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Comparison of midwife-led care and obstetrician-led care on maternal and neonatal outcomes in Singapore: A retrospective cohort study

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ABSTRACT

Objectives: to examine the maternal and neonatal outcomes of low-risk women receiving midwife-led care and obstetrician-led care.

Design, setting, & participants: a retrospective cohort study design was used. Data were collected from a large tertiary maternity hospital in Singapore. This involved a medical record review of 368 women who had singleton, normal to low-risk, term pregnancy, and received midwife-led care and obstetrician-led care between 2013 to 2014.

Measurements: a data extraction tool was used to solicit information on the outcome measures, including duration of labour, mode of delivery, episiotomy, and 5-minutes Apgar score (< 7). Descriptive statistics were used to summarise the women's 'characteristics. χ^2 and independent sample t-test were used to assess the differences in demographics and birth outcomes. Multiple linear and logistic regressions were used to examine the difference between the two comparison groups after adjusted for potential confounders.

Findings: statistically significant differences ($p < 0.05$) between the midwife-led care group and the obstetrician-led care group in terms of the total duration of labour and total antenatal visits were found. No statistically significant differences were observed for mode of delivery, episiotomy, intrapartum pain management, labour augmentation, labour induction, postpartum haemorrhage, perineal trauma, birth status, 5-minutes Apgar score (< 7), low birth weight (< 2500 g), and neonatal admission to intensive care units between the midwife-led care group and the obstetrician-led care group.

Key conclusions: while interventions such as episiotomies and labour augmentation were more common in the midwife-led care group, no significant differences were found for most of the outcome measures between the two maternity groups except for total antenatal visits and duration of labour. Findings suggest that midwife-led care is as safe and effective as obstetrician-led care in achieving optimal birth outcomes, with no higher risk of adversities for low-risk women. Additional studies are necessary to continuously evaluate midwife-led care and to promote normal birth and reduce excessive use of obstetric procedures.

Implications for practice: the provision of midwife-led care should continue to be extended as an additional choice in maternity care for women with low-risk pregnancies. Professional staff development with continuous education is needed to clear misconceptions about midwife-led care and to promote awareness in current practice guidelines. Prospective evaluation of midwife-led care will be beneficial in informing policies and practise guidelines.

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Introduction

The excessive use of obstetric interventions as routine prophylactic measures for women in labour has been the subject of considerable debate in high-income countries (Bernitz et al., 2011; Gottvall et al., 2011). While obstetric interventions can help save the mother's and baby's lives when it comes to a life-threatening emergency, injudicious and excessive use can increase the risk of morbidity and mortality to both the mother and the baby (Caughey et al., 2014). Women's satisfaction and birthing experiences may also be hindered, resulting in ill health and wellbeing such as poorer postnatal psychological adjustment and higher risks for future unexplained stillbirth (McLachlan et al., 2012).

The most classic model of maternity care, obstetrician-led care (OBC) involves obstetricians as the main care provider. From biomedical perspectives, pregnancy and childbirth are considered pathologic processes that need to be closely monitored and actively managed (Prosen and Krajnc, 2013). The focus on the concepts of risks than normality and routine obstetric interventions are essential to assure safety. Despite the recommendations from clinical guidelines calling for restrictive use, intervention rates remain high in high-income countries. In a 2005 study that compiled international statistics on episiotomy use, the reported rates ranged from 32.7% in the United States to 46% in Switzerland and 82% in China (Graham et al., 2005). Caesarean section rates are worrying as well. In 2011, one out of every three births in the United States was delivered via caesarean section whereas in Singapore, the overall caesarean rate in 2009 was 34%, which far surpasses the World Health Organisation's recommendation of 15% (Gibbons et al., 2010; Li et al., 2011; McLachlan et al., 2012; Wang et al., 2013).

Midwife-led care (MWC), on the other hand, is another model of maternity care where midwives are primarily responsible for the care of childbearing women (Sandall et al., 2016). It is women-centred and places emphasis on normality and continuity of care by a known and trusted midwife or a team of midwives (Sandall et al., 2016). With MWC, safe and effective birth has also been achieved and is comparable to OBC which includes frequent use of obstetric procedures (Begley et al., 2011; Hildingsson et al., 2012; Gu et al., 2013). Previous research (Begley et al., 2011; Bernitz et al., 2011; Gottvall et al., 2011; Hildingsson et al., 2012; Tracy et al., 2013) revealed that women who received MWC have similar or more positive optimal birth outcomes as those who received OBC, and are reportedly more satisfied with their birthing experiences. A recent Cochrane Review even recommended that MWC should be offered to most childbearing women unless medically contraindicated (Sandall et al., 2016). As such, the necessity of obstetric interventions for every woman, especially low-risk women, is increasingly challenged (Caughey et al., 2014).

