Post-traumatic stress disorder following childbirth:  an update of current issues and recommendations for future research

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**Abstract**

**Objective:** This paper aimed to report the current status of research in the field of post-traumatic stress disorder following childbirth (PTSD FC), and to update the findings of an earlier 2008 paper. **Background:** A group of international researchers, clinicians and service users met in 2006 to establish the state of clinical and academic knowledge relating to PTSD FC. A paper identified four key areas of research knowledge at that time. **Methods:** Fourteen clinicians and researchers met in Oxford, UK to update the previously published paper relating to PTSD FC. The first part of the meeting focused on updating the four key areas identified previously, and the second part on discussing new and emerging areas of research within the field. **Results:** A number of advances have been made in research within the area of PTSD FC. Prevalence is well established within mothers, several intervention studies have been published, and there is growing interest in new areas: staff and pathways; prevention and early intervention; impact on families and children; special populations; and post-traumatic growth. **Conclusion:** Despite progress, significant gaps remain within the PTSD FC knowledge base. Further research continues to be needed across all areas identified in 2006, and five areas were identified which can be seen as 'new and emerging'. All of these new areas require further extensive research. Relatively little is still known about PTSD FC.

**Keywords:**

*PTSD; childbirth; review; theory; research*

## Introduction

There is now substantial empirical work showing that a proportion of women develop post traumatic stress disorder (PTSD) following childbirth, with potentially wide ranging consequences for them and their families (Fenech & Thomson, 2014). To date, research has focused on the proportion of women affected, risk factors for the development of PTSD following childbirth, and its impact on women. In contrast, there has been relatively little research into prevention, assessment and intervention. In 2006 an international group of researchers, clinicians and user-group representatives met to discuss the status of knowledge and formulate recommendations for research into PTSD following childbirth. Recommendations were made for research into (1) prevalence and comorbidity of PTSD after birth; (2) screening and treatment; (3) diagnostic and conceptual issues and (4) theoretical issues (Ayers, Joseph, McKenzie-McHarg, Slade & Wijma, 2008).

Research and understanding of PTSD following childbirth has increased considerably since that time. In 2014 a small meeting of researchers and clinicians from the UK and Europe was held with the aims of discussing progress in research, and considering key gaps in current understanding (see Appendix for a list of participants). The meeting focused on updating the four primary areas discussed in 2006 and identifying promising areas of developing knowledge.

This paper provides a summary of discussions at this meeting and aims to update our understanding of PTSD following childbirth and recommendations for research. The paper is in two sections. The first considers how research has developed in the areas originally considered in 2006. The second considers emerging areas for research identified as: (1) staff and pathways; (2) prevention and early intervention; (3) impact on families and children; (4) special populations; and (5) post-traumatic growth. As in the previous paper, discussions were based on the knowledge of individuals attending, and the multidisciplinary nature of the group means a variety of views were represented. As illustrated in Appendix A, the group included professionals from psychology, obstetrics, epidemiology and midwifery, and a range of expertise was represented including those working within clinical practice and research as well as those at the beginning of their careers, and those from a more senior perspective. Individuals were identified as having either published within the area of trauma related to birth, or working clinically with this population. This paper is

not a systematic review but represents the discussions on the day, and an overview of issues raised by participants.

A number of themes arose in most discussions. It was acknowledged that childbirth, when experienced as traumatic, may differ from other potentially traumatic events due to its culturally positive connotations, the need to consider at least two individuals at all times (mother and baby), the liminal nature of pregnancy and birth, that the event takes place within the context of formal care, and the potential issues for the mother of caring for a baby who may remind her of the trauma. This has implications for labelling, measurement, comparability with other populations with PTSD, and applicability of PTSD research into the context of traumatic birth. Another issue commonly arising was whether traumatic experiences of childbirth should be conceptualised as a diagnostic category or a continuum of distress. These issues are considered further in the sections on conceptual issues and theory.

**Section 1: Update on research areas outlined by Ayers et al., 2008**

This section presents the groups' discussions on the four topics considered in the previous paper (Ayers et al, 2008), updating the current knowledge base and identifying ongoing research where applicable.

