OUTCOME OF UNBOOKED PREGNANCIES AT THE FEDERAL MEDICAL CENTRE, OWERRI, NIGERIA

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ABSTRACT

Background: *Booking in pregnancy has been found to significantly influence the maternal and perinatal outcome of pregnancy. Unbooked pregnancies contribute to adverse maternal and perinatal outcomes. Some paturients in Owerri, South eastern Nigeria and environs have the erroneous idea that booking was not important for safe motherhood.*

Objectives: *The study was to determine the maternal and perinatal outcomes of unbooked versus booked pregnancies.The maternal outcomes examined included normal deliveries, instrumental vaginal deliveries, caesarean sections and maternal mortality. The perinatal outcomes included an evaluation of Apgar scores and perinatal mortality.*

Design: *It was a retrospective comparative study*

Setting: *The study was carried out at the Federal Medical Center,Owerri South-eastern Nigeria between January, 2010 and December, 2011.*

Methodology: *The labour ward records of all deliveries in the Centre between January 2010 and December 2011were examined and data collected from the theatre and Special care baby unit to determine the maternal and perinatal outcomes. Paturients who registered their pregnancies and received antenatal care in the Centre were termed booked, while those seen in labour for the first time irrespective of whether they registered elsewhere or not, were termed unbooked. Data was analysed using standard electronic calculators.*

Results: *There were a total of Six thousand, six hundred and seventy five (6675) deliveries within the period under review with a total of 680 unbooked pregnancies giving an overall incidence of 10.2%. The incidence was10.12% for 2010 and 10.24% for 2011respectively. In all the indices used to assess maternal and perinatal outcome, there was a more favourable outcome in the booked parturients compared to those who were unbooked.*

Conclusion: *The study goes on to re-emphasize the contribution of the unbooked mother to bad obstetric indices. The unbooked mother increases the risk of operative deliveries, maternal mortality, birth asphyxia and perinatal mortality.*

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INTRODUCTION

A pregnant woman is said to have been 'booked' or have appropriate antenatal care (ANC) if she has had at least four antenatal visits and received among other things tetanus immunization[1,2]. The unbooked mother is one who did not register her pregnancy for antenatal care or one who delivers within three visits or less. It has been established that antenatal care provides an opportunity for risk assessment and monitoring of pregnancy and this is expected to result in improved maternal and fetal/perinatal outcome[3]. Reports from Benin City, Nigeria revealed that lack of antenatal care increased the maternal mortality risk bymorethantenfold[4]. Antenatal care being one of the pillars of safe motherhood initiative is expected to positively contribute to the achievement of the third sustainable development goal which is good health and wellbeing. Despite this, the unbooked pregnancy continues to

constitute a huge health burden to the obstetricians and health system in the developing countries. They have been credited with contributing no fewer than 70% of all hospital maternal deaths in Nigeria[2,5,6.] General and health education as well as improved transport, antenatal care and health care facilities has been suggested as a means of improving utilization of antenatal care services[7].

In the developing countries, the combination of poverty, illiteracy, religious beliefs, unskilled health care providers, relatives and traditional birth attendants continue to contribute to the problem. This issue is not much of a problem in the developed countries as result of more awareness, higher literacy rates among mothers and availability of health insurance as well asaffordable cost for better antenatal care services. In a study done in Papua New Guinea, financial reasons were given for unbooked status as well as a lack of education[8]. However, in South Africa and Saudi Arabia where the antenatal services are free, a good number of women remain unbooked[5,9] any reason for this?.

The reason why the unbooked mother has not bothered to attend the antenatal clinic has been repeatedly asked[2] as well as how her non-attendance might affect the outcome of her pregnancy, especially in view of the high perinatal and fetal wastage among these mothers.[7,8,9]. It is against the backdrop of the latter that this study sought to find out the incidence, and maternal and perinatal outcomes of unbooked pregnancies in our area of practice. This will provide data for use by health care providers and government for proper advocacy while advocating for the pregnant mother to book for antenatal care.

