



Women's experiences of perineal pain during the immediate postnatal period: A cross-sectional study in Brazil

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ABSTRACT

Objective: to identify the severity and prevalence of perineal pain during the post partum in-patient period and associated obstetric, maternal and newborn baby factors following birth.

Design: cross-sectional study.

Setting: a postnatal ward of a hospital in São Paulo, Brazil.

Participants: 303 postnatal women.

Measurements: interviews and perineal assessment were conducted to evaluate the perineal outcomes (trauma and pain). Data on maternal characteristics and infant anthropometric variables were collected. **Results:** among all women, 80.5% had perineal trauma (60.7% had episiotomy) and 18.5% reported perineal pain. The mean pain intensity score was 4.8 ± 1.9 on the visual analogue scale. Only maternal age ($ORa = 1.08$) and performance of episiotomy ($ORa = 3.80$) remained as independent predictors of perineal pain in the final logistic regression model.

Key conclusions: perineal pain in the immediate postnatal period was highly associated with older maternal age and use of episiotomy, although the overall reporting of perineal pain was low.

Implications for practice: perineal pain following vaginal birth is associated with interventions during labour as well as with maternal characteristics. Despite the negative impact on a woman's daily activities, perineal pain following birth is neglected by care givers and usually not reported by women who may consider it to be a normal outcome of giving birth. Care providers need to ensure all interventions during labour and birth are informed by evidence of benefit and that barriers to implementation of evidence are addressed. Further work is needed to obtain the views of women in Brazil on their health and well-being following birth.

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Introduction

Pain is an inevitable consequence of giving birth, with the greatest focus usually given to options for pharmacological and non-pharmacological pain relief during labour. Pain is also an outcome of labour and birth, as a consequence of perineal or abdominal wounds, bruising of perineal tissues and breast pain.

However, morbidity following birth may not be identified by care givers as part of routine postnatal care, or reported by the woman herself (MacArthur et al., 2002), with maternal needs perceived as less of a priority than those of the neonate (Beake et al., 2005). The relatively low priority accorded to the organisation and content of postnatal care (Yelland et al., 1998; MacArthur et al., 2002) may explain why limited attention has been paid to the issue of postpartum pain. Many women who have had a vaginal birth experience pain as a consequence of perineal trauma (Glazener et al., 1995; McCandlish et al., 1998) with perineal pain defined as any pain occurring in the perineal body, the area of muscular and fibrous tissue which extends from the symphysis pubis to the coccyx (Bick et al., 2008). Studies addressing options for perineal pain management have included use of analgesics given orally or per rectum as well as topical applications (Hedayati et al., 2003, 2005, 2010), although there is dearth of evidence of impact on longer-outcomes.

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Following vaginal birth, postpartum pain is likely to be influenced by the extent of perineal trauma sustained. Robust evidence from a range of studies including observational studies and randomised controlled trials (RCTs) shows that perineal tissue damage is associated with diverse birth interventions including episiotomy, forceps, vacuum extraction, pushing methods, prolonged expulsive period and fetal conditions including birth weight and position of the baby at the time of birth (Christianson et al., 2003). Many factors are likely to be inter-related (Bick et al., 2008) but it is possible that subsequent morbidity could be prevented if unnecessary interventions were avoided. In addition to particular obstetric and fetal risk factors for perineal trauma and pain, researchers have shown an association with maternal parity, ethnicity and age, which may also be confounding factors for some obstetric interventions (Angioli et al., 2000; Howard et al., 2000). A woman's experience of postpartum perineal pain from trauma which requires repair could also be affected by the perineal suturing methods and materials used, with evidence from two Cochrane Library reviews that continuous suturing technique (Kettle et al., 2007) and use of vicryl rapide suture material (Kettle et al., 2010) are associated with less short-term perineal pain.

Perineal pain can impact on a woman's daily activities including sleep patterns, urinary and bowel function and providing practical care of her infant (MacArthur et al., 2002). Other studies have demonstrated the persistence of perineal pain (Thompson et al., 2002; Albers et al., 2005) with perineal morbidity linked to women's experiences of painful or difficult sexual intercourse (dyspareunia). Risk factors for dyspareunia have been identified as mode of birth, perineal trauma and primiparity (Glazener et al., 1995; Barrett et al., 2000); however as these factors are all highly inter-related appropriate multivariate analyses needs to be undertaken in order to report on the independent effects of each.

