

Reducing maternal mortality in developing countries, evidence from Sierra Leone

By

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Abstract

At the 2000 Millennium Summit, world leaders committed themselves among other things towards the reduction of maternal mortality by 75% come 2015. Nearly two-thirds of a decade has gone only the industrialized countries have improved on this goal. Most sub-Saharan countries including Sierra Leone have seriously lagged behind. The 2002 UNICEF Report shows that out of 514,000 women that die each year at child-birth, over 50% of the cases occur in sub-Saharan Africa. In 2000 the maternal mortality rate for Sierra Leone was estimated at 2000 per every 100,000 live births. In 2007 the “Countdown to 2015- Maternal, Newborn & Child Survival” shows a staggering figure of 2,100 maternal deaths per every 100,000 live birth. This paper explored the available statistics from seven referral hospitals in Sierra Leone, The results of our analysis have shown that maternal mortality is indeed on the increase, and on an alarming rate.

Background

At the 2000 Millennium Summit, world leaders within the United Nations committed themselves among other things towards the reduction of maternal mortality by 75% come 2015- One of the millennium development goals-MDGs-. Nearly two thirds of a decade has gone by only the industrialised countries and few other developing nations have made any significant moves in achieving this ambitious goal. On the contrary most sub-Saharan countries have done little to reduce maternal death rates on the continent. Sierra Leone is one of the countries in sub-Saharan Africa whose maternal mortality rate has been on the increase since 2000 when the above declaration was made. The 2002 *WHO, UNICEF and UNFPA Report* shows¹, that out of the 514, 000 women that die each year at child birth, over 50% of the cases occur in sub-Saharan Africa- Latin America and the Caribbean accounts for 4%, and Europe combined with North America accounts for only 1%. In 2000 the maternal mortality rate for Sierra Leone was estimated at 2000 per every 100,000 live births. The 2005 statistics compiled from the database on the *Countdown to 2015- Maternal, Newborn & Child Survival* shows a staggering figure of 2,100 maternal deaths per every 100,000 live births. In their recent report, UNDP (HDR 2007) stated that mothers in Sierra Leone

¹ List of countries with MMRs 1000 or greater in 2000 includes: Sierra Leone (2000), Afghanistan (1,900), Malawi (1,500), Angola (1,700), Niger (1,600), the United Republic of Tanzania (1,500), Rwanda (1,400), Mali (1,200), Central African Republic) Chad, Guinea-Bissau, Somalia and Zimbabwe (1,100 each) and Burkina Faso, Burundi, Mauritania and Mozambique (1,000 each), (*WHO, UNICEF and UNFPA, 2000*)

have a one in six chances of dying at child birth, and a quarter of children die before they reach their 5th birthday.

It is acknowledged by most medical practitioners that majority of the women who die at childbirth especially in Sierra Leone experience at least one of the *three delay models*. The first *delay* occurs in deciding to seek care for obstetric complication, for reasons such as late recognition that there is a problem; fear of hospital or the cost that will be incurred and/or lack of available decision maker. The high level of disempowerment of women in Sierra Leone, brought about by their low economic² and educational status hinders them from making decisions about their health problems, to an extent even when they encounter pregnancy complications could find it difficult to urge their spouses to carry them for better medical treatment. In most remote areas of Sierra Leone, villagers rely mostly on traditional healers, who normally force women that encounter prolonged labour to confess- either committing adultery and/or involved in witchcraft. Sometimes the decision to force a pregnant woman to confess can become more appealing to the husband in question than the one to carry her to the hospital, especially when he finds difficulties to raise money for medical bills and other associated cost. Some of these cases had often resulted to fatality, either the child or the mother or both would lose their lives.

The second *delay* occurs after the decision to seek care has been made. This is a delay in reaching the care facility and is usually caused by difficulty in transportation. The problem of transportation in Sierra Leone is of two folds. Firstly, the entire road infrastructure in the country is underdeveloped- Out of twelve major roads linking the twelve district headquarter towns in Sierra Leone, only four of them are tarmac, the rest are un-tarmac and usually suffer deep ditches during the rainy seasons. Drivers find it difficult to attend to emergency cases, especially when it has to do with conveying obstetric cases to the district referral hospitals. Secondly there are still villages-about hundred or more- in Sierra Leone that are without motor ways. Most of the transportations between these villages and other towns are done on foot. Women who had

² More 80% of Sierra Leone women live on less than \$2 USD a day.

been caught up in obstetric complications or other ailments had always been conveyed by villagers using *hammocks*, the delay caused during the period of carrying most mothers had usually resulted to deaths, and these are obvious cases in Sierra Leone.

