Relationship between perineal lacerations, inflammatory pathways and depressive symptoms	155, 64% experienced perineal trauma of any degree, 32% 2 <sup>nd</sup> or more severe	<b>EPDS and PSS</b> AN, 1 week, 2 weeks, 1, 2, 3, and 6 months PP	Any degree of PT was associated with higher EPDS at 1 week PP than no injury (4.6 vs 3.12, $p=0.02$ ). Persistent significant higher EPDS in 2 <sup>nd</sup> or more severe vs. less than 2 <sup>nd</sup> at 1 month (3.05 vs 4.55 $p=0.04$ ) to 3 months PP (2.81 vs 4.15, $p= 0.03$ ). PSS N.S between those with vs. without injury, PSS significantly higher at 3 months PP in women with 2 <sup>nd</sup> degree or more severe vs. less than 2 <sup>nd</sup> degree ( <b>mean=20.8 vs 17.2, respectively; <math>p=0.02</math></b> )	<b>Psychological Health</b>
<b>Ejegard et al., 2008 Sweden</b>	SF 12-18 months after first episiotomy-assisted birth	111 women who had experienced episiotomy vs. 153 aged matched controls	<b>MFSQ Self-Developed</b> Questionnaire from previous study (Sjögren, 1998) at 12-18 months	No difference in sexual satisfaction or sexual functioning. Episiotomy group reported more severe pain ( <b>severe/very severe: cases 70.9% vs. controls 56.3%, <math>p=0.028</math></b> ), felt less strengthened by childbirth ( <b>Hardly/Not at all 13.6 vs. 4.2%, <math>p=0.018</math></b> ) and reported the birth as worse/much worse than expected ( <b>55.5% vs. 38.5%, <math>p=0.018</math></b> )	<b>Sexual Functioning</b> <b>Experience of birth</b>

## Supplementary 2 continued

Author	Focus	Sample	Method/Measures	Findings of interest	Outcome variables
<b>Evers et al., 2012 USA</b>	Long term impact of OASI and AI	449 completed measure, 48 OASI, 146 non OASI, 255 c-section	<b>EPIQ</b> and <b>CRAIQ-7</b> 5-10 years after birth	Those with OASI and AI reported higher degrees of impairment on QoL than controls without OASI = symptoms having an effect on physical activities ( <b>OASI n=10/48 vs Vaginal no OASI 37/146 and C-section 47/255, p=0.002</b> ), social activities away from the home ( <b>15 vs. 38 vs. 59, p=0.008</b> ) and ability to travel by care for more than 30 minutes ( <b>12 vs. 31 vs. 57, p=0.015</b> )	<b>QoL</b> <b>Social Functioning</b>
<b>Firouzkouhi Moghaddam et al., 2015 Iran</b>	Prevalence of PTSD among PP women in Iran	400 women 6-24 weeks PP	<b>PSS-I</b> , 2 questions assessing sense of threat and 2 with emotional response/appraisal	38.2% of women who had experienced an episiotomy showed PTSD symptoms, 28% of those without episiotomy showed symptoms – <b>no inferential statistics computed for perineal trauma</b>	<b>Psychological Health</b>
<b>Fleming et al., 2003</b>	Differences in outcomes when 1 <sup>st</sup> /2 <sup>nd</sup> degree trauma is/is not sutured	74 randomised to sutured or not sutured	<b>EPDS</b> 1, 10 and 6 days PP	No significant differences in EPDS scores at 10 days ( <b>median 6 versus 5; 95% CI: 1.999 to 2.001, p= 0.668</b> ) or 6 weeks ( <b>median 2.5 versus 4; -3 to 0.999, p=0.214</b> ) postpartum	<b>Psychological Health</b>
<b>Jawed-Wessel et al., 2013 USA</b>	Assess SFW and MIS in first time mothers 1 year PP	213 primips 1-52 weeks PP, Epis (N=42) PT stitches (N=128)	<b>SFQ-MIS</b> <b>PSS</b>	Women who had undergone perineal suturing had significantly higher scores on the SFQ-MIS than those who did not ( <b>2.58 vs 2.40, p&lt;0.05</b> )  SFQ-MIS positively correlated with PSS ( <b>r = 0.17, p&lt; 0.05</b> )	<b>Sexual Functioning</b>
<b>Khajehei et al., 2015 Australia</b>	Female sexual dysfunction (FSD) after childbirth	325 women 0-12 months PP	<b>FSFI</b> <b>PHQ</b> <b>RAS</b>	No significant difference in proportion of women with FSD who had experienced a tear/episiotomy and those who had not ( <b>With FSD and Perineal trauma = 69, Without FSD with perineal trauma= 38, p&gt;0.05</b> )	<b>Sexual Functioning</b>