Awareness of evidence-based management of the perineum during birth and consequences for maternal health are fundamental if women are to experience birth as an important, life-enhancing and positive outcome, informed by practice which reflects knowledge and evidence to identify and minimise maternal morbidity. This study aimed to identify the severity and prevalence of perineal pain during the postpartum in-patient period and associated obstetric, maternal and newborn baby factors following birth in one unit in Brazil, outcomes from which could be used to inform how care could be revised to potentially reduce morbidity. This was the first study to consider women's experiences of perineal pain while receiving postnatal in-patient care in a Brazilian hospital. It was also important to consider the impact of routine practices adhered to by maternity care providers in Brazil which may be amenable to change to reflect evidence of benefit.

Methods

Setting

This cross-sectional study was carried out on the postnatal ward of the University Hospital, University of São Paulo. Around 3600 women a year give birth at the hospital, over half of whom have a normal vaginal birth, a third a caesarean birth, the remainder comprising of instrumental (forceps) births. Women giving birth at the hospital continue to be subjected to a number of routine interventions, including perineal shaving, administration of enemas, fasting in labour, amniotomy, oxytocin infusion and routine episiotomy. Perineal trauma outcomes are documented as episiotomy, first or second-degree tear, with international classifications of more severe perineal trauma not routinely applied. If women require postnatal pain relief, dypirone (a widely used analgesic in South America) and diclofenac (a non-steroidal

anti-inflammatory drug) are the pharmacological pain relief options of choice. Healthy women and their infants, who remain together on the postnatal ward, are generally discharged home within 48 hours of birth. The woman and her baby are then offered a consultation at the hospital at 10 days post-birth with the midwifery and nursing staff.

Study inclusion criteria

The study population included women who met the following inclusion criteria: aged 15 years or over who gave birth to a single, live, term fetus, following a spontaneous or instrumental vaginal birth, with no obstetric, maternal or neonatal complications.

Recruitment and data collection processes

Recruitment and data collection took place on the postnatal ward over a three month period in 2007, using a convenience sample of women who met study inclusion criteria. One of the authors (AAF) conducted data collection which included mode, date and time of birth, and type of perineal trauma.

To find out about perineal pain, all recruited women were asked: 'do you feel any pain in the perineal region right now?' If the initial response was negative, the researcher then asked 'did you feel pain in the perineal region after the birth, at any time?'. Those who responded positively to either question were invited to take part in a structured interview, and asked for their permission for the same researcher (a qualified nurse-midwife) to undertake an assessment of their perineum. The questions on perineal pain were asked from two hours to four days after the birth.

Instruments

Interviews and perineal assessments were conducted in a room away from the main ward area. During the interview, severity of perineal pain was assessed using an 11-point visual analogue scale in which a score of zero was considered 'no pain' and a score of ten 'worst possible pain'. To undertake visual assessment of the perineum, women were asked to adopt a recumbent lithotomy position to ensure that the whole perineal area could be observed. The Peri-Rule™, a tool made of medical grade plastic specifically developed to provide an objective measure of the length and depth of perineal trauma (Tohill and Metcalfe, 2005) was then used to evaluate the extent of tissue trauma, measuring the length of the skin from the fourchette towards the anus. Oedema, hyperaemia and ecchymosis in the perineal region were evaluated as well based on visual assessment. As the research team decided that spontaneous perineal tears would not be measured as part of this study, because trauma edges were often irregular and had sometimes extended into the vaginal wall, only trauma following an episiotomy was measured. Data on infant anthropometric variables were also collected. It was not possible to collect data from women following hospital discharge due to lack of routine follow up.

Data collection commenced after receiving ethics approval from the University Hospital of the University of São Paulo Ethics Committee. Women on the postnatal ward who met study inclusion criteria were approached and invited to take part. If they agreed, signed informed consent was obtained.

Data analysis

Descriptive analyses of maternal and obstetric variables were performed using SPSS v10.0 to explore possible associations between maternal, neonatal and obstetric variables and perineal pain. Mean, standard deviation and minimum and maximum values were calculated for quantitative data. χ^2 tests of significance

were used for cross tabulations and Fisher's exact test was used in cases of expected cell sizes of less than 5. Student's *t*-test was used to compare mean values in variables with normal distribution and Mann–Whitney for variables with a non-normal distribution. A multivariate logistic regression model with stepwise process and selection was used to identify independent risk factors associated with women's reports of perineal pain.

Findings

Participant profile

During the study period a total of 334 women who gave birth at the unit met study inclusion criteria. Despite being eligible, 31 (9%) women declined to participate in the study, reasons for which were not investigated. The study population thus comprised 303 women, with a mean maternal age of 24.3 ± 5.9 years (range 15–43 years). Most women were White, $n=215$ (71%), followed by women of Mixed race, $n=75$ (24.7%); Black women $n=11$ (3.6%) and Asian women $n=2$ (0.7%). Over half of the women recruited were multiparous, $n=172$ (56.8%), with $n=131$ (43.2%) nulliparous women.

