

Female Health and Family Planning in Sierra Leone

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OBJECTIVE: To describe the current status of access to maternal care, family planning use, and place of delivery in Sierra Leone, one of the poorest countries in the world with one of the highest maternal mortality rates.

METHODS: Data from the Surgeons OverSeas Assessment of Surgical Need, a cross-sectional two-stage cluster-based household survey conducted in Sierra Leone in 2012, were analyzed to determine access to maternal care, family planning use, and location of delivery.

RESULTS: Of 3,318 females of reproductive age (12–50 years of age), 1,205 participants were interviewed in depth. Twenty percent (95% confidence interval [CI] 17.9–22.5) of respondents reported using family planning methods;

injectables were the most frequently used method. Fifty-nine percent (95% CI 54.0–63.0) of the recalled deliveries took place outside of a health facility. Of the total births, 1.9% (95% CI 1.3–2.5) were reportedly delivered by cesarean and 0.4% (9/2,316) with instrumental delivery. There were 53 reported maternal deaths in the 12 months before the survey, resulting in a maternal mortality rate of 1,600 per 100,000 females per year. Of the maternal deaths, 30 females (56.6%) did not receive any type of modern health care with 53% (16/30) of families citing financial constraints.

CONCLUSION: This study reaffirms a low family planning uptake and very low instrument deliveries and cesarean delivery rates in Sierra Leone. Additionally, financial barriers hinder access to health care and indicate that the free health care initiative for pregnant females is not yet fully covering the reproductive needs of the females of Sierra Leone.

See related editorial on page 515.

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Funded by Surgeons OverSeas with a donation from the Thompson Family Foundation. The Sierra Leone Ministry of Health & Sanitation, College of Medicine and Allied Health Sciences and Connaught Hospital assisted with administrative support.

The authors thank Sahr Yambasu, MS, from Statistics Sierra Leone, for random assignment of the clusters, availability of the maps, and directions of the clusters.

Presented at the American College of Obstetricians and Gynecologists Residents District Meeting, Baltimore, Maryland, April 12, 2013.

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Financial Disclosure

The authors did not report any potential conflicts of interest.

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ISSN: 0029-7844/13

(*Obstet Gynecol* 2013;122:525–31)

DOI: 10.1097/AOG.0b013e31829a2808

LEVEL OF EVIDENCE: III

Sierra Leone, a small coastal West African country, is one of the world's poorest countries and has an average life expectancy of 50 years for the female population.¹ There are only five gynecologists for the six million people of Sierra Leone. Sixty-three percent of the population lives in rural areas with a limited road network and often no personal means of transportation. Sierra Leone has a Gross National Income of \$340 U.S. per person per year and a poverty ratio of over 70% (as measured by the Multidimensional Poverty Index, which accounts for deprivations in education, health, and standard of living) and was recently ranked 180 out of 187 countries by the Human Development Index.^{2–5} It is not on track to attain the Millennium Development Goals, particularly the reduction of maternal mortality. In 1990 Sierra Leone had a maternal mortality ratio of 1,300 per 100,000 live births, but this figure has only decreased by 25% to the current estimate of 970 per 100,000 live births.⁶



Surveys are an important source of health statistics in countries like Sierra Leone where access to health care is very scarce, where it is assumed that many deaths occur outside of hospital settings, and death certificates either do not reveal sufficient information on the causes of death or do not exist. In an effort to document the surgical and women's health needs in Sierra Leone, a collaborative nationwide survey was undertaken by the Ministry of Health and Sanitation, the College of Medicine and Allied Health Sciences, Statistics Sierra Leone, and the non-governmental organization, Surgeons OverSeas.⁷

In this article the findings of the females' health sections of the Surgeons OverSeas Assessment of Surgical Need in Sierra Leone are presented with the aim to inform and discuss the current status of access to maternal care, family planning use, and place of delivery.

PATIENTS AND METHODS

This study reports the results from a cross-sectional, two-stage cluster-based self-weighted household survey. The sample size was primarily calculated to assess the surgical need as explained elsewhere.⁷ Using this sample size with a total of 3,750 individuals, we expected to capture at least 732 females of reproductive age (12–50 years of age), needed to confirm the proportion of females using contraception in Sierra Leone as is currently estimated by the World Health Organization at 8.2%¹ with a binomial distribution and 2% precision.

