



STATS BRIEF

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Botswana - Maternal Mortality Ratio (MMR) 2006 - 2010

This Stats Brief provides information on Botswana maternal mortality ratio for the period 2006 - 2010. 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 to or aggravated by pregnancy or its management. The data used for the year 2008 to 2010 is provisional until the production of final reports, while the other years are final.

Access to Health Services and Birth Attendants Assistance

The 2007 statistics Botswana study on access to health services showed that over 95 percent of Botswana population have access to health services and live within an average of 8 kilometers radius from the nearest health facility. This enables a high coverage and precision on maternal mortality data collection.

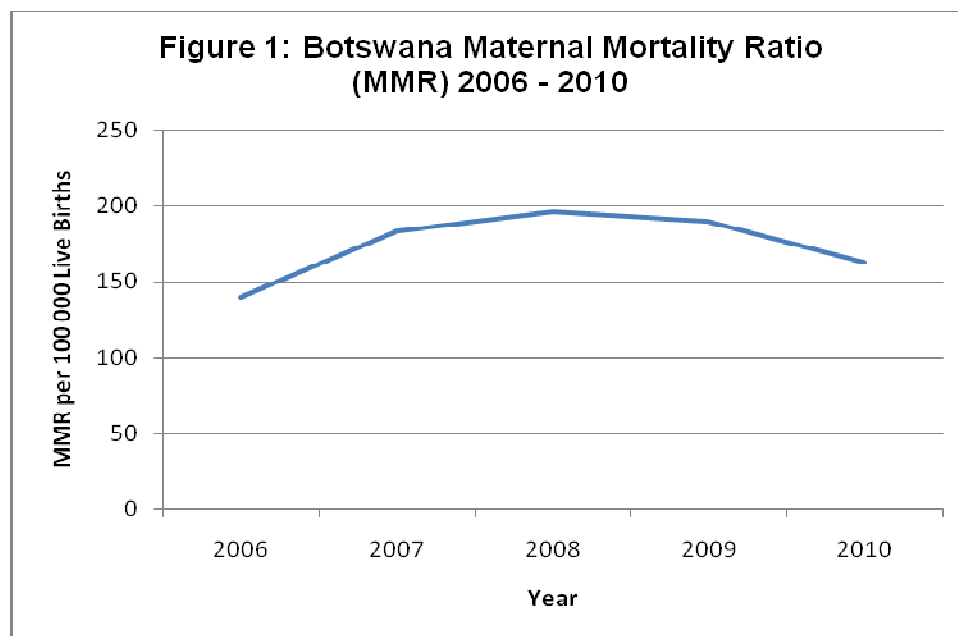
The Botswana Family Health Survey II of 2007 showed that in Botswana, over 99 percent of deliveries have been assisted by skilled birth attendants in cities/towns, 97.2% in urban villages and 90.2% in rural areas. This high level of birth attendance assistance by skilled health personnel allows for correct identification and classification of maternal death cases, as well as certification of causes of maternal deaths. The survey further indicates that over 95 % of all reported deliveries occur in health facilities.

Maternal Mortality Ratio Trends

Botswana Maternal Mortality Ratio is given in Table 1 and Figure 1 below; the ratios are for the years 2006 to 2010. The MMR has been declining since 2008 from 196, 190 and 163 per 100,000 live-births during 2008, 2009 and 2010 respectively.

Table 1: Botswana Maternal Mortality Ratio 2006 – 2010

	2006	2007	2008	2009	2010
Institutional Live births	44,050	44,452	44,212	45,145	49,853
Non-Institutional live-births	302	241	749	220	475
Total live-births	44,352	44,693	44,961	45,365	50,328
Maternal Deaths	62	82	88	86	82
Maternal Morality Ratio (per 100,000 live-births)	139.79	183.47	195.73	189.57	163.0



Causes of Maternal Mortality by Age

The table 2 and 4 shows that there was a total of 82 maternal deaths in Botswana in 2010. The data shows that there were 8 HIV-related maternal deaths in 2010 compared to 11 similar deaths in 2009 (table 2 below). The top cause of maternal mortality was disease of the respiratory system complicating pregnancy, child birth and puerperium with nine cases, followed by protozoal diseases with seven cases. The other leading cause of these deaths was eclampsia with 6 cases. There were 22 (26.8 %) and 20 (24.2 %) deaths reported among age groups 30-34 and 25-29 respectively, while age group 45 and above had the lowest deaths of only 1 person (1.2%).