Assistance characteristics

Two-thirds of women had a spontaneous vaginal birth (204/67.3%) and a third had an assisted vaginal birth using forceps (99/32.7%).

Table 1
Distribution of women with and without pain according to ethnicity, mode of birth, use of analgesia and perineal trauma.

| Variable | Perineal pain | | | | | | p-Value |
|---------------------------|---------------|------------|-----------|------------|------------|------------|---------|
| | No | | Yes | | Total | | |
| | n | % | n | % | n | % | |
| Ethnic group | | | | | | | |
| White | 175 | 70.9 | 40 | 71.4 | 215 | 80.0 | 0.706* |
| Mixed race and Asian | 62 | 25.1 | 15 | 26.8 | 77 | 25.4 | |
| Black | 10 | 4.0 | 1 | 1.8 | 11 | 3.6 | |
| Spontaneous birth | 171 | 69.2 | 33 | 58.9 | 204 | 67.3 | 0.138* |
| Forceps | 76 | 30.8 | 23 | 41.1 | 99 | 32.7 | |
| Labour analgesia | 212 | 85.8 | 50 | 89.3 | 262 | 86.5 | 0.423† |
| No labour analgesia | 35 | 14.2 | 6 | 10.7 | 41 | 13.5 | |
| No spontaneous laceration | 187 | 75.7 | 47 | 83.9 | 233 | 76.9 | 0.185* |
| Spontaneous laceration | 60 | 24.3 | 9 | 16.1 | 70 | 23.1 | |
| Episiotomy | 139 | 56.3 | 45 | 80.4 | 184 | 60.7 | 0.001* |
| No episiotomy | 108 | 43.7 | 11 | 19.6 | 119 | 39.3 | |
| Total | 247 | 100 | 56 | 100 | 303 | 100 | |

* χ^2 test.

† Fisher's exact test.

Table 2

Mean (\bar{x}), standard deviation (sd), minimum (min) and maximum (max) values of newborn infant measurements by perineal pain.

| Newborn infant measurements | Perineal pain | | | | | | <i>p</i> -Value* |
|-----------------------------|---------------|------|------|--------------|------|------|------------------|
| | No | | | Yes | | | |
| | \bar{x} sd | min | max | \bar{x} sd | min | max | |
| Weight (g) | 3182 ± 379.6 | 2165 | 4300 | 3205 ± 447.8 | 2140 | 4090 | 0.726 |
| Head circumference (cm) | 34.2 ± 1.4 | 31 | 37 | 34.6 ± 1.2 | 32 | 37 | 0.067 |
| Chest circumference (cm) | 33.3 ± 1.7 | 30 | 37 | 32.9 ± 1.9 | 28 | 36 | 0.113 |

* Student's *t*-test.

The majority of women received pharmacological analgesia for labour pain (262/86.5%): a third of the women had spinal analgesia (92/30.4%) and a quarter of the women had combined spinal-epidural analgesia (81/26.7%). Two women (0.7%) received epidural analgesia. Local-anaesthetic (or pudendal) block was administered to 87 (28.7%) women who required an episiotomy who did not have epidural analgesia (Table 1). Neonatal birth weight ranged from 2140 to 4300 g (mean 3186.6 ± 392.9 g, Table 2).

Perineal outcomes and pain scores

A total of 244 women (80.5%) had perineal trauma (Table 3) although among 59 women recorded as having an intact perineum, nine actually had other types of perineal trauma, including: vaginal wall trauma (three women), cervical trauma (three women), vaginal wall and cervical trauma (two women), and branched trauma which affected the cervix, vaginal wall and fornix in one woman. The nine women had increased vaginal bleeding post-birth, and following further assessment were found to have sustained perineal trauma which had initially been missed. There was no documentation in the obstetric record on type of perineal trauma for one woman. Episiotomy was routinely performed, with 184 (60.7%) women recorded as having this incision, with a medio-lateral incision performed in the majority of cases (only two women were recorded as having a mid-line incision). No women were documented as having a third or fourth degree perineal tear. All women with perineal trauma had had their trauma site sutured, using simple zero catgut suturing material and repaired using interrupted sutures to muscle and skin.