MATERIALS AND METHODS

This was a retrospective comparative study of the outcome of unbooked pregnancies managed at the Federal Medical Centre, (FMC) Owerri in South eastern Nigeria.

The delivery records of all women who delivered between January 2010 and December 2011 were recovered and analyzed using standard electronic calculators. The booking status, mode of delivery (caesarean section/Spontaneous Vaginal Delivery / Instrumental Vaginal Delivery), and maternal mortality incomplete statement. The perinatal outcome includes an assessment of live birth, apgar score and fresh or macerated still birth. Patients who registered their pregnancies and received antenatal care at least four or more times in FMC were termed booked, while other women seen in labour for the first time irrespective of whether they registered elsewhere or not were termed unbooked. However, women who attended antenatal care at least four times with a qualified caregiver outside FMC were also considered booked. The hospital receives patients from private clinics, general hospitals, mission homes and maternity centres from Owerri and surrounding villages and even from neighbouring states of Abia, Anambra and Rivers. Emergency care is rendered for the first 24 hours irrespective of the patients financial capabilities.

RESULTS

Over the two year period, there were a total of 6,675 deliveries out of which 680 were unbooked pregnancies giving an overall incidence of 10.19%. The year specific incidence of unbooked pregnancies was 10.12% for 2010 and 10.24% for 2011 respectively.

The caesarean section rate for the whole population in 2010 was 19.62%. For the booked population, caesarean section rate was 16.6% in 2010 while that for the unbooked population was 46.44%. The likelihood for Caeserean section was 2-3 times more in the unbooked than the booked paturient. (Table 3 and 4) these tables should have been up beneath the table of"gross data" for 2010

The maternal mortality rate in 2010 for the booked population was 191 per 100,000 registered live births while in the unbooked population it was 2,373 per 100,000 registered live births.

TABLE 1: 2010 GROSS DATA SHOWING THE MATERNAL AND PERINATAL INDICES

Month	Total delivery	Normal delivery(SVD)	Vacuum	Maternal mortality	Emergency C/S	Elective C/S	Booked	Un-booked	Asphyxia	Still birth
Jan	243	201	2	1	25	15	213	30	10	10
Feb	235	189	3	0	33	10	217	18	8	10
Mar	284	230	4	2	27	23	256	28	10	23
April	311	237	6	3	39	29	282	29	25	14
May	321	248	6	1	48	19	290	31	18	11
June	207	165	8	2	23	11	187	20	16	10
July	41	34	0	0	5	2	37	4	2	1
Aug	262	202	9	0	37	14	234	28	17	10
Sept	274	199	10	3	53	12	244	30	16	16
Oct	264	204	2	0	48	10	239	25	12	18
Nov	247	212	2	0	29	4	226	21	13	5
Dec	226	167	3	1	42	14	195	31	25	12
Total	2915	2255	55	13	409	163	2620	295	172	150

Key: C/S= Caesarean Section SVD= Spontaneous Vaginal Delivery

$$\text{General C/S Rate \%} = \frac{\text{Number of Caeserean Section} \times 100}{\text{Total number of deliveries}}$$

$$= \frac{572 \times 100}{2915} = 19.62\%$$

$$\text{C/S rate in booked population (\%)} = \frac{\text{Number of Caeserean section in booked population} \times 100}{\text{Total number of booked deliveries}}$$

$$= \frac{137 \times 100}{295} = 46.4\%$$

$$\text{Maternal Mortality Rate (general)} = \frac{\text{No. of maternal deaths} \times 100{,}000}{\text{Total no. of deliveries}}$$

$$= \frac{13 \times 100{,}000}{2915} = 446 \text{ per } 100{,}000 \text{ registered live births}$$

$$\text{Maternal mortality rate in the booked population} = \frac{5 \times 100{,}000}{2620} = 191 \text{ per } 100{,}000 \text{ registered live births}$$

$$\text{Maternal mortality rate in the unbooked population} = \frac{7 \times 100{,}000}{295} = 2373 \text{ per } 100{,}000 \text{ registered live births}$$