Table 2: Summary of Causes of Maternal Deaths

Major causes of Maternal Deaths	2006		2007		2008		2009		2010	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
HIV-related & other viral diseases	19	30.6	8	9.8	9	10.2	11	12.8	8	9.8
Top Cause of Maternal Deaths (excluding HIV)	19	30.6	33	40.2	38	43.2	36	41.9	27	32.9
Other diseases	24	38.8	41	50.0	41	46.6	39	45.3	47	57.3
Total	62	100	82	100	88	100	86	100	82	100

** Note: Top-cause of Maternal Deaths refer to table 4*

Institutional Births

There were 49 853 total institutional birth in the country in 2010 as alluded to earlier in Table 1. Table 2 below shows that most births (57.3 percent) occurred in General Hospitals during 2010. The decrease of births occurrences during 2009 and 2010 from general hospitals to primary and clinics facilities respectively may be due to improved services at local level facilities and confidence of mothers to use primary hospitals and clinics for delivery services. The average length of stay of patients in maternity clinics was one day.

Place of Birth	2009		2010	
	Number	Percent	Number	Percent
General Hospital	26 956	59.5	28 840	57.3
Primary Hospital	10 279	22.7	11 476	22.8
Clinics	7 910	17.5	9 537	19.0
Non Institutional	220	0.5	475	1.0
Total live births	45 365		50 328	

Born before Arrival (BBA)

The born before arrival (BBA) refers to babies brought to the health facility after delivery. The BBA accounted for 4 percent of 45 365 births in 2009 compared to 4.7 percent of 50 328 births in 2010.

Non-Institutional Births

The non institutional births accounted for 0.5 percent of births in 2008 compared to one percent in 2010. Table 6 shows that in 2010, more non-institutional births were reported from three districts namely: - Gantsi, Bobirwa and Goodhope. The data shows that there were more male babies born outside institutions than females.

Technical Note

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

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, mobile stops) clustered in the 24 health districts. The 2007 study by Statistics Botswana showed that a total of 95% population is within 8km radius from a health facility.

Definition of Maternal Mortality Ratio (MMR)

As alluded to earlier, 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 to or aggravated by pregnancy or its management. The ratio is expressed as follows:

$$\frac{\text{Maternal deaths} *k}{\text{Live births}}$$

Where k=100,000.

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

MMR: 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).	
Maternal Death	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.
Direct Maternal Death	A death resulting from complications of pregnancy, labor or delivery or their management.
Indirect Maternal Death	A death in which pregnancy exacerbated a preexisting health problem.
Non-Maternal Death	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).
Maternal Mortality Ratio (Commonly abbreviated as MMR)	Number of maternal deaths during a given period per 100,000 live-births during the same time-period.
Maternal Mortality Rate (Commonly abbreviated as MM Rate)	Number of maternal deaths in a given period per 100,000 women of reproductive age during the same time period.



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Table 4. Causes of Maternal Mortality by age Group of Mother-2010

