MATERNAL MORTALITY AT THE UNIVERSITY OF NIGERIA TEACHING HOSPITAL, ENUGU, 1999-2003

H. E. ONAH and U.A. UMEH

ABSTRACT

In order to assess the current maternal mortality ratio (MMR) at the University of Nigeria Teaching Hospital, Enugu, Nigeria, a retrospective analysis of maternal deaths for the years 1999 - 2003 was carried out. Data abstracted from the case notes included the socio-demographic characteristics of the women who died; their referral sources, type of delay (if any), medical causes of death and whether each death could have been prevented by appropriate interventions.

Compared to the 1980s, there was a decline in the yearly mean number of deliveries with an increased proportion of unbooked emergencies. During the 5-year period, there were 88 maternal deaths and 3854 live births giving a MMR of 2283 per 100,000 live births. MMR was much higher in this study than in two previous reviews from the same hospital (2283 per 100,000 in the current study compared to 1406 per 100, 000 for the period 1991 - 2000 and 270 per 100,000 for the period 1976 - 1985 respectively). The leading causes of maternal death were obstetric haemorrhage, sepsis, prolonged obstructed labour/ruptured uterus and pre-eclampsia/eclampsia. Most of the deaths were due to obstetric emergencies referred from private hospitals and maternity homes. Referral and institutional delays were the main causes of delay in tackling obstetric emergencies within the 5 year period.

It was concluded that the MMR at the UNTH, Enugu has remained high due to a combination of factors. Reducing maternal mortality ratio in the hospital would involve provision of functional blood banking services and training of private health care providers and those in government hospitals and primary health centers on emergency obstetric care and early referral. Other measures include subsidized health care for the benefit of poor patients, provision of necessary equipment and a drug-revolving fund system.

KEYWORDS: Maternal mortality ratio, trends, Enugu, Nigeria

INTRODUCTION

The Safe Motherhood Initiative (SMI) was launched in Nairobi, Kenya, in 1987 with the goal of reducing maternal mortality ratio (MMR) globally by half by the year 2000 (Rosenfield 1997). Available evidence shows that, instead of a reduction, there has rather been an increase in the number of maternal deaths in developing countries (Kasonde et al 1998, Okaro et al 2001, Olatunji et al 2001, Aboyeji 1998). Most of the maternal deaths are due to obstetric emergencies including haemorrhage, sepsis, obstructed labour and hypertensive disorders (Okaro et al 2001, Aboyeji 1998). Proper management of these conditions will reduce the risk of maternal deaths from them. However, this will entail that health workers and communities develop the necessary capacity to respond appropriately to the management of obstetric emergencies.

A comparison of the MMR at the University of Nigeria Teaching Hospital, Enugu, Nigeria before and after the launching of the SMI showed a 600% increase in MMR after the launching of the initiative when compared to the period before the launching (Okaro et al 2001). This was attributed to institutional delays in the handling obstetric emergencies.

A periodic audit of the MMR in any institution helps to highlight trends and need intervention. The objectives of the present study were to study the current maternal mortality situation at the UNTH Enugu and to compare the findings with the previous ones done in the same hospital with the aim of recommending interventional measures to reduce the number of maternal deaths.

MATERIALS AND METHODS

The study reviewed maternal deaths at the University of Nigeria Teaching Hospital, Enugu for the 5-year period 1999 - 2003 and compared the findings with two earlier reviews involving the periods 1976 - 1985 and 1991 - 2000 respectively. The study was carried out in two steps. First the maternal mortality ratio in the hospital for the period of study was established using records from the hospital delivery, theatre and ward registers as well as patients' case notes obtained from the hospital's medical records department. This was followed by a retrospective detailed study of the maternal deaths to establish the socio-demographic characteristics of the women who died; their referral sources, type of delay (if any), medical causes of death and whether, in the opinion of the reviewer, the maternal death could have been prevented by early and appropriate intervention. The data were analyzed by simple proportions and mean ± standard deviation, as appropriate, using SPSS for MS Windows Version 10.0.