Guided by Statistics Sierra Leone, 75 clusters, defined as "enumeration areas," the smallest administrative units in Sierra Leone, were randomly chosen with a chance proportionate to population size. Each district as well as the rural and urban areas was stratified to achieve a representative sample of the population. In each cluster, 25 households were randomly selected, aiming for a self-weighted sample of 1,875 households. In each household, two household members were randomly selected using a random calculator after an instant listing of household members was made. Maps, randomization protocols, and supervision were provided by Statistics Sierra Leone, which also provided field supervision of the enumerators to follow the Demographic Health Survey guidelines and protocols.

Surgeons OverSeas Assessment of Surgical Need is a survey tool developed by a collaborative effort of various universities and clinicians from over 36 countries. Pretesting, cognitive interviewing, and a pilot test were part of the development and previously described.⁸ The survey tool is comprised of two parts: 1) the household portion in which the head of a household or his or her representative was interviewed about

the household denominator (household members) and household members who had died in the previous 12 months. The deaths were categorized based on conditions in need for surgical expertise; the interviewers recorded the cause of death as given by the head of household or his or her representative. Information was also obtained on the health care-seeking behavior of the families who experienced a household death in the previous year; and 2) two household members were then randomly selected from the list of household members for a verbal head-to-toe examination for the existence of surgically treatable conditions. The female respondents older than 12 years of age were also interviewed on their menstrual cycle and, as applicable, delivery modes as well as their current family planning methods. For this article, use of family planning methods and mode of delivery as well as access to care for the reported maternal deaths were analyzed to describe the current status regarding specific indicators for females' health in Sierra Leone.

Data were collected in January and February 2012 by 16 enumerators from Statistics Sierra Leone and College of Medicine and Allied Health Sciences. The enumerators were trained in interview skills and techniques, household sampling, and were given thorough instructions on the survey tool, tablet use as well as specific translational and privacy aspects of some of the survey questions. The Surgeons OverSeas Assessment of Surgical Need execution followed the protocols of the Demographic Health Survey of Sierra Leone regarding household definition, household selection, and onsite translations into the 14 languages of Sierra Leone.⁴ Enumerators were assigned to the areas based on their language skills and the protocols included to return to household at least three times before marking unavailability to complete the survey. The full research execution protocol is available at www.surgeonsoverseas.org in the resource section.

All data were collected with 3G-enabled tablets, which included the programmed Surgeons OverSeas Assessment of Surgical Need with FileMaker Pro 11·0v2 for computer-assisted data collection. The only data collected on paper were the written consents and global positioning coordinates for verification of the random selected enumerating areas. Collected data were screened on a daily basis by the field supervisors and immediate feedback was given to the enumerators. A final data assessment was performed by the principal investigator (R.G.) to identify inconsistencies and missing items. Data were analyzed using SPSS statistical software. A 95% confidence interval (CI) is given for the relevant proportions in the analysis using $CI = \text{proportion } (p) \pm 1.96 \times \text{standard error}$ and



$$\text{Standard error} = \sqrt{p \left(\frac{1-p}{n} \right)}$$

The study was approved by the Sierra Leone Ministry of Health and Sanitation and ethical approval was obtained from the Ethics and Scientific Review Committee of Sierra Leone and the Research Ethics Committee of the Royal Tropical Institute in Amsterdam, The Netherlands.

RESULTS

Data were collected from 1,843 households giving a response rate of 98%.⁷ The households had a total of 3,318 females of reproductive age (aged 12–50 years), of whom 1,205 (36%) were randomly assigned to be interviewed in depth. The social and economic characteristics of these 1,205 females are shown in Table 1. Fifty-seven percent lived in rural areas and half of them had no formal education. With regard to their employment status, 31.0% of these females reported being farmers, 28.5% were unemployed, and 22.2% were self-employed (Table 1).

At the time of the interview 8.5% (103/1,205, 95% CI 6.9–10.1) of the participants were reportedly pregnant, and 12.5% (151/1,205, 95% CI 10.6–14.4) were breastfeeding. Of the 103 pregnant participants, 18.4% reported to be in the first trimester, 46.6% in the second trimester, and 33.0% in the third trimester of pregnancy (Table 2). Thirteen of the 103 pregnant participants (12.6%) indicated bleeding in their pregnancy.

