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SOCIO-DEMOGRAPHIC CHARACTERISTICS AND PREGNANCY OUTCOME OF BOOKED AND UNBOOKED WOMEN AT THE UNIVERSITY OF BENIN TEACHING HOSPITAL

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Abstract

To investigate effect of booking status and other parturient characteristics on pregnancy outcome. A retrospective case controlled study of unbooked and booked women. Case notes and ward registers were sources of data. The unbooked had less education and higher teenage pregnancy than the booked (Primary education; unbooked 41.7% and booked 9.4%. Teenage pregnancy; unbooked 4.1%, booked 0.6%) $P<0.001$. Caesarean delivery was higher in the unbooked than the booked (51.1% and 20.7%). Maternal Mortality was nine times higher in unbooked than booked parturients.

Birth asphyxia and perinatal mortality were >7 times less in the booked compared to the unbooked. Low social class of unbooked women influenced their not booking; this in turn resulted in poorer pregnancy outcome such as higher interventions, obstructed labour, perinatal and maternal mortality. Low education, husbands occupation and social class of unbooked women influenced their not booking; this in turn resulted in poorer pregnancy outcome such as higher interventions, obstructed labour, perinatal and maternal mortality. Public enlightenment, education of the girl child and women empowerment will improve booking for orthodox ANC and delivery.

INTRODUCTION

Pregnancy outcome, perinatal and maternal mortality are indices by which nations are assessed in terms of health care delivery and development in general. Antenatal Care (ANC) is a continued risk assessment of pregnant women[1] aimed at identifying and treating the earliest signs of complication to achieve safe delivery of a healthy baby to a healthy mother. Unbooked mothers do not have the benefit of being so assessed and screened.[2] The consequences of failing to provide/access good maternal and perinatal care can be seen in the poor statistics of maternal and neonatal morbidity and mortality for developing countries.[2,3].

Due to improved ANC services in the developed world, 98-99% of women now deliver in hospital and almost 100% of women have their pregnancies booked and attend regular antenatal services by skilled attendants. Perinatal mortality is now 8 per 1000 and maternal mortality is 10 per 100,000.[4,5,6,74-7] These encouraging figures are not seen in Nigeria and other developing countries, with maternal and perinatal mortality still unacceptably high. Maternal mortality occurs mainly amongst mothers who did not book or access ANC. These women often die

KEYWORDS: *Booked, Unbooked, Pregnancy Complications, Maternal Mortality, Maternal Morbidity, Educational Status, Social Class.*

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trying to give birth at home or in substandard delivery settings or die within a few minutes to hours of arrival in hospital with complications that health personnel even in tertiary centres find difficult to reverse.[8,9,10] This is the burden of the unbooked woman.

In Nigeria, one woman dies every 10 minutes of childbirth related causes and for everyone that dies, 15 more are maimed.[11] Despite having only 2% of the world's population, Nigeria contributes disproportionately 10% of the world's maternal deaths[12]. Based on UNICEF estimates, Maternal Mortality Ratio (MMR) in Nigeria is 1,100/100,000 live births[13]. The actual figures are probably higher[14].

A review of maternal deaths in Sagamu noted a MMR of 2989.2 per 100,000 live births with 89.3% contributed by unbooked mothers. The risk of maternal death amongst unbooked mothers was 22 times that of booked mothers (OR: 22.1; 95% CI:10.2-50.1).[9]

Analysis of 22,774 pregnancies in Zaria revealed that complications were more prevalent among the unbooked. Unbooked patients' operative delivery rate was 18.2% compared to 6.4% for the booked. MMR for the unbooked was 2,400/100,000 and 100/100,000 for booked patients. ANC had a positive effect on foetal outcome, perinatal mortality being 3 times less in booked patients. The educated booked patients experienced reduced perinatal deaths (30/1000) and maternal mortality (250/100,000 deliveries) compared to the uneducated unbooked patients (perinatal death rate of 259/1000 and 2,890 maternal deaths per 100,000 deliveries).[10]

