



## Quality of intra-partum care at a university hospital in Nepal: A prospective cross-sectional survey



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### ABSTRACT

**Objective:** To investigate the quality of intra-partum care provided to women with an expected normal birth at a university hospital in Nepal.

**Methods:** A prospective cross-sectional study was conducted during three weeks in November 2013. Nurses at the labor ward collected data from 292 consecutive births. Of these, 164 women of low risk were expected to have a normal birth and were included in the study; 107 (65%) were nulliparous. The self-administered questionnaire covered maternal characteristics, previous pregnancies and births, current pregnancy, labor and birth. Nine items assessed care management, five of which comprised the Bologna score with a total possible score of 5: presence of a companion, use of partograph, non-use of augmentation, non-supine position, and skin-to-skin contact.

**Results:** The women were assisted by physicians (56%), nurses (42%) or students under supervision (2%). All were in good health after birth. Two had a postpartum hemorrhage exceeding 500 ml and 49% had an episiotomy. Apgar score in all neonates was  $\geq 7$  at five minutes. Mean Bologna score was 1.43 (variance 0–3).

**Conclusions:** The management of care in normal birth could be improved in the studied setting, and there is a need for more research to support such improvement.

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### Introduction

The overall objective of intra-partum care is for a healthy mother to give birth to a healthy child, with the minimum of intervention compatible with medical safety [1]. Although childbirth is a normal physiological process, complications in pregnancy and birth constitute the majority of causes of death and disability among women of reproductive age in low-income settings [2], and they are some of the leading causes of neonatal mortality [3]. Optimal maternity care providing the best outcomes for mother and child must be based on scientific evidence to allow the physiological process of birth to be as undisturbed as possible. Although medical or technical intra-partum care interventions are indispensable when needed, they will cause negative effects when overused [4–6]. The World Health Organization (WHO) advocates that normal birth should be demedicalized, since a medicalization of childbirth may induce a wide range of negative effects, some of which have serious consequences. Unnecessary intervention may harm mother and child [1],

and there is an increase in operative birth with each intervention introduced in labor, particularly in primiparous women [7].

The most critical time for maternal and neonatal survival is labor, birth and the immediate post-partum period, yet most women and newborns in low- and middle-income settings do not receive the care required during this period [8].

In Nepal the maternity care available is limited by inequality, and location and economic status are important barriers to improving maternal health. Only 36% of women are assisted by a so called skilled birth attendant [9], which in Nepal is an auxiliary nurse-midwife, a nurse or a physician with an additional two months training in selected midwifery skills. Thus there are no professional midwives fulfilling international standards [10]. The maternal and child health situation is however improving, and between 1990 and 2013 the national maternal mortality ratio [MMR] was reduced by 76%, from 790 to 190 in 100,000 live births [11]. Infant mortality ratio (per 1000 live births) was reduced from 97.79 in 1990 to 29.4 in 2015 [12]. This development is at least partially contributed to strategies introduced by the government of Nepal to increase the availability of family planning, safe abortion, antenatal care, and skilled attendance as well as medical care in childbirth [13]. Although the government has issued a clinical protocol for safe motherhood, including care in normal labor and birth [14], no

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initiative has been found that focuses on improving the normal, physiological process of childbirth: Since this is an important measure to reduce the risk of complications, it is of importance to study the care provided in normal birth in Nepal.

The aim of this study was to investigate the quality of intrapartum care provided to women with an expected normal birth at a university hospital in Nepal.

## Materials and methods

The study was conducted at the labor ward of a university hospital in Nepal, with approximately 4800 births per year. A prospective, cross-sectional design was chosen as it is considered a suitable method to describe a situation as it appears at a fixed point in time [15].

### Sample size

The sample size was calculated using the formula:  $n = (Z^2 \times P(1 - P))/e^2$ , where Z is the value of the normal distribution corresponding to 85% CI, P is the expected true proportion and e is desired precision (+ or - 0.5). The proportions used were those expected for no skin-to-skin contact (80%), use of a partograph (80%), and rates of augmentation of labor (70%), based on anecdotal evidence of existing hospital figures. The estimated sample size required was 130, 130 and 169 for those three conditions, respectively. With an estimated birth rate of between 90 and 100 births per week, a three week study period was deemed adequate to reach an appropriate sample size.

