

# BOTSWANA - MATERNAL MORTALITY RATIO (MMR) 2009- 2013

No. 2014/1

## STATISTICS BOTSWANA

Copyrights Statistics Botswana 2014

#### 1.0 Introduction

Complications during pregnancy and childbirth are a leading cause of death and disability among women of reproductive age in developing countries. The maternal mortality ratio represents the risk associated with each pregnancy, i.e. the obstetric risk. It is also a Millennium Development Goals issue where Botswana signed to improve maternal health and reduce of maternal mortality ratio by three quarters between 1990 and 2015.

Maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. To facilitate the identification of maternal deaths in circumstances in which cause of death attribution is inadequate, a new category has been introduced: Pregnancy-related death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death.

This Stats Brief provides information on Botswana Maternal Mortality Ratio and causes of maternal deaths for the period 2009 – 2013. Maternal Mortality Ratio is defined as the number of deaths per 100,000 live births. As part of a collaborative effort between Statistics Botswana and Ministry of Health (Department of Public Health- Sexual and Reproductive Health (SRH) to improve the availability and quality of maternal mortality information, the two organizations, ensure that data on live births and maternal deaths are provided.

A.N Majelantle
Statistician General
November 2014

#### 2.0 Access to Health Services and Birth Attendants Assistance

Facilitating access is concerned with helping people to command appropriate health care resources in order to preserve or improve their health. If services are available and there is an adequate supply of services, then the opportunity to obtain health care exists, and a population may 'have access to services. The extent to which a population 'gains access also depends on financial, organizational and social or cultural barriers that limit the utilization of services. Thus access measured in terms of utilization is dependent on the affordability, physical accessibility and acceptability of services and not merely adequacy of supply. Services available must be relevant and effective if the population is to 'gain access to satisfactory health outcomes'. The availability of services, and barriers to access, have to be considered in the context of the differing perspectives, health needs and material and cultural settings of diverse groups in society.

According to the 2007 Botswana Family Health Survey II (BFHS) conducted by Central Statistics Office, 95 percent of Botswana lives within an 8 kilometre radius from a health facility. In addition 98 percent of mothers deliver in a health facility where they are attended to by a trained birth attendant. Hence there is a high coverage and precision on the collection of births and deaths data.

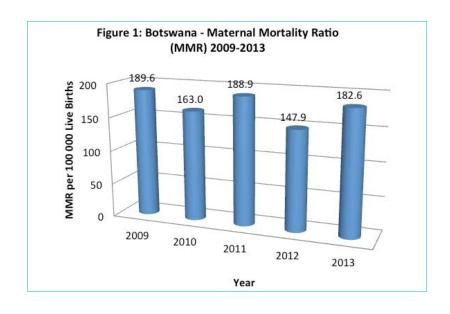
The 2007 BFHS further II indicated that over 99 percent of deliveries have been assisted by skilled birth attendants in cities/towns accounting for, 97.2 percent in urban villages and 90.2 percent in rural areas. However, the high level of birth attendance by skilled health personnel gives accurate identification and classification of maternal death cases, as well as certification of causes of maternal deaths. The survey further indicates that over 95 percent of all reported deliveries occur in health facilities.

#### 3.0 Maternal Mortality Ratio (MMR) Trend

Botswana Maternal Mortality Ratio for the period 2009 to 2013 is shown in Table 1 and Figure 1. The MMR shows an increase of 23.5 percent from 147.9 to 182.6 per 100,000 live-births between 2012 and 2013.

