

Comparative Study of the Obstetric Outcome between Booked and Unbooked Mothers at the Federal Medical Centre, Abeokuta: A Two-Year Review

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ABSTRACT

Pregnancy is a physiological process but sometimes becomes complicated. Antenatal care is aimed at preventing, early detection and treatment of these complications when they occur. The study aimed to determine the prevalence of unbooked pregnancies delivered at our centre and compare their socio-demographic pattern, pregnancy outcomes and maternal/perinatal morbidity/mortality with those who booked and delivered during the same period. It was a retrospective comparative study carried out among unbooked and booked mothers who delivered at our obstetric unit over a two-year period of January 2014 to December 2015. The casenotes were retrieved and analyzed. There were 2232 deliveries during the period under review. Unbooked pregnancies were 235 (10.52% of total deliveries). Unbooked women were younger compared to the booked (29.24 ± 5.74 years versus 30.99 ± 4.17 years), less educated, and nine times more likely to be single (23.92% versus 2.56% respectively). Emergency caesarean section was performed in 58.72% of the unbooked mothers while 60.14% of their booked counterparts had spontaneous vaginal deliveries. Instrumental vaginal deliveries were also more common among the unbooked group. Birth asphyxia and perinatal morbidity/mortality were commoner in the unbooked group. Maternal mortality was 25 times more likely with the unbooked compared to booked mothers. In conclusion, low socio-demographic status has direct correlation with booking status of pregnancy in our environment. Unbooked pregnancies were more associated with poor pregnancy outcomes and maternal mortality compared to the booked ones. It is recommended that affordable and quality antenatal care services be made available in every community while also educating the healthcare givers on need for early referral of high risk pregnancies.



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INTRODUCTION

Pregnancy is a physiological event, yet it is a common cause of death among women of reproductive age. As at 2015, the Nigeria maternal mortality ratio was estimated as 814 per 100 000 live births accounting for 19% of maternal deaths globally. The quality of health care a woman receives during pregnancy goes a long way in determining the maternal and perinatal outcomes. The availability and quality of health care delivery systems of any nation is its maternal and perinatal mortality statistics. Approximately 303 000 women and adolescent girls died as a result of pregnancy and childbirth-related complications in 2015. Approximately 30 to 40% of the approximate 180 million women who are pregnant annually in the world, or roughly 54 million women, report some kind of pregnancy-related morbidity annually. A pregnant woman therefore deserves adequate and effective antenatal care (ANC) to ensure safe pregnancy and delivery with no or minimal complication. Antenatal care (ANC) can be defined as the care provided by skilled health-care professionals to pregnant women and adolescent girls in order to ensure the best health conditions for both mother and baby during pregnancy. It is a form of preventive medicine in which risk factors are recognized early in the antenatal period and specific interventional measures are instituted.

A pregnant woman who received adequate antenatal care is said to have booked. A woman is therefore said to have booked if she attended at least four antenatal care visits and received among other things tetanus immunization. Some other authorities also defined it as a pregnant woman who has booked for ANC and has a minimum of two antenatal visits that lasts not more than two weeks before delivery. The 2018 Nigeria Demographic and Health Survey (NDHS) results show that 67% of women who gave birth in the 5 years preceding the survey received antenatal care from a skilled provider at least once for their last birth. Fifty seven percent of women had

four or more ANC visits. The worst results were from the North East and North West, rural dwellers, and among pregnant women below the age of twenty years.⁸ Another important factor that determines whether a woman receives quality ANC is her level of education, 45% of women with no education received ANC from a skilled provider, as compared with 97% of women with more than a secondary education.⁸

An analytical review of the recent World Health Statistics showed that ANC coverage, between 2006 and 2013, was indirectly correlated with maternal mortality ratio (MMR) worldwide. This indicates that countries with low ANC coverage are the countries with very high MMR.⁹ Globally, the annual number of maternal deaths decreased by 43% from approximately 532 000 in 1990 to an estimated 303 000 in 2015.¹ Undoubtedly, good antenatal care has made a significant contribution to this reduction. Nigeria is one of the countries with the lowest ANC coverage in the world thereby having a very high maternal mortality ratio. However, the coverage as earlier pointed out varies from region to region in Nigeria. Studies have been done in different parts of Nigeria to determine the socio-demographic factors of unbooked mothers in Nigeria and also compared the maternal and perinatal outcomes of unbooked and booked pregnancies. This study becomes necessary in order to determine the socio-demography and obstetric outcomes of unbooked pregnancies in our environment and compare with their booked counterparts. Findings in the study may help in making recommendation which may be useful for health policy makers in addressing some of the identified adverse maternal/perinatal outcomes.