Types of delay encountered in the management of the patients and used in this study referred to the delays as defined by Deborah Maine et al (1997). Type 1 delay is the delay in a woman deciding to seek health care when she experiences complications. Type 2-delay refers to the delay in reaching appropriate care due to difficulty in transportation, when a woman has taken the decision to seek health care. Type 3-delay refers to the delay in receiving care at the health facilities. This includes delays in referral of women from lower levels of care to higher levels of care when women experience serious

H. E. Onah, Department of Obstetrics and Gynaecology, University of Nigeria Teaching Hospital, Enugu, Nigeria
U. A. Umeh, Department of Obstetrics and Gynaecology, University of Nigeria Teaching Hospital, Enugu, Nigeria

complications of pregnancy (Madunagu et al 2004). Recently, Type 4 delay has been proposed to refer to a situation, whereby a patient with an obstetric emergency has reached a health facility that can handle her emergency, but then there is a delay in the woman giving consent for the necessary definitive treatment to be given. Type 4-delay has not been generally accepted as a distinct entity and was not considered in this paper.

RESULTS

Within the 5-year period (1999 – 2003), there were 88 deaths and 3,854 live births at the UNTH, Enugu, giving a MMR of 2,283 per 100,000 live births. The maternal deaths for the 5-year period are summarized in Table 1. The highest MMR of 2,634 per 100,000 was recorded in the year 2000 while the lowest number was recorded in the year 2002 with a MMR of 1745 per 100,000. The case records of 61 (69.3%) out of the 88 maternal deaths were retrieved and these formed the basis for further analysis of the individual maternal deaths.

The mean age of the patients was 30.4 ± 6.3 (range 15 – 43) years. The educational level of the patients is shown in Table 2. It was noticed that the educational level of 52.5% of the patients was not recorded. With respect to marital status, 57 (93.4%) of the patients were married, 3 (4.9%) were single while the marital status of

one patient was not stated. Thirty-two (52.5%) of the 61 maternal deaths were unemployed, 22 (36.1%) were employed, 3 (4.9%) were students while the occupation of 4 (6.6%) was not recorded.

Out of the 61 cases studied, 42 (68.9%) patients received antenatal care while 19 (31.1%) did not. Twenty-eight (66.7%) of the 42 women who received antenatal care did so in a primary or secondary health facility, 13 (30.9%) received antenatal care at the UNTH, Enugu while one (2.4%) received antenatal care in a church-based clinic.

Three (4.9%) of the maternal deaths were not in labour at the time of admission, 10 (16.4%) were admitted in labour while 45 (73.8%) were referred from elsewhere. Whether the other three patients were in labour or not was not stated. For the 45 patients who were referred from elsewhere, Table 3 shows the distribution of the referral sources. The three most frequent referral sources were private hospitals for 25 (55.6%) of the 45 cases, private nurse/midwife for 6 (13.3%) cases and traditional birth attendants for 6 (13.3%) cases. In 29 (47.5%) out of the 61 women, there was no delay in management while in 32 (52.5%), there was delay in instituting management. Type 3 delay was the commonest type of delay occurring in 20 (62.6%) of the 32 cases who experienced delay.

TABLE 1:Maternal mortality ratios at the UNTH Enugu (1999 – 2003)

Year	Live births	Maternal Deaths	Maternal mortality ratio/100,000
1999	695	15	2158
2000	873	23	2634
2001	917	23	2508
2002	573	10	1745
2003	796	17	2135
Total	3854	88	2283

TABLE 2: Maternal deaths at the UNTH: Patients' level of education

Level of Education	No	Percent (%)
None	5	8.2
Primary	9	14.8
Secondary	10	16.4
Tertiary	5	8.2
Not stated	32	52.5
Total	61	100.0

TABLE 3: The referral sources of the patients who were referred from elsewhere

Referral Source	No	Percent (%)
Public primary or secondary health centre	2	4.4
Private hospital	25	55.6
Private nurse/midwife	6	13.3
Traditional birth attendant	6	13.3
Health centre	5	11.1
Not indicated	1	2.2
Total	45	100.0