Table 1: Botswana Maternal Mortality Ratio 2009 – 2013

2009	0010			
	2010	2011	2012	2013
45,145	49,853	44,904	49,957	49,771
220	475	104	91	68
45,365	50,328	45,008	50,048	49,839
86	82	85	74	91
189.57	163	188.86	147.9	182.6
	45,365 86	220 475 45,365 50,328 86 82	220     475     104       45,365     50,328     45,008       86     82     85	220     475     104     91       45,365     50,328     45,008     50,048       86     82     85     74



#### 4.0 Causes of Maternal Mortality by Age

There were 91 maternal deaths in 2013 as indicated in Table 1, 2 and 4. The most common causes of maternal mortality as indicated in Table 2 and Table 4 was Other Immediate Postpartum Hemorrhage with 19 cases, Other and Unspecified Failed Attempted Abortion (15 cases), HELLP syndrome (Hemolysis, Elevated Liver Enzymes and Low Platelet Count) 11 cases, Eclampsia, Unspecified as to time period (7 cases and Diseases of the Circulatory System Complicating pregnancy, Childbirth and the Puerperium with 6 cases.

However, in 2013 there was only 1 case of HIV related diseases which contributed to maternal deaths (Table 2). Table 2 further indicates that the HIV pandemic has been dropping since 2010; this drop might be attributed by the interventions in place.

In table 4, the highest (26 percent) maternal deaths were reported were 24 which were among the age groups 30-34, followed by age groups 35-39 (25 percent), 25-29 (20 percent) and 20-24 with 14 percent respectively. However there was no maternal death recorded in ages 45 and above.

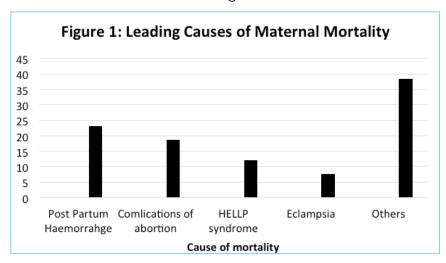


Table 2: Summary of Causes of Maternal Deaths

Major causes of Maternal Deaths	2009		2010		2011		2012		2013	
	Number	%	Number	%	Number	%	Number	%t	Number	%t
HIV-related & other viral diseases	11	12.8	8	9.8	3	3.5	1	1.4	1	1.1
Top cause of Maternal Deaths (excluding HIV)	36	41.9	27	32.9	41	48.2	41	55.4	58	63.7
Other diseases	39	45.3	47	57.3	41	48.2	32	43.2	32	35.2
Total	86	100	82	100	85	100	74	100	91	100

<sup>\*</sup>Note: Top – cause of Maternal Deaths refer to Table 4

#### 5.0 Institutional Births

Institutional delivery refers to giving birth to a child in a medical institution under the overall supervision of trained and competent health personnel where there are more amenities available to handle the situation and save the life of the mother and child.

There were 49,771 Institutional births in 2013 as indicated in Table 1. Table 3 shows that most births (63.4 percent) occurred in General Hospitals, as compared to 21.6 percent and 14.8 percent in primary hospitals and clinics respectively. It is quite evident that most mothers prefer to deliver in health facilities than at home (Table 3). The overall average length of stay in a health facility was 7 days (Table 5) which is skewed towards hospitals as they often handle complicated referral cases.

Table 3: Live Births by Place of delivery 2012 - 2013

Place of Birth	2012	2013			
	Number	Percent	Number	Percent	
General Hospital	30,822	61.6	31,617	63.4	
Primary Hospital	9,593	19.2	10,784	21.6	
Clinics	9,542	19.1	7,370	14.8	
Non Institutional	91	0.2	68	0.1	
Total Live Births	50,048	100	49,839	100.0	

#### 5.0 Non-Institutional Births

The non-institutional births continue to decline, as indicated by 0.2 percent and 0.1 percent in 2012 and 2013 respectively (Table 3). Table 6 indicates that Ghantsi district continues to report the highest non-Institutional births notably: 36 births, accounting for 52.9 percent, followed by Okavango (26 births) with 38.2 percent, Mabutsane (5 births) with 7.4 percent and Goodhope (1 birth) with 1.5 percent.

#### 6.0 Born Before Arrival (BBA)

The BBA refers to babies brought to the health facility after delivery. Table 5 shows BBA accounted for 3.7 percent of all live births in 2013. This was a decrease of 0.3 percent from the 4.0 percent in 2012 (Table 5).

