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Special attention to women experiencing high-risk pregnancy: Delivery, care assistance and neonatal outcomes in two Brazilian maternity wards

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ABSTRACT

Background: To compare two care models of high-risk pregnant women–a House for Pregnant Women, staffed by nurse-midwives, versus a traditional care model in a hospital maternity ward.

Design: This was across-sectional study conducted in two reference maternity hospitals for high-risk pregnancies, in Belo Horizonte, Minas Gerais, Brazil. The sample consisted of 312 high-risk pregnant women consecutively admitted from January 1st to December 31st, 2010, either to the House for Pregnant Women (n=247), or the hospital maternity ward (n=65). Gestational ages varied from 22 weeks to 36 weeks and six days. We measured individual, demographic, obstetric, labour and delivery variables, and newborn characteristics. For data analysis, we used descriptive, bivariate and multivariate statistics using Poisson regression, with a 5% significance level.

Findings: At the conventional hospital maternity ward, more women had six or more antenatal exams, greater frequencies of diagnosis related to blood pressure, and a greater number of women underwent either a C-section or a vaginal delivery with an episiotomy and analgesia. At the House for Pregnant Women, the majority of the hospitalizations were related to preterm labour and premature rupture of membranes. There were no statistical differences in the newborn characteristics.

Key conclusions: The House for Pregnant Women care model, utilizing midwives was less interventionist, yet with results as favorable as in a conventional maternity hospital setting.

Introduction

Pregnancy is a natural physiological, process classified as low-risk in most cases. However, a portion of women of child bearing age, either due to pre-existing health conditions or injury, may develop problems during pregnancy and thus are classified as high-risk, because complications may develop affecting the fetus, the newborn or the mother. A low-risk pregnancy can change its classification even when the first few weeks are considered to be high-risk, and vice versa (Brasil, 2010).

Risk factors include existing health conditions such as high blood pressure, diabetes or being HIV-positive (Dietz et al., 2014), obesity (Moll et al., 2017), multiple births, pregnancy in teens and women aged 35 or older which can increase the risk of preeclampsia and gestational high blood pressure (Posthumus et al., 2015).

In Brazil, the federal government has invested in improving maternal and child health assistance. The current strategy, called *Rede Cegonha*, was launched by the Ministry of Health in 2011. One of its objectives is to reduce maternal and child deaths, still high in the country. It encourages the organization of a maternal and child care network, thus increasing the chance for access, receptivity and resolution, as well as reducing maternal and infant mortality and occurrences of unnecessary caesarean sections (C-sections) within the public health system (Brasil, 2011).

Despite numerous efforts, the government goal of reducing the maternal mortality rate by 75% by 2015, has not been achieved (Victora et al., 2011). Therefore, further investment is needed in the expansion and training of specialised services to care for the estimated three million births that occur each year in Brazil. High-risk pregnant

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women need high quality referral services, such as *Rede Cegonha* (Brasil, 2011).

This strategy encourages the implementation of the House for Pregnant Women (HPW) and nurse-midwives for the admission and care of pregnant women. Although recently and only partially adopted in Brazil, a thorough evaluation of *Rede Cegonha* is needed to better understand the context of its implementation in terms of the political and epidemiological outcomes and the financial, material and human resource costs necessary to achieve the desired outcomes (Cavalcanti et al., 2013).

The HPW aim to support the care of pregnant women in situations that require vigilance in proximity to reference hospital services, in cases where there is no need for hospitalization, especially when high-risk mothers live far from birthing facilities. It is an extra-hospital health service, linked to a secondary or tertiary care health institution and allows clinical assistance which mirrors a home care environment, but offers easy access to the resources of a hospital maternity ward. The HPW favors disease prevention and health promotion. Pregnant women staying in the HPW return there after birth until their condition is stabilised. They receive health education during their stay (Brasil, 2010). Therefore, the House for Pregnant Women represents a strategy for reversing hospital-centered attention, as in the case of traditional hospital maternity ward settings for situations often classified as high-risk.

The HPW is still an emerging health service in Brazil. Its benefits include reduced costs of hospital admissions, a multiprofessional healthcare team, and a care model based on clinical evidence-based practices, all focused on the needs of women. However, most pregnant women classified as high-risk in Brazil continue to be referred to hospital maternity wards.

There is, then, a need for research to explore the effectiveness and or justification for the implementation of a HPW in the healthcare network. This study aimed to compare outcomes of two care models for high-risk pregnant women (a House for Pregnant Women versus a Maternity Hospital Ward - MHW) with respect to perceived adequacy of assistance during labour and childbirth and neonatal outcomes.

