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Does skin-to-skin contact and breast feeding at birth affect the rate of primary postpartum haemorrhage: Results of a cohort study

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ARTICLE INFO

Article history:

Received 11 February 2015

Received in revised form

7 July 2015

Accepted 20 July 2015

Keywords:

Skin to skin

Breast feeding

Postpartum haemorrhage

Oxytocin

Cohort study

ABSTRACT

Objective: to examine the effect of skin-to-skin contact and breast feeding within 30 minutes of birth, on the rate of primary postpartum haemorrhage (PPH) in a sample of women who were at mixed-risk of PPH.

Design: retrospective cohort study.

Setting: two obstetric units plus a freestanding birth centre in New South Wales (NSW) Australia.

Participants: after excluding women ($n=3671$) who did not have opportunity for skin to skin and breast feeding, I analysed birth records ($n=7548$) for the calendar years 2009 and 2010. Records were accessed via the electronic data base ObstetriX.

Intervention: skin to skin contact and breast feeding within 30 minutes of birth.

Measures: outcome measure was PPH i.e. blood loss of 500 ml or more estimated at birth. Data was analysed using descriptive statistics and logistic regression (unadjusted and adjusted).

Findings: after adjustment for covariates, women who did not have skin to skin and breast feeding were almost twice as likely to have a PPH compared to women who had both skin to skin contact and breast feeding (aOR 0.55, 95% CI 0.41–0.72, $p < 0.001$). This apparently protective effect of skin to skin and breast feeding on PPH held true in sub-analyses for both women at 'lower' (OR 0.22, 95% CI 0.17–0.30, $p < 0.001$) and 'higher' risk (OR 0.37 95% CI 0.24–0.57), $p < 0.001$.

Key conclusions and implication for practice: this study suggests that skin to skin contact and breastfeeding immediately after birth may be effective in reducing PPH rates for women at any level of risk of PPH. The greatest effect was for women at lower risk of PPH. The explanation is that pronurturance promotes endogenous oxytocin release. Childbearing women should be educated and supported to have pronurturance during third and fourth stages of labour.

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Introduction

This paper reports on a large, retrospective cohort study concerning the effects of skin to skin and breastfeeding (S2S and B/F) in the first 30 minutes after birth on PPH rates. (Key terms are defined in Table 1.) The first author was the primary researcher for this study; she collected the data and conducted the analyses. She also coined a new term 'pronurturance' to subsume the concepts,

skin to skin and breast feeding. The term 'pronurturance' is used in this paper when referring to both S2S and breast feeding.

Background

Postpartum haemorrhage (PPH) is a major contributor to maternal morbidity and mortality (Corwin et al., 2003; Alvarez et al., 2009; Wise et al., 2010; Say et al., 2014; WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division, 2014). The rates of PPH have shown a steady rise in PPH across the developed world

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Table 1
Definition of key terms.

Term	Definition
Active management of third stage	The clinician intervenes by injecting into the mother's thigh/upper arm a prophylactic uterotonic drug Syntocinon 5–10 units with the birth of the baby's anterior shoulder. There is early clamping and cutting of the cord and the placenta is delivered with controlled cord traction (New South Wales Health, Primary Health and Community Partnerships, 2005)
Breast feeding	Any attempt by the baby to suckle the breast within 30 minutes following birth. This definition is consistent with the definition in the ObstetriX database where midwives enter either breast feeding or artificial milk feeding according to the woman's wishes and the time of first observed feed
Fourth stage of labour	The first hour after the delivery of the placenta and membranes (old definition passed down in the oral tradition)
Lower risk of PPH	For this study, lower risk, is defined as women who had normal vaginal births and excluding APH/placenta praevia, polyhydramnios, induction and augmentation
Physiological care	The woman and midwife have a trusting relationship. The environment is calm, warm and dim. The newborn baby is immediately placed S2S on the mothers bare chest/abdomen and allowed to seek the nipple. There is spontaneous delivery of the placenta during third stage without resort to oxytocic drugs
Physiological management of third stage	The cord is neither clamped nor cut until pulsation ceases. There is spontaneous delivery of placenta and membranes by gravity, maternal effort or nipple stimulation
Postpartum haemorrhage	1. WHO and NSW Health Definition = blood loss greater than 499 ml. 2. In NSW at the time of the study the same definition applied to all births – including caesareans.
Skin-to-skin contact at birth	The naked healthy newborn baby is placed prone on the mother's bare abdomen/chest immediately after birth in a position where the baby has ready access to the maternal nipple. Both mother and baby should be covered with a warmed blanket. This definition is consistent with the clinical practice at the 3 study sites and in the ObstetriX database where midwives provide a 'Yes' or 'No' to S2S.
Third stage of labour	The period of time extending from the birth of the baby until the delivery of placenta and membranes.