Prevalence and Comorbidity

The 2008 paper identified three issues within this topic: prevalence; course of PTSD; and methodological issues to be considered. The prevalence of PTSD following childbirth has been widely examined and meta-analyses of this research suggest it is 3.1% in all postnatal women and 15.7% in high risk groups (Grekin & O'Hara, 2014). Since 2006, there has been an increase in research examining prevalence in other groups, such as fathers, specific populations (such as those experiencing stillbirth), and staff, all of which provide some evidence that PTSD following childbirth (PTSD FC) can occur within these groups. The implications of the new diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5, APA, 2013) are unknown at present as all published research thus far has been conducted using DSM-IV criteria.

The natural course of PTSD FC is still poorly understood, and research needs to chart incidence, severity, duration and recovery phases utilising longitudinal

methods. A review and meta-analysis of PTSD following other events suggests 44% of people recover spontaneously in the first ten or more months after the event (Morina, Wicherts, Lobbrecht & Priebe, 2014) whereas the few studies examining the course of PTSD FC have inconsistent findings. Comorbidity of PTSD FC with depression is known to be high, with reported rates from 20-75% (Stramrood et al., 2011; White, Matthey, Boyd & Barnett, 2006). However, comorbidity with other mental health problems is unknown. The course and onset of comorbid PTSD and depression is also unclear, although clinicians in the group suggested PND is usually secondary to PTSD FC.

Methodological issues in this area remain largely unchanged. Robust measures are needed, adapted to the perinatal period, to ensure that women are being appropriately identified as having PTSD FC. Research using clinical interviews remains rare and usually reports lower prevalence rates (Grekin & O'Hara, 2014). There are very few studies looking at long-term outcomes after the first year. Clinically, it is important that PTSD is considered as a diagnosis in all pregnant and postnatal women; many are misdiagnosed with postnatal depression and therefore do not receive appropriate treatment.

Screening and Treatment

The 2008 paper considered screening, treatment and impact of PSTD on women and their families. Many of the issues outlined in 2008 remain. Screening for PTSD FC is not common in maternity care, and the disorder remains largely unrecognised outside specialist perinatal and/or maternity services. Research is needed to examine the context and process of screening as well as identifying appropriate tools. For example there are questions around when screening should take place, by whom, and what the best method might be of raising staff and patient awareness. The process of screening can raise anxiety and hence it is important to administer screening in an appropriate manner, and ensure that referral routes exist. It is also important to consider symptom overlap with comorbid mental health issues, such as depression or generalised anxiety, and how best to assess for these although differentiating between PTSD FC and comorbid depression or anxiety is not straightforward as several symptoms overlap. It is generally agreed that the symptoms of PTSD FC are the same as those found in PTSD arising following other traumas (defined in DSM-5 as falling within four clusters of symptoms: intrusions; avoidance; alterations in arousal/reactivity; and negative cognitions/mood). It is in

these last two clusters that symptoms may overlap, such as sleep disturbance or persistent negative beliefs and expectations about oneself or the world, for example.

Since 2008, a few studies have looked at interventions for women with PTSD FC. These predominantly comprise case studies which suggest that PTSD treatments such as cognitive-behavioural therapy (CBT) and eye movement desensitisation and reprocessing (EMDR) are effective (Ayers, McKenzie-McHarg & Eagle, 2007; Sandstrom, Wiberg, Wikman, Willman & Hogberg, 2008; Stramrood et al, 2012).

The role of charities, service user groups and advocacy groups has gained prominence in supporting the development of quality services providing input to women and their families. For example, in the UK, the Maternal Mental Health Alliance was set up as an umbrella advocacy group for organisations working within the perinatal period. Their campaign for improved recognition and services was launched in 2014 (www.everyonesbusiness.org.uk). Internationally, there are calls for maternal mental health to be fully integrated into maternity care (Rahman et al., 2013). These and other initiatives provide an opportunity for PTSD FC to be appropriately recognised. The clinical implications are that services need to incorporate appropriate assessment for PTSD in pregnancy or following childbirth. At present, training on perinatal mental health issues for health visitors varies around the UK. Where health visitors are aware of PTSD FC, and there are appropriate referrals routes, they occupy an important position in ensuring that women receive appropriate treatment early in the postnatal period. However, there remains much to be done in terms of training and supervision of health visitors, and in ensuring that onward services exist to which health visitors may refer identified women.

