CLINICAL ARTICLE

Obstetric complications and cesarean delivery in Nepal

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ABSTRACT

Objective: To determine the incidence of obstetric complications, the stillbirth rate, and the factors associated with cesarean delivery in central Nepal. Methods: A community-based prospective cohort study was undertaken in the Kaski district during 2011–2012. In total, 701 women who were at least 5 months pregnant were recruited and interviewed. Participants were followed-up and interviewed again within 45 days after delivery. Results: Of the 658 women who remained in the cohort after 43 were lost to follow-up, 12 (1.8%) had stillbirths. Cesareans accounted for 13.3% of the total deliveries. Age, urban residency, college-level education, and particularly presence of intrapartum symptoms significantly increased the likelihood of cesarean delivery. Prepartum, intrapartum, and postpartum symptoms were reported by 21.1%, 24.4%, and 10.2% of women, respectively. Common danger signs included prolonged labor, severe abdominal pain, swollen hand and body, and heavy bleeding. Conclusion: Obstetric complications and stillbirth rates were relatively high in central Nepal. Cesarean delivery appeared to meet obstetric need and was performed with medical indication, particularly after the onset of labor.

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1. Introduction

Complications of pregnancy and childbirth are 2 of the 10 leading causes of death and disability among women of reproductive age in low- and middle-income countries [1]. Beside maternal mortality, many more women experience maternal morbidity in the form of near-miss events, pregnancy-related complications, and long-term disabilities [2]. Stillbirth is another "invisible" adverse pregnancy outcome associated with maternal morbidity and mortality. It occurs mainly in rural families and receives relatively little attention in policy agenda such as the Millennium Development Goals [3].

Maternal morbidity includes acute and chronic problems resulting from pregnancy-related complications during the prepartum, intrapartum, and postpartum periods. It may be aggravated by gender inequality, domestic violence, early marriage, adolescent pregnancy, and poor reproductive health services. Acute complications include hemorrhage, pre-eclampsia/eclampsia, prolonged or obstructed labor, infection, and unsafe abortion. It is anticipated that 15% of pregnancies will involve complications that require additional medical care or cesarean delivery [4]. However, women may choose to undergo cesarean delivery for a variety of psychological, social, or provider-induced reasons [5].

The rate of cesarean delivery has been increasing in low-resource countries, coinciding with increasing hospital delivery rates—as advocated by the Safe Motherhood Initiative to reduce maternal mortality [6]. In Nepal, the cesarean rates among tertiary hospitals ranged from 12% to 25% in 2012 [7]. Although there is no consensus on an optimal rate, a high level of cesarean delivery performed without medical indication could increase the risk of maternal and neonatal morbidity [8], whereas a low cesarean rate may reflect unmet demand due to obstetric complications.

A previous hospital-based study in Nepal reported that 94% of women admitted for delivery developed maternal morbidities during the prepartum period [9]. Moreover, between 600 000 and 1 million Nepalese women were estimated to experience uterine prolapse [10]. Such high prevalence of uterine prolapse is an indication of poor care. Gender discrimination and the patriarchal nature of society have limited the ability of women to make informed choices, take control of their reproductive life, and seek proper care during pregnancy and childbirth [11]. Consequently, a range of maternal morbidities is likely to remain in Nepal, where many births still take place at home.

In the literature, studies on pregnancy outcomes in low-income countries are based predominantly on hospital data systems, record reviews, or birth logs. Such hospital-based data do not cover those women who deliver at home or who have prepartum stillbirths. There has been no community-based study that monitors and explores the reasons for cesarean delivery in Nepal. A community-based longitudinal approach has the advantage of effectively tracking pregnancy outcomes and events of women at the household level, and their use of maternity services during the entire pregnancy and childbirth period. Therefore, the aim of the present community-based study was to determine the incidence of obstetric complications, the stillbirth rate, and the factors associated with cesarean delivery in a large cohort of pregnant women residing in central Nepal.

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2. Materials and methods

A community-based prospective cohort study was undertaken in the Kaski district of central Nepal between December 1, 2011, and October 30, 2012. The study was approved by the Human Research Ethics Committee of Curtin University (approval number HR 130/2011), the Ethical Review Board of the Nepal Health Research Council (approval number 88/2011), and the District Public Health Office of Kaski. An information sheet was distributed and read to each participant before obtaining her signed or thumbprint informed consent. Confidentiality of the information provided was maintained throughout the study. Participants were assured of their freedom to withdraw without any negative consequences.