#### 7.0 Technical Note

The availability of data on number of live births and maternal mortality are a collaborative effort between Ministry of Health's Sexual and Reproductive Health Unit and Statistics Botswana through its Health Statistics Unit to ensure production of quality national maternal mortality information.

#### 7.1 Access to Health Services in Botswana

In Botswana, healthcare is delivered through a decentralized system with primary health care being the pillar of the delivery system. Botswana has an extensive network of health facilities (Hospitals, Clinics, Health posts and Mobile Stops) clustered in the 27 Health Districts, following the relocation of Tonota and Tlokweng Subdistricts to Greater Francistown and Greater Gaborone respectively.

Definition of Maternal Mortality Ratio (MMR)

As already alluded to, Maternal Mortality Ratio is defined as the number of maternal deaths per 100,000 live births. This indicator estimates the proportion of pregnant women or mothers who die from causes related or aggravated by pregnancy or its management. The ratio is expressed as follows:

Maternal deaths\*K
Live Births

Where K = 100,000.

### World Health Organization (WHO) Maternal Death Definitions for classification and calculation of MMR

#### MR: key terminologies

The following World Health Organization (WHO) maternal death definitions were used for classification and calculation of MMR. The classification of causes of maternal deaths is also according to WHO International Classification of Diseases Volume 10 (ICD 10).

A death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.
A death resulting from complications of pregnancy, labor or delivery or their management.
A death in which pregnancy exacerbated a preexisting health problem.
A death that occurred during pregnancy or within 42 days of termination of pregnancy, but was considered unrelated to pregnancy (e.g. due to injury, homicide, or suicide).
Number of maternal deaths during a given period per 100,000 live- births during the same time-period.
Number of maternal deaths in a given period per 100,000 women of reproductive age during the same time period.

Table 4 Causes of Maternal Mortality by Age Group of Mother - 2013

	Age group of mothers (years)											
Code	Diagnosis	<15	15-19	20-24	25-29	30-34	35-39	40-44	45+	N/S	Total	
B21.0	HIV resulting in kaposi sarcoma	0	0	1	0	0	0	0	0	0	1	
0.000	Ectopic pregnancy, unspecified	0	0	0	0	0	1	0	0	0	1	
O05.8	Other abortion complete or unspecified, with other and unspecified complecations	0	0	1	0	0	0	0	0	0	1	
O06.3	Incomple abortion with other and unspecified complications	0	0	0	0	0	1	0	0	0	1	
O07.5	Other and unspecified failed attempted abortion, complicated by genital tract and pelvic infection	0	0	1	6	3	3	2	0	0	15	
0.800	Genital tract and pelvic infection following abortion and ectopic and molar pregnancy	0	0	1	1	0	0	0	0	0	2	
O00.9	Ectopic pregnancy, unspecified	0	0	0	1	0	0	0	0	1	2	
013	Gestational (pregnancy-induced) hypertension with significant proteinuria	0	0	0	0	0	1	0	0	0	1	
	HELLP syndrome ( Hemolysis, Elevated Liver Enzymes and Low											
014.2	Platelet Count)	0	1	3	1	3	2	1	0	0	11	
O15.9	Eclampsia, unspecified as to time period	0	0	1	2	1	2	1	0	0	7	
024.9	Diabetes mellitus in pregnancy, unpecified	0	0	0	0	0	0	1	0	0	1	
044.1	Placenta praevia with haemorrhage	0	0	0	1	0	0	0	0	0	1	
O45.9	Premature separation of placenta, unspecified	0	0	0	0	1	0	0	0	0	1	
O72.0	Third stage haemorrhage	0	0	0	0	1	0	0	0	0	1	
O72.1	Other immediate post partum hemorrhage	0	0	0	3	5	9	2	0	0	19	
O72.3	Postpartum coagulation defects	0	0	1	0	0	0	0	0	0	1	
074.9	Complication of anaesthesia during labour and delivery, unspecified	0	0	0	0	1	0	0	0	0	1	
O85	Puerperal sepsis	0	2	0	1	0	0	0	0	0	3	
O87.9	Venous complication in the puerperium, unspecified	0	0	1	0	0	0	0	0	0	1	
O95	Obstetric death of unspecified cause	0	0	0	1	0	1	0	0	0	2	
O98.0	Tuberculosis complicating pregnancy, childbirth and the puerperium	0	0	1	0	0	0	0	0	0	1	
O98.5	Other viral diseases complicating pregnancy, childbirth and	0	0	0	0	2	0	0	0	0	2	
076.5	puerperium  Protozoal diseases complicating pregnancy, childbirth	U	U	U	U	2	U	U	U	U	2	
O98.6	and puerperium	0	1	0	0	0	0	0	0	0	1	
O98.7	HIV disease complicating pregnancy, childbirth and puerperium	0	0	0	0	1	0	0	0	0	1	
	Other maternal infectious and parasitic diseases complicating											
O98.8	pregnancy, chilbirth and the puerperium  Endocrine, nutritional and metabolic diseases	0	0	1	0	1	1	0	0	0	3	
099.2	complicating pregnancy, childbirth and the puerperium	0	1	1	0	0	0	0	0	0	2	
O99.3	Mental disorders and diseases of the nervous system complicating pregnancy, childbirth and the peurperium	0	0	0	1	0	0	0	0	0	1	
099.4	Diseases of the circulatory system complicating pregnancy, childbirth and the peurperium	0	0	0	0	4	2	0	0	0	6	
O99.5	Diseases of the respiratory system complicating pregnancy, childbirth and the peurperium	0	0	0	0	1	0	0	0	0	1	
	Grand Total	0	5	13	18	24	23	7	0	1	91	