## Diagnostic and Conceptual Issues

The 2008 paper considered whether PTSD FC is the same as PTSD following other events, and whether focus should be broadened to include other forms of distress. Diagnostic issues remain paramount. To date, all published research uses DSM-IV criteria, which included somatic symptoms common in the postnatal population such as ‘difficulty falling or staying asleep’, ‘difficulty concentrating’ and ‘hypervigilance’. This has issues for how we conceptualise, diagnose and screen for postnatal PTSD (Ayers, Wright & Ford, 2015). DSM-5 has changed how PTSD is classified and it is now a ‘trauma and stressor-related disorder’ rather than an anxiety disorder. Event criteria have changed, including the removal of the previous criterion A2 which

specified that individuals must respond to the traumatic event with intense fear, helplessness or horror. In DSM-5 a cluster of symptoms has been added to include 'negative alterations in cognitions and mood associated with the traumatic event(s)'. Symptoms such as loss of interest or participation in significant activities, persistent negative emotional state, and inability to experience positive emotions could also be attributed to depression.

These changes are critical and impact on the prevalence, conceptualisation and diagnosis of PTSD FC. For example, two large studies (UK and Australia) suggest the removal of A2 will increase prevalence rates of PTSD FC because many women perceive a threat of injury or death during birth (Ayers, Harris, Sawyer, Parfitt, & Ford, 2009; Boorman, Devilly, Gamble, Creedy, & Fenwick, 2014). Research is therefore needed to examine the implications and utility of DSM-5 criteria in comparison to other diagnostic criteria, such as DSM-IV or ICD-10 (World Health Organisation, 2010).

The group also recognised, and discussed, the reality that for a significant minority of women with PTSD FC, the birth itself may not have been objectively regarded as 'traumatic'. PTSD is generally easier to recognise by health professionals when the birth has had a clear element of objective trauma such as a third degree tear, or postpartum haemorrhage. However, many women report trauma symptoms following births where the trauma was based on more subjective factors such as feeling abandoned by the midwife, or feeling that the pain was unmanageable (Ayers, 2004). These women may be less likely to be identified.

Another issue is the importance of recognising the impact of sub-threshold symptomatology, particularly when broadening the focus on the full range of distress rather than just diagnosis. Many women may not meet full caseness for a diagnosis of PTSD, but clinicians in the group reported that sub-clinical symptoms may still negatively impact on women's functioning, particularly if they are experiencing symptoms of re-experiencing. Given the potential impact of PTSD on women and their families, intervention remains important even where a diagnosis cannot be given if there is a clear impact on levels of distress or functioning.

## Theoretical Issues

Research in PTSD FC has been predominantly atheoretical, in that it has rarely been explicitly based on theory. Careful consideration of relevant theories can contribute to greater clarity of concepts and understanding of different explanations for PTSD following childbirth. Theories of PTSD, stress, and specifically about PTSD FC are all relevant. Theoretical mechanisms proposed to perpetuate symptoms of PTSD after traumatic events include dysfunctional cognitions (Ehlers & Clark, 2000), memory processes (Brewin, 2001; Ehlers & Clark, 2000), and negative social phenomena (Charuvastra & Cloitre, 2008). Ehlers & Clark's (2000) theory proposes that PTSD occurs if individuals process the event or its sequelae in a way which produces a *sense of current threat*, with negative thoughts and cognitions about the event, and a disturbance or block in memory processing (Ehlers & Clark, 2000). This model has been applied to PTSD FC and found to be a good predictor of PTSD FC symptoms (Ford, Ayers & Bradley, 2010; Vossbeck-Elsebusch, Freisfeld & Ehring, 2014).

Relevant stress theories include those by Lazarus and Folkman (1984), who emphasised the importance of appraisal in stress responses. Stress arises when events are appraised as high threat and coping ability is perceived to be low. Diathesis-stress frameworks account for the interaction between individual vulnerability and events to determine outcome. Specific conceptual frameworks using stress theories for perinatal populations have been proposed. Ayers (Ayers, 2004; Ayers & Ford, 2014) used a diathesis–stress framework to propose a model of vulnerability and risk factors for PTSD following childbirth, and to summarise factors that might be involved in the aetiology of the condition. Slade (2006) provided a detailed conceptual framework which includes predisposing, precipitating, and maintaining factors which relate to internal, external and interactional influences. New theories are also being developed (Iles, 2015)