TABLE 2 : 2011GROSS DATA SHOWING MATERNAL AND PERINATAL INDICES

Month	Total delivery	Normal delivery	Vacuum	Maternal Mortality	Emergency C/S	Elective C/S	Booked	Un-booked	Aspyxia	Still birth
Jan.	243	181	6	2	46	10	207	36	16	11
Feb.	192	143	3	2	37	9	160	32	14	22
Mar.	275	215	5	1	44	11	233	42	15	10
Apr.	326	246	13	1	59	24	296	30	10	17
May	372	282	8	1	64	19	325	47	15	10
June	346	243	5	0	84	14	323	23	16	13
July	312	245	10	1	48	9	284	28	12	14
Aug.	328	236	9	0	68	15	290	38	13	4
Sept.	312	222	8	0	58	24	282	30	16	18
Oct.	408	304	3	1	85	16	379	29	10	19
Nov.	343	259	11	1	56	17	317	26	14	14
Dec.	303	222	4	0	63	14	279	24	11	24
Total	3760	2798	85	10	712	182	3375	385	162	176

Key: C/S= Caesarean Section

General C/S rate = 894/3760 x 100 = 23.78%

C/S rate in booked Population = 730/3375 x 100 = 21.63%

C/S rate in the unbooked Population = (164/385) x 100 = 42.6%

General Maternal Mortality rate =(10/3760)x100,000 = 266 per 100, 000 births

Maternal mortality rate in the booked population = (3/3375)x100,000 = 89 per 100000 registered live births

Maternal mortality rate in the unbooked population = (7/385)x100000 = 1818 per 100000 registered live births

The maternal mortality rate for the general population was 446 per 100, 000 births in 2010 and 266 per 100, 000 births in 2011. However, in the unbooked population it was 2,373 per 100, 000 births in 2010 and 1818 per 100,000 births in 2011(Tables 3 and 4).

In 2010, there were 55 cases of vacuum delivery, 39 were in the booked population while 16 were in the unbooked population. The rate of vacuum delivery was 1.49% in the booked population and 5.42% in the unbooked population. Therefore, an unbooked woman was 4 times more likely to have a vacuum delivery than in the booked patient in 2010.

In 2011, of the 85 cases of vacuum delivery,

TABLE 3: MATERNAL OUTCOME OF **UNBOOKED** PREGNANCIES – 2010

Month	Caesarean Section	Vaginal Deliveries	Instrumental Vaginal Del.	Mortality	Unbooked
January	15	15	0	1	30
February	7	10	1	0	18
March	6	17	1	1	28
April	16	12	1	1	29
May	20	10	2	0	31
June	5	13	2	1	20
July	1	3	0	0	4
August	13	13	2	0	28
September	15	10	5	2	30
October	10	15	0	0	25
November	11	10	0	0	21
December	18	11	2	1	31
Total	137	139	16	7	295

C/S Rate = 137/295x100 = 46.44%

Maternal Mortality Rate for the unbooked mother = 7/295 x100,000= 2373 per 100,000 registered live births.

62 were in the booked population while 23 were in the unbooked population. The rate of vacuum delivery was 1.84% in the booked population and 5.97% in the unbooked population. Therefore, an unbooked mother was 3 times more likely to undergo vacuum delivery than a booked mother in 2011.

Perinatal morbidity as reflected by perinatal asphyxia was also noted to be much higher in the unbooked pregnancies. Perinatal asphyxia was diagnosed when the 5th minute APGAR score was less than 6 and good APGAR score was diagnosed when the 5th minute APGAR score was 6 or greater. Seventy-seven (25.58%) neonates of unbooked mothers in 2010 and 85 (21.04%) neonates of unbooked mothers in 2011 were asphyxiated.(See Table 5 and 6).