In Singapore, women were traditionally cared for by midwives throughout their pregnancy and childbirth (Li et al., 2011; Wang et al., 2013) until childbirth was medicalised in the 1970s and the focus started to shift from MWC to obstetricians-led care in hospitals (Loh, 2015; Tan and Chern, 2003). Most pregnant couples have shown acceptance towards obstetrician-led care as evident by the increased numbers of births in hospitals (Loh, 2015). This is likely due to the embedded mind-set of seeing doctors for all health-related issues. Nevertheless, with a recent focus on physiological birth and the importance of MWC in the West (Kuo et al., 2008; Cheung et al., 2011; Iida et al., 2014; Butler et al., 2015), Singapore's MWC services were first introduced in 2010 in a large public tertiary hospital (KK Women's and Children's Hospital). However, these services are only available on-site and are not well utilised by parents, probably due to a lack of awareness and trust in such services (anecdotal evidence). To create awareness, there is a need to evaluate local MWC services that are offered to the multiracial Singaporean population. This will also provide evidence for areas of improvement in such services so that international standards of maternity care can be achieved. This is of special importance as the current evaluation of MWC (Johnson et al., 2005; Begley et al., 2011; Monk et al., 2014; Tracy et al., 2014) differs due to the various available models of MWC, such as case-load midwifery, single midwife care, and team midwifery programmes (Sandall et al., 2016). Additionally these modelas are practised at varied locations including hospitals, home-care, and birth centre settings in countries such as Australia, United Kingdom, Netherland, and Asian countries (Cheung et al., 2011; Gu et al., 2013; Iida et al., 2014). As the study hospital offers team midwifery care where midwives provide care during the antenatal, intra-partum, and immediate postnatal periods without following-up women in the postnatal wards and at homes after hospital discharge, it is worth evaluating local MWC services, especially when the differences in the organisation of care, practices, and cultural settings in previous studies suggest that the generalisability of findings to the Singapore population may be limited. As such, the aim of this study is to assess and compare the impact of MWC on maternal and neonatal outcomes of low-risk women with OBC in Singapore.

Methods

Study design

This was a retrospective cohort study involving medical record review.

Setting

The study was conducted in KK Women's and Children's Hospital (KKH), a restructured tertiary hospital that offers both maternity and paediatric care. It has the largest maternity facility in Singapore and sees approximately 12,000 births annually. All women are encouraged to book their first antenatal visit as soon as they are aware of their pregnancy, after which they are automatically enrolled into OBC where they will start antenatal care with an obstetrician. OBC caters to both private and subsidised women with low to high-risk pregnancies. Under OBC, obstetricians are the primary care providers, with attendance by different obstetric nurses and midwives on duty throughout the maternity period. Care as such is fragmented. The standard schedule for antenatal visit is as follow: monthly before 28 weeks, fortnightly from 28 to 36 weeks, and weekly from 36 to 40 weeks. Most women will receive an average of 10 to 12 antenatal visits. Once a woman's pregnancy reaches more than 24 weeks and is determined as low-risk or normal pregnancy, she is given the choice of opting for MWC by the obstetricians at the study site (which is not the norm in other public hospitals). The MWC is offered as a subsidised care for local women with normal or low-risk pregnancies. In the local context, the term ‘subsidised care’ applies to local women who are either Singapore citizens or permanent residents that are receiving care in public healthcare institutions and hence benefiting from government subsidies. Antenatal care will be transferred from obstetricians to midwives once a woman has decided to receive MWC. Women who choose not to receive MWC will continue their OBC visits with their respective obstetricians. For MWC, the first visit to midwives typically begins at 28 to 32 weeks gestation at either one of the three MWC clinics in the study hospital, following referral from their respective obstetricians after being certified as low-risk. Women receiving MWC at the study site are cared for by a small team of midwives from the delivery suite who will ensure provision of relational continuity of care throughout the antenatal, intra-partum, and immediate postnatal periods. Whenever necessary or when complications arise, care would be transferred back to obstetricians for further care management. Postnatal care, however, will be provided by a different group of nurses in the postnatal wards and the midwives do not follow-up with women in the postnatal wards or after hospital discharge. Under MWC, clinical