Details of the study area, target population, and sampling have been described previously [12]. Briefly, 701 women from urban and rural areas who were at least 5 months pregnant were recruited and interviewed. The urban central valley of Kaski district, Pokhara, has a regional public hospital and 2 private hospitals, which provide comprehensive obstetric services including cesarean delivery. In rural areas, birth centers provide basic obstetric services only—referring women to hospitals when complications arise that might require cesarean delivery. The regional public hospital is the main delivery center, accounting for 80% of all deliveries in the district. From July 2011 to August 2012, approximately 1700 cesareans (22.6% of the total 7500 deliveries) were performed at this hospital [7].

Fifteen female data collectors were recruited and employed from local areas to identify and interview pregnant women in their locality, with the assistance of female community health volunteers and local health facility registrations for prenatal care visits. These female community health volunteers act as a bridge between the community and the local health center [13]; they keep track of pregnant women in their village, and counsel and motivate pregnant women to use prenatal and delivery services.

The baseline interview—conducted between December 1, 2011, and January 31, 2012—sought information on the sociodemographic and obstetric characteristics of the pregnant women. Participants were interviewed again during another household visit within 45 days after delivery to determine whether they had experienced any serious complication(s) during the prepartum, intrapartum, and postpartum (within 1 week) periods. A list of common symptoms was prepared to probe and verify such danger signs at each stage; the list was also used by health workers and community volunteers for counseling pregnant women: (1) prepartum symptoms: heavy bleeding (soaked clothes/bed/floor), swollen hand and body, loss of consciousness/convulsions, blurred vision, severe headache, severe fever, severe abdominal pain, and severe vomiting; (2) intrapartum symptoms: heavy bleeding, prolonged labor (>12 hours), retained placenta (placenta not delivered within 30 minutes), swollen hand and body, and loss of consciousness/convulsions; (3) postpartum symptoms: heavy bleeding, severe fever, smelly water discharge, swollen hand and body, and loss of consciousness/convulsions.

The main demographic variables are listed in Table 1. An asset score was generated from the first component of a principal component analysis, utilizing national survey questions on household assets, and was then used to develop wealth quintiles. Four levels of education were recorded: none; primary (grade 1–5); secondary (grade 6–10); and

Table 1
Demographic and obstetric characteristics of participants by delivery method (n = 639).[a]

Characteristic	Vaginal delivery (n = 554)	Cesarean delivery (n = 85)	Total	P value
Age, y	23.38 ± 4.07	24.97 ± 4.64	23.6 ± 4.2	0.001
Caste				0.065
Upper caste	295 (53.3)	44 (51.8)	339 (53.1)	
Janajati	114 (20.6)	26 (30.6)	140 (21.9)	
Lower caste	144 (26.0)	15 (17.6)	159 (24.9)	
Education level				0.029
None	48 (8.8)	5 (5.9)	53 (8.3)	
Primary	119 (21.4)	14 (16.5)	133 (20.8)	
Secondary	211 (38.0)	25 (29.4)	236 (36.9)	
College	176 (31.7)	41 (48.2)	217 (34.0)	
Wealth quintile				0.002
1	125 (22.7)	12 (14.1)	137 (21.5)	
2	114 (20.7)	7 (8.2)	121 (19.0)	
3	101 (18.3)	20 (23.5)	121 (19.0)	
4	96 (17.4)	27 (31.8)	123 (19.3)	
5	115 (20.9)	19 (22.4)	134 (21.1)	
Residential location				<0.001
Urban	279 (50.4)	64 (75.3)	343 (53.7)	
Rural	275 (49.6)	21 (24.7)	296 (46.3)	
Delivery location[b]				0.100
Private hospital	37 (9.6)	14 (16.2)	51 (10.9)	
Public hospital	347 (90.4)	72 (83.8)	419 (89.1)	
Frequency of prenatal visits				0.413
<4	147 (26.5)	19 (22.4)	166 (26.0)	
≥4	407 (73.5)	66 (77.6)	473 (74.0)	
Parity				0.470
1	288 (52.1)	43 (50.6)	331 (51.8)	
2	157 (28.3)	20 (23.5)	177 (27.7)	
3	72 (13.0)	16 (18.8)	88 (13.8)	
≥4	37 (6.7)	6 (7.1)	43 (6.7)	
Prepartum symptoms				0.252
No	440 (79.6)	63 (74.1)	503 (78.8)	
Yes	113 (20.4)	22 (25.9)	135 (21.1)	
Intrapartum symptoms				<0.001
No	431 (78.8)	44 (52.4)	475 (75.3)	
Yes	116 (21.2)	40 (47.6)	156 (24.4)	
Postpartum symptoms				0.890
No	498 (89.9)	76 (89.4)	574 (89.8)	
Yes	56 (10.1)	9 (10.6)	65 (10.2)	

[a] Values are given as mean ± SD or number (percentage) unless otherwise indicated.
[b] For hospital delivery only.