(Bais et al., 2004; Cameron, et al., 2006; Ford et al., 2007; Knight et al., 2009). Some, but not all, of this rise may be accounted for by improved reporting in the developing world (International Classification of Diseases, 2014). Uterine atony (lack of effective myometrial contraction) is well accepted as the major cause of PPH accounting for 80–90% of all (Bateman et al., 2010; Driessen et al., 2011; Wickham, 2011; Lutomski et al., 2012; Radon and Divers, 2012; Mehrabadi et al., 2013; Wetta et al., 2013).

The main medical approach to preventing PPH is the active management of the third stage of labour, where artificial oxytocin is administered at, during or immediately after, the birth of the baby. A randomised control trial published in 1988 (Prendiville et al., 1988) and subsequent updates (Begley, 1990; Prendiville et al., 2000; Begley et al., 2010; Begley et al., 2011) were influential on health policy. The Department of Health in NSW – the state in which this study was set – based its policy on this RCT. The policy directed that all women have their third stage of labour actively managed using Syntocinon, 5–10 units intramuscularly, with delivery of the baby's anterior shoulder (New South Wales Health, Primary Health and Community Partnerships, 2005).

The Department of Health directive included a list of putative risk factors for PPH; some of which are not supported by research evidence nor is there a causal pathway; e.g. anaemia, age and grand multiparity.

The notion that skin to skin contact and breast feeding should be effective in reducing PPH rates is supported by theory and physiology (Tortora and Grabowski, 2003; Stables and Rankin, 2005; Fry, 2007; Hastie and Fahy, 2009; Coad and Dunstall, 2011; Saxton et al., 2014). The physiological reason is that women have similar reproductive physiology as other female mammals where, in undisturbed birth, uterine atony and therefore PPH is rare (Abrams and Rutherford, 2011). Left undisturbed, the newborn mammal remains in close contact with its mother (Nisbett and Glander, 1996; Fahy, 2008; Henry et al., 2009); immediately searches for the breast and suckles, causing oxytocin levels to peak in both the mother and newborn (Nissan et al., 1995; Matthiesen et al., 2001). For women, skin to skin contact and breast feeding (pronurture) occur naturally when labour is peaceful and undisturbed – in that situation both the woman and baby are under the influence of the parasympathetic nervous and hormonal system; appropriately termed the state of 'calm and connect' (Uvnas-Moberg, 2013). This serene state is crucial for

optimal release and uptake of oxytocin at the myometrium (Odent, 2001; Tortora & Grabowski, 2003; Stables and Rankin, 2005; Coad and Dunstall, 2011; Saxton et al., 2014). When a woman is alert, over-excited or frightened she is under sympathetic stimulation and releases adrenaline. Adrenaline interferes with the uptake of oxytocin at the myometrial receptor site (Gimpl and Farenholtz, 2001; Odent, 2001; Tortora and Grabowski, 2003; Stables and Rankin, 2005; Coad and Dunstall, 2011; Saxton et al., 2014) causing uterine atony. Midwifery models of care where midwives practice pronurture demonstrate low rates of PPH (Dixon et al., 2009; Fahy et al., 2010; Catling-Paull et al., 2013). Maybe the hyper-medicalization of birth (Simpson and Thorman, 2005; Zwelling, 2008; Rossen et al., 2010; Belghiti et al., 2011) is interfering with innate pronurture behaviours at birth.

Review of related literature

There has been little research on the effect of either skin to skin or breast feeding on PPH. An extensive literature search revealed only two partially relevant research articles. These two studies arrived at conflicting results (Bullough et al., 1989; Sobhy and Mohamed, 2004). The first study, a large RCT (Bullough et al., 1989), was conducted in Malawi where the usual cultural practice is for relatives take the baby very shortly after birth. This RCT randomised the Traditional Birth Attendants (TBAs) to either promote breast feeding at birth or follow usual cultural practice. The breast-feeding group ($n=2104$) had a PPH rate of 7.9% compared with 8.4% for the control group ($n=2123$) i.e. there was no significant difference. The lack of effect is surprising given the role of oxytocin in both breast feeding and uterine contractions. Skin to skin contact apparently did not occur in either group because the babies were routinely wrapped and handed to the relatives. If the TBA was supposed to be practising early breast feeding then the wrapped baby was taken to the woman's nipple which is hardly conducive for optimal oxytocin release (Odent, 2001). A small, quasi-experimental study, with 50 participants in each arm was conducted by Sobhy and Mohamed (2004). The timing of breast feeding and blood loss was examined. One group of women started breast feeding immediately after the birth of the placenta whereas the other group delayed the initiation of breast feeding for two hours. The results indicated that early breast

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