Failing et al in their study in Papua New Guinea noted that the two most important risk factors for being unbooked were mothers having no education ($P<0.001$) and the type of employment of their spouse ($P<0.01$)[15]. Unbooked mothers were more likely to have preterm babies (OR 16.1; 95% CI 3.4-75.7). Another study in Zimbabwe[16] noted that unbooked mothers were significantly more likely to be younger, single, have lower socioeconomic status and be uneducated. Their study showed their infants were significantly more likely to be preterm and/or of low birth weight and have a higher perinatal mortality. The unbooked status has also been associated with excessive perinatal mortality[17] and birth weights less than 2500g.[18]

In Nigeria and most developing countries, the health seeking behaviour of women is influenced by their educational status and their husbands' income. The educational status and income essentially define the Social Class and all these in turn influence the decision to book and utilize ANC services. Over the years at the University of Benin Teaching Hospital (UBTH), poor pregnancy outcomes amongst unbooked women has been documented. Unuigbe et al reported a MMR of 563/100,000 for the period 1973-1985 with most deaths among the unbooked.[19] Orhue reported a worsening trend a decade later (MMR of 827/100,000).[20] Orhue and Ande reported MMR from 1986-1999 noting rising trends when compared to previous reviews[20,21]. Bobzom and Unuigbe reported perinatal mortality rates for 1987-1989 in UBTH as 44, 62.7 and 71.9 per 1000 respectively[22]. Perinatal mortality for the unbooked and booked was 8:1 ($P<0.001$).

This study is aimed at finding out why many women do not book their pregnancy and how socio-demographic characteristics influence booking status and pregnancy outcomes in UBTH.

Findings from this study will improve knowledge of factors that influence access to antenatal care. Addressing these will increase antenatal care utilization, consequently improving pregnancy outcome.

MATERIALS AND METHOD

The study is a retrospective case controlled study of the socio-demographic characteristics and pregnancy outcome of booked and unbooked pregnant women presenting for delivery at the UBTH Labour Ward (LW). For the purpose of this study, a booked pregnant woman was regarded as one who had at least four antenatal clinic visits including the Booking Clinic visit[2,23, 24] while the unbooked is one who just presented for the first time in UBTH LW and was delivered[24]. Those who registered and had less than 3 other Antenatal Clinic visits were excluded. All pregnancies were beyond viability (defined as pregnancy at or beyond 28 completed week gestation).

The minimum sample size required for the unbooked was calculated using Fisher's formula[25] with an unbooked delivery rate at UBTH of 20%[26] and using precision of 0.05 and 95% confidence interval. Minimum sample size was 292. A total of 362 unbooked pregnant women delivered during the study period formed the study population while an equal number of booked pregnant women delivered during the same period served as controls. For every unbooked patient managed and delivered, the next booked patient meeting the inclusion criteria was selected as control.

Data was extracted from the patients' case notes, the Quality Control Assessment Sheets (QCAS) mandatorily filled for every pregnant woman delivered in UBTH and registers in the Labour Ward, Maternity Ward, Special Care Baby Unit, LW Theatre and Intensive Care Unit.

For the purpose of this study previous bad obstetric history was defined as one or more previous perinatal foetal death. The scoring system for determining Social Class developed by Olusanya et al [27] was used in determining Social Class. Data was entered into and analyzed using Statistical Package for the Social Sciences (SPSS) 13 (SPSS Inc., Chicago, IL, USA). P value, Confidence interval and Odd Ratio were used as appropriate to test for statistical significance. Statistical significance was set at P value of 0.05.

RESULTS

Significantly higher proportion of the unbooked women had only Primary School Level of Education, 41.7% compared to only 9.4% in the booked (P value <0.001). The Social Class tended to significantly influence booking status(P value 0.0001).

Teenage pregnancy was significantly higher in the unbooked (P value <0.001). Unbooked pregnant patients tended to be younger than the booked. There were 8 times more single mothers amongst the unbooked than the booked ($P = 0.0001$).
There was three times more Bad Obstetric History in the unbooked than in the booked.

There was nine times more complications in the unbooked than in the booked population $P<0.0001$. The emergency caesarean section rate for the unbooked population was more than double the rate for the booked population ($P <0.0001$).