Methods

This was a cross-sectional study, examining data from two referral maternity hospitals for high-risk pregnant women in the metropolitan city of Belo Horizonte, in the southeastern state of Minas Gerais, Brazil. All pregnant women with gestational ages between 22 and 36 weeks and six days, who were hospitalised for at least one day, with conservative management care and resulting in childbirth, were included in the sample.

Our first study hospital was a philanthropic, non-governmental institution, a national and international reference center for the humanization of childbirth and birth care, depending on the guidance of nurse-midwifes since its inception. This maternity hospital offers services such as a high-risk infirmary, neonatal intensive care, a house for puerperal women, a normal delivery center, and the HPW. This latter hospital was started in 2006, a pioneering center for a specific type of care and, therefore, has served as a model for the future creation of the House for Pregnant Women, Puerperal Women and their Babies, as proposed by the Ministry of Health (Victora et al., 2011).

Currently, the studied HPW offers 22 beds, exclusively occupied by pregnant women. It is an annex to the reference maternity hospital which supports and manages it. Initially, women are admitted to the maternity ward, and following obstetric diagnosis and treatment, when necessary, they are transferred to the MHW for conservative care. In cases of clinical improvement, the mother is discharged and continues her high-risk antenatal care at the city's reference clinic. If there is a worsening of clinical symptoms the mother is instructed to return to the hospital.

The selection criterion for admission of pregnant women to a HPW is based on some risk to maternal-fetal health not requiring the major interventions offered in a maternity hospital setting. Those requiring daily follow-up (such as cardiotocography, blood pressure monitoring) are not eligible. An example of those who are include treatment for premature rupture of membranes without potential complications at less than 34 weeks. Given any sign of deterioration of their maternal-fetal clinical diagnosis, they return to the maternity hospital unit.

Pregnant women with more serious complications remain in the maternity hospital ward and are not referred to the HPW because they may require an intervention, such as rapid termination of pregnancy (as in cases of severe hypertension, use of magnesium sulphate or imminent eclampsia). The transfer criterion is defined as stabilization of the women's clinical states, taking into account that they are high-risk pregnant women who may not be in condition to receive a discharge, this according to an institutional protocol for decision-making, based on scientific evidence.

One of the objectives of the HPW is to maintain pregnancy under conservative management and to avoid extreme prematurity. All women admitted to the HPW are linked to the reference maternity hospital, and in case of emergency care, a scheduled childbirth or labour, are admitted to that maternity hospital.

If the referral maternity hospital has an annexed HPW and offers antenatal care, as is the case in this study, pregnant women can be referred directly to the HPW for antenatal care. In instances of improvement of their clinical diagnosis, the woman is discharged and will continue their high-risk antenatal care on an out-patient basis at the referral center closest to their residence.

A HPW differs from other, similar services because of its unique pioneering approach, both due to its physical structure, which resembles a home environment, and because it is staffed by nurse-midwives, who perform consultations and daily follow-ups, evaluating the need to refer the woman to the reference maternity hospital. Nurse-midwives, additionally, also engage in discussions with other health professionals to propose a specific patient care plan when necessary. In Brazil, nurse-midwives have regularly practiced under federal law since 1986 (CLAP/SMR, 2014). Therefore, these professionals are trained and credentialed according to federal legislation to offer expert care, education, counselling, and support to women during pregnancy, birth and the postpartum period as defined by the International Confederation of Midwives (ICM) (CLAP/SMR, 2014).

The Ministry of Health has striven to strengthen a new model of obstetrical care by financing a training course for nurse-midwives that ran until 2010. More recently, with the addition of the *Rede Cegonha* strategy, created in 2011, the training of obstetric nurses was resumed, and new courses are being conducted throughout the country in the form of residency and specialization modalities, in addition to in-service training (GAMA et al., 2016).

These efforts have been undertaken in order to increase the number of specialised nurses in obstetrics, as well as to strengthen their qualifications, so that they can contribute even more to the country's obstetric and neonatal assistance at all levels of complexity (Souza et al., 2014).

However, like the HPW, the participation of nurse-midwife professionals is also considered recent in the Brazilian context due to the predominant care model (Medical versus Holistic Models), which focuses on the doctor's treatment of pathologies, and thus, lacks a holistic outlook on the woman as a human being and the environment as a single recovery system. Quantitatively, there are an insufficient number of professionals to meet the demands of antenatal, childbirth and postpartum care services. Nonetheless, in contrast to the limited participation of these professionals in Brazil, this first model of the study (a maternity hospital with a HPW) opted, a few decades ago, for the presence of nurse-midwives in low-risk childbirth care and in the care of pregnant women, women in labour, puerperal women and their babies, including high-risk cases.