Women and Birth 28 (2015) 279–284

Contents lists available at ScienceDirect

Women and Birth

journal homepage: www.elsevier.com/locate/wombi

ORIGINAL RESEARCH – QUANTITATIVE

Getting the first birth right: A retrospective study of outcomes for low-risk primiparous women receiving standard care versus midwifery model of care in the same tertiary hospital

Nola Wong [a,b,*], Jenny Browne [a], Sally Ferguson [a], Jan Taylor [a], Deborah Davis [a,b]

[a] University of Canberra, Bruce, ACT, Australia
[b] Centenary Hospital for Women and Children, ACT, Australia

ARTICLE INFO

Article history:
Received 8 April 2015
Received in revised form 28 June 2015
Accepted 29 June 2015

Keywords:
Primiparous
Birth
Continuity
Midwifery
Birth centre

ABSTRACT

Background: There is national and international concern for increasing obstetric intervention in childbirth and rising caesarean section rates. Repeat caesarean section is a major contributing factor, making primiparous women an important target for strategies to reduce unnecessary intervention and surgeries in childbirth.
Aim: The aim was to compare outcomes for a cohort of low risk primiparous women who accessed a midwifery continuity model of care with those who received standard public care in the same tertiary hospital.
Methods: A retrospective comparative cohort study design was implemented drawing on data from two databases held by a tertiary hospital for the period 1 January 2010 to 31 December 2011. Categorical data were analysed using the chi-squared statistic and Fisher's exact test. Continuous data were analysed using Student's *t*-test. Comparisons are presented using unadjusted and adjusted odds ratios, with 95% confidence intervals (CIs) and *p*-values with significance set at 0.05.
Results: Data for 426 women experiencing continuity of midwifery care and 1220 experiencing standard public care were compared. The study found increased rates of normal vaginal birth (57.7% vs. 48.9% $p = 0.002$) and spontaneous vaginal birth (38% vs. 22.4% $p = <0.001$) and decreased rates of instrumental birth (23.5% vs. 28.5% $p = 0.050$) and caesarean sections (18.8% vs. 22.5% $p = 0.115$) in the midwifery continuity cohort. There were also fewer interventions in this group. No differences were found in neonatal outcomes.
Conclusion: Strategies for reducing caesarean section rates and interventions in childbirth should focus on primiparous women as a priority. This study demonstrates the effectiveness of continuity midwifery models, suggesting that this is an important strategy for improving outcomes in this population.

1. Introduction

Mode of birth, especially for primiparous women, has far-reaching implications not only for the woman and her family but also for the health care organisation as a whole. Women who have experienced a vaginal birth recover faster from the experience, are independent much sooner and enjoy a better quality of life[1] if they have not had an operative birth. Not only does a vaginal birth impact on the immediate experience of the woman and her family but if a woman is able to birth without intervention the first time, she will not carry the burden of a previous caesarean section into a future pregnancy and this has physical, psychological, social and financial implications for her.[2]

2. Literature review

Rates of caesarean section and other interventions in childbirth are rising every year in the western world.[3] The Australasian Council on Healthcare Standards (ACHS) reports a 23.0% selected primipara caesarean section rate in the Australian public system in their 2003–2010 Clinical Indicator Report. A more recent (2004–2011) report indicates a 29.2% rate in 2011, an increase of 6.2%. The ACHS definition of a selected primipara is a woman who is 20–34 years of age at the time of giving birth for the first time at greater than 20 weeks gestation.

* Corresponding author at: 12/56-60 Wentworth Avenue, Kingston, ACT 2604, Australia. Tel.: +61 403 081 407.
E-mail address: garrynola@bigpond.com (N. Wong).

http://dx.doi.org/10.1016/j.wombi.2015.06.005
1871-5192/

She is pregnant with a single foetus with a cephalic presentation and is 37–40.6 weeks gestation.

There is widespread national and international concern about this increase and the impact on neonatal and maternal outcomes.[4,5] This does not only include primiparous women having caesarean sections but women who plan a caesarean section for a subsequent birth. This prompted a recent study[6] to specifically examine why some women plan a caesarean section after birthing vaginally the first time. They concluded that there was an increased risk of planned caesarean section in the second birth for women who had obstetric interventions and adverse outcomes in the first birth. They emphasise the importance of 'getting the first birth right' in an effort to reduce this increasing caesarean section rate.