Whilst the application of theory is increasing, there is still much to be done to evaluate theoretical frameworks for PTSD FC. Greater application and testing of existing PTSD theories to PTSD FC is needed, including exploration of proposed mediating factors, such as memory processes involved in trauma memories, and how they differ in women with and without PTSD following birth. Research is also needed to extend the theories applied to childbirth. Theories applied thus far to PTSD FC are mainly psychological and theories on the neurobiology of PTSD (e.g. Brewin, 2001; Brown & Morey 2012), social theories of PTSD (e.g. Charuvastra & Cloitre, 2008), or other disciplines that may also be relevant have not been examined. For example, liminality theories, which understand birth as a rite of passage (Kenworthy Teather,

2005; Parratt, 2008) provide a different perspective. Research should also examine the role of social bonds within the development of PTSD between the woman, her caregivers, her partner and her infant as well as her family and personal networks and the impact of these. A role for attachment theory in terms of adult attachment patterns as a predisposing vulnerability factor is also emerging (Iles et al 2011; Quinn et al,. 2015). Additionally, it would be valuable to see research on high risk subgroups, such as stillbirth, being informed by theoretical frameworks.

Theory is also highly relevant to clinical interventions, in that our understanding of what causes PTSD FC will inform the treatment we provide. It is therefore an important area to develop further.

**Section 2: Important or emerging areas of research in PTSD FC**

The group also identified five important or emerging areas of research in PTSD FC that they thought should be prioritised. These were: staff and care pathways, prevention and early intervention, impact on families and infant, special populations, and post-traumatic growth.

Staff and Care Pathways

Evidence indicates that one significant cause of a woman's perception of birth as traumatic is the actions or inactions of maternity staff, which can result in care being experienced as dehumanising, disrespectful or uncaring (Elmir, Schmeid, Wilkes & Jackson, 2010: Goldbort 2009). Professionals' manner and communication can significantly affect women's feelings of control during their delivery (Salter 2009) and their ability to make informed decisions (Eliasson, Kainz & Von Post, 2008). Yet choice, information and involvement in decisions are potentially protective against a traumatic birth experience (Goodall, McVittie & Magill 2009). Therefore, professionals need to understand that childbirth can be traumatic for women (Elmir et al., 2010); acknowledge the role they may play and recognise the signs of psychological trauma (Beck 2004). There is also evidence that increased empathy in staff can increase their own risk of developing PTSD symptoms after witnessing traumatic childbirth events (Sheen, Spiby & Slade, 2014). This means that clinicians need to manage the difficult boundary between recognising and supporting postnatal women with symptoms of trauma, while simultaneously maintaining their own professional boundaries in order to protect themselves.

In some international contexts, there is a firm policy remit for the assessment of psychological health and identification of perinatal mental health disorder in its broadest sense (eg NICE, 2007; Beyond Blue 2011; Rahman et al., 2013) which assumes that improved detection and assessment leads to improved outcomes. At present this relationship is neither proven nor likely to be linear. Across the spectrum, perinatal mental health detection, treatment and referral remains seriously lacking, is inconsistent and requires attention (Goodman & Tyler-Viola 2010; NSPCC 2013; Jomeen & Martin 2014).

Routine questioning in clinical practice to elicit trauma symptoms requires appropriate and available measures (Alderdice et al., 2013). However, these are often not consistently utilised or applied (Rowan, McCourt & Bick 2010). Several authors propose flexible questioning to facilitate broader consideration of the comorbidities of psychological and complex psychosocial factors (Dennis, Janssen & Singer, 2004; Robertson, Grace, Wallington & Stuart 2004), which might be more relevant to the PTSD FC context.

Clinical guidelines refer to PTSD FC pathways for care that appear to be outside the maternity context. The result of this might be that practitioners feel less informed about PTSD FC but also unclear about referral and management options. Lack of training has been identified as a core barrier to addressing issues of perinatal mental illness (Byatt, Moore-Simas, Lundquist Johnson, Ziedonis, 2012). Available and accessible pathways for care and onward referral are also critical for confident practitioner identification and assessment. Evidence highlights that midwives (Jomeen, Glover & Davies 2009), health visitors (Jomeen, Glover, Jones, Garg & Marshall 2013) and obstetricians (Leddy, Hagga, Gray, Schulkin, 2011) are reluctant to ask women about psychological issues when pathways are not evident.

Deficient care may be a consequence of numerous factors, including psychopathology, time, effective screening measures, referral options or lack of knowledge (Matthey & Ross-Hamid 2011). Research is needed to evaluate care pathways and training interventions, with reference to sensitive care, effective identification, assessment and management of PTSD FC. This research should additionally focus on the impact of witnessing traumatic events on staff and ways in which staff can be protected both by their own internal strategies, and by management in their place of work.