Table 5 Health Facilities by Patients Care Services - 2013

				Discharg	ed				Ne	wborn [	Discharge	d	
District Health Facility	Beds	Patient admissions	Alive	Dead	Patient days	Occ upancy Rate (%)	Average L. of Stay (Days)	Turnover Rate	Number	BBA	Alive	Dead	Total Livebirths
General Hospitals					,		( ,,,,						
Letsholathebe Memorial Hospital	314	7,805	7,630	177	59,425	52	8	25	381	1	424	0	382
Delta Medical Centre	0	0	0	0	0	0	0	0	0	0	0	0	0
Sekgoma Memorial Hospital	448	11,043	10,866	277	80,459	49	7	25	2,236	39	2,110	61	2,275
Scotish Livingstone Hospital	338	8,907	8,497	406	61,914	50	7	26	2,836	102	2,808	31	2,938
Bokamoso Private Hospital	128	4,521	4,418	58	13,604	29	3	35	720	0	688	0	720
Jwaneng Mine Hospital	55	2,654	2,531	87	10,763	54	4	48	865	17	865	16	882
Kanye Seventh Day Advent. Hospital	167	5,156	4,946	204	22,318	37	4	31	1,565	33	1,560	26	1,598
Mahalapye Hospital	320	8,665	8,460	343	99,924	86	11	28	2,389	98	2,358	31	2,487
Deborah Retief Memorial Hospital	181	5,347	5,126	191	32,258	49	6	29	1,683	0	1,538	17	1,683
Orapa Hospital	106	1,323	1,275	22	6,551	17	5	12	295	6	306	1	301
Princes Marina Ref. Hospital	582	27,590	26,729	1,044	331,293	156	12	48	6,164	46	5,903	307	6,210
Gaborone Private Hospital	89	4,738	5,459	98	15,043	46	3	62	925	0	901	7	925
Nyangabgwe Ref. Hospital	561	21,808	21,488	1,147	243,051	119	11	40	4,962	49	4,949	62	5,011
Bamalete Luthern Hospital	140	4,795	4,593	159	18,389	36	4	34	1,309	18	1,378	6	1,327
Athlone Hospital	174	4,950	4,748	217	26,152	41	5	29	1,026	1	1,004	1	1,027
Sbrana Mental Ref. Hospital	300	1,508	1,482	8	77,872	71	52	5	0	0	0	0	0
BCL Hospital	15	206	199	2	692	13	3	13	0	0	0	0	0
Selibe - Phikwe Gov. Hospital	64	5,248	4,972	156	17,134	73	3	80	1,373	22	1,386	36	1,395
Total	3,982	126,264	123,419	4,596	1,116,842	77	9	32	310,921	525	30,468	642	31,617
Primary Hospitals	50	1.040	1 000	00	7 (00	40		00	500		50.4		500
Masunga Primary Hospital	50	1,969	1,883	80	7,609	42 81	4	39	522	11	534 974	2	533
Palapye Primary Hospital Bobonong Primary Hospital	75 38	4,867 2,554	4,718 2,462	149 92	22,062 8,725	63	5	65 67	947 965	35 17	896	12	982 982
Mmadinare Primary Hospital	48	1,298	1,238	57	4,533	26	4	27	397	17	409	3	412
Thamaga Primary Hospital	39	2,055	1,893	67	4,960	35	3	50	739	13	754	5	752
Good-Hope Primary Hospital	35	1,840	1,596	106	5,926	46	3	49	575	31	595	17	606
Ghanzi Primary Hospital	96	1,838	1,734	53	7,839	22	4	19	812	106	918	18	918
Sefhare Primary Hospital	50	1,761	1,667	93	6,207	34	4	35	616	35	637	13	651
Kasane Primary Hospital	33	1,492	1,447	38	5,520	46	4	45	365	13	362	18	378
Tsabong Primary Hospital	57	1,757	2,273	69	6,429	31	3	41	540	11	543	5	551