Diagnosis	< 15	15-19	20-24	25-29	30-34	35-39	40-44	45+	N/S	Total
B20.0 HIV disease resulting in mycobacterial infection	-	-	-	-	1	-	-	-	-	1
B20.6 HIV disease resulting in pneumocystis carinii pneumonia	-	-	1	-	-	-	-	-	-	1
B20.9 HIV disease resulting in unspecified infectious or parasitic	-	-	-	-	1	-	-	-	-	1
B24 Unspecified human immunodeficiency virus	-	-	-	3	1	1	-	-	-	5
C46.8 Kaposi's sarcoma of multiple organs	-	-	-	1	-	-	-	-	-	1
O00.1 Tubal pregnancy	-	-	-	-	-	1	-	-	-	1
O00.9 Ectopic pregnancy, unspecified	-	1	1	-	-	-	-	-	-	2
O06.4 Unspecified abortion incomplete, without complication	-	-	1	-	2	-	-	1	-	4
O06.9 Unspecified abortion complete or unspecified, without complication	-	-	-	1	-	1	-	-	-	2
O07.5 Other and unspecified failed attempted abortion, complicated by genital tract and pelvic infection	-	-	1	-	1	1	-	-	-	3
O08.0 Genital tract and pelvic infection following abortion and ectopic and molar pregnancy	-	-	1	-	1	-	-	-	-	2
O13 Gestational [pregnancy-induced] hypertension without significant proteinuria	-	-	-	-	1	-	-	-	-	1
O15.9 Eclampsia, unspecified as to time period	-	-	3	2	-	1	-	-	-	6
O24.9 Diabetes mellitus arising in pregnancy, unspecified	-	1	-	-	-	-	-	-	-	1
O45.0 Premature separation of placenta with coagulation defect	-	-	-	-	1	1	-	-	-	2
O72.1 Other immediate postpartum haemorrhage	-	1	-	2	-	1	-	-	-	4
O72.3 Postpartum coagulation defects	-	-	1	-	-	-	-	-	-	1
O75.1 Shock during or following labour and delivery	-	-	-	-	-	1	-	-	-	1
O85 Puerperal sepsis	-	-	1	2	-	-	-	-	-	3
O88.2 Obstetric blood-clot embolism	-	-	2	-	-	1	-	-	-	3
O89.9 Complication of anaesthesia during the puerperium, unspecified	-	-	1	-	-	-	-	-	-	1
O90.3 Cardiomyopathy in the puerperium	-	-	-	1	-	-	-	-	-	1
O98.0 Tuberculosis complicating pregnancy, childbirth and the puerperium	-	-	1	-	-	-	1	-	-	2
O98.5 Other viral diseases complicating pregnancy, childbirth and the puerperium	-	1	-	-	1	-	-	-	-	2
O98.6 Protozoal diseases complicating pregnancy, childbirth and puerperium	-	-	-	2	4	1	-	-	-	7
O98.8 Other maternal infections and parasitic diseases complicating pregnancy, childbirth and the puerperium	-	-	1	-	1	-	-	-	-	2
O99.0 Anaemia complicating pregnancy, childbirth and the puerperium	-	-	-	-	1	-	-	-	-	1
O99.3 Mental disorders and diseases of the nervous system complicating pregnancy, childbirth and the puerperium	-	-	-	2	-	1	-	-	-	3
O99.4 Diseases of the circulatory system complicating pregnancy, childbirth and puerperium	-	-	1	-	-	2	-	-	-	3
O99.5 Diseases of the respiratory system complicating pregnancy, childbirth and the puerperium	-	1	1	2	4	1	-	-	-	9
R69 Unknown and unspecified causes of morbidity	-	-	-	2	1	1	-	-	-	5
Z91.5 Personal histo	-	-	-	-	1	-	-	-	-	1
Grand Total	-	5	17	20	22	15	2	1		82