Women were asked about their experience of perineal pain a mean of 27.7 ± 19.6 hours (minimum two hours, maximum 96 hours) following the birth. Fifty-six women (18.5%) reported perineal pain in response to the two questions described earlier, 23 of whom had an assisted birth and 33 a normal birth. Thirty-two of these women (57.1%) had received postpartum pain relief at sometime while on the ward. The mean pain intensity score was 4.8 ± 1.9 on the visual analogue scale, with 29 (51.8%) women reporting moderate pain intensity (a measure of 4–6 on the scale). Six of the 56 women had an intact perineum, 45 an episiotomy and five a spontaneous laceration. Among these women, it was noted by

Table 3
Perineal outcomes in study group.

| Perineal outcome | n | % |
|--------------------------|------------|------------|
| No trauma | 59 | 19.5 |
| Episiotomy* | 184 | 60.7 |
| Laceration first-degree | 39 | 12.9 |
| Laceration second-degree | 20 | 6.6 |
| Not recorded | 01 | 0.3 |
| Total | 303 | 100 |

* Nine women had episiotomy associated with perineal laceration.

the research midwife on assessment of the perineal trauma site that 21 (37.5%) also had oedema, three (5.4%) hyperaemia (increased blood flow to the tissues) and two women (3.6%) had ecchymosis (subcutaneous haematoma). The length of the episiotomy incision was measured post partum in all interviewed women in whom this intervention had been performed, with measurements ranging between 2 and 5 cm, with a mean of 3.2 ± 0.9 cm.

There was a statistically significant age difference among the women who reported perineal pain; women who reported perineal pain were older than those without pain ($p=0.025$). Of the women who reported perineal pain, a third were aged 30 years or more (19/33.9%). No statistically significant differences between parity and perineal pain outcomes were found (Table 4).

No statistically significant differences were observed between reports of perineal pain and ethnicity, nor were there any differences in mode of vaginal birth, despite higher numbers of forceps births among women who reported pain. Regarding the use of labour analgesia, no statistically significant differences were found among the groups observed, and no differences in reporting of pain among women who did or did not sustain a spontaneous perineal laceration. However, postpartum women with perineal pain did include a higher number of episiotomies when compared to the group without episiotomy (80.4% versus 56.3%, $p=0.001$) (Table 1), a statistically significant difference.

No statistically significant differences regarding infant data were observed between women who did and did not have perineal pain, although infant head circumference just failed to reach statistical significance. In the univariate analysis, we selected a significance level of $p < 0.05$. In constructing the model of logistic regression for the multivariate analysis, with process selection and stepwise, we included variables that presented as significant at $p < 0.10$. This level was set arbitrarily, to identify independent predictors of pain. Only maternal age ($ORa=1.08$) and performance of episiotomy ($ORa=3.80$) remained as independent predictors of perineal pain in the final logistic regression model (Table 5).

Discussion

This large cross-sectional study examined associations between maternal, neonatal and obstetric factors and postpartum perineal pain experienced by women while on the postnatal ward of a large University hospital in Brazil. The prevalence of perineal pain, as

initially self-reported by recruited women, was very low, despite high rates of labour and birth interventions. In addition to the influence of routine episiotomy on outcomes, we have shown that older maternal age was a strong predictor of perineal pain. Of note is that a number of women documented as having an intact perineum had extensive vaginal wall and cervical tears, with a wide range in the length of the surgical incision made among women who had an episiotomy. These findings, issues of how trauma was assessed and managed, and barriers and facilitators to evidence-based practice in Brazilian maternity care will be discussed.

Women are subjected to a number of routine interventions during labour and birth in Brazilian maternity care, although many practices are unsupported by evidence of benefit (Revez et al., 2007; Basevi and Lavender, 2008; Alfirevic et al., 2009; Singata et al., 2010). Despite evidence that use of routine episiotomy cannot be justified (Carroli and Mignini, 2008), clinicians in Brazil and other parts of the world continue to assume that a surgical incision to the perineal body will protect the woman and her infant from a range of birth-related injuries (Graham et al., 2005). Women who reported pain in our study were more likely to have an episiotomy, an association reported elsewhere. One study of 119 primiparous women which compared pain outcomes following medium-lateral episiotomy, intact perineum and first- and second-degree spontaneous laceration found higher perineal pain scores among the episiotomy group (Sartore et al., 2004).

A UK study found significant differences in pain scores among women who had more severe perineal lacerations compared with women who had an intact perineum or first-degree tear on day one, day five and at seven weeks after birth (Andrews et al., 2008), based on accurate classification of perineal trauma (RCOG, 2004). After taking account of analgesic requirements and breast feeding, the authors found that second-degree tears were associated with less perineal pain than episiotomy. Of note was that 92% of the 241 primiparous women included in the mentioned study experienced perineal pain within 24hrs of the birth, a much higher proportion than our study. Unlike our study, initial screening questions were not used, perineal trauma was categorised using international classification more likely to identify severe trauma, and data were collected on women's views of pain when at rest, sitting and moving. If all women in our study had been asked to complete the VAS in the first instance, a higher proportion of perineal pain may have been identified, with the possibility that women with more severe trauma were not identified by labour ward staff. As a third of the women in our study had pudendal block for episiotomy, the analgesic effect may have persisted at the time of questioning. We also have to consider the potential that women may not have considered their own health needs following birth or did not wish to volunteer problems with their health. The first author who interviewed the women did note that in some cases women felt that perineal pain was an expected outcome of birth, and as such was not a problem.

