International Journal of Gynecology and Obstetrics 132 (2016) 130–134

Contents lists available at ScienceDirect

International Journal of Gynecology and Obstetrics

journal homepage: www.elsevier.com/locate/ijgo

EVIDENCE FOR ACTION

Spatial distribution of emergency obstetric and newborn care services in Ghana: Using the evidence to plan interventions

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ARTICLE INFO

Keywords:
Emergency obstetric and newborn care (EmONC)
Geospatial analysis
Ghana
Maternal mortality
Needs assessment
Signal functions

ABSTRACT

Objective: To provide clear policy directions for gaps in the provision of signal function services and sub-regions requiring priority attention using data from the 2010 Ghana Emergency Obstetric and Newborn Care (EmONC) survey. *Methods:* Using 2010 survey data, the fraction of facilities with only one or two signal functions missing was calculated for each facility type and EmONC designation. Thematic maps were used to provide insight into inequities in service provision. *Results:* Of 1159 maternity facilities, 89 provided all the necessary basic or comprehensive EmONC signal functions 3 months prior to the 2010 survey. Only 21% of facility-based births were in fully functioning EmONC facilities, but an additional 30% occurred in facilities missing one or two basic signal functions—most often assisted vaginal delivery and removal of retained products. Tackling these missing signal functions would extend births taking place in fully functioning facilities to over 50%. Subnational analyses based on estimated total pregnancies in each district revealed a pattern of inequity in service provision across the country. *Conclusion:* Upgrading facilities missing only one or two signal functions will allow Ghana to meet international standards for availability of EmONC services. Reducing maternal deaths will require high national priority given to addressing inequities in the distribution of EmONC services.

1. Introduction

The total number of maternal deaths worldwide was estimated at 289 000 in 2013—a 45% decline since 1990 [1]. While encouraging, it is far from the 75% reduction that 171 heads of states had hoped for and agreed on in the Millennium Declaration [1]. In Ghana too, maternal survival has improved over the past 20 years. The maternal mortality ratio (MMR) declined from 760 in 1990 to 380 in 2013—a reduction of approximately 49% [1]. The average annual reduction in MMR between 1990 and 2013 in Ghana was −2.9% (range, −3.2% to −2.5%). Although this rate of reduction is encouraging, Ghana will not meet the Millennium Development Goal (MDG) target of 185 by the end of 2015. Improving maternal health remains a priority for the Ghana Ministry of Health.

Skilled care at birth is crucial to save maternal and newborn lives [2], as is the universal availability of emergency obstetric and newborn care (EmONC) because complications usually cannot be predicted [3]. Data collected from all facilities by EmONC needs assessments provide information for planning maternal and neonatal health interventions. The Ghana Health Service (GHS) in collaboration with development partners conducted the first nationwide EmONC needs assessment in 2010 [4] and this study provided national baseline figures. The next assessment, planned for 2016, is an opportunity to assess further progress.

The present paper aims to provide clear policy directions in terms of gaps in the provision of signal function services and subregions that need priority attention. First, we present the national situation regarding EmONC services as of 2010 and assess how this compares with the existing international standard (i.e. at least five EmONC facilities, with at least one of them being comprehensive EmONC [CEmONC], are available per 500 000 population, [3]). Second, we identify the most commonly missing signal functions. Third, we assess the situation in terms of estimated pregnancies as a better measure of need than population because a missing signal function will have more impact where facilities have a higher workload. Fourth, and most important, we put these facility data in geospatial context by looking at the geographic distribution of facilities—basic, comprehensive, nearly functioning—and the proportion of pregnancies delivered at these facilities, per district. This analysis identifies geographic inequities in service provision, thus giving policymakers the information needed to address shortfalls in EmONC functionality.

