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B. Chigbu, MBBS, FWACS, Lecturer, S. Onwere, MBChB,MMed (Obst & Gynae), Senior Lecturer, C.I. Kamanu, MBChB, FWACS, Senior Lecturer, C. Aluka, MBBS, FW ACS, FRCOG, Senior Lecturer, O. Okoro, MBBS, FWACS, FRCOG, Senior Lecturer and E. Adibe, MBBS, Registrar, Department of Obstetrics and Gynaecology, Abia State University Teaching Hospital, P.M.B. 7004, Aba, Abia State, Nigeria

Request for reprints to: Dr. B. Chigbu, Department of Obstetrics and Gynaecology, Abia State University Teaching Hospital, P.M.B. 7004, Aba, Abia State, Nigeria

PREGNANCY OUTCOME IN BOOKED AND UNBOOKED MOTHERS IN SOUTH EASTERN NIGERIA

B. CHIGBU, S. ONWERE, C.I. KAMANU, C. ALUKA, O. OKORO and E. ADIBE

ABSTRACT

Background: **In order for individual health institutions in Nigeria to contribute towards the achievement of the Millennium Development Goals (MDG) with regards to maternal health, there is need for research on the local causes of and factors influencing adverse maternal outcomes. This would enable care providers and policy makers appreciate the burden of the problem and know where to focus as they distribute resources.**

Objectives: **To compare the socio-demographical characteristics, obstetrical complications and foetal outcome in booked verses unbooked mothers who delivered at this hospital.**

Design: **A hospital based retrospective study.**

Setting: **The Abia State University Teaching Hospital (ABSUTH), Aba in South Eastern Nigeria.**

Subjects: **Three thousand, seven hundred and thirty four mothers who delivered in the hospital between 1st January 2005 and 31st December 2007.**

Results: **Unbooked mothers constituted 17.0% of the 3734 deliveries in the studied period. Compared to booked mothers, unbooked mothers were younger in age (28.2 ± 5.80 vs. 29.3 ± 6.04; p < 0.001) and had a lower educational status (P <0.001). Majority of the unbooked were of lower social class; p<0.001. Unbooked mothers had a statistically significant higher incidence of pre-eclampsia/eclampsia (OR 3.88; 95%CI 2.61-5.77; p< 0.001) and were 13 times more likely to die in the hospital than booked patients (OR: 13.54; 95%CI: 6.89-27.03); p <0.0001). Unbooked mothers were about half as likely to deliver by spontaneous vaginal delivery compared to booked mothers (OR 0.64; 95%CI 0.55-0.73; P< 0.001) and eight times more likely to be delivered by emergency laparotomy due to uterine rupture than booked mothers (OR 8.80; 95%CI 3.84-20.55; P < 0.001). Unbooked mothers were nine times more likely to have babies with birth asphyxia.**

Conclusion: **The study showed a positive correlation between lack of proper antenatal care and adverse pregnancy outcome with poorer outcomes in unbooked than booked patients. Improving the availability and accessibility of quality antenatal and delivery care services in our environment will improve pregnancy outcome.**

INTRODUCTION

Millennium Development Goal 5 which is improving maternal health by reducing maternal mortality ratio by 75% between 1990 and 2015 is proving hard to reach in many African countries despite the launch over 21 years ago of the Safe Motherhood Initiative (1). Half of maternal deaths worldwide in 2005 were in just five countries, three of which are in sub-Saharan Africa; namely Nigeria, Democratic Republic of Congo and Ethiopia (2). In Nigeria, estimates of maternal mortality exceeds 1000 per 100, 000 live births, with evidence of a rising trend over the last decade (3). Such high maternal mortality rates are indicators of the poor state of health services in the country. A Nigerian government document acknowledges that ''the health system in Nigeria and the health status of Nigerians are in a deplorable state" (4). External evaluations of the system and health sector statistics back up this assessment. In 2000 the World Health Organisation ranked the performance of Nigeria's healthcare system 18th among 191 United Nations member states (5). In

2002 general government per capita expenditure on health amounted only to US $ 5, far below the World Health Organisation's minimum recommendations, and health spending constituted only 3.3% of total government expenditure (6). The poor state of health services, widespread ignorance, pervading superstition, traditional beliefs and customs and high hospital bills tend to make traditional medicine and faith-based practice arguably more popular than orthodox obstetric practice in our communities. Evidence-based medicine, however, indicates that most pregnancy-related maternal deaths could be averted with access to professional care during pregnancy and childbirth and the puerperium, as well as access to emergency obstetric care in the event of complications (7). Conversely, various studies have associated lack of proper antenatal care with adverse maternal outcome (8, 9).