May be in the medium or long run Sierra Leone and other West African countries would be privileged to have the *Flying Doctors* Project equivalent to the one operating in East Africa, whose main objective is to pick patients from all geographical locations- especially those in the remote part of the regions covered by the project- and conveying them to referral hospitals by helicopters. The project currently covers Kenya, Uganda and Tanzania. This project had saved the lives of many, especially women encountering obstetric complications.

The third *delay*, which has been very pathetic in Sierra Leone, is a delay in obtaining care at the facility centres. This is one of the most tragic issues in maternal deaths in the country, often women wait many hours at the referral centres because of poor staffing, prepayment policies, or difficulties in obtaining blood. The mass emigration of Sierra Leoneans to other countries, especially the professionals-doctors, nurses, engineers, etc has caused a shortage of manpower in all walks of life, including the medical field. Many a time pregnant women who required emergency attention wait endlessly, and when they sometimes succeed in seeing doctors or nurses their situation would be helpless, five chances out of every ten, these women may end up dying. Sometimes some medical personnel had refused seeing patients on the grounds of lack of money to pay their bills; this is a common practice in most of the private and even government hospitals in the country.

Statement of the Problem

In 1997 the government of Sierra Leone through the Ministry of Health and Sanitation (MOHS) established the Reproductive Health Programme (RHP) with its main focus on the reduction of maternal mortality. Apart from Freetown and its environs, the RHP had initially covered other six districts in Sierra Leone. It is the principal implementing agency for UNFPA funded activities under the MOHS. 2007 was the fourth and final

year of implementation of the third UNFPA Country Programme Action Plan (CPAP), which started in 2004. The operational goal of the programme was to provide men, women and adolescents in Sierra Leone with quality reproductive health information and services and contributing to the improvement of health for all. The expected outcome for UNFPA support RHP among other things was, “increased access and utilisation of gender-sensitive, high quality reproductive health information and services, and the output included increased availability and utilisation of high quality maternal care services, such as emergency obstetric care and family planning.

In terms of impact of the *RHP Annual Progress Report (2007)* acknowledged that “it still remains a challenge to show results of UNFPA intervention in the country- as is a normal case- much is not expected of maternal mortality reduction programmes over a short period of intervention”. This paper tried to explore the death toll of mothers at birth, social/economic factors and clinical factors responsible for this tragedy in our country, which still seems to be increasing. The study addressed the following specific research questions: What percentage of deaths occurred in the various referral hospitals for the period under review? Did the maternal mortality rate increase or decrease, if a decrease, which medical interventions made it possible, or if increase which socio-economic factors are responsible?

Aim and objectives

The general aim of this paper has been to demonstrate to policy makers, fellow scholars/researchers and politicians within and outside Sierra Leone that the problem of maternal deaths is still a grave situation in the country, and we have done this by analysing the recent statistical data compiled by RHP in the regions, where they have been operating in Sierra Leone.

The specific objectives therefore include the following:

- To analyse in tabular form the maternal deaths statistics in the regions covered by the RHP
- To determine the major clinical causes of these deaths

- To determine the socio-economic factors responsible for maternal deaths in Sierra Leone.
- To compare the rates of maternal deaths across the various referral hospitals in our study.
- To compare Sierra Leone's maternal deaths to other countries in the same region and across the world.
- To determine policy implication of our findings.

This paper is justified on the following grounds. It serves as a wakeup call to all well-meaning Sierra Leoneans, including researchers, policy makers, politicians and development workers to intensify effort toward reducing maternal mortality rate among our women in Sierra Leone. Readers of this paper would know how grave the situation is in the areas covered by the RHP operations. However, there are up to six other administrative district regions where obstetric care services are absent, thus the need for a more comprehensive primary survey into this problem. For now it suffices to say this paper has been able to throw light on one of the gravest problems affecting Sierra Leone. Our data could be used for further research on similar topics within and outside Sierra Leone.