TABLE 4: The specific nature of type 3 delays

Nature of delay	No	Percent (%)
Referral delay*	9	45.0
Delay in getting blood for transfusion	5	25.0
Inability of the patient to provide drugs	2	10.0
Lack of linen in theatre	1	5.0
Lack of Oxygen	0	0.0
Inability to pay hospital fees	1	5.0
Referral delay due to apathy on the part of the relations	1	5.0
Delay in anaesthetic review	1	5.0
Total	20	100.0

* Delays in referral from lower levels of care

TABLE 5: The specific medical causes of death among the 61 women

Medical cause of death	No	Percent (%)
Obstetric haemorrhage	17	19.7
Sepsis	10	16.4
Prolonged obstructed labour/ruptured uterus	9	14.8
Pre-eclampsia/Eclampsia	9	14.8
Others*	22	36.1
Total	61	100.0

Others*
Complicated abortion – 3, Hepatitis – 3, Acquired Immune Deficiency Syndrome – 2, Anaemia in pregnancy – 2, Diabetes mellitus in pregnancy – 2, Cardiac failure – 1, Liver malignancy – 1, Renal failure – 1, Hepatic failure – 1, Thrombo-embolism – 1, Malaria in pregnancy – 1, Cardio-pulmonary collapse – 1, Lobar Pneumonia – 1, Thyrotoxicosis – 1.

Types 1& 2 delays occurred in 6 (18.7%) and 6 (18.7%) respectively. A further analysis of the specific natures of the 20 cases of type 3 delay is shown in Table 4. Nine (45.0%) out of the 20 cases of Type 3 delay were due to referral delay. Delay in getting blood for transfusion accounted for 5 (25.0%) of the cases of type 3 delay. The specific medical courses of maternal death in these women are shown in Table 5. The four leading causes of maternal deaths were obstetric haemorrhage, sepsis, prolonged obstructed labour/ruptured uterus and pre-eclampsia/eclampsia, the four accounting for 65.7% of the maternal deaths. Overall, 48 (78.7%) of the maternal deaths were adjudged preventable while 13 (21.3%) were considered not preventable.

DISCUSSION

The maternal mortality ratio in this study (2283/100,000) was much higher than the ones recorded previously at UNTH - 270 per 100,000 for the period 1976 - 1985 (Chukudebelu et al 1988) and 1406 per 100,000 births for the period 1991-2000 (Okaro et al 2001). It is also over three times higher than the recently published Nigerian national MMR of 704/100,000 (Fatusi 2004), which is still high when compared to the figures for developed countries of 5 – 12 maternal deaths per 100,000 live births (Whitfield 1995). Several factors may be responsible for the increase. Firstly, over the years, there has been a steady decline in the total number of deliveries at UNTH from a yearly mean of 4736 in the 1980s (Chukudebelu et al 1988) through 1295 in the 1990s (Okaro et al 2001) to the 771 recorded in the present study. Secondly, concurrent with the declining number of total deliveries was an increase in the proportion of unbooked women admitted with obstetric emergencies to the hospital. In the current study they accounted for approximately three-quarters of the maternal deaths. As in several other reports (Olatunji et al 2001, Chukudebelu et al 1995, Onah et al 2005), such unbooked patients are more likely to die than their booked counterparts especially when considered against the increasing decision-intervention intervals in obstetric emergencies at the UNTH from 2 hours in the 1980s (Chukudebelu et al 1988) through 6 hours in the 1990s (Okaro et al 2001) to the 8½ hours during the period of study (Onah et al 2005).

Thirdly, it is these institutional delays and high user fees, which dissuade otherwise healthy pregnant women from coming to deliver at the UNTH in the first instance, especially when there are alternative health institutions (mainly private-owned) that offer quicker and cheaper services. That user fees were higher at the UNTH than in most private hospitals in Enugu is supported by the fact that most of the women who died were unemployed, were poorly educated and were referred from private health establishments. Unfortunately, many of these private health institutions lack the capacity to handle obstetric emergencies and eventually refer them late to the UNTH where institutional delays further add to an already bad situation. Thus one key to reducing the high MMR at the UNTH is first to retrain private health care providers on emergency obstetric care particularly partographic monitoring of labour so that they can make early referrals where necessary. A previous study showed low usage rate of this instrument amongst health care personnel in Enugu State of Nigeria

(Umezulike et al 1999). Another key to reducing the high MMR at the UNTH is to minimize to acceptable levels the decision-intervention interval in obstetric emergencies as has been suggested in a previous study (Onah et al 2005). Considering the major causes of maternal mortality documented in this study, functional blood banking services and provision of consumables as well as a drug revolving fund will help in reducing decision-intervention interval in obstetric emergencies at the UNTH.