Prevention and Early Intervention

At present, published research on the prevention of PTSD FC is scarce. Most available evidence is on midwife-led postnatal debriefing. These randomised controlled trials suggest women appreciate debriefing sessions but the evidence is inconsistent about whether debriefing reduces symptoms of PTSD or depression after birth (Baxter, McCourt & Jarrett, 2014; Borg Cunen, McNeill & Murray, 2014; Peeler, Chunt, Stedmon & Skirton, 2012). Interestingly, a study of women attending midwife debriefing services found the average time women chose to attend was 4 months after birth, which is much later than the 3 days to 4 weeks used in the RCTs (Meades, Pond, Ayers & Warren, 2011). The controversy over debriefing arises because evidence for psychological debriefing following other types of traumatic events shows it can lead to increased PTSD under some circumstances (Rose, Bisson, Churchill, Wessely, 2009). UK guidelines for PTSD treatment therefore explicitly state debriefing should not be used. Whether the evidence on psychological debriefing is applicable to midwife-led debriefing is difficult to determine because of huge variability in what midwife 'debriefing' comprises (Steele & Beedle, 2003). Clinical guidelines now recommend a less standardised "postnatal discussion", in which a woman has the opportunity to evaluate the course of labour and delivery, to ask questions and to voice her opinion to a trained professional (NICE, 2007). Targeting debriefing as a form of treatment rather than providing it for all women as a form of prevention is also likely to be more effective (Sheen et al., 2015).

Research looking at other prevention or treatment strategies is ongoing. Research is examining a number of promising potential prevention strategies, such as a system of identifying high risk women and training staff to provide empathic care (McKenzie-McHarg, Crockett, Olander & Ayers, 2014). Similarly, a recent RCT of trauma-focused CBT for mothers of preterm infants found it reduced symptoms of PTSD, depression and anxiety one and six months later (Shaw, St John, Lilo, Jo, Benitz, Stevenson & Horwitz, 2014).

Prevention can address a variety of factors, some of which are outlined in previous sections, such as staff training and systemic interventions aimed at whole maternity systems. Prevention strategies targeted at women could include early identification of vulnerable women, additional targeted support from midwifery and psychological services, ensuring compassionate care in labour and interventions early in the postnatal period such as postnatal discussion which could encourage women to

process any traumatic experience and have the possibility of reducing later symptoms (Sheen et al., 2015). Any such interventions should also be aimed at changing factors that play a role in women's appraisals, including the need for maternity staff to create realistic expectations of delivery.

One example of an intervention which aims to address the need for realistic expectations is that of a 'birth flow chart' rather than a 'birth plan', with different pathways for 'what if labour starts with induction / preterm / ends with caesarean section' etc. (Thomson & Downe, 2010). It is important that approaches to birth consider a range of possible processes and outcomes, rather than focusing on a single expected outcome which can result in women going into labour with an idealistic picture of natural childbirth (Frost, Pope, Liebling & Murphy, 2006).

The group acknowledged the need to map current perinatal provision, in order to understand the messages women are receiving antenatally, but also during and after delivery. A number of researchers have explored the role of support antenatally and in labour (Iles, Spiby & Slade, 2013) and this work is continuing.

Despite increasing knowledge of PTSD FC, very few professional support services are available to help women postnatally or prior to a subsequent birth (Thomson & Downe 2008). Limited interventions for fear of childbirth exist within maternity services, emerging from the premise that fear of childbirth is both a consequence of (Elmir et al., 2010) and a risk factor for trauma symptoms (Otley, 2012; Fisher, Hauck & Fenwick 2006). Despite a somewhat inconsistent evidence base (Otley, 2012) these offer one pathway of care for PTSD FC (Poote et al., submitted).

For future clinical and research purposes, strategies for early intervention may be adapted from studies in other trauma populations. The optimal timing of treatment and intervention for PTSD FC remains a topic of debate. Intervening in the very early postnatal period may pathologise and disrupt normal cognitive mechanisms of adjustment. It potentially disregards the fact that most women do *not* develop long term trauma responses following a difficult delivery. For example, as mentioned, meta-analyses show that 44% of people recover spontaneously without intervention over the first 10 or more months after a traumatic event (Morina et al, 2014). However, women who report labour as traumatic or have early symptoms of PTSD should be monitored and offered referrals if and when it is appropriate.