Several studies have reported less postnatal pain among women who have an intact perineum. Leeman et al. (2007) found less pain among women with intact perineum than women who had a second-degree laceration ($p < 0.02$) and Macarthur and Macarthur (2004) found at seven days post partum that 38% of the women in their study who had an intact perineum reported pain compared with 60% of women who had first and second-degree tear and 91% of women with a third or fourth degree tear. The importance of effective clinical practice to minimise perineal morbidity is clear.

Our finding of an association between maternal age and perineal pain is supported in other studies. A study of 1809 primiparous women who had a vaginal birth found the probability of perineal trauma increased by 6% for each year of life (Howard et al., 2000). Macarthur and Macarthur (2004) also found statistically significant differences between maternal age and perineal trauma, although the authors did not consider this difference to be clinically significant. In contrast, some studies did not find this association

Table 4

Mean values (\bar{x}), standard deviation (sd), minimum (min) and maximum (max) values for maternal age, parity and presence or absence of perineal pain.

| Variable | Perineal pain | | | | | | p-Value |
|--------------|---------------|-----|-----|--------------|-----|-----|---------|
| | No | | | Yes | | | |
| | \bar{x} sd | min | max | \bar{x} sd | min | max | |
| Maternal age | 23.9 ± 5.7 | 15 | 43 | 25.8 ± 6.6 | 15 | 38 | 0.025 * |
| Parity | 0.9 ± 1.3 | 0 | 7 | 1 ± 1 | 0 | 3 | 0.182 † |

* Student's *t*-test.

† Mann–Whitney non-parametric test.

Table 5

Crude odds ratio (ORc), adjusted odds ratio (ORa) and 95% confidence interval (CI) according to age and episiotomy.

| Variable | ORc | 95% CI (ORc) | ORa | 95% CI (ORa) |
|------------|------|--------------|------|--------------|
| Episiotomy | 3.18 | 1.57–6.44 | 3.80 | 1.83–7.89 |
| Age | 1.06 | 1.01–1.11 | 1.08 | 1.02–1.13 |

(Christianson et al., 2003). Of note for maternity care providers is the increasing numbers of women who delay childbirth until their late 30s and beyond. Evidence of a range of poorer outcomes among this group including maternal and infant morbidity has been published (Luke and Brown, 2007; Huang et al., 2008), indicating that women and health-care professionals need to be aware of risks of delayed childbirth and how best to address them, including options for perineal management before, during and after the birth.

The lack of a statistically significant difference between parity and perineal pain in our study has been reported elsewhere, most recently a small RCT from Brazil (Almeida and Riesco, 2008), although this may reflect differences in universal approaches to perineal management in Brazil. Primiparity is acknowledged as a risk factor for perineal pain although the extent to which this is influenced by the greater proportion of instrumental deliveries and perineal trauma that occur among first births is difficult to assess (Bick et al., 2008). Previous studies have observed that multiparous women are less likely to complain of perineal pain up to 24 weeks post-birth when compared to primiparous women (Thompson et al., 2002; Macarthur and Macarthur, 2004). A recent survey of over 1000 American women examined women's reports of postpartum experiences with pain stratified by mode of birth, and based on descriptive analyses, with results presented separately by parity (Declercq et al., 2008). Among primiparous women who had a normal vaginal birth with or without an episiotomy, more women who had an episiotomy had pain, a statistically significant difference ($p < 0.027$). Multiparous women who had episiotomy (19%) were three times more likely to report pain than those with no episiotomy.

Our study found no association between mode of vaginal birth and perineal pain, in contrast to others; however, our sample size may not have been large enough to detect a difference. A population-based Australian cohort study which compared outcomes following assisted and spontaneous vaginal births found a statistically significant association between assisted vaginal births and perineal pain at a number of follow-up times within the first 24 weeks of birth after taking account of type of perineal trauma (Thompson et al., 2002). Brown and Lumley (1998) in an earlier population-based Australian study, found perineal pain, reported as a problem sometime between the birth and 6–7 months post partum, occurred in 20% of women after a spontaneous vaginal birth, 54% after instrumental birth, 2% after an emergency caesarean section and none after elective section (OR for instrumental relative to spontaneous vaginal birth 4.69, 95% CI 3.2–6.8). The differences in perineal pain between instrumental compared with spontaneous vaginal births were adjusted to take account of degree of perineal trauma, infant birth weight, and length of labour and remained statistically significant.