The fact that about two-thirds of the maternal deaths received antenatal care confirms the inability of antenatal care to predict obstetric emergencies. Therefore antenatal care alone without attention to emergency obstetric care is unlikely to reduce the high maternal mortality in developing countries including Nigeria (Fatusi 2004, Thaddeus et al 1997).

We conclude that the maternal mortality ratio at the UNTH, Enugu has remained high due to a combination of factors. The leading causes of death include obstetric haemorrhage, sepsis, prolonged obstructed labour/ruptured uterus and pre-eclampsia/eclampsia. Most of the deaths are due to obstetric emergencies referred from private hospitals and maternity homes. Reducing maternal mortality ratio in the hospital would involve provision of functional blood banking services and training of private health care providers and those in government hospitals and primary health centers on emergency obstetric care and early referral. Other measures include subsidized health care for the benefit of poor patients, provision of necessary equipment and a drug-revolving fund system.

REFERENCES

Aboyeji, A. P., 1998. Trends in Maternal Mortality in Ilorin, Nigeria. Trop. J. Obstet. Gynaecol. 15: 15 – 20.

Chukudebelu, W.O., Ozumba, B.C., 1988. Maternal mortality at the University of Nigeria Teaching Hospital, Enugu: a ten year survey. Trop. J. Obstet. Gynaecol. Special Ed 1:23 – 26.

Chukudebelu, W. O., 1995. Maternal Mortality. Trop. J. Obstet. Gynaecol. 12 Suppl. 1: 1 – 3.

Fatusi, A., 2004. Maternal Mortality situation and determinants in Nigeria: A review commissioned by the Federal Ministry of Health Abuja, Nigeria, pp 1 – 41.

Kasonde, J. M., Kama I., 1998. Safe Motherhood; the message from Colombo. Int. J. Gynaecol. Obstet. 65: 103 – 105.

Madunagu B., Okonofua F., Adeyemi N., Bello M., Odeku M., Mairiga A. et al., 2004. Training Curriculum for Leadership in Safe Motherhood. Benin City, Nigeria: Nigerian Partnership for Safe Motherhood, p 28.

Maine D., Akalin M.Z., Ward V.M., Kamara A., 1997. The design and evaluation of maternal mortality programs. New York: The Centre for Population and Family Health, School of Public Health, Columbia University.

Okaro J. M., Umezulike A. C., Onah H. E., Chukwuali L. I., Ezugwu F. O., Nweke P. C., 2001. Maternal Mortality at the University of Nigeria Teaching Hospital, Enugu before and after Kenya. Afr. J. Reprod Health 5: 90 – 97.

Olatunji A. O., Sule-Odu A. O., 2001. Maternal Mortality at Sagamu, Nigeria – a ten-year review (1988 – 1997). The Nig. Postgrad. Med. J. 8: 219 – 224.

Onah H. E., Ibeziako N., Umezulike A. C., Effetie E. R., Ogbuokiri C. M., 2005. Decision-delivery interval and perinatal outcome in emergency caesarean section. J. Obstet. Gynaecol. 25 (4): 342 – 346.

Rosenfield A., 1997. The history of Safe Motherhood Initiative. Int. J. Gynecol. Obstet. Supplement 2: 57 – 59.

Thaddeus S., Maine D., 1997. Too far to work: Maternal Mortality in context. Soc. Sci. Med. 38: 1091 – 1110.

Umezulike A. C., Onah H. E., Okaro J. M., 1999. Use of partograph among medical personnel in Enugu, Nigeria. Int. J. Gynecol. Obstet. 65: 205 – 207.

Whitfield C.R., 1995. Vital statistics and derived information for obstetricians. In: Whitfield C R (ed). Dewhurst's Textbook of Obstetrics and Gynaecology for Postgraduates, 5th edition. Oxford: Blackwell science, pp 494 – 509.