None of these studies report on the situation in Abia State South Eastern Nigeria. Our study aimed at determining the relationship between the booking status of mothers and maternal health outcomes in our locale. This we did by comparing the socio-demo graphical characteristics, obstetrical complications and foetal outcomes in booked and unbooked mothers who delivered at Abia State University Teaching Hospital, Aba, Nigeria. The findings of this study have implications for planning and implementing interventions that are relevant for maternal mortality reduction in the State.

MATERIALS AND METHODS

Mothers who had antenatal care and delivery (booked mothers) at the Abia State University Teaching Hospital, Aba between 1st January 2005 and 31st December 2007 were retrospectively studied. Their data were compared with that of women who never had antenatal care but delivered in the same health facility during the same period of time (unbooked mothers). In principle, booked mothers were defined as those who had at least two antenatal care visits at our centre, while the unbooked mothers referred to those who had no antenatal care at all prior to delivery, and patients referred as emergencies from other facilities or traditional birth attendants or faith-based clinics. Information was obtained from a combination of admission and discharge registers, labour and delivery records, obstetric theatre records and retrieved case files from the Medical Records Department of the hospital. Data were collected on parity, age, marital status, social status, booking status, gestational age at delivery, mode of delivery, maternal complications, Apgar score of the infants, birth weight of the infants, near- miss morbidities, maternal deaths and the cause of deaths. The total number of deliveries and live births conducted during the study-period were also documented. Since the patients' relatives rarely allowed autopsy, the causes of maternal deaths were attributed to the consensus diagnoses at the monthly maternal mortality audit meetings in the obstetrics and gynaecology department which were documented in the patients' files. The socio-economic status was computed using the methods reported by Oyedeji (10) which is based on the educational qualifications and type of employment of the patients and their spouses.

Maternal death was defined according to the tenth revision of International Classification of Diseases (lCD 10) by World Health Organisation (11). Ethical clearance for the study was obtained from the hospital's Ethics and Research Committee. Data analysis was done using Epi-info version 6 statistical package. Frequencies of the outcome indicators were determined. Chi-square test and Student's t-test were used to test for association between variables of interest. Associations were considered significant if P-value is < 0.05 at 95% confidence interval level.

RESULTS

Maternal characteristics of the unbooked mothers were significantly different from that of the booked mothers. Compared to booked mothers, unbooked mothers were younger in age (28.2 ± 5.80 vs. 29.3 ± 6.04; $p < 0.001$), had a lower educational status ($p < 0.001$), and had a higher probability of being unmarried (5% verses. 1%; $p < 0.001$). Majority of the unbooked were of lower social class with only 14% in the upper class compared to 65.4% of the booked mothers; $P < 0.001$. A lower proportion of the unbooked were multiparous (7.1 % verses 15% $P < 0.05$).

The causes of maternal deaths in the booked and unbooked mothers are shown in Table 1. During the period of study, there were 3734 deliveries, 3514 live births and 49 maternal deaths. Thirty six (73.5%) of the maternal deaths were recorded among the 634 women who were not booked for antenatal care, while 13 (0.36%) of 3100 booked patients died. Therefore, the risk of maternal deaths among unbooked patients was about 13 times that of booked patients (OR: 13.54; 95%CI: 6.89-27.03); $p < 0.0001$). Twenty six (72.2%) of the unbooked patients who died presented for delivery either at a primary health centre, a private hospital or a general (district) Hospital from where they were referred. Maternal and perinatal complications in booked and unbooked mothers are shown in Table 2. Unbooked mothers were about half as likely to deliver by spontaneous vaginal delivery compared to booked mothers (OR 0.64; 95%CI 0.55-0.73; $p < 0.001$) and eight times more likely to be delivered by emergency laparotomy due to uterine rupture than booked mothers (OR 8.80; 95%CI 3.84-20.55; $P < 0.001$). Also, compared with booked mothers, unbooked mothers had a statistically significant higher incidence of pre-eclampsia / eclampsia, antepartum haemorrhage, postpartum haemorrhage, peripartum anaemia, obstructed labour, and puerperal sepsis ($p < 0.001$). Unbooked mothers were nine times more likely to

have babies with birth asphyxia as indicated by an Apgar score of <7 at five minute of life (OR 9.92; 95% CI 7.92-12.42; P < 0.001). There was also a significant difference between booked and unbooked mothers as regards intrauterine death (OR 6.80; 95% CI 5.09-9.10; P <0.001) and early neonatal death (OR 4.44; 95% CI 3.20-6.16; P < 0.001).