Methodology: Target Country and Area of Study

Target Country

The target country for this study is Sierra Leone. With an estimated population of 5.7 million, Sierra Leone is found in Western Africa, bordering the North Atlantic Ocean, between Guinea and Liberia and total land area of 71,740 sq km. It is an extremely poor country with more than 70% of its population living on less than \$2 USD a day. The average life expectancy for the people of this nation is 40.58 years, infant mortality rate is one of the highest in the world, accounting for 158.27 deaths per every 1000 live births, the total fertility rate is also one of the highest in the world with about 6.01 children per woman, (CIA World Facts Book, 2007).

Two thirds of the country is inaccessible by vehicles, and the roads leading to the few accessible areas have deep ditches. For the better part of the raining season, these areas are impassable, exposing inhabitants of those areas vulnerable to all forms of health hazards, including complicated obstetric cases. Besides transportation problems, most of the administrative district head quarter towns lack well-equipped medical centers and/or trained doctors or nurses.

The current research draws data from seven referral hospitals located in the following administrative regions of the country, namely: Freetown (the capital city of Sierra Leone); Bo, Kenema, Moyamba, Makeni, Magburaka and Port Loko. These were the districts covered by the UNFPA supported RHP for Sierra Leone.

Data type and sources

The study made use of both primary and secondary data sets, compiled from the referral hospitals and also from discussions with the obstetrics service providers. The secondary data were compiled from the annual reports of the Reproductive Health Unit (RHU) and the Vital Registration Unit (VRU) of the MOHS in Sierra Leone. Primary data were compiled from the staff of UNFPA and RHU, the nurses and other health workers.

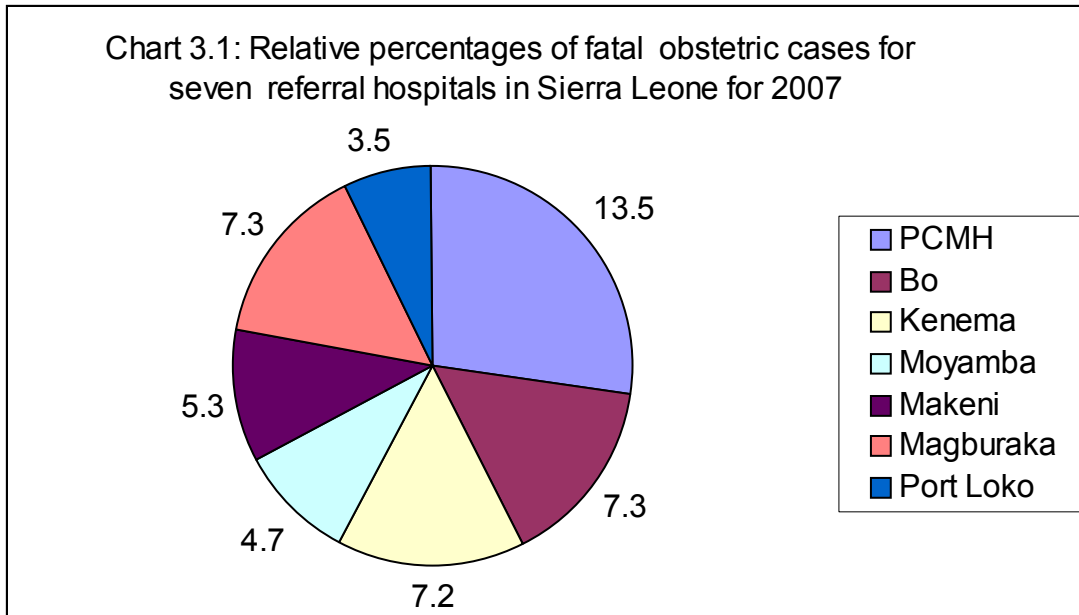
Statistical Techniques/Methods

Simple statistical methods were used to analyse the data for this study. We particularly used percentages, averages, tables and charts to analyse our data. Methodologies such as Brass, logistic regression, and/or linear probability seemed appealing but were not used for our study, for simple reasons of lack of comprehensive data; lack of statistical/econometric packages (like stata, E-view or SPSS), which are normally used for such analysis. We have however, used the above simple techniques to explain at this stage the problem of maternal mortality in Sierra Leone.