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http://dx.doi.org/10.1016/j.ijgo.2015.11.004
0020-7292/

Table 1
Number of and shortfalls in EmONC facilities per 500 000 people in Ghana obtained from 2010 data.[a]

Regions	Population	No. of expected births (CBR*pop)	No. of facilities	No. of births attended in facilities (% of expected births)	No. of births attended in EmONC facilities (% of expected births)	Actual number of EmONC facilities		Recommended number of EmONC facilities (EmONC facilities per 500 000 people) [C]	Shortfalls	
						Basic [A]	Comprehensive [B]		Number = [C]–([A] + [B])	%
Western	2 325 597	72 094	120	40 731 (56.5)	5560 (7.7)	2	3	23	18	79
Central	2 107 209	80 074	105	45 474 (56.8)	8594 (10.7)	0	4	21	17	81
Greater Accra	3 909 764	93 834	138	75 274 (80.2)	37 505 (40.0)	2	9	39	28	72
Volta	2 099 876	58 797	81	28 474 (48.4)	2164 (3.7)	1	3	21	17	81
Eastern	2 596 013	70 092	121	44 026 (62.8)	23 581 (33.6)	1	14	26	11	42
Ashanti	4 725 046	141 751	214	89 507 (63.1)	40 583 (28.6)	3	18	47	26	56
Brong Ahafo	2 282 128	75 310	120	46 274 (61.4)	16 127 (21.4)	1	10	23	12	52
Northern	2 468 557	108 617	108	31 709 (29.2)	15 579 (14.3)	3	8	25	14	55
Upper East	1 031 478	28 881	85	22 130 (76.6)	3806 (13.2)	0	3	10	7	71
Upper West	677 763	23 044	67	10 909 (47.3)	2433 (10.6)	0	4	7	3	41
Ghana	24 223 431	752 494	1159	434 508 (57.7)	155 932 (20.7)	13	76	242	153	63

Abbreviations: EmONC, emergency obstetric and newborn care; CBR, crude birth rate.
[a] Source: Ministry of Health/Ghana Health Service, Government of Ghana [4].

Table 2
Ghanaian maternity facilities by EmONC signal readiness.

Facilities and workload				Basic				Comprehensive		
				Signal Functionality				Signal functionality		
Designation/expected level of EmONC performance	Facility type	No. of facilities (% of total)	Average births per annum (min, max)	No. (%) with all 7 signal functions working	No. (%) with 1 or 2 missing signal functions	Of those with 1 or 2 missing - how many are:		No. (%) with all 9 signal functions working	No. (%) with cesarean delivery missing	No. (%) with blood transfusion missing
						assisted vaginal delivery?	removal of retained products?			
Basic EmONC	Health centers	644 (73.4)	185 (0, 3506)	3 (0.5)	136 (21.1)	121 (89.0)	85 (62.5)	-	-	-
	Maternities	164 (18.7)	164 (4, 1670)	3 (1.8)	28 (17.1)	24 (85.7)	10 (35.7)	-	-	-
	CHPS	69 (7.9)	66 (6, 230)	0 (0)	3 (4.3)	3 (100)	2 (66.7)	-	-	-
	Total	877 (100)	879 (0, 3506)	6 (0.7)	167 (19.0)	148 (88.6)	97 (58.1)	-	-	-
Comprehensive EmONC	District hosp	278 (98.9)	915 (1, 8085)	80 (28.8)	129 (46.4)	99 (76.7)	19 (15)	73 (26.3)	44 (15.8)	68 (24.5)
	Teaching hosp	3 (1.1)	9801 (5331, 13 287)	3 (100)	0 (0)	0	0	3 (100)	0 (0)	0 (0)
	Total	281 (100)	1010 (1, 13 287)	83 (29.5)	129 (45.9)	99 (76.7)	19 (15)	76 (27.0)	44 (15.7)	68 (24.2)
	Grand total	1158	375 (0, 13 287)	89 (7.7)	296 (25.6)	247 (83.4)	116 (39.2)	76 (27.0)	44 (15.7)	68 (24.2)

Abbreviation: EmONC, emergency obstetric and newborn care; CHPS, Community-based Health Planning and Services.