Table 5: Health Facilities by Patients Care Services - 2010

Facility	Number of Beds	Admissions	Discharges		Patient Days	Occupancy Rate(%)	Average L. of stay (Fays)	Turnover Rate	Newborns		Discharged		Total-Livebirths
			Alive	Dead					Number	BBA	Alive	Dead	
General Hospitals													
Maun Hospital	140	8,622	8,513	310	52,501	102.7	6.0	63.0	2,367	291	2,070	29	2,658
Delta Medical Centre	20	699	699	-	1,419	19.4	2.0	35.0	48	-	56	1	48
Sekgoma Hospital	376	8,504	7,740	385	52,074	37.9	6.4	21.6	2,142	48	2,165	34	2,190
Scottish Livingstone Hospital	284	9,061	8,358	426	50,131	48.4	5.7	30.9	2,725	113	2,742	46	2,838
Bokamoso Private Hospital	105	3,112	3,028	68	10,674	27.9	3.4	29.5	830	1	816	5	831
Jwaneng Mine Hospital	87	2,869	2,754	138	11,471	36.1	4.0	33.2	744	21	749	15	765
Seventh Day Adventist Hospital	169	4,839	4,597	198	24,150	39.2	5.0	28.4	1,637	35	1,676	27	1,672
Mahalapye Hospital	247	10,801	8,396	405	57,718	64.0	6.6	35.6	3,551	79	2,117	47	3,630
Deborah Retief Memorial Hospital	130	4,343	4,107	178	16,841	35.5	3.9	33.0	1,120	15	1,135	19	1,135
Orapa Hospital	106	1,998	1,994	17	9,554	24.7	4.8	19.0	510	16	513	6	526
Princes Marina Hospital	543	20,885	20,410	931	414,895	209.3	19.4	39.3	3,833*	11*	3,902*	1*	3,844*
Gaborone Private Hospital	84	3,572	4,051	72	10,502	34.3	2.5	49.1	814	-	806	28	814
Nyangabgwe Ref Hospital	554	24,708	24,125	1,440	271,226	134.1	10.6	46.1	3,404	10	3,459	-	3,414
Bamalete Lutheran Hospital	140	6,505	6,137	252	29,432	57.6	4.6	45.6	1,729	26	1,698	11	1,755
Athlone Hospital	163	4,730	4,484	255	20,467	34.4	4.3	29.1	1,163	33	1,171	28	1,196
Sbrana Mental Hospital	300	1,298	1,287	7	82,589	75.4	63.8	4.3	-	-	-	-	-
BCL Hospital	18	316	304	11	1,035	15.8	3.3	17.5	-	-	-	-	-
Selibe-Phikwe Hospital	66	5,624	5,402	206	22,199	92.2	4.0	85.0	1,497	27	1,482	40	1,524
Total	3,532	122,486	116,386	5,299	1,138,878	1088.9	160.3	645.2	28,114	726	26,557	337	28,840
Primary Hospitals													
Masunga Primary Hospital	43	2,228	2,095	134	9,533	60.7	4.3	51.8	541	11	541	8	552
Palapye Primary Hospital	50	4,081	3,844	227	12,817	70.2	3.1	81.4	1,534	71	1,592	20	1,605
Bobonong Primary Hospital	38	2,415	2,383	120	10,052	72.5	4.0	65.9	885	36	896	28	921
Mmadinare Primary Hospital	48	1,615	1,571	45	6,040	34.5	3.7	33.7	429	16	432	6	445
Thamaga Primary Hospital	39	2,357	2,265	96	6,467	45.4	2.7	60.5	824	25	843	6	849
Good Hope Primary Hospital	35	1,819	1,683	110	5,602	43.9	3.1	51.2	719	40	752	17	759
Ghanzi Primary Hospital	96	2,894	2,651	165	13,857	39.5	4.9	29.3	798	104	817	24	902
Sefhare Primary Hospital	50	2,316	2,208	112	8,468	46.4	3.7	46.4	794	41	816	14	835
Kasane Primary Hospital	29	1,687	1,635	43	7,283	68.8	4.3	57.9	360	15	561	9	375
Tsabong Primary Hospital	35	1,598	1,512	83	6,444	50.4	4.0	45.6	499	26	525	2	525
Tutume Primary Hospital	35	2,672	2,563	146	8,873	69.5	3.3	77.4	1,047	61	1,100	14	1,108
Rakops Primary Hospital	42	1,754	1,693	54	6,409	41.8	3.7	41.6	270	28	295	2	298
Lethakane Primary Hospital	25	2,496	2,419	129	11,297	123.8	4.4	101.9	721	93	787	18	814
Gumare Primary Hospital	34	2,129	2,017	142	9,465	76.3	4.4	63.5	691	49	706	28	740
Thebe-Phatshwa Primary Hospital	42	126	122	-	576	3.8	4.7	2.9	5	4	9	-	9
Hukuntsi Primary Hospital	57	1,290	1,206	74	6,549	31.5	5.1	22.5	342	16	348	9	358
Gweta Primary Hospital	50	1,479	1,391	78	7,208	39.5	4.9	29.4	359	22	374	2	381
Total	748	34,956	33,258	1,758	136,940	918.5	68.3	862.9	10818	658	11394	207	11,476
All Clinics	733	16,493	16,479	7	15,791	5.9	1	22.5	8,563	974	8,048	115	9,537
Grand Total	5,013	173,935	166,123	7,064	1,291,609	6	2,013	230	47,495	2,358	45,999	659	49,853

Note: * Botswana Maternal Mortality figures for 2009 and 2010 are provisional

Table 6**Non - institutional livebirths by district, age group of mother and sex of infant-2010**

District	<15		15-19		20-24		25-29		30-34		35-39		40-44		45-49		50+		N/S		Total		Grand	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	Total	
Ngamiland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
North East	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Serowe/Palapye	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bobirwa	-	-	-	-	3	11	2	8	4	5	2	2	1	1	-	-	-	-	2	3	14	30	44	
Kweneng East	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Southern	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gantsi	2	2	-	18	32	36	25	62	12	25	6	13	-	55	1	1	55	-	6	14	139	226	365	
Mahalapye	-	-	-	4	1	1	2	5	1	1	-	5	-	-	-	-	-	-	-	-	4	16	20	
Kgatleng	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kgalagadi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	
Tutume	-	-	1	1	1	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2	4	6	
Boteti	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Okavango	-	-	-	-	1	1	1	1	-	-	-	-	1	1	-	-	-	-	-	-	3	3	6	
Goodhope	-	2	2	1	1	2	7	2	8	-	5	-	2	-	-	-	-	-	-	-	25	7	32	
TOTAL	2	4	3	24	41	52	37	80	25	31	13	20	4	57	1	1	55	-	8	17	189	286	475	