MATERIALS AND METHODS

Study Design

This was a retrospective comparative study among

obstetric patients who delivered at the department of Obstetrics and Gynaecology of the hospital between January 1, 2014 and December 31, 2015 irrespective of whether the woman received antenatal care in the centre or not.

Study Population

The study population was made up of all pregnant women at gestational age of 28 weeks or more who had their deliveries at the centre.

Inclusion Criteria

All deliveries at the centre at estimated gestational age of 28 weeks and above

Exclusion Criteria

Any delivery of less than 28 weeks gestational age and any delivery that occurred before arrival to our centre even if the mother booked the pregnancy with us.

Data Collection

All the deliveries conducted in the department during the period were identified through the delivery register in the labour ward. Their folders were retrieved from the record department. The women were categorized into booked and unbooked. Operationally booked mothers were defined as those who had at least two antenatal care visits at our centre while the unbooked mothers encompassed those who had no prenatal care at all throughout the index pregnancy or those who had less than two antenatal clinic visits with us or those who had two or more antenatal visits in other facilities but did not present to us with documentation of their antenatal care. Neonatal admission into the neonatal unit was tracked through the unit's admission and discharge register and their folders were retrieved from the record department. Information were retrieved through the individual patient's folder. Data collected included age, parity, educational status, and marital status. The patterns of maternal complications and perinatal outcomes were also reviewed. The maternal complications were determined

by Caesarean section rate and operative vaginal deliveries, preeclampsia/eclampsia, antepartum haemorrhage, post-partum haemorrhage, uterine rupture, preterm labour, prelabour rupture of membrane and maternal mortality. The perinatal outcomes were determined by birth weight, Apgar scores, and perinatal morbidity (including admission rate, neonatal jaundice and sepsis) and mortality.

Data Analysis

Information retrieved from the casefiles was coded and filled into a spread sheet. Data obtained were analyzed using International Business Machine (IBM) Statistical Package for Social Sciences version 22 (SPSS 22) Data Editor. Absolute numbers and simple percentages were used to describe categorical variables. Similarly, quantitative variables were described using measures of central tendency (mean, median) and measures of dispersion (range, standard deviation) as appropriate. Statistical significance was determined using Chi-square test with the level of significance set at $P < 0.05$ for categorical and t-test for continuous variables.

Ethical Considerations

Ethical permission to carry out the study was sought and approval obtained from the Hospital's Health Research Ethics Committee (HREC).

RESULTS

A total of 2745 deliveries were recorded during the study period, out of which 2232 casefiles with complete information were retrieved and analyzed giving a retrieval rate of 81.3%. Two hundred and thirty-five (235; 10.52%) of the women were unbooked. Many of the unbooked women however gave history of having received several level of care from traditional birth attendants, churches, primary health centres, private hospitals or general hospitals.

Table 1 shows the socio-demographic status of both the booked and unbooked mothers. The age range of the

unbooked mothers was 15-48 years with an average age of 29.17 ± 5.74 years while the age range for the booked was 19-43 with an average of 30.99 ± 4.17 years. There was statistically significant difference in the ages of the two groups ($X^2 = 13.1943$, $P = 0.001364$). The unbooked group were younger. Teenage pregnancy was commoner among the unbooked mothers than the booked mothers (3% and 0.65% respectively).

Unbooked mothers were of lower educational status compared to booked mothers. One hundred and twenty (51.06%) unbooked versus three hundred and ninety-one (19.58%) booked mothers respectively had less than secondary education and it was statistically significant ($X^2 = 137.025$, $P < 0.00001$). The unbooked mothers were also more likely to be single compared to their booked counterpart (23.92% versus 2.56%) and there was significant association between marital status and booking status ($X^2 = 208.533$, $P < 0.00001$). One hundred and nine (46.38%) of unbooked women were nullipara which was higher than the 32% observed among the booked mothers. Grand multiparity was also more common among the unbooked mothers (4.26% versus 1.15%; unbooked vs booked respectively). Generally, however, the average parity of the unbooked mothers was lower than the average parity of the booked mothers (1.12 and 2.25 for unbooked and booked respectively). There was statistically significant difference between the parities of unbooked and booked mothers ($X^2 = 36.5728$, $P < 0.00001$).

