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CLINICAL ARTICLE

Knowledge, attitudes, and practices in safe motherhood care among obstetric providers in Bugesera, Rwanda

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ABSTRACT

Objective: To determine the knowledge, attitudes, and practices of obstetric care providers (OCPs) in Bugesera District, Rwanda, crucial to the delivery of safe motherhood services. *Methods:* A quantitative descriptive survey in Kinyarwanda targeting all OCPs in the district was implemented in November 2010 to determine demographic characteristics, safe motherhood knowledge, obstetric practices, and attitudes toward additional training. *Results:* The study captured 87% of OCPs, of whom 137 of 168 (82%) were A2 level nurses. Most expressed a need to improve their knowledge (60.6%) and skills confidence (72.2%) in safe motherhood. The mean percentage of correct answers of 50 questions assessing overall knowledge was 46.4%; sections on normal labor (39.3% correct) and obstetric complications (37.1% correct) were the weakest. Fundal pressure during vaginal delivery was practiced by 60.8%, and only 15.9% of providers practiced active management of the third stage of labor for all deliveries. Providers supported additional training, and 89.3% expressed willingness to participate in a 2-day workshop even if it were their day off. *Conclusion:* The study has identified a need to improve safe motherhood knowledge and practices of OCPs in the Bugesera District of Rwanda. OCPs support additional training as an intervention to reduce maternal mortality.

1. Introduction

Reducing maternal and neonatal mortality is complicated by the multi-factorial circumstances of resource-limited settings with struggling health systems. These issues are significant in Rwanda, where a woman has a lifetime risk of dying from pregnancy of 1 in 32 as compared with 1 in 2400 in the United States [1]. Significant investments have been made to improve the infrastructure of primary health centers and to remove financial barriers to access through community health insurance [2]. Nevertheless, reducing Rwanda's maternal mortality ratio, estimated at 750 deaths per 100 000 live births, is encumbered by a high fertility rate of 5.5 children per woman and a population growth rate of 2.8% per year, which is among the highest in Africa [3,4]. In 2008, only 52% of births had skilled attendance. Although 93% of women had at least 1 prenatal care visit, early entry and retention in prenatal care may be equally significant factors because only 23.4% of pregnant women had 4 or more visits [4].

Globally, the leading causes of maternal mortality include hemorrhage, eclampsia, sepsis, obstructed labor, and complications of abortions [5]. Obstetric care providers (OCPs) addressing these conditions at community health centers (CHCs) in Rwanda are nurses with 1 or 2 years of general health training. Complicated cases are referred to medical doctors at district hospitals who are not specialized in obstetrics and gynecology. Determining the ability of providers at all levels of the district to recognize and manage conditions causing maternal and neonatal death, as well as their attitudes and clinical practices, is necessary to developing appropriate educational interventions aimed at improving safe motherhood services.

Located in the Eastern Province of Rwanda, the Bugesera District is divided into 15 sectors and encompasses 581 villages with a population of 274 113 people according to the 2006 Rwandan population census [6]. Women account for 52% of the total population, and 31% are of reproductive age [6]. Bugesera has 12 CHCs and 1 district hospital. The CHCs offer no surgical services, operative deliveries, misoprostol, or blood transfusions. The Nyamata District Hospital is the only facility to offer cesarean delivery and blood products. There are 4 ambulances that are shared by all facilities. If needed, patients are referred to the University Teaching Hospital

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of Kigali or King Faisal Hospital, located 45 minutes away by vehicle from Nyamata.

Data are limited on the capacity and behavior of OCPs to deliver safe motherhood services within Rwanda. Knowledge, attitudes, and practice surveys can be used to provide systematic information to assist policy-makers and health officials in developing programs, services and interventions for broader populations [7]. Such data related to safe motherhood may identify the learning needs of providers necessary to improving quality of services, as well as maternal and neonatal outcomes. The aim of the present study was therefore to assess the capacity and ability of OCPs to deliver safe motherhood services in Rwanda by focusing on the Bugesera District.

2. Materials and methods

A prospective descriptive study design with a quantitative survey instrument was implemented to evaluate the knowledge, attitudes, and practice of OCPs working at all levels of the health system in Bugesera District, Rwanda. Study activities were conducted by a collaboration between the National University of Rwanda and Duke Global Health Institute. Survey data were collected from November 22 to November 29, 2010. The study protocol, survey instruments, and modifications were reviewed and approved by the institutional review board of the University Teaching Hospital of Kigali; the Duke University Institutional Review Board declared the protocol exempt from review.

