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Emergency obstetric and neonatal care needs assessment: Results of the 2010 and 2014 surveys in Burkina Faso

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ABSTRACT

Objective: To analyze and compare the availability, utilization, and quality of services for maternal and neonatal health in 2010 and 2014 in Burkina Faso. **Methods:** A cross-sectional study of emergency obstetric and neonatal care services (EmONC) in all public and private health facilities in Burkina Faso in 2010 and a sample of 812 health facilities in 2014. The generic tools developed by the Averting Maternal Death and Disability (AMDD) program were used as the basic tools for evaluation. **Results:** In 2010, 25 health facilities were considered as EmONC health facilities and there were 23 in 2014. In 2010 and 2014, the proportion of births in EmONC health facilities was low (4.5%). The cesarean delivery rate also remained very low, at 0.9% in 2010 and 1.13% in 2014. The proportion of obstetric complications supported in health facilities was 12.3% in 2010 and 17.1% in 2014. The direct complication case fatality rate in EmONC health facilities was 1.6% in 2010 and 1.3% in 2014. **Conclusion:** The two surveys did not show a significant improvement in the availability, utilization, and quality of maternal and neonatal healthcare services between 2010 and 2014.

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1. Introduction

Newborn and maternal deaths are important public health problems for low-resource countries specifically in Sub-Saharan Africa. According to the estimations of the WHO, about 800 women die every day in the world because of the complications related to pregnancy, childbirth, or in the postpartum period [1]. Globally, the number of maternal deaths decreased by 43% from 1990 (532 000 maternal deaths) to 2015 (303 000 maternal deaths) in the world [2]. Almost all maternal deaths (99%) occurred in low-resource countries, with more than half in Sub-Saharan Africa [2]. In 2015, the maternal mortality ratio (MMR) was estimated at 546 maternal deaths per 100 000 live newborns in Sub-Saharan Africa, versus 12 per 100 000 live newborns in the high-resource regions [2]. Among the 130 million children born each year in the world, about 3.3 million die during the neonatal period—with almost 99% of these deaths in low-resource countries. Similarly, every year in Africa there are about 1 million stillbirths with at least 300 000 deaths occurring during labor [3].

In Burkina Faso, maternal deaths represent 19% of all deaths of women aged 15–49 years [4]. The MMR is high. It was estimated at 341 deaths per 100 000 live births according to the Demographic and Health Survey in 2010 and, according to the same source, the proportion of neonatal deaths was estimated at 28 per 1000 live births [4].

Improvement of emergency obstetric and neonatal care (EmONC) is an essential pillar for the reduction of maternal and neonatal mortality. Several studies have been conducted in Africa during this last five years [5–16]. However, few studies analyze the results of two or more needs assessments [9]. In Burkina Faso, two evaluations of EmONC were conducted respectively in 2010 and 2014 [17,18]. The objective of the present study is to analyze and compare the availability, utilization, and quality of services for maternal and neonatal health by reviewing data collected from two surveys conducted in Burkina Faso in 2010 and 2014.

2. Materials and methods

2.1. Study setting

The two surveys were carried out in the 13 regions of Burkina Faso—a country with limited resources that is located in West Africa.

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The population of Burkina Faso was estimated in 2014 at more than 17 300 000 inhabitants according to projections of the general population and habitat census of 2006 (RGPH). Women make up 51.7% of the population (36.5% are of childbearing age) [4]. The country has 1860 health care centers, of which 1553 are public and 306 are private [19].

2.2. Type of study and study population

Both evaluations deal with a cross-sectional study assessing the performances in emergency obstetric and neonatal health care in public and private health facilities.

The study population consisted of public and private health facilities offering delivery services. They were classified as potential EmONC, health facilities according to the type of signal function that they were supposed to fulfill. Potential BEmONC health facilities were the primary healthcare facilities at the first level of the health system: health centers (CSPS) and medical centers (CM). The potential CEmONC health facilities were those at the second and third levels providing health care: hospitals and medical centers with surgical antenna (CMA), regional hospitals (CHR), university hospitals, and the national hospital (CHU/HN). They were described as functional BEmONC or functional CEmONC facilities if they performed all of the seven and nine essential functions, respectively, during the three months preceding the survey [20].

2.3. Sampling and sample size

The 2010 assessment was carried out on all health facilities providing deliveries and likely to be considered as CEmONC or BEmONC health facilities. Among 1982 surveyed health facilities, 1628 had made at least one delivery within the last 12 months—82% of health facilities at the national level. The 1628 health facilities can be considered as potential health facilities providing EmONC [17].