Table 1
Causes of maternal deaths

Cause	Unbooked	Booked
Ruptured uterus	10	0
Eclampsia	9	6
Primary PPH	9	4
Sepsis	8	2
HIV	0	1
Total	36	13

The causes of maternal deaths in the unbooked mothers were ruptured uterus (10 cases), eclampsia (9 cases), primary postpartum haemorrhage (9 cases), and sepsis (8 cases), while in the booked patients, maternal deaths were from eclampsia (6 cases), primary postpartum haemorrhage (4 cases), sepsis (2 cases), and HIV infection (1 case). Contributory factors to maternal death were identified as failure of the patient to seek appropriate medical care in time (9 cases), delay in referral from other health-care facilities (20 cases) and delay in receiving care in our hospital (20 cases). Delay in commencing necessary care in our hospital were related to inability of the patients' relatives to adequately procure blood for transfusion in cases related to severe blood loss, inability to pay for the required medical / surgical intervention, delay in accurate diagnosis by attending physician, and lack of appropriate facilities for management.

Table 2
Maternal and perinatal outcomes and complications in booked and unbooked mothers

Variable	Unbooked mothers (n =634) No.	(%)	Booked mothers (n =3100) No.	(%)	OR	95%CI	P-value
Pregnancy outcomes							
Mode of delivery							
SVD	357	55.0	2679	86.4	0.64	0.55-0.73	<0.001
Vacuum assisted	14	2.2	51	1.7	1.34	0.71-2.52	0.64
Vaginal breech	3	0.5	13	0.4	1.13	0.26-4.24	0.74FE
Caesarean section	250	39.4	347	11.2	3.52	2.92-4.25	<0.001
Laparotomy	18	2.8	10	0.3	8.80	3.84-20.55	<0.001
Maternal mortality	36	5.7	13	0.4	13.54	6.89-27.03	<0.001
Foetal outcomes							
5 min Apgar score (<7)	286	45.1	141	4.6	9.92	7.92-12.42	<0.001
Birth weight (<2.5kg)	112	17.7	243	7.8	2.25	1.76-2.88	<0.001
Perinatal mortality							
Intrauterine death	128	20.2	92	3.0	6.80	5.09-9.10	<0.001
Early neonatal death	79	12.5	87	2.8	4.44	3.20-6.16	<0.001
Maternal complications							
PPH	60	9.5	74	2.4	3.96	2.75-5.71	<0.001
Pre-eclampsia/eclampsia	50	7.9	63	2.0	3.88	2.61-5.77	<0.001
Obstructed labour	35	5.5	2	0.1	85.57	20.07-515.56	<0.001
APH	25	3.9	6	0.2	20.37	7.92-55.55	<0.001
Puerperal sepsis	19	3.0	2	0.1	46.45	10.43-289.15	<0.001FE

SVD = Spontaneous vertex delivery
PPH = Postpartum haemorrhage
APH = Antepartum haemorrhage
FE= Fisher exact

DISCUSSION

This study reiterates the importance of proper antenatal care and delivery towards reducing maternal mortality in Nigeria. Many of the unbooked mothers belonged to the poor socio-economic class. Poor economic status may make it difficult for women to make informed decisions about using health preventive and promotive services, such as antenatal care, and more so seek skilled attended delivery.