Supplementary 2 continued

Author	Focus	Sample	Method/Measures	Findings of interest	Outcome variables
<b>Larsson et al., 2011 Sweden</b>	Impact of socio-demographic and obstetric factors on birth exp. in first-time mothers	541 women, 460 experienced PT of any degree	<b>W-DEQ-B Experience of birth VAS (negative to positive)</b>	Perineal lacerations and wound healing not sig correlated with experience of birth at 9 months ( $p=0.417$ , $p=0.364$ ). Perineal pain negatively correlated with experience of birth at 3 months PP ( $t=-0.13$ , $p=0.006$ , $N=443$ )	<b>Experience of Birth</b>
<b>Leal et al., 2013 Portugal</b>	SF in pregnancy and 3 months PP after episiotomy	93/108 completed 3 month PP measures	<b>FSFI</b>	Significantly lower mean levels of sexual desire postnatally compared to prenatal score (2.79 vs 3.42 $T(56)=4.33$ , $p<0.001$ )	<b>Sexual functioning</b>
<b>Lurie et al., 2013 Portugal</b>	Mode of birth and sexual functioning	79 completed 3 months PP	<b>FSFI</b>	No sig differences between NVD, VDE and OVD groups at 6, 12 or 24 weeks ( $p>0.05$ )	<b>Sexual Functioning</b>
<b>Macleod et al., 2013</b>	Impact of restrictive vs routine episiotomy during OVD	198 randomised to routine (N=98) or restrictive epis (N=100)	<b>EPDS</b>	Mean EPDS higher following restrictive use of episiotomy at 6 weeks PP (6.7 vs 5.1, $p=0.01$ ), N.S at 1 year PP	<b>Psychological functioning</b>
<b>Otero et al., 2006 Switzerland</b>	Maternal health 18 years after AST	445 AST 445 controls 540 returned questionnaire	<b>SF-12 FSFI</b>	Mental health score on SF-12 marginally lower in women with AST ( $45.3 \pm 6.0$ vs $46.4 \pm 6.0$ , 95% CI 0-2.1, $p=0.05$ ) No difference in FSFI between groups No difference in impact of incontinence symptoms on QoL	<b>Psychological Functioning</b> -
<b>Pastore et al., 2007 USA</b>	Sexuality concerns of first time parents	205 4 mnths 205 12 mnths - non-overlap	<b>Author Developed Questionnaire</b>	No significant differences in concerns when stratified by those with/without episiotomy/tear	<b>Sexual Functioning</b>

## Supplementary 2 continued

Author	Focus	Sample	Method/Measures	Findings of interest	Outcome variables
<b>Rikard-Bell et al., 2014</b> <b>Australia</b>	Influence of Pelvic floor dysfunction on QoL	766 women, 79% had a perineal injury, 60% spontaneous tear 19% episiotomy, 5% sustained 3 <sup>rd</sup> /4 <sup>th</sup>	<b>PFDI-20</b> <b>PISQ-12</b> 6 months PP	No significant differences in rates of bother caused by sexual dysfunction. Women with an intact perineum reported highest rate of UI, Women with an episiotomy reported least amount of bother, those with a spontaneous tear were most distressed with UI symptoms. Differences in symptom of: Colorectal, POP, SF N.S ( $p>0.05$ )	<b>Sexual functioning</b>
<b>Rogers et al., 2009</b> <b>USA</b>	Presence and severity of spontaneous perineal trauma on sexual functioning	276 - minor trauma (N=83, no trauma, 1 <sup>st</sup> degree/unsutured), major trauma (N=193, 2 <sup>nd</sup> /3 <sup>rd</sup> /4 <sup>th</sup> degree)	<b>IRS</b> 3 months PP	IRS lower in 'major' group (33.5 vs 35.5, $p=0.02$ ) and stronger relationship in subset of women who were sutured (31.8 vs 35.5, $p=0.007$ ). Major trauma reported less satisfaction, less desire to be held/touched, more likely to report pain and much less satisfaction with appearance (66% vs 47% $p=0.003$ ). Controlling for parity: desire to be held was still lower in women with 'major' trauma ( $p=0.01$ ) and subset of women with major trauma and stitches continued to have poorer SF scores ( $p=0.03$ ) and reported less or much less satisfaction with their bodily appearance ( $p=0.01$ )	<b>Sexual functioning</b> <b>Psychological health</b>
<b>Safarinejad et al., 2009</b> <b>Iran</b>	Method of birth SF and QoL	836 women	<b>FSFI</b> AN and 12 months PP SF-36	Vaginal delivery or any other form of assisted delivery was consistently related to incidence of SD compared to a planned c-section. All values for QoL lower for VDE than SVD however referent group PCS so significance unknown	<b>Sexual functioning</b> <b>Psychological health</b>
<b>Storksen et al., 2013</b> <b>Norway</b>	Impact of previous birth experiences on maternal fear of childbirth	1357 women, 51 experienced AST	<b>Overall experience of birth on NRS 0-10</b>	Of those who experienced OASI at previous delivery, 7 reported a negative overall experience and 6 had FoC Those with OASI no more likely to report negative experiences ( $p=0.0186$ ) and no more likely to show FoC ( $p=0.149$ ) than those who had not experienced OASI	<b>Psychological health</b> <b>Experience of birth</b>