Although we did not follow up women following hospital discharge, studies have reported that perineal pain can persist for several months (Glazener et al., 1995; Declercq et al., 2008) although evidence is accruing that differences in pain severity by type of perineal trauma may dissipate by three months of birth (Leeman et al., 2009). Leeman et al. (2009) assessed perineal pain at the time of hospital discharge in women who had a normal vaginal birth at six weeks and three months post partum, using the visual analogue scale (VAS) and present pain intensity (PPI) scale components of the short-form McGill pain scale. Perineal condition after childbirth was classified as major trauma (second-degree or greater laceration and trauma requiring suturing) and minor trauma (no trauma or non-sutured laceration). The reports of pain on discharge were higher among women who had major trauma. At six weeks or three months post partum, VAS scores and PPI scales were low in each group and were not significantly different.

The lithotomy position for birth is routinely used at the current study site. A Cochrane Library review which included data on 6135

birthing women without epidural analgesia and compared lithotomic or supine position for giving birth with any upright or lateral position, suggested that the latter positions were associated with a range of differences in outcome including a reduction in the length of the expulsive period, a reduction in episiotomy rate, with the possibility of increased risk of blood loss greater than 500 ml (Gupta et al., 2005). The reviewers recommended that until the benefits and risks of various delivery positions could be estimated with greater certainty, women should be allowed to make informed choices about positions for the birth of their babies. More work is required to support midwives in our units to feel confident to offer women choices in position for birth, including upright positions. We also need to work with our obstetricians, anaesthetists and women who book for maternity care to discuss why alternative, upright positions in labour may be of more benefit.

At our study site simple zero catgut thread is widely used for perineal suturing, although polyglactin thread is also available. An issue we need to address locally is why clinicians seem to prefer to use catgut. A Cochrane Library review recommended that polyglactin thread should be the material of choice as it is associated with less perineal pain during the first three postpartum days (OR=0.62) and less requirement for analgesia (OR=0.63), compared to outcomes among women who had perineal trauma sutured with catgut thread (Kettle et al., 2010). There is anecdotal evidence that clinicians in our units find catgut easier to manipulate than polyglactin thread, and as it is less expensive for our hospital to purchase, costs and clinician experience may remain as barriers to change.

The high number of episiotomies performed in Brazil, the lack of adaptation of guidance with respect to perineal repair and continued use of labour and birth practices with no evidence of benefit reflects the challenges of implementing and sustaining evidence-based maternity care. Work to identify why these practices continue to be promoted and the barriers and facilitators to achieving a paradigm change in approaches to practice need to be addressed. As Klein recently wrote '*fear based practice and the desire to control the uncontrollable are present for both the maternity care professions and society as well*' (Klein, 2010). The complexity of closing the gap between 'best practice' as determined by scientific evidence and health-care practice is well documented (Grol and Wensing, 2004). Due to this complexity, it is acknowledged that if change is to be achieved work needs to address potential barriers at a number of levels within the health-care organisation, which take account of the nature of the innovation; characteristics of the professionals and patients involved; and the social, organisational, economic and political context of care.

Limitations of this study are that data were only collected from women who gave birth in one unit and did not include longer-term follow up; there are also issues with respect to women feeling able to volunteer health problems, which our use of 'screening questions' to identify those with perineal pain may have influenced, the low proportion of women reporting perineal pain somewhat of a conundrum given the findings of previous studies, in which catgut thread and interrupted sutures use has been associated with an increased rate of postpartum perineal pain (Kettle et al., 2010). We have highlighted a number of important implications for maternity care in Brazil. Differences in the length of episiotomy incision suggest a need for better training in this aspect of practice, including correct use of episiotomy to minimise the risk of a more severe tear. In addition to reducing routine interventions of no proven benefit, the development of midwifery and obstetric skills to correctly identify and manage perineal trauma could make an important difference to maternal morbidity and promote accurate assessment and documentation of the extent of trauma in line with international classification (Andrews et al., 2008; Bick et al., 2010).

Implications for practice and research

Assessment of perineal trauma currently relies on an objective assessment of the perineum, which should include good light and the woman in a comfortable position to enable the whole perineal body to be observed. Current national guidance for maternity care in England and Wales ([National Institute for Health and Clinical Excellence, 2007](#)) recommends that perineal trauma assessment should include a rectal examination to assess whether there has been any damage to the external or internal anal sphincter, however use of standard definitions of trauma and appropriate documentation are also essential to inform on-going quality improvement and enable comparisons with other studies.

This study found a low overall prevalence of perineal pain after vaginal delivery, with pain highly associated with episiotomy and older maternal age. Routine practices with no evidence of benefit continue to be used in labour and birth in Brazil and other countries. It is hoped that more researchers will focus on obtaining the views of women, including their physical and psychological health outcomes, and use findings to influence discussion and debate about current maternity care. Women need information on birth outcomes if they are to be able to make an informed decision about options for pain relief, place and mode of birth and implications for their postnatal health and recovery.