In the booked population, 3.6% (95) of neonates were asphyxiated in 2010 while 2.28% (77) of neonates were asphyxiated in 2011. Therefore, the neonate of an unbooked mother was seven times more likely to be asphyxiated in 2010 and nine times more likely to be asphyxiated in 2011 than the neonate of a booked mother. A summation of the fetal outcome irrespective of the year of occurrence is more relevant.The stillbirth rate

TABLE 4: MATERNAL OUTCOME OF UNBOOKED PREGNANCIES – 2011

Month	Caesarean Section	Vaginal Delivery	Instrumental Vaginal Delivery	Mortality	Total unbooked
January	16	18	2	2	36
February	10	19	1	1	32
March	17	25	0	2	42
April	13	13	4	0	30
May	19	24	4	0	47
June	10	10	3	0	23
July	15	10	3	0	28
August	14	21	2	0	38
September	16	13	1	0	30
October	11	17	1	1	29
November	11	13	2	1	26
December	12	12	0	0	24
Total	164	185	23	7	385

C/S Rate =(164/385)x100 = 42.6%

for the unbooked pregnancies in 2010 was 256/1000 births or 25.6% and increased to 309/1000 births or 30.9% in 2011. This is in sharp contrast with the booked population where the stillbirth rate in 2010 for the booked population was 53/1000 births or 5.3% and decreased to 17/1000 births or 1.7% in 2011. So while the stillbirth rate in the unbooked population increased, the rate in the booked population drastically reduced.

DISCUSSION

Unbooked pregnancies constitute a huge obstacle to achieving sustainable development goals number 3 which focuses on good health and well being. The incidence of the unbooked pregnancy in FMC Owerri was found to be approximately 10%. This is lower than in Abia State University Teaching Hospital (17%) [3], Universty of Benin Teaching Hospital (21%)[4], and Obafemi Awolowo University Teaching Hospital (29%)[10]. It is the same as at University of Uyo Teaching Hospital (10.3%)[2].

At the University of Calabar Teaching Hospital in 2012, C.U. Iklaki et al reported an incidence of 27.4%[11], but this was essentially the incidence among teenage pregnant

TABLE 5: PERINATAL OUTCOME OF UNBOOKED PREGNANCIES – 2010

Month	Good Apgar score(= 6 in 5 minutes)	Asphyxia (= 5 in 5 minutes)	Fresh Still Birth	Macerated Still birth	Others
January	16	10	3	1	
February	9	3	2	4	
March	12	8	6	3	Twins x 1
April	16	6	3	5	Twins x 1
May	15	10	7	0	
June	12	3	4	1	
July	1	2	1	0	
August	15	6	8	1	Twins x 2
September	11	9	7	3	
October	13	5	2	5	
November	16	3	1	1	
December	11	12	6	2	
Total	147	77	51	26	

Stillbirth rate in the unbooked population = (17/295)x1000 = 261 per 1000 births
Still birth rate in the booked population = (63/2620)x1000 = 24 per 1000 births

women. This is not surprising looking at the demographics for unbooked mothers. The unbooked mother is most likely to be young, unemployed and most likely to be from a lower socio-economic class[11].

Unbooked pregnancies have been found to correlate directly with increased perinatal and maternal morbidity and mortality.[12,13,14,15]. This is because the unbooked mother was most likely referred to the hospital after complications have arisen. The parameters used to assess the maternal outcome included caesarean section rate, rate of instrumental vaginal deliveries and maternal mortality. In 2010, the maternal mortality rate in the booked population was 446/100000 births while it was 2373/100000 births in the unbooked population. In 2011, the maternal mortality rate in the booked population was 266/100000 births and 1818/100000 births in the unbooked population. In 2010 therefore, an unbooked mother was 5 times more likely to die from childbirth and 6 times more likely to die in 2011. This is a setback for the battle against maternal mortality.