### Setting

The labor ward consisted of one labor room with five beds that could be separated with curtains, one delivery room with three gynecology chairs placed next to each other in an open area, and one operation theatre. Caregivers, i.e. auxiliary nurse-midwives, nurses or physicians were based in the different rooms and women moved between the rooms and got new caregivers as their labor progressed. Thus one-on-one care was not practiced. Fifteen nurses worked exclusively at the ward; three in the day shift, and two in the evenings and nights. Of these about one third had completed a two month "Skilled Birth Attendance" course. There was a team of 16 physicians employed at the clinic, and their shifts were evenly distributed over the 24 hours. The nurses were responsible for intrapartum care, which was provided by themselves, physicians, or medical or nursing students under supervision. Fetal status was evaluated by a nurse or a physician, listening to the fetal heart rate with a Doppler every half-hour and observing amniotic fluid passed for meconium. Maternal well-being was initially assessed by a physician, measuring temperature, pulse and blood pressure. Palpations of contractions were performed regularly by a physician, and a nurse or a physician examined the women vaginally every fourth hour or more often when needed. One cardiocograph machine was available at the ward, but it was not routinely used. Nurses, physicians, and medical and nursing students under supervision, all assisted the women in vaginal births. Only physicians performed vacuum extractions (VE) and cesarean sections (CS). This intra-partum care was based on the national clinical protocol issued by the Ministry of Health and Population in Nepal [14].

### Measurements

A self-administered questionnaire, previously developed and validated [16,17], was further developed for this study. The authors tested the questionnaire on a group of registered nurses and registered nurse-midwives at a Masters seminar at the University of

Gothenburg. The questionnaire was further reviewed by an associate professor at the university connected to the hospital where the study took place. To minimize the risk of misinterpretations, and to achieve a chronological order of questions, the questionnaire was re-designed to consist of four different sections. Section one; maternal characteristics, included maternal age, gestational age and level of education. Section two described the outcome of previous pregnancies and births, and section three described the current pregnancy, including obstetric risk factors and use of maternity health care. The information collected in these sections was used to distinguish the women included in further analysis.

The fourth section described current labor and birth. It included nine items describing intra-partum care, and four items measuring the outcome of expected normal birth. Five of the intrapartum care variables were part of the Bologna score, an instrument developed by WHO to evaluate the management of care in normal birth [18]. The score, which has been tested and validated in both high- and low-income settings [16,17], consisted of five variables: presence of a companion during labor and birth; use of partograph; absence of labor augmentation (i.e. no medical augmentation, amniotomy, fundal pressure, forceps, VE, or emergency CS); use of non-supine position for birth; and skin-to-skin contact of mother and child for at least 30 minutes within the first hour after birth. Each affirmative answer was assigned one point, and a total score of five was assessed as representing effective management of care in normal birth [18]. The other four items assessing intra-partum care were: use of pharmacological and/or non-pharmacological pain management, episiotomy, and prevention of post-partum hemorrhage. The four outcome measures were; rupture of anal sphincter (yes/no), post-partum hemorrhage (no/500–1000 ml/>1000 ml), Apgar score at five minutes, and mother in health after birth (yes/no).

### Inclusion and exclusion criteria

The inclusion criterion was: an expected normal birth, i.e. women assessed to be of low risk, who received skilled attendance in childbirth. Low risk was defined as: no obstetric risk factors in previous pregnancies, childbirths or current pregnancy; no maternal chronic illness that may affect the outcome of the birth; singleton full-term pregnancy, i.e. gestational age 37 weeks and 0 days – 41 weeks and 6 days; cephalic position; spontaneous start of labor; in active labor; and fetal heart rate of 110–150 beats per minute on arrival to the ward. Both adolescent pregnancy [19] and pregnancy late in life [20] have been found to correlate with higher risk, and maternal age <20 years and >35 years were therefore exclusion criteria from the low risk category.

### Conduct of the study

Data were collected by the 15 nurses employed at the labor ward. Before the study commenced explanation sessions were held with all the nurses, after which they all opted to participate and gave informed written consent. A pilot study was conducted over three consecutive day and evening shifts, to test the questionnaire and the design of data collection. The nurses who worked during any of those shifts also took part in the pilot study. Subsequently, two questions were modified to avoid misunderstandings; a question regarding active labor on admission was simplified to a yes/no variable to avoid misconceptions, and a question regarding amniotic fluid was modified to request the status of amniotic fluids in general, and not only if the membranes ruptured spontaneously. During the study period, the nurses filled in questionnaires for all consecutive births. The first and second author visited the ward daily, to collect the completed questionnaires and answer questions regarding the study. All questionnaires were collected in a closed envelope and kept safe by the first and second author.

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