Impact on Families and Infants

Traumatic birth may have negative implications for maternal and infant health, reproductive choices and relationships with infants and partners. Recent meta-syntheses of qualitative studies highlight the emotional impact on women, with reports of anger, self-blame, suicidal ideation, loss of positive affect, isolation and dissociation from others (Elmir et al., 2010; Fenech & Thomson, 2014). Future reproductive choices may be affected, with women delaying or avoiding future pregnancies due to fear. In extreme cases this can lead to women contemplating sterilisation (Fenech & Thomson, 2014).

Women's relationships may also be affected. Qualitative research suggests women can struggle to form a positive relationship with their infant (Elmir et al., 2010; Fenech & Thomson, 2014), although the role of comorbid depression in this is unclear (Davies, Slade, Wright & Stewart, 2008; Parfitt & Ayers, 2009). PTSD FC can negatively impact on relationships with partners; and avoidance of sex and intimacy are common due to fear of conception and triggering PTSD symptoms (Elmir et al., 2010; Fenech & Thomson, 2014). Studies of male partners show high levels of co-morbidity within couples and men's PTSD FC responses may affect the mental health of their partner (Iles, Slade & Spiby, 2011). Men also report PTSD FC responses (Stramrood et al., 2013; White, 2007), but evidence of the scope of these is mixed (Bradley and Slade 2008. Similarly the impact of PTSD FC on the parent-baby relationship is not clear cut. For example, Parfitt and colleagues found that although PTSD was associated with a worse self-reported parent-baby bond (Parfitt & Ayers, 2009) it was not associated with an observational measure of parent-infant interaction (Parfitt, Pike & Ayers, 2013a). A longitudinal study of the impact of PTSD on parenting found it was be associated with parenting stress at two years, but did not affect mothers' perceptions of their infant (McDonald, Slade, Spiby & Iles, 2011).

The long term impact of PTSD FC on the infant's development is an area where little research is available. The qualitative research above suggests some women might have difficulties bonding and/or avoid breastfeeding (Beck & Watson, 2008), which can have long-term health implications for infants (Horta, Bahl, Martines & Victora, 2007; Ip et al., 2007). Research with preterm infants has also reported that maternal PTSD is associated with poor sleeping and eating patterns in infants (Pierrehumbert, Nicole, Muller-Nix, Forcada-Guex & Anserment, 2003). Only one study has been published to date that examines infant development in relation to PTSD FC and this

found maternal PTSD FC was associated with poor cognitive development in the infant at 17 months of age (Parfitt, Pike & Ayers, 2013b).

Conclusions about the impact of PTSD FC on the mother-baby relationship, couple's relationship and child development therefore remain tentative because of the limited evidence available. Whilst there is substantial qualitative research showing a traumatic birth can have a wide-ranging impact on women and their families, more quantitative research is needed to confirm and extend these findings. In particular, prospective studies with large, representative samples are needed to establish the extent and nature of the impact of PTSD FC on the couple's relationship and infant development. Studies are needed that examine gaps between index and subsequent children; the impact of trauma on infant's developmental outcomes within term, pre-term and vulnerable population groups (e.g. bereaved or abused mothers); the course and impact of male partners' PTSD FC responses; the combined effect of co-morbidity (particularly depression) on familial relationships; other birth partners (i.e grandparents, sisters); as well as the intergenerational implications of trauma.

Given the uncertainty as to impact, clinicians are currently best-placed to monitor any impact of PTSD symptoms on the mother-infant attachment relationship, and to consider offering appropriate intervention to support secure attachment. Clinicians can also offer useful psychoeducational input to parents following a traumatic delivery to support positive infant outcomes.

## Special Populations

High-risk populations are increasingly focused on, including women with pre-eclampsia, preterm or stillbirth. Here we consider stillbirth and preterm birth.

### *Stillbirth*

The global prevalence rate of stillbirths (in the UK, a baby born after 24 weeks with no signs of life) is 2.64 million (Cousens et al., 2011). Most research has focused on the psychological impact of stillbirth on parents and the wider family system, highlighting grief, loss of self-esteem, and feelings of worthlessness, isolation, shame and guilt (Cacciatore, 2010). Depression, anxiety, PTSD and traumatic grief have also been reported (Campbell-Jackson & Horsch, 2014).