Caesarean section rate was almost more than

TABLE 6: PERINATAL OUTCOME OF UNBOOKED PREGNANCIES - 2011

Month	Good APGAR Score	Asphyxia	Fresh still birth	Macerated still birth	Others
January	**15**	**13**	**8**	**3**	**Twins x3**
February	**17**	**6**	**5**	**5**	**Twinsx 1**
March	**29**	**6**	**8**	**5**	**Twins x2** **Quintuplet x 1**
April	**13**	**9**	**10**	**1**	**Twins x 2**
May	**23**	**8**	**10**	**7**	**Twinsx1**
June	**10**	**8**	**3**	**2**	
July	**15**	**10**	**3**	**0**	
August	**17**	**5**	**10**	**6**	**Twinsx3**
September	**18**	**5**	**6**	**1**	
October	**15**	**8**	**8**	**2**	**Twinsx4**
November	**15**	**5**	**7**	**2**	**Twinsx1**
December	**13**	**2**	**5**	**2**	**Twinsx1** **(Retained 2nd twin)**
Total	**200**	**85**	**83**	**36**	

Stillbirth rate in the unbooked population

$$= \frac{\text{Number of stillbirths x 1000}}{\text{total of unbooked deliveries}} = \frac{119 \times 1000}{385} = 309/1000 \text{ births}$$

$$\text{Stillbirth rate in booked population} = \frac{\text{Number of stillbirths in booked population X1000}}{\text{total number of booked deliveries}}$$

$$= \frac{57 \times 1000}{3375} = 17 \text{ per } 1000 \text{ live births}$$

double in the unbooked population with almost half of the unbooked mothers undergoing emergency caesarean section (See results above). The rate of vacuum delivery in the unbooked population was also very high. In 2010, of the 55 cases of vacuum delivery, 39 were in the booked population while 16 were in the unbooked population. The rate of vacuum delivery was 1.49% in the booked population and 5.42% in the unbooked population. Therefore, an unbooked woman was 4 times more likely to have a vacuum delivery than in the booked patient in 2010. In 2011, of the 85 cases of

vacuum delivery, 62 were in the booked population while 23 were in the unbooked population. The rate of vacuum delivery was 1.84% in the booked population and 5.97% in the unbooked population. Therefore, an unbooked mother was 3 times more likely to undergo vacuum delivery than a booked mother in 2011.

The parameters used in assessing perinatal outcome included perinatal asphyxia and still birth (macerated still births and fresh still births). It was difficult to track cases of early neonatal deaths in the 1st 7 days of life because some may have been discharged and may now present at the special care baby unit or outside the hospital.

Perinatal morbidity and mortality was also on the very high side in the unbooked population. Ekwempu C.C. in a retrospective study in 1988 showed clearly that proper antenatal care was associated with a three-fold reduction in perinatal loss and virtual elimination of fetal loss from stillbirth.[15]

Perinatal morbidity as reflected by perinatal asphyxia was also noted to be much higher in the unbooked pregnancies. Seventy seven (25.58%) neonates of unbooked mothers in 2010 and 85 (21.04%) neonates of unbooked mothers in 2011 were asphyxiated (See Table V&VI).

In the booked population only 3.6% (95) of neonates were asphyxiated in 2010 while only 2.28% (77) of neonates were asphyxiated in 2011.

Therefore, the neonate of an unbooked mother was 7 times more likely to be asphyxiated in 2010 and 9 times more likely to be asphyxiated in 2011. Perinatal asphyxia is a cankerworm that will continue to torment the baby and the family for the rest of their lives. Hypoxic ischaemic encephalopathy may leave some of these neonates with neurological deficiencies and with growth and mental retardation. A long follow-up will be required to find out how these babies fare.

The perinatal mortality rate in 2010 was 261/1000 births in the unbooked population and 63/1000 births in the booked population. In 2011, the perinatal mortality rate was 309/1000 births for the unbooked and 17/1000 births for the booked population. This is a lot more than the report by Madike et al, of 44/1000births among the unbooked population in Velden hospital in Limpopo South Africa.[16,17]

The neonate of an unbooked mother was 4 times more likely to die during labour in 2010 and 18 times more likely to die in 2011. The contrast here is that stillbirth rate was reduced in the booked population in 2011 but was increasing in the unbooked population.

There was a paucity of patients in July 2010. This was due to an industrial action that affected clinical activities in the hospital.

