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Back to normal: A retrospective, cross-sectional study of the multi-factorial determinants of normal birth in Queensland, Australia

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ABSTRACT

Background: currently, care providers and policy-makers internationally are working to promote normal birth. In Australia, such initiatives are being implemented without any evidence of the prevalence or determinants of normal birth as a multidimensional construct. This study aimed to better understand the determinants of normal birth (defined as without induction of labour, epidural/spinal/general anaesthesia, forceps/vacuum, caesarean birth, or episiotomy) using secondary analyses of data from a population survey of women in Queensland, Australia.

Methods: women who birthed in Queensland during a two-week period in 2009 were mailed a survey approximately three months after birth. Women ($n=772$) provided retrospective data on their pregnancy, labour and birth preferences and experiences, socio-demographic characteristics, and reproductive history. A series of logistic regressions were conducted to determine factors associated with having labour, having a vaginal birth, and having a normal birth.

Findings: overall, 81.9% of women had labour, 66.4% had a vaginal birth, and 29.6% had a normal birth. After adjusting for other significant factors, women had significantly higher odds of having labour if they birthed in a public hospital and had a pre-existing preference for a vaginal birth. Of women who had labour, 80.8% had a vaginal birth. Women who had labour had significantly higher odds of having a vaginal birth if they attended antenatal classes, did not have continuous fetal monitoring, felt able to 'take their time' in labour, and had a pre-existing preference for a vaginal birth. Of women who had a vaginal birth, 44.7% had a normal birth. Women who had a vaginal birth had significantly higher odds of having a normal birth if they birthed in a public hospital, birthed outside regular business hours, had mobility in labour, did not have continuous fetal monitoring, and were non-supine during birth.

Conclusions: these findings provide a strong foundation on which to base resources aimed at increasing informed decision-making for maternity care consumers, providers, and policy-makers alike. Research to evaluate the impact of modifying key clinical practices (e.g., supporting women's mobility during labour, facilitating non-supine positioning during birth) on the likelihood of a normal birth is an important next step.

Introduction

While variations in usage of the term exist, a 'normal birth' is commonly understood to be a vaginal birth with little medical intervention (Lee, 1999). A 2007 consensus statement on normal birth by the Maternity Care Working Party, *Making Normal Birth a Reality*, defined a normal birth as an unassisted vaginal birth with spontaneous onset of labour (i.e., without induction of labour with prostaglandins, oxytocics or artificial rupture of membranes), without epidural, spinal or general anaesthetic, and without episiotomy (Maternity Care Working Party, 2007). This definition, informed by the NHS Information Centre definition of 'normal delivery', establishes normal birth as a *process* (Werkmeister et al., 2008), and is consistent with criteria for normal birth as defined in the *Towards Normal Birth in New South Wales* policy directive

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(New South Wales Health, 2010). Other definitions (e.g., Society of Obstetricians and Gynaecologists of Canada et al., 2008; World Health Organization and Maternal and Newborn Health/Safe Motherhood Unit, 1997), including those in Queensland's Clinical Guidelines for Normal birth (Queensland Maternity and Neonatal Clinical Guidelines Program, 2012), also include *outcomes* (such as gestational age at birth, fetal position at birth, or postnatal perineal status) in the criteria for normal birth. Due to their inclusion of downstream outcomes that may or may not be modifiable by clinicial practice, we consider these definitions less useful for efforts to generate evidence relevant for consumer, organisational, and policy decision making.

Using the above definition of normal birth as a process, Werkmeister et al. (2008) reported that the normal birth rate varied significantly across maternity facilities in England and, overall, had declined considerably in recent years. In 2012, the rate of normal birth was between 39.5% (Health & Social Care Information Centre, 2013) and 42% (Dodwell, 2012) in England, and 35.5% in Scotland (Information and Statistics Division, Scotland, 2013). The Birthplace in England Collaborative Group (2011) applied the same definition of normal birth and reported a higher rate of normal birth (61.5%), but in a sample restricted to low-risk women. Although normal birth data are not routinely reported in other countries, increases in the proportions of birthing women that experience caesarean section and epidural anaesthesia in Australia (Laws et al., 2010), Canada (Canadian Institute for Health Information, 2007), and the United States (Menacker and Hamilton, 2010) suggest that the normal birth rate has also declined elsewhere.