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References

- Albers, L.L., Sedler, K.D., Bedrick, E.J., et al., 2005. Midwifery care measures in the second stage of labor and reduction of genital tract trauma at birth: a randomized trial. *Journal of Midwifery and Women's Health* 50, 365–372.
- Alfirevic, Z., Kelly, A.J., Dowswell, T., 2009. Intravenous oxytocin alone for cervical ripening and induction of labour. *Cochrane Database Systematic Reviews*, CD003246. doi:10.1002/14651858.CD003246.pub2.
- Almeida, S.F.S., Riesco, M.L.G., 2008. Randomized controlled clinical trial on two perineal trauma suture techniques in normal delivery. *Revista Latino-Americana de Enfermagem* 16, 272–279.
- Andrews, V., Thakar, R., Sultan, A.H., et al., 2008. Evaluation of postpartum perineal pain and dyspareunia: a prospective study. *European Journal of Obstetrics and Gynecology and Reproductive Biology* 137, 152–156.
- Angioli, R., Gómez-Marín, O., Cantuaria, G., et al., 2000. Severe perineal lacerations during vaginal delivery: The University of Miami experience. *American Journal of Obstetrics and Gynecology* 82, 1083–1085.
- Barrett, G., Pendry, E., Peacock, J., et al., 2000. Women's sexual health after childbirth. *British Journal of Obstetrics and Gynaecology* 107, 186–195.
- Basevi, V., Lavender, T., 2008. Routine perineal shaving on admission in labour. *Cochrane Database of Systematic Reviews*, CD001236. doi:10.1002/14651858.CD001236.
- Beake, S., McCourt, C., Bick, D., 2005. Women's views of hospital and community-based postnatal care: the good, the bad and the indifferent. *Evidence-Based Midwifery* 3, 80–86.
- Bick, D., MacArthur, C., Winter, H., 2008. *Postnatal Care: Evidence and Guidelines for Management* 2nd edn. Churchill Livingstone, London.
- Bick, D.E., Kettle, C., Macdonald, S., et al., 2010. Perineal Assessment and Repair Longitudinal Study (PEARLS): protocol for a matched pair cluster trial. *BMC Pregnancy and Childbirth*, doi:10.1186/1471-2393-10-1010. Available from: <<http://www.biomedcentral.com/1471-2393/10/10>>.
- Brown, S., Lumley, J., 1998. Maternal health after childbirth: results of an Australian population based survey. *British Journal of Obstetrics and Gynaecology* 105, 156–161.
- Carroll, G., Mignini, L., 2008. Episiotomy for vaginal birth. *Cochrane Database of Systematic Reviews*, CD000081. doi:10.1002/14651858.CD000081.pub2.
- Chou, D., Abalos, E., Gyte, G.M.L., et al., 2010. Paracetamol/acetaminophen (single administration) for perineal pain in the early postpartum period. *Cochrane Database of Systematic Reviews* 3, CD008407. doi:10.1002/14651858.CD008407.
- Christianson, L.M., Bovbjerg, V.E., McDavitt, E.C., et al., 2003. Risk factors for perineal injury during delivery. *American Journal of Obstetrics and Gynecology* 189, 255–260.
- Declercq, E., Cunningham, D.K., Johnson, C., et al., 2008. Mothers' reports of postpartum pain associated with vaginal and cesarean deliveries: results of a national survey. *Birth* 35, 16–24.
- Glazener, C.M.A., Abdalla, M.I., Stroud, P., et al., 1995. Postnatal maternal morbidity: extent, causes, prevention and treatment. *British Journal of Obstetrics and Gynaecology* 102, 282–287.
- Graham, I.D., Carroli, G., Davies, C., et al., 2005. Episiotomy rates around the world: an update. *Birth* 32, 219–223.
- Grol, R., Wensing, M., 2004. What drives change? Barriers to and incentives for achieving evidence based practice. *Medical Journal of Australia* 180, S57–S60.
- Gupta, J.K., Hofmeyr, G.J., Smyth, R.M.D., 2005. Position in the second stage of labour for women without epidural anaesthesia. *Cochrane Database of Systematic Reviews*, CD002006. doi:10.1002/14651858.CD002006.pub2.
- Hedayati, H., Parsons, J., Crowther, C.A., 2003. Rectal analgesia for pain from perineal trauma following childbirth. *Cochrane Database of Systematic Reviews*, CD003931. doi:10.1002/14651858.CD003931.