The overall maternal and perinatal mortalities for the period of review were 1312/100,000 total deliveries and 103/1000 births respectively. These unacceptably high rates were due mainly to deaths from obstetrical emergencies in the unbooked mothers. Pregnant women unbooked for antenatal care were 13 times more likely to die in the hospital compared to booked mothers. The poor pregnancy outcomes in the unbooked mothers were due to delay in the patients making a decision to seek care, delay in referral from other healthcare facilities, and delay in receiving care in our facility since the services were not free. Many of the women presented for delivery at health facilities lacking in trained staff to manage complex situations or make decisions to refer. The extent of complications in these women at presentation to our centre which ultimately resulted to death, questions the quality of primary and secondary healthcare provided in our environment. This observation, however, does not exonerate the apparent inability of our tertiary institution to save the lives of these poor women, since the incidence of maternal deaths among referred patients presenting to a referral centre is a reflection of its capability to handle emergencies. A situation where 5.7% of unbooked mothers died suggests a deficiency in the provision of both essential and comprehensive emergency obstetric care in our hospital. Issues of staff shortages and strike actions, immediate payment for emergency surgery and blood, lack of equipment and supplies and negative attitude of staff at our tertiary facility need to be addressed as these are major contributors to maternal morbidity and mortality in our environment (12). Anything that discourages women from utilising available obstetric care spells danger to the lives of expectant mothers and their infants. There is need to refurbish the existing sleeping-in facilities for doctors to enable them to offer 24-hour services in the maternity unit of the hospital. There should also be regular supply of water, electricity and other materials to work with. A waiver system for payment of services in emergency situations for the poor and needy patients need also be pursued in this hospital.

The referral system in Nigeria needs to be strengthened too. It is vital that the community comes up with some financial and transport schemes to help facilitate transfer of mothers with emergencies swiftly and safely to facilities which are equipped to handle these emergencies and have staff with appropriate knowledge and skill.

In conclusion, the study showed a positive correlation between unbooked mothers and increased risks of maternal and foetal adverse outcomes. Educating the communities at the grass roots level about the benefits of receiving antenatal care and supervised delivery by skilled attendants will have a significant impact on improving pregnancy outcomes in our locale. Our primary healthcare facilities should be staffed with trained midwives supervised by obstetricians and the secondary care hospitals in the State should have obstetricians and facilities for providing emergency services. Health and hospital policies aimed at overcoming financial barriers to service utilisation such as enactment of subsidised or free maternal care services, as recently witnessed in a few Nigerian states, would also be appreciated in Abia State. Political priority for maternal mortality reduction in our State is needed. The governor of the State and the heads of the 17 local governments should prioritise safe motherhood. Although the MDG directly related to obstetric care are 4 and 5, in actuality nothing can work in seclusion and improving maternal survival has links to other MDGs which include poverty alleviation and women empowerment and effective literacy and educational development programmes.

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REFERENCES

1. Qureshi, Z. Obstetrical emergencies in relation to Millennium Development Goals. *East Afr. Med. J.* 2008; **85:** 53-55.
2. Kenneth, H. Estimates of maternal mortality worldwide between 1990 and 2005: an assessment of available data. *Lancet*. 2007; **370**:1311-1319.
3. Okonta, P. I., Okali, U.K., Otoide, Y.O. and Twomey, D. Exploring the causes and risk factors for maternal deaths in a rural Nigerian referral hospital. *J. Obstet. Gynaecol*. 2002; **22:**626-629.
4. Federal Ministry of Health. *Health Sector Reform Program*, 2004-2007. Abuja, Nigeria: Federal Ministry of Health, 2004.
5. World Health Organization. *World Health Report 2000 - Health Systems*. Improving Performance. Geneva, Switzerland: World Health Organization, 2000.
6. World Health Organization. World Health Organization health statistics for 2002. World Health Organization, 2002. Available: *http://www3.who.int/statistics.*
7. UN: The Millennium Development Goals Report 2007, New York (2007).

8. Ekwempu, C. C. The influence of antenatal care on pregnancy outcome. *Trop. J. Obstet. Gynaecol.* 1988; **1:** 67-71.
9. Owolabi, A.T., Fatusi, A.O., Kuti, O., *et al*. Maternal complications and perinatal outcomes in booked and unbooked Nigerian mothers. *Singapore Med. J*. 2008; **49:** 526-531.
10. Oyedeji, G.A. Socioeconomic and cultural background of hospitalized children in Ilesa. *Niger J. Paediat*. 1985; **12:**111-117.
11. World Health Organization; ICD- 10: International statistical classification of diseases and health- related problems. In Tenth Revision Volume 2. Geneva: World Health Organization; 1993.
12. Asuquo, E.E.J., Etuk, S.J. and Duke, F. Staff attitude as barrier to the utilization of University of Calabar Teaching Hospital for obstetric care. *Afr. J. Reprod. Health.* 2000; **4:** 69-73.