In conclusion, it is overwhelmingly clear that booking and indeed early booking is one of the measures that will impact positively on perinatal and maternal morbidity and mortality in our society. The health personnel, the churches/mosques, the school and the government must come together to ensure that the issue of booking can be made acceptable to the women and their husbands. Further awareness must be created on the importance of antenatal care in maternal and child health. Antenatal care should also be made accessible, available and affordable to all women.

References:

1. Tracy A, Donovan O, Byrne P. Perinatal Outcome in Unbooked Women AtRotundu Hospital. Irish Medical Journal, 2002; 95(2): 44-47.
2. Abasiattai M.T. and Udoma C.J. The unbooked pregnant woman: Experience from a rural Tertiary hospital in South–South Nigeria. Global Journal of Community Medicine 2009; vol. 2:
3. Chigbu B, Onwere S, Kamanu I. Aluka C, Okoro O and Adibe E. Incidence and outcome of unbooked pregnancy in ABSUTH Aba. East African Medical Journal 2009; 86(6): 267-271.
4. Olusanya O, Amiegheme N. Biosocial factors in maternal mortality: a study from a Nigerian mission hospital. Trop

J ObstetGynaecol. 1988;1(1):88-9.
5. Harrison KA. Maternal Health in Developing Countries. Lancet 1996; 347: 40.
6. Fabamwo AO, Akinola DI, Mojoyinola OO. The Tragic Consequences Of Unsupervised Pregnancies Among Patients Referred To a Tertiary Maternity Unit In Lagos, South West Nigeria. The International Journal of Tropical Medicine, 2010; 7(1) DOI: 10.5580/23d1
7. Iloabachie GC. Maternity Care Monitoring: The Case Of The Unbooked Patient: Trop J Obstet Gynaecol1988;1(1):65-7.
8. Lulu AA, Adelusi B, Chowdhury NH, Kangave D, Salah A, Moghraby, Turki Al-Kharfy.The "Unbooked Mother" At A University Teaching Hospital: Factors Mitigating Against Antenatal Clinic AttendanceAnnals Of Saudi Medicine, 1998;18(3):269-272.
9. Hamilton RA, Perlmann T, de Souza JJL. The unbooked patient. :Reasons for failure to attend ante-natal clinics. S Afric Med J1987;81:28-31.
10. Owolabi AT, Fatusi AO, Kuti O, Adeyemi A,Faturoti SO ,Obiajunwa PO. Maternal complications and perinatal outcomes in booked and unbooked Nigerian mothers at Wesely Guild Hospital Nigeria (OAUTH). Singapore Medical Journal, 2008; 49(7):526-530.
11. Iklaki CU, Inaku JU, Ekabua EJ, Ekanem EI, and Udo AE. Perinatal outcome in unbooked teenage pregnancy in the University of Calabar Teaching Hospital. Trop J Obstet Gynecol 2012;246983.
12. Briggs ND, Maternal outcome in the booked and unbooked patients at the University of Portharcourt Teaching Hospital, Nigeria. Trop J Obstet Gynaecol, 1988; 1(1):26-29.
13. Failing F, Ripa P, Tefuarani N, Vince J. A comparison of booked and unbooked mothers delivering at the Port Moresby General Hospital, Papua New Guinea. Papua New Guinea Medical Journal, 2004; 47(34): 174-180.
14. Mutihir J.T and Nyiputen Y.A. The unbooked patient: A lingering obstetrics pathology in Jos, Nigeria. Journal of Obstetrics and Gynaecology, 2007; 27(7): 695-698.
15. Ekwempu C.C. The influence of antenatal care in pregnancy outcome in Trop J Obstet Gynaecol 1988; 1:67-71.
16. Madike E.L. Comparison of pregnancy outcome between booked and unbooked mothers at Van Velden Hospital in the Limpopo province, South Africa. 2012; URI:http/hel.net/10539/10948.
17. Tadasse E, Afework S, Surafiel Y and Mehari B. Determinants of perinatal deaths: A five year retrospective study at Ethiopia Tikur Ambesse Teaching Hospital. Journal of Obstetrics and Gynaecology East Central Africa, 1989; 8(1): 15-17.