Table 1: Sociodemographic characteristics

	Booking status			
	Unbooked n = 362	Booked n = 362	Total	P value
Age (Years)	N %	N %	N %	
≤ = 19	15(4.1%)	2(6.0%)	17(2.3)	
20-24	64(17.7%)	34 (9.4%)	98 (13.5%)	
25-29	133(36.7%)	126(34.8%)	259(35.8%)	
30-34	90(24.9%)	134(37.0%)	224(30.9%)	
35-39	47(13%)	54(14.9%)	101(14.0%)	
≥40 .	13(3.6%)	12(3.3%)	25 (3.5%)	
Mean Age	29.05	31		0.0001
Social Class				
1	11(3.0%)	59(16.3%)	70(9.7%)	<0.0001
2	23(6.4%)	109(30.1%)	132(18.2%)	
3	89(24.6%)	130(35.9%)	219(30.2%)	
4	130(35.9%)	51(14.1%)	181(25.0%)	
5	109(30.1%)	13(3.6%)	122(16.9%)	
Marital Status				
Unmarried	18(5.0%)	2(0.6%)	20(2.8%)	<0.0001
Married	344(95.0%)	360(99.4%)	704(97.2%)	

P value ≤ 0.05 is significant

Table 2: Obstetric parameters

	Booking Status		Total	P value	OR	95% CI
	Unbooked n = 362	Booked n = 362				
Parity	N %	N %	N %			
Nullipara	147(40.6%)	141(39.0%)	288(39.8%)			
Para 1-4	175(48.3%)	209(57.7%)	384(53.0%)			
Grandmultipara	40(11.0%)	12(3.3%)	52(7.2%)	<0.0001	3.6	1.9-7
Type of Gestation						
Single	343(94.3%)	351(97.0%)	694(95.9%)			
Twin	18(5.0%)	11(3.0%)	29(4.0%)			
Triplet	1(0.3%)	0(0.0%)	1(0.1%)			
BOH						
No	295(81.5%)	340(93.9%)	635(87.7%)			
Yes	67(18.5%)	22(6.1%)	89(12.3%)	<0.0001	3.5	2.1-5.8

P value ≤ 0.05 is significant

TABLE 3: Obstetric risks and complications

	Booking Status UNBOOKED n = 362	BOOKED n = 362	Total	P value	OR	95% CI
Obstetric Risks						
None	99(27.3%)	243(67.1%)	342(47.3%)			
Anaemia	3(0.8%)	3(0.8%)	6(0.8%)			
PIH	75(20.7%)	18(5.0%)	93(12.8%)			
PROM	41(11.3%)	10(2.8%)	51(7.0%)			
APH	43(11.9%)	9(2.5%)	52(7.2%)			
Others	101(27.9%)	79(21.8%)	180(24.9%			
Obstetric Complications						
None	194(53.6%)	341(94.2%)	535(73.9%)	<0.0001	58.8	8.6-22.7
Severe PIH	36(9.9%)	8(2.2%)	44(6.1%)		4.9	2.2-10.7
Eclampsia	25(6.9%)	1(0.3%)	26(3.6%)		26.8	3.6-198.7
PPH	32(8.8%)	3(0.8%)	35(4.8%)		11.6	3.5-38.3
Uterine Rupture	7(1.9%)	0(0.0%)	7(1.0%)	0.015		
Retained Placenta	2(0.6%)	0(0.1%)	2(0.3%)			
Obstructed Lab.	48(13.3%)	4(1.1%)	52(7.2%)	<0.0001	13.682	4.9-38.4
Others	18(5.0%)	5(1.4%)	23(3.2%)		3.736	1.4-10.2
Blood Transfusion						
No Transfusion	304(84.0%)	354(97.8%)	658(90.9%)			
Transfusion	58(16.0%)	8(2.2%)	66(9.1%)	<0.0001	8.4	4-17.9