Table 2 shows the mode of delivery and the maternal/pregnancy outcomes of unbooked and booked mothers. One hundred and thirty-eight (138; 58.72%) of unbooked women were delivered by caesarean section, 3 (1.28%) had ventouse delivery, and there was a case of exploratory laparotomy on account of ruptured uterus. Caesarean section and other operative delivery rates were higher in the unbooked group than that of booked and the mode of delivery was significantly associated with the booking status ($X^2 = 132.107$, $P < 0.00001$). Pregnancy complications namely antepartum haemorrhage, preeclampsia/eclampsia, preterm labour, intrauterine

growth restriction and prelabour rupture of membrane were all more prevalent among the unbooked women compared to the booked ones, but there was no statistically significant difference between the two groups ($X^2 = 5.5831$, $P = 0.2325$). Unbooked women were three times more likely to give birth to low birth weight (birth weight < 2.5 kg) neonates than booked women. The rate of delivery of macrosomic babies was similar in both groups (2.55% and 2.95%; unbooked vs booked). The average birth weights were 2.75 ± 0.78 and 3.01 ± 0.56 kg for the unbooked and booked groups respectively and there was statistically significant association between birth weight and booking status ($X^2 = 66.3858$, $P < 0.00001$).

Apgar score of less than 7 at one minute was four times more common in children born to unbooked mothers than booked mothers and even 7 times more prevalent at 5 minutes. Average Apgar scores were 5.7 and 7.4 versus 7.52 and 9.3 at one and five minutes for unbooked and booked respectively, and there were statistically significant differences ($P = 0.000$). Prevalence of intrauterine foetal death was 14.89% in unbooked and 0.65% in booked pregnancies. Early neonatal death was observed in 13 (5.5%) in the unbooked group and 40 (2%) in the booked group. There were statistical significant association between perinatal mortality and booking status ($X^2 = 33.574$, $P < 0.00001$).

Six (2.55%) cases of maternal mortality were reported in the unbooked group which was 25 times the 3 (0.1%) cases of maternal mortality reported among the booked group and the difference was statistically significant ($X^2 = 30.231$, $P < 0.00001$)

Table 1. Sociodemographic characteristics of booked and unbooked mothers.

Variable	Unbooked mothers (%) (n = 235)	Booked mothers (%) (n =1997)	Chi-Square	P-Value
Age group (years)				
< 20	7 (3.0)	13(0.65)		
20–39	217 (92.3)	1905(95.39)		
≥ 40	11 (4.7)	79(3.96)	13.1943	0.001364
Educational level				
None	49(20.85)	102 (5.11)		
Primary	71(30.21)	289 (14.47)		
Secondary	72 (30.64)	929 (46.52)		
Post-secondary	43 (18.29)	677 (33.9)	137.025	<0.00001
Marital Status				
Married	179 (76.08)	1946 (97.44)		
Single	56 (23.92)	51(2.56)	208.533	<0.00001
Parity				
0	109(46.38)	639 (32)		
1–4	116 (49.36)	1335(66.85)		
≥ 5	10 (4.26)	23(1.15)	36.5728	<0.00001

Table 2: Mode of delivery and the maternal/ pregnancy outcomes of unbooked and booked mothers

Variable	Unbooked	Booked	Chi-Square(X²)	P-Value
	No of mothers (%)	No of mothers (%)		
	(n = 235)	(n = 1997)		
Pregnancy complications				
Antepartum haemorrhage	24 (10.21)	48 (2.4)		
Preeclampsia/eclampsia	31 (13.19)	97 (4.88)		
Preterm Labour	36 (15.32)	81 (4.06)		
IUGR	12 (5.1)	54 (2.7)		
PROM	19 (8.09)	57 (2.85)	5.5831	0.232518
Mode of delivery				
SVD	91 (38.72)	1201 (60.14)		
EMCS	138 (58.72)	527 (26.39)		
ELCS	2 (0.85)	264 (13.22)		
Vacuum	3 (1.28)	5 (0.25)		
Exploratory Laparotomy	1 (0.43)	0 (0.00)	132.107	<0.00001
Birth Weight				
Low Birth Weight (< 2.5Kg)	73 (31.06)	234 (11.72)		
Normal Birth Wt (2.5-3.9Kg)	156(66.38)	1704(85.33)		
Macrosomia (≥4.0Kg)	6 (2.55)	59 (2.95)	66.3858	<0.00001
Maternal mortality	6 (2.55)	3 (0.1)	30.2311	<0.00001
Apgar score (< 7)				
1 min	143(60.85)	301 (15.07)	148.988	<0.00001
5 min	92(39.04)	107 (5.36)	242.150	<0.00001
Perinatal mortality				
Intrauterine Foetal Death	35 (14.89)	13 (0.65)		
Early neonatal death	13 (5.5)	55 (2.75)	33.574	<0.00001

Key: PROM- Prelabour Rupture of Membrane, IUGR- Intra-uterine Growth Restriction, SVD- Spontaneous Vaginal Delivery, EMCS- Emergency Caesarean Section, ELCS- Elective Caesarean Section.