Table 1. Current Social and Economic Status of Survey Participants

Variable	n	%
Residency		
Urban	520	43.2
Rural	685	56.8
Total	1,205	
Education		
None	612	50.8
Primary school	176	14.6
Secondary and higher	414	34.4
Total	1,205	
Illiteracy		
Not able to read or write	654	54.3
Self-reported health		
Not feeling totally healthy	487	40.4
Occupation		
Farmer	374	31.0
Unemployed	344	28.5
Self-employed	268	22.2
Home worker or domestic helper	175	14.5
Employee	42	3.5
Total	1,205	

Eighty-two percent of the total females interviewed (990/1,205, 95% CI 80.0–84.4) indicated that they menstruated at least once in the previous year. Of the 990 menstruating females, 12.8% reportedly had an irregular cycle, 10% reported spotting, and 45.1% mentioned pain, which interfered with their daily activities. Twelve percent of these females indicated the need for medical care for their menstrual problems (116/990, 95% CI 9.7–13.7) and 6.4% (77/116) sought traditional care for their menstrual problems. Financial constraints were reported by 50% of these females as the major barrier to obtain health care (Table 2).

Twenty percent of the interviewed females (95% CI 17.9–22.5) reported using family planning methods at the time of the interview. Injectable was most frequently mentioned as the method of contraception (118/244 [48.4%]) followed by oral contraceptive pills (89/244 [36.4%]) and implants (20/244 [8.2%]). Less frequently mentioned were intrauterine devices or condoms as well as breastfeeding (Table 2).

A total of 2,645 pregnancies, resulting in a total of 2,316 births, were recalled by the 990 females who were still menstruating (Table 3). Fifty-nine percent (1,355/2,316, 95% CI 54.0–63.0%) of the recalled deliveries took place outside a health facility. Of the

Table 2. Current Reproductive Health Characteristics of Survey Participants

	n	%	95% CI
Reproductive health			
Reported pregnancies	103/1,205	8.5	6.9–10.1
First trimester	19	18.4	
Second trimester	48	46.6	
Third trimester	34	33.0	
Unknown	2	1.9	
Currently menstruating	990/1,205	82.2	80.0–84.4
Irregular cycle	127	12.8	
Spotting	99	10.0	
Pain	466	45.1	
Use of family planning	244/1,205	20.2	17.9–22.5
Injectable	118	48.4	
OCPs	89	36.4	
Implant	20	8.2	
Breastfeeding*	7	2.9*	
Intrauterine device	4	1.6	
Condom	3	1.2	
Other	3	1.2	
Reproductive health care barriers			
Financial constraints	58	50.0	
Not available	5	4.3	
No time	3	2.6	
Transportation	1	0.9	
Total	116		

CI, confidence interval; OCP, oral contraceptive pill.

* Used as method of contraception.



Table 3. Recalled Pregnancies and Delivery Modes for Survey Participants With at Least One Menstruation in the Previous Year

	n	%	SE	95% CI	Range	Mean
Total no. of pregnancies in lifetime	2,645	100			0–12	2.7
No. of deliveries	2,316	100			0–11	2.3
No. of home deliveries*	1,355	58.5	2.3	54.0–63.0	0–11	
No. of health facility deliveries	957	41.3			0–9	
No. of cesarean deliveries	44	1.9	0.3	1.3–2.5	0–2	
No. of instrumental deliveries	9	0.4			0–1	

SE, standard error; CI, confidence interval.

* Location of delivery missing for four (0.2%) participants.

total births, 1.9% (44/2,316, 95% CI 1.3–2.5%) were reportedly delivered by cesarean and 0.4% (9/2,316) with instrumental delivery (Table 3).

There were a total of 709 household deaths reported; of these deaths, 32.7% (232/709) were females of reproductive age. Fifty-three females (53/232 [22.8%]) who died during reproductive age were at the time of death reportedly pregnant or within 6 weeks after their delivery. These reported deaths came from 40.0% (30/75) of the clusters, ranging from zero to six maternal deaths per cluster in the previous year. The clusters that were affected by a maternal death in the previous year are spread over the entire

country (Fig. 1). Because maternal mortality rate is calculated by the number of maternal deaths divided by the total number of females in the sample aged 15–49 years,⁹ our maternal mortality rate was computed as 53 of 3,318 or 0.01597 or 1,600 of 100,000 females per year.

Causes of maternal death were categorized 75.5% (40/53) as “bleeding or ill around childbirth” and 3.8% (2/53) as abdominal distention or pain. Other causes that were mentioned by the household representative were malaria, hypertension, chest pain, heart failure, and in 13.2% (7/53) of participants, the cause of death was unknown (Table 4).