P value ≤ 0.05 is significant

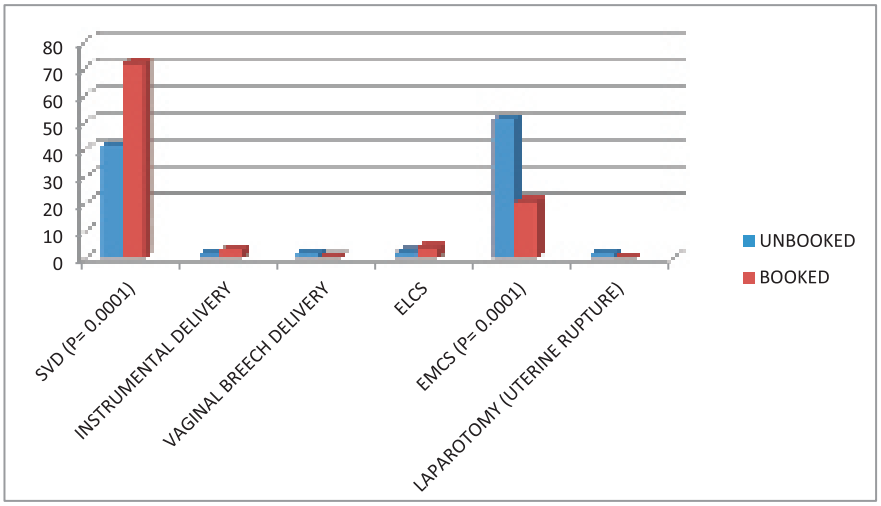
TABLE 4: Perinatal outcome

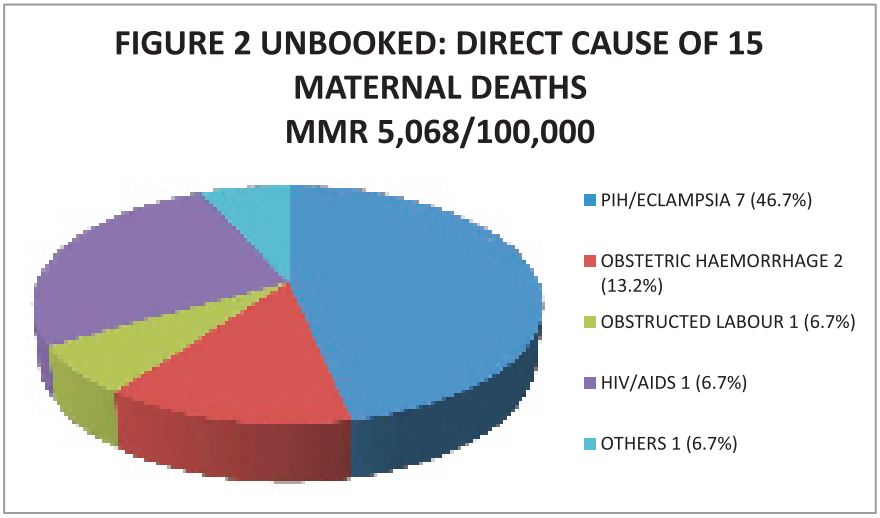
	Booking Status of Mother			P value	OR	95% CI
	Unbooked n=381*	Booked n=373*	Total			
Gestational Age at Delivery						
Preterm	150(39.4%)	46(12.3%)	196(26.0%)			
Term	198(52.0%)	323(86.6%)	521(69.1%)			
Post Term	33(8.7%)	4(1.1%)	37(4.9%)	<0.0001		
Total	381(100%)	373(100%)	754(100%)			
Birth weight						
Low Birth Weight	139(36.5%)	24(6.4%)	163(21.6%)			
Normal Birth Weight	221(58.0%)	325(87.1%)	546(72.4%)	<0.0001		
Foetal Macrosomia	21(5.5%)	24(6.4%)	45(6.0%)			
Sev Birth Asphyxia	54(14.2%)	7(1.9%)	61(8.1%)			
MSB/FSB	85(22.3%)	5(1.3%)	90(11.9%)			
Admission to SCBU						
No	115(29.9%)	313(83.9%)	427(56.6%)	<0.0001		
Yes	183(48.0%)	55(14.7%)	238(31.6%)			
Baby home alive						
No	127(33.3%)	14(3.8%)	141(18.7%)	<0.0001	12.8	7.2-22.8
Yes	254(66.7%)	359(96.2%)	613(81.3%)			
Total	381(100%)	373(100%)	754(100%)			
PMR	333/1,000	38/1,000				