Analysis and presentation of results

This section analysis and presents the data obtained from seven administrative regions of UNFPA supported RHP operations for the past four years (2004-2007). Our presentation covers among other things: the rates of maternal mortality in 2007 for the seven referral hospitals; social/economic and major clinical factors driving these rates. The study selected the Princess Christian Maternity Hospital (PCMH) to demonstrate the trend of maternal mortality between 1994 and 2005. Over this period the trend in the rate of maternal mortality was compared to the stillbirth rates.

For 2007 about 2,895 obstetric complication cases were admitted in all the seven referral hospitals, namely PCMH in Freetown, Bo, Kenema, Moyamba, Makeni, Magburaka and Port Loko. Out of the above cases 141 (or 8.3%) resulted into fatality. At the individual hospital level, the highest number of deaths occurred at the PCMH, with a death toll of 108 (or 13.1%) of the total 1,076 cases admitted. The referral hospital with the second highest obstetric complication was in Kenema, with a 537 admissions and a death toll of 34 (or 6.0). Holding all other factors (under reporting, miscalculation of figures, etc) constant, Moyamba and Port Loko reported the lowest number of obstetric cases. In each of these hospitals 117 cases were admitted and only 3 death toll (or 2.6%) was reported in each of the hospitals. The pie chart below shows relative case fatality rates (CFR) for the seven referral hospitals.



The high level of cases admitted at the PCMH, which also resulted into high fatality level is as a result of Freetown being the capital city and thus carries the largest population more than any of the places sampled for this study. Besides, some obstetric cases tried in the provincial towns are conveyed to the city where people presumed to have better medication. Such cases normally arrive at PCMH too late for any medical rescue effort. Additionally most urban poor take delight in first seeking the services of the traditional births attendants (TBAs) in their neighbourhood before making decisions to meet trained and qualified medical practitioners, this option can only be thought of after a prolonged labour pain, regrettably such cases arrive at the health centre too late for the survival of the child and/or the mother. These are frequent problems in most of the depressed /slums communities of the city. Again women in the city take delight in committing abortion more than their counterparts in the provincial towns, referring to Table 1A in the Appendix one would see that the number of complicated obstetric cases caused by abortion is highest at the PCMH referral hospital. Abortion is one of the main factors driving up the level of obstetric complications in most of the urban settlements, although the death toll from it is usually under-reported.

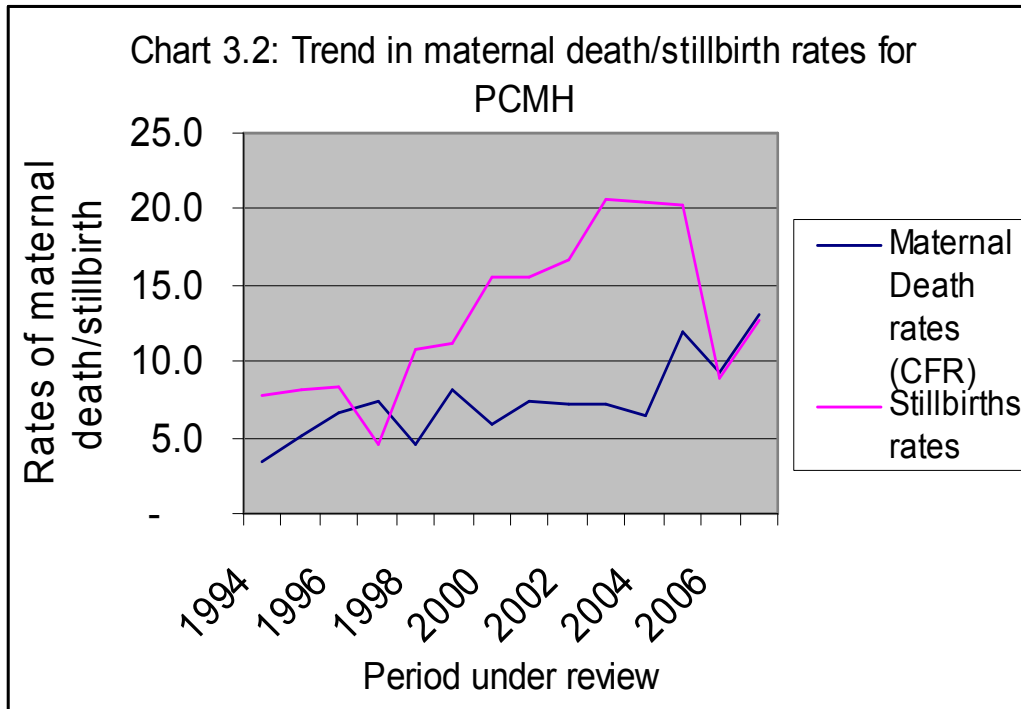
The obstetric complications were divided into direct and indirect causes. For the direct causes obstruction/prolonged labour was ranked the highest among other causes, out of the 2,155 direct cases 730 (or 33.9%) were as a result of the obstructed/prolonged labour. The second highest direct cause was haemorrhage, it accounted for 470 complicated cases, and 48 (or 10.2%) were fatal.