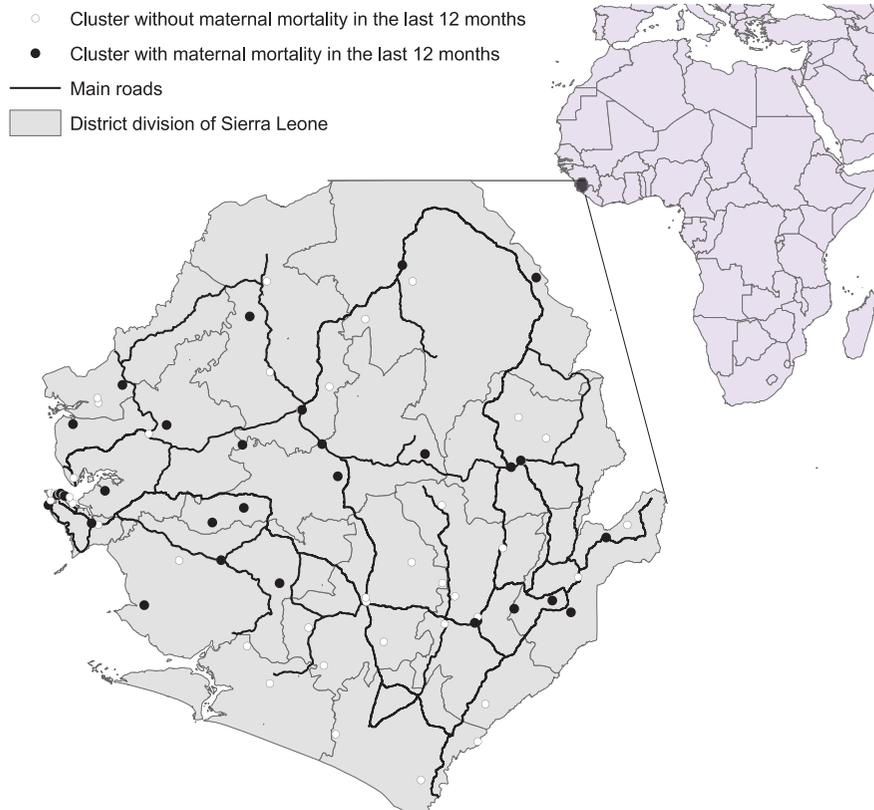


Fig. 1. The 75 clusters visited and indication of the reported maternal deaths.

Groen. *Female Health in Sierra Leone. Obstet Gynecol* 2013.



Table 4. Information Regarding Maternal Mortality as Reported by the Household Representatives

Mentioned Cause	n	%
Bleeding or ill around childbirth	40	75.4
Abdominal distention or pain	2	3.8
Malaria in pregnancy	1	1.9
Hypertension in pregnancy	1	1.9
Chest pain in pregnancy	1	1.9
Heart failure in pregnancy	1	1.9
Unknown	7	13.2
Total	53	100
Health care-seeking behavior		
Modern health care	31	58.5
Traditional health care	3	26.4
Both modern and traditional health care	14	5.7
None	5	9.4
Total	53	100
Type of care given		
No attempt to find modern care	8	15.1
No care at all	22	41.5
No need for surgery	11	20.8
Minor procedure	7	13.2
Major procedure	4	7.5
Missing value	1	1.9
Total	53	100

With regard to health-seeking behaviors for sick females before death, 84.9% (45/53) sought modern health care. Fifty percent of the families (22/45) who reportedly sought modern health care did not receive this care at all. Thus, a total of 30 participants (56.6%) did not receive any modern care (ie, 22 who sought but did not receive and eight who did not seek at all). Fifty-three percent (16/30) of their families reported that financial constraints were the main reason for not accessing modern care, 26.7% (8/30) had no time, and 6.5% (2/30) reportedly had difficulty with organizing transportation (Table 5).

In 47.2% of the cases, the place of death was reported to be the home, 45.3% in health facilities, and 7.5% elsewhere.