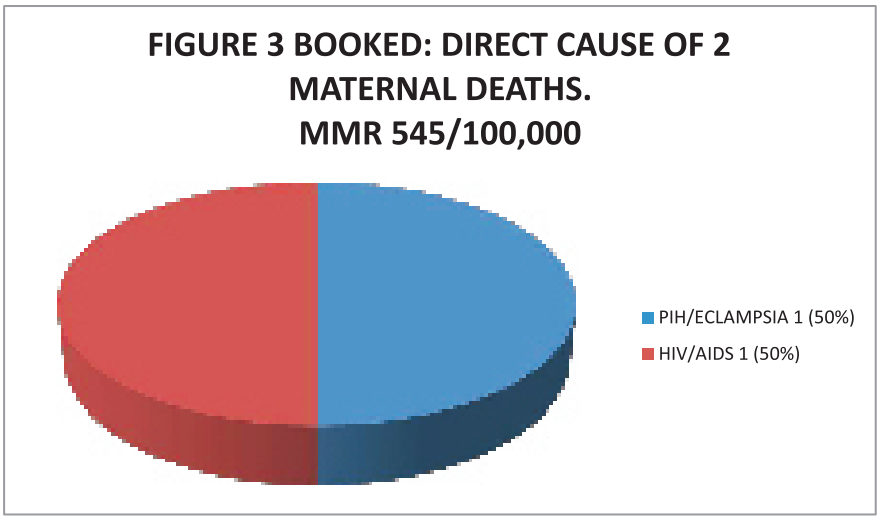
*n includes twin deliveries

FIGURE 1 MODE OF DELIVERY OF BOOKED AND UNBOOKED MOTHERS

percentage







There were 15 maternal mortalities among the unbooked giving a Maternal Mortality Ratio (MMR) of 5,068/100,000 live births while among the booked patients there were 2 maternal mortalities giving a MMR of 545/100,000 live births (P <0.001). Severe Pre-eclampsia/Eclampsia was the leading cause of death.

Still birth was 17 times more for the unbooked parturients than in the booked. The booking status positively influenced the Apgar Score as the babies born to booked mothers had better scores. Preterm delivery rate among the unbooked pregnant women was three times higher in the unbooked population than in the booked (P <0.0001, O.R 4.6, 95% CI 3.2-6.7).

Incidence of Low Birth Weight (LBW) was >5 times in the unbooked than in the booked population (P<0.0001). Foetal Macrosomia was not significantly different in the two groups. Perinatal Mortality Rate for the unbooked was 333/1000 and for the booked patients 38/1000 deliveries. See Table 6.

DISCUSSION

The unbooked woman presenting for delivery with no prior visit and most time no referral note to a particular hospital can be an enigma and test the wits and preparedness of the emergency services in that hospital. Unfortunately only 4.2% of Public Health Facilities in Nigeria meet internationally accepted standards for Essential Obstetric Care[28].

In this study, the teenage pregnant women were more likely to be unbooked (P value 0.001 confirming the findings of other workers[17,18,19] . Teenagers who get pregnant may hide the pregnancy, sometimes up to time of delivery. Rejection by their consort, family and poor social support could also explain their not being booked[15]. The unmarried/single pregnant women in this study were largely unbooked (90%, P <0.0001). The fact that they were unmarried with possible poor social support could have influenced their booking status. This finding is also similar to those of other researchers.[16,17]

A significant proportion of the pregnant women who had only primary level of education were unbooked (P <0.001) while those who had up to university level of education were largely booked (P <0.0001). Education significantly influenced booking status as those with lower educational attainment were mainly unbooked as against those with higher educational attainment – a similar observation by other workers.[10,15,16,17,29,30]

The same is noted for social class as more women in the lower social classes of 4 and 5 were unbooked while a significant proportion of the higher social class of 1 and 2 were booked ((P <0.0001).[27] The unbooked women with low social classes may have decided against booking for financial reasons. Studies have shown that the unbooked were significantly more likely to be younger, single, have lower socioeconomic status and uneducated or have lower education[10,15,16,17,18, 27,29,30]