As understanding about care after stillbirth has developed (see Horsch et al., 2015 for a review) but there is a need to disentangle traumatic grief and post traumatic stress at a conceptual level. The International Society for Traumatic Stress Studies describes traumatic grief as the sudden and unexpected death of a significant other – usually a close family member. While many of the symptoms of traumatic grief overlap with PTSD, the core symptoms of traumatic grief are an unquenchable yearning or longing for the dead person that preoccupies much of a person's waking life. It is not typical to experience reliving or avoidance phenomena in the way that those experiencing PTSD do. There is very little research which aims to disentangle the two, and only a small number of studies examine both PTSD and traumatic grief within the same cohort (Campbell-Jackson & Horsch, 2014; Horsch, McKenzie-McHarg & Jacob, in press)

Guidelines surrounding maternal contact with the stillborn infant have been contradictory (NICE, 2007) and evidence as to whether seeing and holding the stillborn baby is associated with maternal anxiety and depressive symptoms has been inconclusive. A recent study on the maternal experience of this contact found that the majority felt satisfied with their decision to see or hold their stillborn (Ryninks, Collins, McKenzie-McHarg & Horsch, 2014) and another emphasised the importance of sharing memories of the stillborn baby to aid psychological adjustment (Crawley, Lomax & Ayers, 2013). In addition, a recent study has examined the impact of care practices and psychosocial interventions on parental distress (Crispus Jones, McKenzie-McHarg & Horsch, in press). Efforts have increased to better understand the risk factors and predictors of traumatic grief after stillbirth (Crispus-Jones, McKenzie-McHarg & Horsch, under review), but more are needed. Recent studies have focused on the impact of stillbirth on antenatal attachment during the subsequent pregnancy and on parenting a subsequent child (Campbell-Jackson, Bezance & Horsch, under review; Lee & Horsch, under review).

Most research to date has grouped together all forms of perinatal loss and the psychological impact of early versus late loss requires further clarification. More longitudinal studies and those using validated measures and incorporating diverse samples are needed. More research examining the impact of changes in guidelines and care offered to bereaved parents linked with psychological theory should be encouraged.

*Preterm Birth*

Preterm birth (prior to 37 weeks gestation) is the most important determinant of adverse outcomes in terms of survival, quality of life, psychosocial and emotional impact on the family and costs for health services. In Europe the preterm birth rate for live births ranges from approximately 5% to 11% (Zeitlin et al., 2013). PTSD and depression in pregnancy are also associated with an increased risk of preterm birth (Yonkers, Smith, Forray, Epperson, Costello, Lin & Belanger, 2014).

Preterm birth and hospitalisation of the baby can be a distressing time for parents. Research on psychological adjustment following preterm birth has focused on depression and anxiety. Fewer studies have explored maternal trauma reactions. Studies report high and persistent rates of PTSD (Elkit, Hartvig, & Christiansen, 2007; Forcada-Guex, Borghini, Pierrehumbert, Anserment, & Muller-Nix, 2011; Jotzo & Poets, 2005; Misund, Nerdrum, Bratten, Pipp, & Diseth, 2013). Associations between PTSD symptoms, a poor mother-infant relationship, and adverse infant outcomes have also been reported (Feeley et al., 2011; Forcada-Guex et al., 2011; Pierrehumbert et al., 2003).

More studies are needed to identify risk factors for traumatic stress responses following preterm birth. Current research suggests a higher level of prematurity, low social support, dysfunctional coping, preeclampsia, bleeding in pregnancy, and intraventricular hemorrhage in babies are associated with higher levels of PTSD symptoms (Misund et al., 2013; Shaw, Bernard, Storfer-Isser, Rhine, & Horwitz, 2013; Suttora, Spinelli, & Monzani, 2014). There is a higher incidence of preterm birth in certain ethnic groups and in women from very deprived areas (Aveyard, Cheng, Manaseki, & Gardosi, 2002; Smith, Draper, Manktelow, Dorling & Field, 2007). However, most research exploring PTSD has been conducted with white, married, highly educated mothers and research is needed with more diverse groups. Finally, guidelines for screening for trauma symptoms in mothers of preterm infants are absent. As there are currently no clear maternal or infant predictors, one option is to screen all mothers of preterm infants (Shaw et al., 2014).

**Post-Traumatic Growth**

Research on psychological adjustment following childbirth has predominantly focused on negative outcomes, and positive outcomes have been relatively ignored. A positive outcome that may be particularly relevant to birth is personal growth.