The survey instrument was adopted from JHPIEGO maternal and neonatal health tools, which are based on WHO's International Guidelines for Managing Complications in Pregnancy and Childbirth (IMPAC) and have been used to assess safe motherhood services in other East African countries [8,9]. A demographic survey instrument evaluating providers' self-assessment and self-reporting of practices was also developed. Both instruments were translated into Kinyarwanda and then back translated into English to ensure fidelity. The survey was piloted among 7 obstetric providers at a CHC in Rwamagana, and necessary revisions were made before data collection. Data collectors, fluent in Kinyarwanda, were trained in consent and administration of the survey instruments, and then paired in groups of 2 for data collection at each facility.

Obstetric care providers were identified at Nyamata District Hospital and each CHC with the assistance of the Medical Director of Nyamata and the head CHC administrator. All OCPs employed in the district were targeted for participation. Excluded were OCPs who were not available during the survey period and those who declined participation. Each participant received written and verbal explanation of the study in Kinyarwanda before consent was obtained. Each facility was visited 3 times according to a specific schedule identified to capture all providers within the 1-week time frame. To ensure anonymity, no identifying information was captured on the survey. Once the data collection period was completed, the information was entered into FileMaker Pro version 10 (FileMaker, Santa Clara, CA, USA) and then exported into Excel (Microsoft, Redmond, WA, USA), where it was coded. Data analysis was performed using JMP 9 software (SAS Institute, Cary, NC, USA). Analysis of variance and pooled *t* test were used to determine statistical difference of means of groups compared, with a threshold of less than 0.05 used to determine significance.

3. Results

At the time of data collection, 193 OCPs were employed in Bugesera. Among them, 174 took part in the survey, 19 could not be contacted during the study period, and 1 declined to participate. Of the 174 returned surveys, 6 were not analyzed because fewer than 80% of questions were answered. Among the 168 completed surveys, the mean ± SD age of providers was 30.3 ± 6.25 years (range 20–54 years), 53 (32%) were male, and 113 (68%) were female. Tables 1 and 2 outline basic demographic details of participants. A2 nurses comprised 82% of the OCPs surveyed in the district. Kinyarwanda was the fluent language spoken most frequently, followed by French, and non-fluency in English was reported. Most providers had been exposed to emergency obstetric care (EmOC) education at some point during their career or training. Twenty-nine percent of providers reported no EmOC training, 45% reported 1 training period, and 25.6% reported 2 training periods between their education and employment.

Assessment of provider's knowledge was broken into 5 areas of safe motherhood care: routine prenatal care, normal labor, newborn care, obstetric complications, and postpartum care. Each section contained 10 questions so that the entire knowledge assessment was calculated from a 50-question multiple-choice survey. Table 3 summarizes the scores in each section as the mean percentage of correct answers and 95% confidence interval (CI) for all participants. There was no significant difference in the level of knowledge measured on the basis of type of provider, months of experience providing obstetric care, frequency of deliveries per month, number of work hours averaged per week, or exposure to EmOC training. Women, who averaged 47.7% (95% CI 46.0%–49.5%) of correct answers, had significantly higher scores than men, who averaged 43.1% (95% CI, 40.1%–46.1%), using an analysis of variance with probability > *F* of 0.0058.

Before testing their knowledge in aspects of obstetric care, the participants were asked to rate their own knowledge in specified areas, as well as their confidence in executing emergency skills (Table 4). Comparisons of knowledge performance across levels of perceived knowledge were not significantly different. When providers were asked about their willingness to attend a 2-day workshop on EmOC, 89.3% stated that they would enthusiastically attend even it were their day off, 3% said that they would attend only if it counted as a normal work day, and 2.4% stated that they would attend only if it was required; 1.8% admitted having no interest in the subject.

Recognizing the difficulties in assessing provider's practice, the goal of the present study was to collect preliminary data using a self-reporting method. Participants were asked to estimate the

Table 1
Summary of the demographic data of study participants[a].

	Total	MD	A1 midwife	A1 nurse	A2 nurse	A3 nurse	No response
Providers	168	8 (5)	3 (2)	15 (9)	137 (82)	5 (3)	1
Months of obstetrics experience	43 ± 37.9	31 ± 16.3	38 ± 48.8	23 ± 23.3	44 ± 37.5	77 ± 64.1	10
Comfort with language [b]							
Kinyarwanda	4.8	4.9	4.3	4.9	4.8	4.8	21
French	4.1	4.6	4.5	4.6	4.1	4.0	5
English	1.9	3.1	4.3	2.7	1.7	0.3	8
Exposure to emergency obstetric training							
EmOC training in school	116 (70.1)	7 (88)	2 (67)	12 (80)	92 (69.1)	5 (60)	5
EmOC training since working	46 (28)	2 (25)	2 (67)	3 (21)	37 (27)	2 (40)	4

Abbreviation: MD, medical doctor.
[a] Values are given as mean ± SD or number (percentage) unless stated otherwise.
[b] Using a 5-point scale where 0 is not fluent and 5 is fluent.