Grandmultiparity is a notable risk factor in obstetrics as it is associated with complications[9,19] such as uterine rupture, placenta praevia and secondary postpartum haemorrhage. In this study, the grand multiparous patients were more likely to be unbooked (P <0.0001). Grand multiparous patients probably rely on their 'experience', hence may not seek skilled/expert care. Unuigbe et al and Orhue have associated higher rates of

complications and maternal mortality with grandmultiparity and the unbooked status[19,20]. Bad Obstetric History (BOH) was 3 times more common in the unbooked pregnant women (P <0.001). The unbooked patients seem not to realize that obstetric events that may have caused the previous perinatal losses could recur and that they may therefore need specialized care. The findings of this study differ from that of Ndiweni and Butchmann who noted higher incidence of BOH in booked patients[31]. They explained that the BOH could have been the factor that influenced their booking.

Intra-partum complications were 8 times commoner in the unbooked than in the booked (P < 0.0001). These complications included pre-eclampsia/eclampsia, post partum haemorrhage, uterine rupture, retained placenta, and obstructed labour. It is possible that this was due in part to the fact that UBTH is both a formal (medical personnel referral) and informal (self, relative, friend, etc) referral centre. A researcher in Zaria noted that pregnancy and delivery complications were most prevalent in the unbooked[10]. Delivery by Emergency Caesarean Section was significantly more in the unbooked than in the booked (P <0.0001).

Maternal mortality was high in this study; more so in the unbooked who had a significantly higher rate (5068/100,000) than in the booked (544/100,000). The major causes of maternal deaths included PIH/eclampsia, HIV/AIDS related deaths, obstetric haemorrhage and obstructed labour. The MMR and major causes of maternal death were similar to those found at Sagamu[9]. The contribution by unbooked women to maternal mortality in that study was also similar to that of this study (88% and 89.3% respectively. This high maternal mortality rate in the unbooked is mainly due to late presentation and referrals with severe morbidities and complications that are difficult to reverse[8].

The unbooked women in our study had a significantly greater tendency towards having stillbirths and poor Apgar score babies than the booked (P<0.001). The overall Still Birth Rate was 119/1000 (booked 38/1000, unbooked 333/1000). Ekwempu[10] has noted that women delivering stillbirths and early neonatal deaths were less likely to be booked or receive ANC. This study confirms their findings.

Low birth weight and preterm newborns had greater than 5 and 3 times respectively more prevalence among the unbooked mothers than the booked in this study. Nutritional at ANC, routine use of anti-malarials and haematinics, early treatment of urinary tract infection, and other febrile illness in booked patients helps to reduce the incidence of preterm labour, preterm delivery and low birth weight babies[32].

Perinatal Mortality for the unbooked was 9 times higher than in the booked. The high perinatal mortality among the unbooked is probably due to the pregnancy complications and morbidity with which the unbooked women presented including preterm labour, severe intra-uterine growth restriction, HIV/AIDS without prior use of Highly Active Anti-Retroviral Therapy, severe pregnancy induced hypertension /preeclampsia/eclampsia and obstructed labour. Researchers have found in their studies that infants of the unbooked are significantly more likely to be preterm

and or low birth weight and have higher level of perinatal mortality[15,16].

Our study is limited by the fact that it is a retrospective study. It cannot now be ascertained with certainty that all the unbooked women had no ANC in hospitals and maternities run by skilled attendants. It is also possible that because UBTH is a referral centre, some of the unbooked parturients were referred because of their complications hence high rates of complications and poor outcomes. A prospective study that clearly identifies women who had received no antenatal care is needed to test the conclusions of this study.

This study has found lower education and social class amongst unbooked women. We have also noted more complications in the pregnancies of unbooked women. Measures to reduce maternal and perinatal morbidity and mortality must address the root causes of a significant number of women in developing countries not being booked in hospital for ANC and delivery. Identified associations include low social class resulting from low level of education and income. Education of the girl child, provision of employment and poverty eradication through employment will improve booking and antenatal care and delivery in hospital and by extension our health statistics.

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