Midwifery led continuity of care is a strategy known to increase the chances of vaginal birth for low risk women.[7–11] Recent studies internationally[7,10,12–14] and in the Australian context[15–17] have demonstrated the safety and efficacy of midwifery continuity of care[7,16] for decreasing intervention rates and promoting vaginal birth. However, much of the research on these strategies including the Mango trial[15] in Australia, focuses on women of mixed parity and do not offer sub-analyses for a primiparous cohort. Therefore it is unclear whether these strategies are effective for primiparous women who have experienced higher rates of operative birth and obstetric interventions than multiparous women.[18] Two recent Australian studies provide some data for primiparous women. McLachlan et al.,[16] conducted a RCT comparing case-load midwifery with standard care in a group of women of mixed parity (though 70% primiparous). Unplanned sub-analyses of outcomes show that primiparous women in the case-load group were less likely to experience caesarean section and epidural analgesia and more likely to experience a spontaneous vaginal birth than their counterparts in standard care. No other analyses were offered for the primiparous cohort. Tracy et al.,[15] conducted a cross sectional study with a sub-analysis of outcomes for standard primiparous women experiencing caseload midwifery, standard hospital and private obstetric care. This study demonstrated that standard primiparous women in the caseload model were more likely to experience spontaneous onset and unassisted vaginal birth and had lower rates of elective caesarean section than standard primiparous women in the standard care and private obstetric models. Whilst these results are important further research is needed to examine a broader range of outcomes for a primiparous cohort of women.

Women who have experienced a vaginal birth are more autonomous in the postnatal period because they are not inhibited by a level of pain experienced by women who have had an assisted vaginal or caesarean birth. Although these interventions are sometimes required, the resulting discomfort may impact negatively on the woman's ability to initiate breastfeeding[19] and may have longer-term impact on breastfeeding.[20] The adverse effects of emergency caesarean section on mother–infant bonding are also well documented.[2,21] It is also well known that respiratory difficulties are more common in babies born by caesarean section, particularly if the woman has not laboured.[22–23] Any baby born by caesarean section (elective or in labour), has an increased risk of respiratory difficulties and admission to a neonatal intensive care unit (NICU).[24]

This has organisational funding implications because of the significant cost of caring for a baby in NICU. The introduction of a first obstetric intervention that may lead to others during labour for low risk women is very costly to the health system.[25] A more recent review of studies examining midwife-led care compared to doctor-led care suggested that further research was needed to establish the cost-effectiveness of midwife-led care.[3] In response to this need, a recent randomised control trial (the M@NGO Trial) was undertaken in Australia.[15] This study found that a woman receiving 'one on one' care by a case-loading midwife saves the organisation over $500 per birth when compared to the costs for a woman receiving standard care. Women who experience a spontaneous vaginal birth (i.e. unassisted with no obstetric intervention) are also able to ambulate earlier, which encourages early transfer home with her baby, because of the reduced risk of respiratory difficulties. This has cost saving implications for the organisation.[25]

The following methods were used in this study to determine if continuity of midwifery care at this site impacted on intervention and caesarean section rates.

3. Methods

A retrospective comparative cohort study design was implemented drawing on data from two databases held in an Australian tertiary hospital:

- Birth outcomes system (BOS) is a clinical information management system designed to capture obstetric information and medical and obstetric history.
- Clinical records information system (CRIS) is a computerised patient record where paper records are converted to digital format.

In this study every data entry in BOS was cross-checked with those in CRIS. Hard copy clinical notes were accessed for any missing data or for electronic data that appeared implausible.

Outcomes for low risk primiparous women giving birth between 1st January 2010 and 31st December 2011 who accessed two different models of care were compared. The models of care were:

- Continuity midwifery model: A model of care that provides a woman with a designated midwife who provides all care in pregnancy, is 'on call' for and cares for her in labour and provides postnatal support for two weeks. Women accessing this model plan to give birth in the Birth Centre which (during the period of the study), was an 'alongside' birth centre on the ground floor with Delivery Suite situated on level three of the same building. In this model, women who develop complications in pregnancy and in labour will remain in the care of the midwives providing continuity of care with the birth taking place in Delivery Suite, as the Birth Centre is an environment for low risk women only. Women usually transfer home within 24 h with their continuity midwife providing postnatal support for a further two weeks.
- Standard public care: Midwives, obstetric registrars, obstetricians and general practitioners share a woman's care, with the woman having no expectation that she will see the same midwife more than once and will not know her midwife in labour or the postnatal period. Women within this model of care plan to give birth in the Delivery Suite which is a traditional labour ward and are encouraged to transfer home 2–3 days later, with postnatal support from midwives unknown to them previously.

3.1. Sample

The sample comprised low-risk primiparous women who: gave birth for the first time, had a singleton pregnancy, had a foetus with a cephalic presentation, had a gestation of >37 weeks, were not planning an elective caesarean section, had no pre-existing or emerging medical conditions, had no emerging obstetric complications, had a BMI <40 and did not enter either model of care >30 weeks gestation. There were no maternal age or end-gestation