DISCUSSION

Pregnancy is a physiological state and many women will carry pregnancies to term and have safe deliveries with good neonatal outcomes however, a few other women will develop some forms of complications during pregnancy, delivery, or in the puerperium. Antenatal care therefore offers the opportunity to identify those at risk of pregnancy complications and prompt intervention.

In this study, 10.52% of the women who delivered with us were unbooked. This incidence was smaller than 40%, 25%, 29%, and 17% got in similar studies done in Karachi, India; Kano, North-West Nigeria; Ile-Ife, South-West Nigeria; and Aba, South-East Nigeria respectively, but higher than 2% reported in Jos, North-Central Nigeria. This wide range especially in Nigeria was probably due to the fact that almost all the unbooked cases actually received one form of antenatal care or the other in other peripheral centres before referral to the tertiary centres where all the studies in these series were carried out, and the number of such cases seen will depend on the availability of other alternative referral centres in such areas.

This study also showed that an unbooked woman was likely to be younger, of lower educational level, single and a primigravida when compared with a booked woman. This was similar to findings by Owolabi et al, Mutihir, Vijayasree, Farzana et al, Gonied, and Sodje^{13, 14} but different from finding by Muhammed et al in Kano.¹² These observations were somewhat interrelated. A woman in the younger age group who gets pregnant is likely to be single, probably out of school, unemployed and most likely her first pregnancy, and without adequate family support. She is therefore less likely to book at all, and when she does it is more likely to be with a traditional birth attendant or a primary health centre where she ends up labouring and later referred when complications set in. Grandmultiparous women were also more likely to be unbooked (4.26% versus 1.15% for unbooked versus booked). This is attributable to the perceived experience by such women, hence she feels less need for her to book.

This is similar to findings by Muhammed, Owolabi and Sodje.^{12, 13, 19}

Majority (58.72%) of the unbooked women in this study were delivered through emergency caesarean section compared to 39.86% in the booked group. The caesarean section rates were much higher than the 10.2–34.7% reported in some hospitals in Nigeria.^{15, 16} This high caesarean section rate was probably because most of the unbooked women were referred from other centres with complications, thereby necessitating urgent delivery mostly through the abdomen. This may explain the higher maternal morbidity and mortality among the unbooked mothers compared to the booked mothers as reported in this study as documented evidences showed that vaginal delivery is a safer mode of delivery than caesarean sections, and elective caesarean section is also safer than emergency caesarean sections. Majority of the morbidities and mortalities occurred in patients who had emergency caesarean section especially those that their labour was already complicated before arrival.

The higher rate of low birth weight observed in children of unbooked mothers is similar to findings by Chigbu et al, Vijayasree et al, Gonied and Sodje.^{14, 16, 18, 19} This may probably be related to the higher incidence rates of intrauterine growth restriction, preterm labour and preeclampsia/eclampsia that were more prevalent among the unbooked mothers. This further explains the higher incidence of birth asphyxia (defined by Apgar Scores of < 7 in this study) among the unbooked women as a complication. Low birth weight and perinatal asphyxia amongst other complications necessitated the higher incidence of admission into the neonatal unit of children delivered to unbooked compared to booked mothers. This further explains the higher incidence of early neonatal deaths seen among the unbooked group. The neonatal outcomes found in this studies were similar to those of other study series.^{9, 17}

The unbooked group had higher maternal mortality ratio of 3 000 per 100 000 live births compared to 151 per 100

000 live births for the booked group. The Nigeria maternal mortality ratio in 2015 (corresponding year for this study) was 814 per 100 000 live births.¹ This showed that the maternal mortality of unbooked mothers in this study was far higher than that of the national figure whereas the maternal mortality ratio for the booked mothers were far less than the national figure. This is a reflection of importance of effective antenatal care at reducing maternal mortality. This finding is in consonance with findings in other studies by Fabanwo et al and Mutihir et al.¹⁵

CONCLUSION

This study agreed with other studies that there is positive correlation between the socio-demographic status of pregnant women and booking status. More educated women are more likely to receive antenatal care from skilled health care providers than the less educated. Booked pregnancies were more likely to result in better obstetric outcomes and reduced maternal and perinatal morbidity and mortality.

Recommendations

There is need to intensify women education and empowerment, and also make available quality and affordable antenatal care services in our local communities. There is also need to create awareness among health workers at the lower health care levels and traditional birth attendants on how to identify high risk pregnancies, early complications of low risk, and refer them to higher health centres on time for expert management.

Limitation of the Study

Due to the analog system of record keeping some of the casenotes could not be retrieved for analyses.

Conflict of Interest

We declare no conflict of interest.

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