## Supplementary 2 continued

Author	Focus	Sample	Method/Measures	Findings of interest	Outcome variables
<b>Symon &amp; Dobb 2011 UK</b>	Using the mother-generated index postnatally to assess QoL	34 women AN and 19 PN	<b>MGI</b> <b>GHQ</b> 28-36 weeks AN and 6 weeks PP	Degree of PT was predictive of PN MGI, Each degree of PT associated with 0.9 decrease in QoL compared to AN score prediction alone ( $=0.86, p<0.001$ )	<b>Psychological health</b>
<b>Thompson and Miller 2015 Australia</b>	Decision making processes for 9 pregnancy labour and birth procedures	424 women who reported having an episiotomy	<b>Author Developed survey</b> 4-5 months PP	42.5% of women felt they were not informed about the risks/benefits of episiotomy ( $n=421$ ) 34.4% felt it wasn't their decision. Of those feeling 'informed' ( $n=242$ ) 13.6% their decision, 72.4% shared decision, 14% not their decision. Of those who were uninformed ( $n=179$ ) 1% their decision, 36.9% shared decision, 62% not their decision	<b>Experience of Birth/Care</b>
<b>Wegnelius and Hammarstrom 2011 Sweden</b>	Long term effects of OASI on Pelvic floor dysfunction	OASI at first delivery N=136 and two control groups NVD N=211 and EICs N=121	<b>Author Developed</b> 3-8 Years after first delivery	More women in OASI group wanted to postpone subsequent birth compared to caesarean/NVD groups (32.8% vs 17.4% vs 16.1%, $p=0.0007$ ) similar trend for wanting to abandon plans for more children (17.6% vs 13.2% vs 4.7% $p=0.0005$ )	<b>Psychological Health</b>

*Note: PP: Postpartum, NVD: normal vaginal delivery, OVD: operative vaginal delivery, NVE, Normal vaginal with episiotomy, AI: Anal Incontinence, EICs: Elective Caesarean section, QoL: Quality of life, SF: Sexual functioning, FSD: female sexual dysfunction, PT: Perineal Trauma, FoC: Fear of Childbirth, NRS: Numeric Rating Scale, VAS: Visual Analogue Scale, FSFI: Female sexual functioning index, EPDS: Edinburgh postnatal depression scale, PSS: Perceived Stress Scale, MFSQ-McCoy Female Sexuality Questionnaire, EPIQ: Epidemiology of Prolapse and Incontinence Questionnaire, CRAIQ-7: Colorectal-Anal Impact Questionnaire, PSS-I: PTSD symptom scale-Interview, SFQ-MIS: sexual function questionnaire medical impact scale, PHQ: Patient Health Questionnaire, RAS: Relationship Assessment Scale, W-DEQ-B: Wijma Delivery Expectation Questionnaire Section B, EMDR: Eye movement desensitisation and processing, SF-12: Short form Health survey, PFDI-20: Pelvic floor distress inventory, PISQ-12: Prolapse urinary incontinence questionnaire, IRS: Intimate relationship scale, MGI: Mother Generated Index, GHQ: General Health Questionnaire.*

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