Growth is defined as positive change resulting from struggle with challenging events (Tedeschi & Calhoun, 1996) and has been variously conceptualised as 'benefit-finding', 'thriving' and 'posttraumatic growth' (PTG).

Evidence that positive outcomes and growth occur after birth is increasing. A population survey of 5,333 women found that approximately one third reported a positive outcome after birth (Henderson & Redshaw, 2013). Qualitative research on women's experiences following traumatic births supports this with positive outcomes such as a sense of strength or purpose being reported (Beck & Watson, 2010; Thomson & Downe, 2010; Thomson & Downe, 2013; Elmir et al., 2010). Studies in different countries support the occurrence of growth following childbirth (Sawyer et al, 2015).

Very few studies have examined growth directly using validated instruments such as the posttraumatic growth inventory (PTGI). The PTGI measures five areas: New Possibilities, Relating to Others, Personal Strength, Spiritual Change, and Appreciation of Life. Studies confirm that approximately 50% of women report at least moderate levels of growth, and scores are broadly comparable to other samples e.g. after accidents (Sawyer & Ayers, 2009). Women report most growth in the Appreciation of Life and Personal Strength domains, and the least in the Spiritual Change domain (Sawyer & Ayers, 2009; Sawyer, Ayers, Young, Bradley, & Smith, 2012; Taubman-Ben-Ari, Findler, & Sharon, 2011). More growth is reported by women with difficult circumstances e.g. mothers of preterm babies (Spielman & Taubman-Ben-Ari, 2009), women who have PTSD in pregnancy or caesarean section births (Sawyer et al., 2012).

However, research on growth following childbirth is limited and important gaps remain around conceptualization, measurement, predictors, and how growth can be incorporated into clinical interventions. Conceptually, the relationship between growth and resilience is unclear (Westphal & Bonanno, 2007). The applicability and validity of measures of growth with postnatal women needs to be explored further (Taubman-Ben-Ari et al., 2011). More qualitative research is needed to provide insights into the nature of positive changes following childbirth.

Finally, although the literature is equivocal regarding the relationship between growth and distress, a number of notable longitudinal studies in non-obstetric populations have found that growth following a stressful event is predictive of better emotional

adjustment in the long term (e.g. Danoff-Burg & Revenson, 2005; Frazier, Conlon & Glaser, 2001), and there are promising studies integrating growth into clinical interventions (Roepke, 2014). However, before growth can be recommended as a viable therapeutic option for women with PTSD FC more prospective and longitudinal studies are needed to understand the relationship between growth and distress.

**Summary**

This paper provides an update on the paper by Ayers et al. (2008) and reports on progress and remaining gaps in the four primary areas of research and knowledge identified in that paper. In addition, five further areas of research are discussed which were considered important for future PTSD FC research. This paper highlights areas in which our understanding of PTSD has increased, as well as those where more research is needed. These include a wide range of issues, such as the development of robust measures for the identification of risk factors and PTSD FC, as well as consideration of sub-threshold symptoms. The evaluation of theoretically informed insights into PTSD FC are needed, as well as exploration into the potential for positive outcomes. Longitudinal studies are required to assess prevalence, intensity and severity of PTSD as well as impact on mothers, infants, fathers and others within diverse population groups. Further areas that require consideration concern the integration of PTSD FC within maternity care pathways together with suitable training for maternity professionals, alternative approaches to prepare mothers for childbirth and further testing to identify the timing of and suitable and effective intervention approaches.

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**Appendix 1: participants**

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Ros Crawley, Reader in Cognitive Psychology, University of Sunderland, UK
Elizabeth Ford, Research Fellow in Epidemiology, Sussex University, UK
Antje Horsch, Clinical Psychologist, University of Lausanne, Switzerland
Jane Iles, Research Associate, Imperial College London, UK
Julie Jomeen, Professor of Midwifery, University of Hull, UK
Kirstie McKenzie-McHarg, Consultant Clinical Psychologist, Warwick Hospital, UK
Aimee Poote, Clinical Psychologist, Warwick Hospital, UK
Alexandra Sawyer, Research Fellow, City University, London, UK
Geraldine Scott-Heyes, Consultant Clinical Psychologist, Belfast Trust, NI
Kayleigh Sheen, Research Associate, University of Liverpool, UK
Pauline Slade, Professor of Clinical Psychology, University of Liverpool, UK
Claire Stramrood, Obs/Gynae Resident, Utrecht, Netherlands
Gill Thomson, Research Fellow, University of Central Lancashire, UK