



## Birth preparedness and skilled attendance at birth in Nepal: Implications for achieving millennium development goal 5

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### ABSTRACT

**Objective:** to assess birth preparedness in expectant mothers and to evaluate its association with skilled attendance at birth in central Nepal.

**Design:** a community-based prospective cohort study using structured questionnaires.

**Setting:** Kaski district of Nepal.

**Participants:** a total of 701 pregnant women of more than 5 months gestation were recruited and interviewed, followed by a second interview within 45 days of delivery.

**Measurements:** outcome was skilled attendance at birth. Birth preparedness was measured by five indicators: identification of delivery place, identification of transport, identification of blood donor, money saving and antenatal care check-up.

**Findings:** level of birth preparedness was high with 65% of the women reported preparing for at least 4 of the 5 arrangements. It appears that the more arrangements made, the more likely were the women to have skilled attendance at birth ( $OR=1.51$ ,  $p<0.001$ ). For those pregnant women who intended to save money, identified a delivery place or identified a potential blood donor, their likelihood of actual delivery at a health facility increased by two to three fold. However, making arrangements for transportation and antenatal care check-up were not significantly associated with skilled attendance at birth.

**Conclusions:** intention to deliver in a health-care facility as measured by birth preparedness indicators was associated with actual skilled attendance at birth. Birth preparedness packages could increase the proportion of skilled attendance at birth in the pathway of meeting the Millennium Development Goal 5.

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### Introduction

Maternal mortality remains a major issue for health systems despite the progress made in reducing the maternal mortality ratio in many countries (Hogan et al., 2010). The key strategy incorporated in safe motherhood programmes for achieving the Millennium Development Goal 5 of Maternal Health is to ensure all deliveries take place in the presence of skilled birth attendants (Cambell and Graham, 2006; Starrs, 2006). To become a skilled birth attendant, a health worker must undertake accredited training and education to gain midwifery skills that are essential to manage a normal delivery, to recognise and manage obstetric complications, or refer those complications in time if needed (World Health Organisation, 2004). The adoption of this strategy has enabled the reduction of maternal mortality in several

countries such as Malaysia and Sri Lanka (De Brouwere et al., 1998; Koblinsky et al., 1999; Pathmanathan et al., 2003). Moreover, the 'Three Delay Framework' has been widely used to explain obstacles to health-care facilities resulting in maternal death (Thaddeus and Maine, 1994): delay in decision to seek care, delay in reaching a health-care facility, and delay in receiving treatment for obstetric complications. They arise due to a variety of reasons including lack of money, distance, quality of service, inadequate community and family awareness, and insufficient knowledge about maternal and newborn health issues.

The elements of birth preparedness have been promoted by international agencies as part of their maternal mortality reduction strategies. Birth preparedness and complications readiness (BP/CR) is the process of planning for normal birth and anticipating the actions needed in case of an emergency. It is the initial prerequisite step to seek skilled birth attendance, and indicates the perceived need of a skilled birth attendant for delivery. BP/CR assists women to seek and reach midwifery care during pregnancy and childbirth, especially when they experience obstetric complications or are far away from a health facility. It can reduce the first

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and second types of delay in obtaining obstetrical care (Stanton, 2004). BP/CR components at the individual level include knowing danger signs of pregnancy, childbirth and post partum, identifying a health facility and skilled birth attendant, attending a health facility for an antenatal check-up, arranging transport, saving money, and identifying a potential blood donor (JHPIEGO, 2004b).

Nepal has made a substantial progress in reducing maternal mortality and is likely to achieve the Millennium Development Goal 5 (Hussein et al., 2011; WHO, 2012). Community mobilisation strategies that utilised counselling have made a positive impact on maternal and child health in Nepal (Manandhar et al., 2004; Morrison et al., 2005, 2010). The BP/CR framework was first adopted in the government's 'SUMATA' programme in 2002. This programme encouraged families to care for women during pregnancy, to share their work, and to prepare for birth (JHPIEGO, 2004a; Sood et al., 2004). Birth preparedness packages were then introduced at a number of districts in partnership with several non-government organisations. Community health workers, including maternal and child health workers, village health workers and community volunteers, were trained in counselling techniques and use of the birth preparedness tools (flip-charts and key chains) to communicate the BP/CR messages. Female community health volunteers identified and counselled expectant mothers in their locality, whereas facility-based health workers dealt with pregnant women during antenatal check-ups (McPherson et al., 2006, 2010). BP/CR has now been incorporated into the national safe motherhood programme of Nepal and implemented throughout the district health system. The district health facilities as well as female community health volunteers use pictorial charts that depict preparation activities and danger signs.

