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A Review of Underlying Causes of Maternal Deaths in Benue North Central Nigeria

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Abstract:

Most maternal death reviews are on impact assessment rather than the underlying factors. Maternal death review that goes beyond the number has not been widely studied in Nigeria despite the high contribution of underlying factors to maternal deaths in the country. To determine the underlying causes of maternal death in the facility. This was a comprehensive facility based maternal death review at Federal Medical Centre Makurdi from 1st January to 31st December 2012. Factors surrounding each maternal death were analyzed prospectively to learn a lesson from each death by exploring gaps at the levels of the hospital, patient and the community. The MMR was 1381/100000 live births. Hospital factors were implicated in 39.3% and they were predominantly lack of ICU 19.0%, poor management of the referral chain 19.0% inability to assess complications fully 15.5%, laboratories challenges 11.9% and lack of obstetric skills (inexperience) 8.3%. Patient's factor occurred in 32.1% and they were non booking (34.6%), non use of family planning (26.9%) and decision delays (32.7%). The Community factors occurred in 28.6% and they included transportation problem (28.6%), socio-cultural factors (28.6%), gender inequality (16.7%), inhibitory abortion laws 11.9% and illiteracy 9.5%. Maternal mortality was high in the facility because of the complex interaction of underlying factors with obstetric complications.

Key Words: Maternal mortality review, underlying factors, Benue state

1. Introduction:

Globally MMR has been declining progressively over the past 2 decades with an average rate of 3.1% per annum. Grossly the decline is from 400/100000 in 1990 to about 210/100000 in 2010 which is about 543000 to 287000 or a decline of 47%.This though positive is short of the 5.5% expected for the attainment of the MDGs. The decline is about 50% in Nigeria where the current MMR is 545/100000. Prompt access to skilled birth attendant had been hugely responsible for this decline (1,2,3,4).

Maternal deaths can be due to medical and underlying causes. The medical causes are mainly due to direct obstetric complications such as obstetric hemorrhage, abortions, preeclampsia/ eclampsia, obstructed labor, puerperal sepsis etc. the underlying causes contribute to maternal deaths by causing delays in accessing care. These can be due to the patient's factor, the community and the health facility. Assessing the numbers of maternal deaths accurately had remained a problem because of unavailability of data especially in our environment where most women die at home and on transit. Poor record keeping and non notification of maternal death has made it impossible to access data relating to maternal deaths.

In Nigeria, most studies are facility based where data are relatively available and to some extent reproducible. A ten year retrospective study of maternal mortality in Sokoto Nigeria from 1990 to 1999 gave a mortality Ratio of 2151/100000 live births with a mean maternal age of 27 years (5). Ujah etal in a retrospective study from January 1st 1985 to December 31st, 2001 gave a maternal mortality ratio of 740/100000 live birth (range of 450 to 1010) (6). Other studies in the country gave a MMR of 1700 in Sagamu (7), 518 in Benin (8) and 430 at Maiduguri (9).

This study although facility based was amongst very few prospective studies in the country. Aside from providing data for impact assessment such as

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MMR, it also tries to provide some of the answers to many factors within and outside the facility believed to be playing prominent role in the deaths. The patient's factor assessed included transportation problems, unsafe harmful traditional and cultural practices, use of traditional medications, refusal of treatment, delays in decision making. Others were poor health seeking behaviors evidenced by pattern of booking, delivery by skilled birth attendant, recognition and reporting of warning signs of pregnancies, refusal or non compliance with medical advice and family planning.

The Community and Traditional Birth Attendant (TBA) factors included illiteracy, decision making in health matters, health care financing, and socio cultural factors. It also included the roles of traditional birth attendant where applicable. These included failure to recognize danger signs, failure to accept limitations and also harmful traditional practices and delays. The hospital factors assess issues like health system failure at each point of service, timely intervention to patients, communication breakdown, incorrect diagnosis and mismanagement. Others were availability of supply, quality of laboratory, power, intensive care unit, manpower, resuscitation facilities and lack of knowledge in obstetrics life saving skills.

2. Methodology

Study site and design

This was a facility based maternal death review in the Obstetrics and Gynecology Department of the Federal Medical Centre Makurdi from 1st January to 31st December 2012. All patients admitted to the wards were routinely clerked and vital data obtained. Several factors were assessed from patients and their relative at presentation. Whenever there was a maternal death, effort was made to establish the cause. A facility based Maternal Death Review (MDR) Form was filled for each patient. Each case of mortality or severe morbidity was reviewed daily in the departmental clinical meetings. This was usually to learn a lesson from each case in a non judgmental manner.