- Hedayati, H., Parsons, J., Crowther, C.A., 2005. Topically applied anaesthetics for treating perineal pain after childbirth. *Cochrane Database of Systematic Reviews*, CD004223. doi:10.1002/14651858.CD004223.pub2.
- Howard, D., Davis, P.S., DeLancey, J.O.L., et al., 2000. Differences in perineal lacerations in black and white primiparas. *Obstetrics and Gynecology* 96, 622–624.
- Huang, L., Sauve, R., Birkett, N., Fergusson, D., van Walraven, C., 2008. Maternal age and risk of stillbirth: a systematic review. *Canadian Medical Association Journal* 178. doi:10.1503/cmaj.070150 Available from: <<http://www.cmaj.ca/cgi/reprint/178/2/165>>.
- Kettle, C., Hills, R.K., Ismail, K.M.K., 2007. Continuous versus interrupted sutures for repair of episiotomy or second degree tears. *Cochrane Database of Systematic Reviews*, CD000947. doi:10.1002/14651858.CD000947.pub2.
- Kettle, C., Dowswell, T., Ismail, K.M.K., 2010. Absorbable suture materials for primary repair of episiotomy and second degree tears. *Cochrane Database of Systematic Reviews* 7, CD000006. doi:10.1002/14651858.CD000006.
- Klein, M.C., 2010. What do episiotomy and cesarean have to do with Copernicus. *Galileo and Newton? Birth* 37, 1–2.
- Leeman, L., Fullilove, A.M., Borders, N., Manocchio, R., Albers, L.L., Rogers, R.G., 2009. Postpartum perineal pain in a low episiotomy setting: association with severity of genital trauma, labor care, and birth variables. *Birth* 34, 283–288.
- Leeman, L.M., Rogers, R.G., Greulich, B., Albers, L.L., 2007. Do unsutured second-degree perineal lacerations affect postpartum functional outcomes? *Journal of the American Board of Family Medicine* 20, 451–457.
- Luke, B., Brown, M., 2007. Elevated risks of pregnancy complications and adverse outcomes with increasing maternal age. *Human Reproduction* 22, 1264–1272.
- Macarthur, A.J., Macarthur, C., 2004. Incidence, severity and determinants of perineal pain after vaginal delivery: a retrospective cohort study. *American Journal of Obstetrics and Gynecology* 191, 1199–1204.
- MacArthur, C., Winter, H., Bick, D., et al., 2002. Effects of redesigned community postnatal care on women's health 4 months after birth: a cluster randomised controlled trial. *Lancet* 359, 378–385.
- McCandlish, R., Bowler, U., van Asten, H., et al., 1998. A randomised controlled trial of care of the perineum during second stage of normal labour. *British Journal of Obstetrics and Gynaecology* 105, 1262–1272.
- National Institute for Health and Clinical Excellence, 2007. *Intrapartum Care Guideline: Care of Healthy Women and Their Babies During Childbirth*. National Institute for Health and Clinical Excellence, London. Available from: <www.nctpregnancyandbabycare.com/.../B1NICEintrapartumCareGuideline.pdf>.
- Reveiz, L., Gaitán Hernández, G., Cuervo, L.G., 2007. Enemas during labour. *Cochrane Database of Systematic Reviews* 4, CD000330. doi:10.1002/14651858.CD000330.pub2.
- Royal College of Obstetricians and Gynaecologists, 2004. *Methods and Materials Used in Perineal Repair*, RCOG Guideline No. 23. RCOG Press, London.
- Sartore, A., De Seta, F., Maso, G., Pregazzi, R., Grimaldi, E., Guaschino, S., 2004. The effects of mediolateral episiotomy on pelvic floor function after vaginal delivery. *Obstetrics and Gynecology* 103, 669–673.
- Singata, M., Trammer, J., Gyte, G.M.L., 2010. Restricting oral fluid and food intake during labour. *Cochrane Database of Systematic Reviews* 1, CD003930. doi:10.1002/14651858.CD003930.pub2.
- Thompson, J.F., Roberts, C.L., Currie, M., Ellwood, D.A., 2002. Prevalence and persistence of health problems after childbirth: associations with parity and method of birth. *Birth* 29, 83–93.
- Tohill, S., Metcalfe, A., 2005. Perineal tear assessment and the development of the Peri-Rule™. In: Henderson, C.H., Bick, D. (Eds.), *Perineal Care: An International Issue*. Cromwell Press, Trowbridge, pp. 87–97.
- Yelland, J., Small, R., Lumley, J., Cotronei, V., Warren, R., Rice, P.L., 1998. Support, sensitivity, satisfaction: Filipino, Turkish and Vietnamese women's experiences of postnatal hospital stay. *Midwifery* 14, 144–154.