Increasing medical intervention during birth has prompted efforts by maternity care providers and policy-makers in several countries to support and encourage normal birth. In the United Kingdom, explicit policy directives have focused on increasing normal birth (Maternity Care Working Party, 2007), with the Royal College of Midwives' Campaign for Normal Birth launched in 2005 (The Royal College of Midwives, 2005). In Canada, a Joint Policy Statement on Normal Birth has been published by various organisations to promote, protect, and support normal birth (Society of Obstetricians and Gynaecologists of Canada et al., 2008). In Australia, the National Maternity Services Plan 2010 (Australian Health Ministers' Conference, 2010) is underpinned by a service provision philosophy of birth is a normal physiological event. Further, the *Towards Normal Birth in New South Wales* policy directive was published in 2010, requiring that all maternity services in that state have a written normal birth policy by 2015 (New South Wales Health, 2010). Additionally, clinical guidelines on normal birth have been developed in the Australian state of Queensland, the aim of which are to 'protect, promote and support normal birth' (Queensland Maternity and Neonatal Clinical Guidelines Program, 2012, p. 12).

These goals and policy directives for increasing the normal birth rate are aligned with most women's preferences. Literature from Australia and several other countries indicates that the majority of women report the desire for minimal medical intervention during birth (Gamble and Creedy, 2001; Thomas et al., 2001; Kringeland et al., 2010; Miller et al., 2012). A systematic review and meta-analysis of 23 studies in various countries published since 2000 found that only a minority of women (13.8% overall) expressed a preference for caesarean birth over vaginal birth (Mazzoni et al., 2011).

Growing interest in normal birth has led to calls for the education of maternity care consumers about factors that increase the likelihood of normal birth. In particular, the *Making Normal Birth a Reality* consensus statement recommended the development of '[e]vidence-based information for women about factors that make a normal birth with good outcomes for the mother and baby more or less likely, presented in a format which they understand, so that they can plan for the kind of birth they want and make informed decisions' (Maternity Care Working Party, 2007, p. 2). Both of the Australian state-level policies referred to above direct care providers to inform all pregnant women about the factors that promote normal birth as part of their antenatal care (New South Wales Health, 2010; Queensland Maternity and Neonatal Clinical Guidelines Program, 2012). There have also been calls for education and training for maternity care providers in how to effectively support normal birth for those women who wish to give birth without intervention (Society of Obstetricians and Gynaecologists of Canada et al., 2008). Developing such educational resources for both consumers and care providers requires comprehensive understanding of the modifiable determinants of normal birth.

Many have speculated about the factors that are likely to increase the odds of a woman experiencing a normal birth. For example, the Lamaze Institute for Normal Birth has suggested that ensuring that women can move freely, have continuous emotional and physical support, and use non-supine positions in labour and birth will minimise medical intervention and, thus, increase the likelihood of normal birth (Lamaze International, 2007). Others have focused on the role of place of birth, suggesting that normal birth is more likely at home or in freestanding birth centres than in conventional hospital settings (Young, 2009), and finding that low-risk women's odds of normal birth were more than doubled when birthing in midwifery units or at home, compared with obstetric units (The Birthplace in England Collaborative Group, 2011). Still others have highlighted the possible role of care provider attitudes and orientations in the likelihood of normal birth. For example, the Maternity Care Working Party (2007, p. 4) suggested that the likelihood of normal birth is higher where 'there is a shared positive attitude towards birth as a normal physiological process, positive leadership, timely access to support for junior staff, commitment to evidence-based practice, integration of different parts of the service, and an ability to manage change'.

There is considerable recent empirical evidence on factors associated with *some* of the individual elements of normal birth: determinants of type of onset of labour (Humphrey and Tucker, 2009), mode of birth (Coonrod et al., 2008), use of epidural analgesia (Jeschke et al., 2012), and use of episiotomy (Robinson et al., 2000; Allen and Hanson, 2005; Ogunyemi et al., 2006; Gossett and Dunsmoor-Su, 2008). Altogether, these studies provide consistent evidence that the determinants of various individual elements of normal birth are multifactorial and include parity, insurance status, care provider characteristics (e.g., discipline, experience), hospital characteristics (e.g., percentage of publicly-funded births, availability of in-house medical specialists), and the presence of maternal medical conditions such as diabetes and pre-eclampsia (Robinson et al., 2000; Allen and Hanson, 2005; Ogunyemi et al., 2006; Coonrod et al., 2008; Gossett and Dunsmoor-Su, 2008; Humphrey and Tucker, 2009; Jeschke et al., 2012). There is less consistent evidence for maternal age as a determinant of individual elements of normal birth, no evidence for the influence of some suggested care practices (i.e., ensuring mobility) and no research examining determinants of normal birth as a multidimensional construct that can be aligned with population targets for increasing 'normal birth' when evaluating policy initiatives.

The aim of this study was to address these gaps in knowledge by estimating the prevalence of normal birth and determining factors associated with processes of normal birth, as defined by Werkmeister et al. (2008), using secondary analyses of data from a retrospective, self-reported population survey of women's maternity care experiences in Queensland, Australia.

Method

Participants

Participants were respondents to the 2009 Having a Baby in Queensland Survey; a population survey of women's experiences of pregnancy, labour and birth, and after birth care (Miller et al., 2010).