In 2014, the EmONC needs assessment was conducted on a sample of health facilities of all reference health centers from the public sector (CHU/HN, $n = 3$; CHR, $n = 9$; CMA, $n = 48$) and private sector (private polyclinics, $n = 11$, and private clinics $n = 41$), and 700 first level health facilities (CSPS and CM) [18]. In total, a theoretical size of 812 public and the private health facilities of all categories was included in the 13 regions of the country.

2.4. Data collection

The data collection took place from June 7 to August 30, 2010, and July 7 to August 20, 2014, throughout the country. The modules of the Averting Maternal Death and Disability (AMDD) program in collaboration with the agencies of the United Nations (UNFPA, UNICEF, and WHO) were used as the data collection tool. The tools were adapted to the Burkinabe context by the national steering committee that was composed of researchers, experts from the UN agencies, representatives of the Ministry of Health at central level, regional, and district level, and clinicians (obstetricians, pediatricians, and midwives). The tools are organized in 11 modules. Among them, three tools were used to determine the indicators presented in the current study. The first is the national module, which captures national level data such as crude birth rate and total population by region. The second is module 4, which is designed to capture retrospective data on the monthly number deliveries, childbirths, complications, and deaths that occurred in the last 12 months prior to the survey. These data are captured from the registers. Finally, the third is module 5, which is designed to capture the performance of signal functions in the last three months through interviews with the heads of units and key health workers in facilities [20].

2.5. Statistical analysis

Double entry of data was done using CSPro software version 4 (US Census Bureau). The analyses were performed using SPSS software version 18 (SPSS Inc, Chicago, IL, USA). An estimation of the number of expected births was determined using the data (birth rate and population size) projections of the 2006 General Census of the population of Burkina Faso [21]. The number of direct obstetric complications expected was obtained by multiplying the number of expected births by 15%. The shortfall of the functional CEmONC health facilities was calculated by the difference between the minimum number recommended and the current number of CEmONC facilities. The frequency of health facilities with one or two missing essential functions was calculated for each type of health facility. Descriptive statistics were used for the presentation of the results.

2.6. Ethical considerations

The protocols of the needs assessments of the EmONC surveys conducted in 2010 and 2014 were approved by the Ethics Committee for health research of Burkina Faso.

3. Results

3.1. Availability of EmONC services

In 2010, four first level health facilities were considered functional BEmONC facilities; whereas in 2014, this figure was one. In 2010, only 21 of the potential CEmONC facilities qualified as actual CEmONC functional; this figure was 22 in 2014. The total number of EmONC health facilities has remained almost stationary between 2010 and 2014. In 2010, 25 EmONC health facilities were considered EmONC functional facilities, whereas this figure was 23 in 2014. The ratio of functional EmONC facilities per 500 000 inhabitants showed a slight decrease from 0.8 in 2010 to 0.6 in 2014 (Table 1).

There was wide regional disparity in both 2010 and 2014 on the availability of functional EmONC health facilities (Table 2).

Most of the potential EmONC health facilities have not been classified because of the lack of the practice of one or two functions. These include assisted vaginal delivery with vacuum extraction or forceps (98.4% in 2010 vs 97.6% in 2014) and resuscitation of the newborn (74.1% in 2010 vs 38.2% in 2014) (Table 3).

3.2. Utilization of services

The proportion of births in functional EmONC health facilities was 4.5% in 2010 and 2014 (Table 1). The rate of cesarean delivery was 1.5% in 2010 and 2.07% in 2014. The proportion of cesarean deliveries performed in functional CEmONC health facilities remained very low (0.9% in 2010 vs 1.13% in 2014) (Table 1). The proportion of obstetric complications managed in health facilities was 17.1% in 2014 and has progressed when compared with 2010, which was at 12.3% (Table 1).

3.3. Quality of services

In 2014, the direct complication case fatality rate was 0.8% in 2010 and 0.9% in 2014. Although the direct complication case fatality rate in EmONC health facilities was lower in 2014 (1.3%) than in 2010 (1.6%), it is still high (Table 1).

Despite a decrease in the proportion of maternal deaths from indirect causes in EmONC health facilities in 2014 (29.6%) compared with 2010 (35.8%) at the national level, it remains high. In 2014, in EmONC health facilities, the rate of early neonatal and intrapartum deaths (31 per 1000 live births) increased compared with 2010 (21 per 1000 live births). As for the direct complication case fatality

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