3. Results

There were 2100 live births and 29 maternal mortality giving a MMR of 1381/100000 live births. The direct obstetric complications were involved in 22(75.9%) while the indirect obstetrics complication was involved in 7(24.1%). Unsafe Abortion was the leading cause of mortality 5(17.2%) followed by PPH 4(13.8%), anaesthetic/surgical complication 4(13.8%), preeclampsia/eclampsia 3(10.3%), Puerperal sepsis 3(10.3%), Malaria 3(10.3%), sickle cell anaemic patients with obstructed labour who developed Vaso occlusive syndrome after abdominal delivery 2(6.9%), ruptured ectopic pregnancy 2(6.9%). Others were acute collapse, pulmonary TB and Gestational trophoblastic neoplasia with 1(3.4%) death each. Eighteen (62.1%) of the patients were admitted in critical condition, 9(31.0%) were stable on admission while 2(6.9%) died on arrival. The average hospital stay was 4 days and 8 days post delivery (Table 1 and 2).

Table 1: Causes of mortality

Cause of death	Numbers	Percentage
Unsafe abortion/ectopic #	7	24.1
Primary postpartum haemorrhage	4	13.8
Anaesthetic/surgical complications	4	13.8
Preeclampsia/Eclampsia	3	10.3
Puerperal sepsis	3	10.3
Malaria	3	10.3
Sickle cell anaemia	2	6.9
Others	3	10.3
Total	29	100.0

#Unsafe abortion accounted for 5(17.2%) of the mortalities

Table 2: Condition of patient at presentation

Condition	Numbers	Percentage
Stable on admission	9	31.0
Critical condition	18	62.1
Dead on arrival	2	6.9
Total	29	100

In the underlying factors assessed, deaths due to heath care delivery failure was the leading cause accounting for 39.3%, this was followed by patient factors 32.1% and Community factors in 28.6. The breakdowns of the findings are as summarized in tables 3, 4, 5 and 6.

The average maternal age was 27.1years with the youngest being 17 years and the oldest 38years. The average antenatal visit for the booked patients was 5 and the average parity was 2. The women were predominantly literate with 15(51.7%) having secondary education, 6(20.7%) primary education, 4(13.8%) tertiary education and 4(13.8%) had no formal education. Most of the women were from the low socio economic class with 22 (75.9%) being full time house wives sharing in their husband's trade. Five (17.2%) were civil servants while 2 (6.9%) were business ladies.

Table 3: Underlying factors implicated in the mortality

Underlying Factors	yes	Percentage of all mortality	Percentage of all factors (n =56)
Hospital factor	22	75,9%	39.3%
Patients factors	18	62.1%	32.1%
Community factors	16	55.2%	28.6%
Total	56 #		100

#Data were nominal and collected as yes or no for each death. Several factors played a role for each death

Table 4: Health facility factors

Contributory factors	Positive respondents	Total mortality	Percentage Of total mortality	Percentage of positive respondent (n=84)
Definitive diagnosis of complication unknown	13	29	44.8%	15.5
Intensive care indicated but could not be used	16	29	55.2%	19.0
Laboratory delays and inadequacy	10	29	34.5%	11.9
Referral and communication problems between facilities	16	29	55.2%	19.0
Anesthetics /surgical complications	4	29	13.8%	4.8
Inexperience Skilled Birth Attendants	7	29	24.1%	8.3
Industrial actions	1	29	3.4%	1.2
Total	84	29		100

Table 5: Patients factors

Contributory factors	Positive respondents	Total mortality	Percentage of all mortality	Percentage of patients factor(n=52)
Non Booking	18	29	62.1%	34.6
Teenage pregnancies(≤ 18yrs)	3	29	10.3	5.8
Delays in decision to seek care	17	29	58.6	32.7
Family planning not utilized	14	29	48.3	26.9
	52	29		100

Table 6: Community factors

Contributory factors	Positive respondents	Total mortality	Percentage of all deaths	Percentage of common factors(n=42)
Illiteracy	4	29	13.8%	9.5
Gender inequality in health decisions	7	29	24.1%	16.7
Socio-cultural/large family, early marriage	12	29	41.4%	28.6
Inhibiting Abortion law	5	29	17.2%	11.9
Transport problems	12	29	41.4%	28.6
TBA	2	29	6.9%	4.8
Total	42	29		100

4. Discussion

The maternal mortality ratio of 1381/100000 live births in the facility was about 3 times the national average of 545 and about 7 times the global average of 210/100,000 live births (3,4). The MMR though high, was fairly comparable to other tertiary hospitals in the country.(5,6.7,8,9) It was also comparable to a similar facility based study in Ghana at 1100/100000 (10) but was much higher than 534/100000 in Tanzania (11), 519/100000 in India (12) and 733/100000 in Papua New Guinea (13).