At individual hospital level eclampsia continues to be the highest direct clinical cause of obstetrics complication at the PCMH; in 2007 alone 234 (or 29.3%) deaths that occurred out of 799 were as a result of eclampsia. The second highest clinical cause of maternal deaths in the same hospital was obstructed/prolonged labour, out of the 211 admitted 26 (or 12%) of them ended up in fatality. Maternal deaths resulting from haemorrhage and abortion also show very disturbing statistics in the same hospital, they are also the highest cause of deaths at both Kenema and Magburaka hospitals, as the Table A1 suggests.

The indirect causes of obstetrics complications according to the statistics from the seven referral hospital include anaemia, malaria and *others*. Of the three categories, anaemia ranks highest for maternal deaths in 2007, it accounted for 11.7% deaths from the 205 obstetric cases admitted.

Trend in maternal mortality and stillbirth at PCMH

When we selected PCMH for a trend analysis, between 1994 and 2005, a very disturbing picture of maternal mortality was shown. It suffices to say that both the maternal death and still birth rates have been increasing, at least for the current reporting period. Regrettably the stillbirth rate is increasing faster than the maternal mortality rate. We do this comparison at this stage because of the close relationship between the two variables. In statistical analysis there is in fact a causal relationship between the two. Looking at the chart below one can draw many conclusions on maternal death and stillbirth situation at the PCMH facility level. Although PCMH information cannot be used to give a global trend of the tragedy of maternal death situation in Sierra Leone, yet it can show as sample of the problem to policy makers and other stakeholders how grave the situation is in the country.



As the chart shows both maternal mortality and still birth rates were high even during the early part of the 90s. They have remained high throughout the period under review, although with slight fluctuations (falling and rising along the period). In particular the stillbirth rate dropped in 1997 and two years later maternal mortality rate also dropped. Reasons for these drops according to our information sources were attributed to the intervention of the International Red Cross Society and other humanitarian organisations, which used to donate medicament and other logistics to the referral hospitals, including the PCMH. Between 1998 through 2005 UNFPA had also been supporting the activities of the Reproductive Health Division within the MOHS, this intervention resulted in reducing to some extent maternal deaths, but did not reduce the rates of stillbirths in this same period.

Conclusion

The maternal mortality rates report in the study covered only a limited area and time period, the information sampled for our analysis is one captured at the seven central government referral hospitals. However there is clear evidence that maternal mortality

in Sierra Leone is on the rise, and at a very alarming rate. This situation if left unchecked would disallow the country from meeting one of its most important millennium development goals, improving the health of women.

The main social and economic factors driving maternal deaths in Sierra Leone, include low women empowerment (illiteracy and poverty)-which stops them from making decisions on issues relating to their welfare; the general poverty situation which discourages family heads to send their spouses to hospitals for antenatal care before complications set in. The problem also has to do with the poor road infrastructure in the country, which makes it difficult for pregnant mothers to seek emergency obstetric care no sooner they need it. There is also the shortage of medical personnel in most of our referral hospitals. The few available ones are posted to limited number of the urban areas. The rural people remain uncovered by most these facilities.