The government of Nepal implemented the 'safer mother programme' in January, 2009. This programme provides monetary incentives to women who have attended the recommended four antenatal care visits and delivered at designated birth facilities. It also provides free delivery services at such facilities and encourages women to deliver under skilled attendance, preferably at designated birth centres (Ministry of Health and Population, 2009). Staff nurses and auxiliary midwives with additional training on midwifery skills are qualified as skilled birth attendants in Nepal, and can lead the maternity and delivery care in birth centres. In-service skilled birth training has been provided to midwives since 2006 (Ministry of Health and Population, 2006).

BP/CR is acclaimed as 'a process indicator in the pathway to maternal survival and a demand-creation intervention that promotes key messages and behaviour change via inter-personal communication through community health volunteers' (JHPIEGO, 2004a). Although BP/CR has been widely accepted, its effectiveness as a means of increasing the use of skilled birth attendants remains uncertain (Miller et al., 2003; Maine, 2007; Solnes et al., 2013). Studies have been undertaken to measure change in birth preparedness level after educational intervention, rather than measuring the increase in skilled attendance at birth (Sood et al., 2004). Therefore, the aim of this study was to assess birth preparedness level in expectant mothers and to evaluate its association with skilled attendance at birth in a central hills district of Nepal.

## Methods

### Study location and setting

This study was conducted in the Kaski district of the Western Development Region of Nepal, a hilly area with a population of 490,429 and literacy rate of 82% according to the latest census data (Government of Nepal, 2012). Kaski is a relatively developed

district and ranks third in terms of the human development index among 75 districts in Nepal (United Nations Development Programme, 2004). The district is administratively divided into 42 Village Development Committees (VDC) and two municipalities. Geographically, the district has a central valley housing the two municipalities and a few VDC in the urban areas. The rest of the VDC spread out into the rural hilly terraces. Pokhara is the regional capital and attracts people from neighbouring districts for education, employment and health care. It has a regional government hospital, two teaching hospitals of private medical colleges and several nursing homes and pharmacies. The three hospitals serve as tertiary referral centres for emergency obstetric care and provide free delivery services.

The District Public Health Office of Kaski has divided the rural part of the district into 13 *illakas* for health service provision. Each *illaka* has at least one health facility (birth centre) where skilled birth attendants provide basic emergency obstetric care services. Additional competent auxiliary midwives with skilled birth training were contracted to provide 24-hour delivery service at each designated centre. Therefore, facility delivery is equivalent to skilled attendance at the target setting.

### Study design and participants

A community-based prospective cohort study design was adopted. The female population in the 15–49 age group was about 117,500 with 13,800 expected pregnancies annually (District Public Health Office, Kaski, 2010). Our study population consisted of all pregnant female residents who delivered during the period December 2011 to October 2012. The probability of finding women who were 5 or more months pregnant during a single visit constituted about one quarter of the annual number of expected pregnancies in the district. A sample size of 700 pregnant women represented about 20% of the eligible women in the Kaski district and the number deemed appropriate for the study sample within our available budget.

*Illakas* in the rural areas and wards within the two municipalities were first randomly chosen. From the selected seven *illakas* in rural areas and six wards in municipalities, we recruited women who were 5 months or more pregnant until the desired sampling quota was filled, based on the probability proportional to the expected number of pregnancies in each selected area. Of the total 748 eligible women initially approached, 701 participants took part in the baseline interview, giving a response rate of 93.7%.

### Data collection and ethics

The questionnaire used in the interview was adapted from the Maternal and Neonatal Baseline Health Survey of Nepal (Johns Hopkins University, 2001), and the Safe Motherhood Needs Assessment Survey (World Health Organisation, 2001). The translated questionnaire was pretested on 50 pregnant women for cultural appropriateness, content validity and understanding. It sought information on socio-demographics, birth preparedness and complication readiness. Participants were asked whether they had heard of birth preparedness and if yes, 'What kind of preparation should you do beforehand for the delivery?' The pregnant women were then prompted if they had made preparation for each of the five measures: identification of delivery place; identification of transport; identification of blood donor; money saving; and antenatal care check-up. A follow-up second interview was conducted within 45 days post partum to obtain information on skilled attendance at birth by the same data enumerators who conducted the baseline interview.

To implement data collection, 15 female data enumerators who were local residents from each selected area were employed.

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