Table 5. Reasons Given by Family For Lack of Modern Care Before the Maternal Death

Reason	n	%
Financial constraints	16	53.3
No time	8	26.7
Care not available	3	0.1
No possibilities for transportation	2	6.7
Missing value	1	3.3
Total	30	100

DISCUSSION

Measuring maternal mortality is a complicated entity, especially without adequate public records, which is the case in many resource-poor countries. In a place such as Sierra Leone, where the majority of births (59% in this study) and deaths (55% in this study) take place outside of health care facilities, it is difficult to have comprehensive national level records of birth and death rates. And therefore surveys take an important place in the health statistics. This current survey was not specifically developed for maternal mortality and did not follow the sisterhood method.^{10,11} Therefore, we calculated a maternal mortality rate instead of ratio. It is thought that our figure is an underestimation because deaths resulting from ectopic pregnancies or deaths from spontaneous or induced abortions might not have been accounted for. On the other hand, recall for a tragic event like a maternal death will probably be a significant memory and therefore prone to telescoping. Telescoping of events might make them seem closer to the current date than when it actually happened and might therefore lead to overreporting of an event in a year because the actual event was before the year of interest. Nevertheless, these data suggest that maternal mortality remains a crucial health concern throughout the nation of Sierra Leone and support the need for regional and national health strengthening.

Gabrysch and Campbell¹² found in their review that maternal age, ethnicity, mother's education, multiparity, inability to pay, and rural location are the most important factors influencing the absence of a skilled birth attendant at the time of delivery. Economic accessibility was thought to be a significant factor as well, which is consistent with our findings. Sierra Leone instituted free health care for all pregnant females in April 2010; thus, it is very concerning that the predominant reason reported by families for failure to seek care, resulting in a maternal death, was self-report of financial constraints.¹³ Financial concerns were followed by not having enough time and difficulty arranging transportation. These last two reasons may indicate a lack of preparedness on the household level in general. Further research is needed to understand current preparedness in pregnancy by the pregnant woman as well as her family. Access to some of the randomly chosen cluster sites was difficult, requiring the use of boats, long hikes, and rough driving paths. This illustrates the likely difficulty for females in need of emergency obstetric care. Maternal waiting homes might be a possible solution to overcome these geographic barriers to care.⁹

One way to reduce the absolute number of pregnancy-related deaths is to improve access to and



use of contraception.^{14–16} According to our study, 20% of females used family planning methods at the time of the interview, the majority of which were injectable hormonal contraceptives. This seems an improvement compared with other studies that reported 5% and 10% overall use rate.^{3,17} However, caution has to be exercised when comparing different survey methods to estimate trends. Furthermore, the current survey did not explore in depth the correct use of contraception (eg, “When was the last injectable given?” or “What percentage of intercourse was with condoms?”). Our study did not explore the distribution or clustering of the mentioned contraception use either. This could be useful to address preferences across the country and in differences among the tribes of Sierra Leone or could reveal lack of local availability or skilled health care providers. Nevertheless, increasing contraceptive use in developing countries will not only reduce maternal mortality,¹⁸ but also improve perinatal outcomes and child survival.¹⁹

Although maternal mortality and access to family planning are prominent in global health discussions, the gynecologic burden is infrequently mentioned. Our survey also documents part of the gynecologic burden in the population. Almost 12% of the females who were menstruating reported a need for medical attention based on prolonged, excessive, or painful menstrual periods. Although free care for pregnant and lactating females is made available,¹³ females with leiomyomas, ovarian masses, and endometrial or cervical cancers are currently left with limited medical attention.

Survey limitations were related to the fact that the survey was primarily designed to measure the need for surgical care and only secondarily included questions related to reproductive health. To make the survey workable for the enumerators, elaborate questioning of the females on each individual childbearing period was therefore not included but could have given useful insight. Despite close supervision and a thorough training before the survey execution, we cannot exclude an interviewer’s bias. The enumerators reported in the feedback session that some of the most difficult questions to ask were related to the menstrual cycle, which is considered a private condition in Sierra Leone.

In summary, our study documents family planning use by reproductive-aged females in Sierra Leone at 20%, which is substantially higher than the 8.2% reported by the World Health Organization for Sierra Leone¹ and therefore encouraging. However, our study also documented that only 1.4% of the recalled deliveries were by cesarean and less than 1% by instrumental delivery, far below the expected need.²⁰

Furthermore, financial constraints were mentioned by half of the families as the reason they were not able to access modern care. We therefore conclude that the free health care initiative for pregnant females is not yet fully covering the reproductive needs of the females of Sierra Leone.

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rev 7/2013