Policy implication

At the policy front, all stakeholders in the health sector in Sierra Leone need to commit adequate resources-human, material and financial to reverse the trend of this calamity in our midst. It requires government to provide better road infrastructure, increase the number of referral hospitals, well equip them and staff them with trained and qualified medical personnel, which would be motivated financially and otherwise to provide 24 hour services to pregnant women. Some researchers discovered that without 24 hours services, some emergency obstetric cases which arrive in hospital at night or during weekends may result to death. In some cases free obstetric medical care could be provided for single mothers as well as rural settlers.

When the central government takes such a lead, the authors of this paper expect other stakeholders within and outside Sierra Leone to come in and help our women folk, by supporting research work and advocacy programmes; equipping hospitals with medicaments and the provision of vehicles for conveying obstetric cases to the referral hospitals, no sooner they arise.

Annex

Annex Table A1. Comprehensive EmONC Services Data in Programme-Supported District Hospitals, January–December 2007

Process Indicators	PCMH		Bo		Kenema		Moyamba		Makeni		Magburaka		Port Loko		Total	
DIRECT CAUSES																
Obstetric Complication	A	D	A	D	A	D	A	D	A	D	A	D	A	D	A	D
Haemorrhage	178	24	64	4	89	9	15	2	33	3	76	5	15	1	470	48
Obs./Prolonged Labour	211	26	118	7	188	10	13	0	34	1	128	6	38	0	730	50
Ruptured Uterus	31	7	17	2	21	1	2	0	3	0	21	3	2	0	97	13
Puerperal Sepsis	28	5	18	5	23	4	8	0	8	0	17	1	2	0	104	15
Eclampsia	234	33	13	2	52	6	7	0	28	2	41	3	16	2	391	48
Abortion complications	102	11	61	2	63	2	19	1	42	2	24	5	12	0	323	23
Ectopic Pregnancies	15	2	9	0	7	0	0	0	2	0	6	0	1	0	40	2
TOTAL	799	108	300	22	443	32	64	3	150	8	313	23	86	3	2,155	199
INDIRECT CAUSES																
Anaemia	112	18	32	1	17	2	1	0	11	1	29	2	3	0	205	24
Malaria	69	2	23	0	35	0	39	0	32	0	44	1	11	0	253	3
Others	96	13	45	0	42	0	13	0	21	0	48	0	17	0	282	13
GRAND TOTAL	1,071	141	400	23	537	34	117	3	214	9	434	26	111	3	2,895	239

Key: A – Admission, D - Death (Maternal)

Annex Table A2: Summary of Maternal Deaths in seven project areas, 2005-2007.

Project District Hospitals	2005			2006			2007			CFR (%)		
	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007
Western Area	97	88	141	11.8	9.3	13.0						
Bo	21	21	23	6.1	5.4	5.0						
Kenema	14	29	34	4.5	8.1	6.0						
Moyamba	4	2	3	4.5	1.8	2.0						
Bombali	15	13	9	4.2	4.8	4.0						
Port Loko	3	1	3	2.9	1.0	2.0						
Tonkolili	24	23	26	7.5	5.7	6.0						
TOTAL	178	177	239	5.9	5.2	5.4						

Key: CFR – Case Fatality Rate, N/A – Not Available

Annex Table A3: Trend in Maternal deaths for the 1994-2005 Period at the PCMH in Freetown.

Year	Total Delivery	Stillbirth	Maternal Death	CFR	%Sb to TD
1994	2,425	189	81	3.3	7.8
1995	2,452	201	124	5.1	8.2
1996	1,425	119	94	6.6	8.4
1997	751	34	56	7.5	4.5
1998	1,334	143	60	4.5	10.7
1999	1,162	130	95	8.2	11.2
2000	1,598	248	93	5.8	15.5
2001	1,727	268	128	7.4	15.5
2002	1,506	250	109	7.2	16.6
2003	1,329	275	95	7.1	20.7
2004	1,482	303	95	6.4	20.4
2005	816	166	97	11.9	20.3
2006	1,819	262	119	6.5	14.4
2007	2,823	359	141	13.0	12.7

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