The leading global causes of death among pregnant women featured greatly in the study with direct obstetric complication accounting for over two third of cases. Unsafe abortion was the commonest cause of death followed by PPH, anesthetic complications, preeclampsia and puerperal sepsis. Unsafe abortion alone accounted for 17.2% of the deaths. With ectopic pregnancies they accounted for 24.1%. This ratio was greater than the global average of 13% where it was considered that the rate of unsafe abortion was increasing but mortality was decreasing (14). None use of family planning, stigmatization, financial problems and restrictive abortion laws are major factors in abortion related deaths in the country and they featured greatly in the study.

The 29 maternal deaths were potentially preventable but for their interaction with several underlying factors within the patients, health facility and the community. The commonest factor was the health facility (39.3%) followed by the patient (32.1%) and then the community (28.6%). These factors created unnecessary delays in accessing care. These delays have been known for many years as major causes of obstetric morbidity and mortality and they were the major factors in the death of these women (15). The major gaps in the health facility were referral logistic in 19% and inability to access the intensive care unit (ICU) in 19% due to cost or availability. About 62.1% were admitted in critical condition at which time assessing the patient fully in order to make clinical decisions became difficult. The inability of the laboratory to give speedy results further compounded the problem as many procedures were not automated and power supply was erratic. The ability of the patient to foot medical bills after spending so much at home and the referring facility became another challenge as most of the women were not on the National Health Insurance scheme (NHIS). The plan by the government to extend the health insurance to none civil servant would hopefully mitigate this. The poor access to ambulance compelled many patients to resort to public transport. The decision on when and where to access care was usually made either by the family head or the husband. When these people are not around at the time of complications, the patient has to wait. Similar findings were reported by Kongnyuy et al in Malawi where about two third of the women were referred from other facility with 79.1% critically ill on admission. Major health worker factors were also inadequate resuscitation (69.8%), lack of obstetrics life saving skills (60.5%), inadequate monitoring (55.8%), incomplete initial assessment (46.5%) and delays in starting treatment (46.5%). Lack of blood transfusion and other administrative factors were involved in 20.9% as well as low manpower and poor data collection (16) in Haiti among 12 deaths explored 8 deaths were due to delay in decision to seek care with transportation problem accounting for 2 deaths and inadequate care at the health facility accounting for 7. Multiple factors were seen in 3. Improving the capability of health facility to deliver quality care was an important aspect of maternal death reduction. This would increase the confidence of women on the health care (17).

Non booking, low contraceptive prevalence, early marriage, desire for large family exposed most of the women to pregnancy and its attendant risk in an environment where the life time risk of dying in pregnancy was about 9% (Approximately 1 in 10). (18). These were further findings in the patient and community factors. The high ANC coverage of 90.0% might have contributed to the low MMR in Malaysia a developing country where the MMR is 29/100000 (19). If most of these pregnancies were booked, the picture may be similar.

Despite the similarities in obstetric complication in between countries, a woman in our environment is more likely to die than a woman from other setting as a result of the interaction of underlying factors with the complications. The future of MMR depends tremendously on the extent to which these underlying factors are handled. If the factors are not adequately addressed, the MMR will continue in the present rate and further threaten the Millennium Declaration.

The study was limited in scope and coverage as many Nigerian women deliver and die at home or transit with inaccessible data. Because it was carried out in the hospital, the true socio cultural factors surrounding the patient were only reported and could not be assessed first hand. Most patient presents in a state where history taking had to be taken from the relatives who do not know much or are not willing to divulge much about the patient. Post mortem examination was a rarity in the country including the facility even in cases like acute collapse making the diagnosis of the causes of deaths to be clinical rather than pathological.

5. Conclusion

Health care financing needed to be increased in order to modernize most of the equipments and infrastructures. Provision of automated laboratory equipments and increase in power supply would make the management of complicated cases much easier. The Abuja Declaration on health financing needed to be implemented urgently.

The referral system needed to be strengthened and supported with ambulance and a policy of subsidizing ANC, delivery cost and the ICU. Capacity building in terms of training and retraining will help in preparing health workers on the ability to triage and manage complication more effectively. Increase funding for the recently initiated Mid Wives Service Scheme {MSS) as well as Redistribution of existing manpower to enable easy access to skilled birth attendants will minimize the problems of poor knowledge of obstetric skill in peripheral hospitals. Prompt resolution of trade dispute among health practitioner is very important in the country where trade dispute is recurrent. Some patients in critical care are often caught up in the crisis and barely escape. Encouraging the use of contraceptive and ANC services will prevent the greatest killers in the study which was unsafe abortion.

The introduction of Subsidy Reinvestment program (SURE-PATH) and NHIS are laudable efforts by the Federal Government which if well managed and expanded can reduce the financial burden of health care among women.

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