Tutume Primary Hospital	37	2,244	2,159	71	8,807	65	4	60	1,069	70	1,124	12	1,139
Rakops Primary Hospital	42	1,206	1,153	54	4,550	30	4	29	245	23	268	1	268
Letlhakane Primary Hospital	25	2,462	2,304	127	10,110	111	4	97	912	140	1,037	20	1,052
Gumare Primary Hospital	34	2,212	2,085	139	12,974	105	6	65	703	48	712	33	751
Thebe-Phatshwa Primary Hospital	42	91	93	0	548	4	6	2	6	1	6	0	7
Hukuntsi Primary Hospital	57	1,407	1,352	51	7,583	36	5	25	373	22	392	4	395
Gweta Primary Hospital	50	1,269	1,214	53	5,364	29	4	25	380	27	396	9	407
Total	808	32,322	31,271	1,299	129,746	44	4	40	10,166	618	10,557	190	10,784
All Clinics	760	14,506	14,437	3	11,772	4	1	19	6,670	700	7,434	32	7,370
Grand Total	5,550	173.092	169,127	5,898	1,258,360	62	7	32	47,928	1,843	48,459	864	49,771

Table 6 Non-Institutional live births by district, age group of mother and sex of infant -2013

District	<15		15 -19		20-24		25-29		30-34		35-39		40-44		45-49		50+	<del>i</del> 0+		N/S		tal	Grand	
	M	F	M	F	M	F	М	F	M	F	М	F	М	F	M	F	M	F	М	F	M	F	Total	
Ngamiland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
North East	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Palapye	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bobirwa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kweneng East	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Southern	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Gantsi	0	0	3	4	1	4	3	2	9	3	4	0	0	1	0	1	0	0	1	0	21	15	36	
Mahalapye	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kgatleng	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Chobe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kgalagadi South	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tutume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Boteti	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Okavango	0	0	2	0	5	8	5	0	1	3	1	0	0	0	0	0	0	0	0	1	14	12	26	
South East	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lobatse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
S/Phikwe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kweneng West	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Mabutsane	0	0	1	0	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5	
Jwaneng .T.Council	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Goodhope	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	
Kgalagadi North	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Moshupa Sub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Charles hill Sub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Serowe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	6	4	9	12	9	3	10	6	5	0	0	1	0	1	0	0	1	1	40	28	68	