

## PATTERN OF MATERNAL AND PERINATAL COMPLICATIONS AT DELIVERY IN A TERTIARY HOSPITAL IN NORTH-WESTERN NIGERIA

Muhammad Z<sup>1</sup>, Ugwa, EA<sup>2</sup>, Onuorah C<sup>3</sup>

### ABSTRACT

**Background:** Maternal and perinatal healths are very important public health issues. The availability and quality of health care delivery systems of any nation is its maternal and perinatal mortality statistics. **Objective:** To determine the pattern of maternal and perinatal morbidities among mothers who are booked for antenatal care in Aminu Kano Teaching Hospital and those who did not and to determine the factors which contribute to these outcomes. **Methods:** Women who did not have antenatal care (unbooked mothers) at Aminu Kano Teaching Hospital and those who had (booked mothers) between 1<sup>st</sup> July, 2006 and 31<sup>st</sup> June, 2009, were retrospectively studied for maternal complications and perinatal outcome. The indices of outcome measured in this study were Caesarean section rates, antepartum eclampsia, antepartum haemorrhage, postpartum haemorrhage, low birth weight, low Apgar scores, stillbirth, and foetal macrosomia. Both groups had their deliveries supervised at Aminu Kano Teaching Hospital. The data between the two groups were compared. **Results:** A total of 11,035 deliveries were conducted during the study period. Of these, 8,292(75%) were booked while 2,743(25%) of total deliveries were unbooked. Among the booked group, 6,363 files were retrieved giving a file retrieval rate of 76.7% while in the unbooked group, 1,998 case files were retrieved, giving a file retrieval rate of 72.8%. Compared with booked mothers, unbooked mothers had more maternal complications and poorer perinatal outcomes. Caesarean section rate is significantly commoner among the unbooked patient (25.52% against 6.47%, P=0.000), antepartum eclampsia occur commonly in the unbooked patients (5.94% against 0.87% P=0.000), antepartum haemorrhage also occur significantly in the unbooked patients (2.95% against 0.47%, P=0.000). Postpartum haemorrhage is commoner in the booked patients (2.73% against 1.07% P=0.000). Low birth weight is commoner among the babies of the unbooked patient (21.51% against 7.22%, P=0.000), low Apgar scores is higher among babies of the unbooked patient (17.17% against 4.29%, P=0.000). There was no statistical difference in the occurrence of stillbirth between booked and unbooked patients (15.13% against 2.56% P=0.133). **Conclusions:** There is a significantly higher maternal and perinatal complication in the unbooked women than the booked. There is also a positive correlation between unbooked mothers and an increased risk of maternal and foetal adverse outcomes and that parity, distance and maternal age affect these outcomes.

**KEYWORDS:** Booked/unbooked pregnancies, maternal complications, perinatal outcome.

<sup>1</sup>Obstetrics and Gynaecology Department, Aminu Kano Teaching Hospital, Kano, Nigeria, <sup>2</sup>Obstetrics and Gynaecology Department, Federal Medical Centre Birnin Kudu, Jigawa State, <sup>3</sup>Nursing Services Department, Aminu Kano Teaching Hospital, Kano.

### Correspondence to:

**DR MUHAMMAD ZAKARI**

Department of Obstetrics and Gynaecology  
Bayero University

**eMail:-** Muhammad.zakari@yahoo.com

### INTRODUCTION

Maternal and perinatal morbidity and mortality are very important public health issues. The availability and quality of health care delivery systems of any nation is its maternal and perinatal mortality statistics.<sup>1</sup>

Forty-two percent of the 129 million women who gave birth annually experience some complications during pregnancy.<sup>2-3</sup> Approximately 15% of women worldwide develop potentially

life-threatening complications, which include chronic pain, impaired mobility, damage to the reproductive system and infertility.<sup>4</sup>

In developing countries, pregnancy and complications from childbirth account for 18% of disease among females.<sup>5-6</sup>

Harrison, Ekwempu, Onwudiegwu Oguniyi and Faleyemu all agreed that Maternal complications and perinatal outcome are indirectly proportional to the utilization of antenatal and delivery care services.<sup>7-11</sup> Antenatal care is a specialized pattern of care organized for women to enable them attain and maintain a state of good health throughout pregnancy, and to improve their chances of having safe delivery of healthy infants at term.<sup>11</sup> One of the purposes of antenatal care is the prevention of maternal and foetal complications through appropriate and proactive measures.<sup>9</sup> There are studies which have highlighted the importance of antenatal care in ensuring better maternal and perinatal outcomes.<sup>12</sup> Ekwempu found that antenatal care was associated with a three-fold reduction in perinatal loss and virtual elimination of foetal loss from stillbirth.<sup>8</sup> This study is a comparative analysis of the pattern of maternal and foetal complications at delivery among booked and unbooked mothers over a 36-month period from 1<sup>st</sup> July, 2006 to 31<sup>st</sup> June, 2009 at Aminu Kano Teaching Hospital and to determine the factors responsible for these complications. The findings from this research may help policy makers and government in planning and budgeting towards interventions that are relevant for reduction of maternal and perinatal morbidity and mortality.

## MATERIALS AND METHODS

Women who did not have antenatal care (unbooked mothers) at Aminu Kano Teaching Hospital and those who had (booked mothers) between 1<sup>st</sup> July, 2006 and 31<sup>st</sup> June, 2009, were retrospectively studied for maternal complications and perinatal outcome. Both groups had their deliveries supervised at Aminu Kano Teaching Hospital. The data between the two groups were compared. The unbooked mothers were those who did not have antenatal care at Aminu Kano Teaching Hospital or had one in a place considered by the unit as being of less than standard level of care, while booked mothers were defined as those who have had at least two antenatal care visits at our centre in Aminu Kano Teaching Hospital, Kano. The case files of the patients were retrieved from the medical records department of AKTH and the following data collated: age, parity, residential address, educational status and social class. The pattern of maternal complications and perinatal outcomes were also reviewed. The maternal complications were determined by Caesarean section rate, antepartum eclampsia, antepartum haemorrhage and postpartum haemorrhage. The perinatal outcomes were determined by low birth weight, low Apgar scores, stillbirth and foetal macrosomia.

Data Obtained was analyzed using SPSS (SPSS 14, Chicago, IL) statistical software. 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  $P < 0.05$ .

## RESULTS

A total of 11,035 deliveries were conducted during the study period. Of these, 8,292 constituting about 75% were booked while 2,743, constituting about 25% of total deliveries were unbooked. Among the booked group, 6363 files were retrieved giving a file retrieval rate of 76.7% while in the unbooked group, 2057 case files were retrieved, giving a file retrieval rate of 72.8%.

### Table I

Shows the socio-demographic characteristics of booked and unbooked mothers at delivery. Mean age for the booked mothers was  $27.0 \pm 5$  years, while the mean parity was  $2.9 \pm 2$ . For the unbooked, the mean age was  $27.0 \pm 6$  years and the mean parity was  $3.0 \pm 2.4$ . In both groups most of the mothers were in the age range 20-39 years. However, there were more mothers < 20 years in the unbooked group compared to the booked group (9% and 2.7%,  $P=0.000$ ). Proportion of women aged 40 years or more in the two groups showed statistically significant difference (4% Vs. 1.7%  $P=0.021$ ). More of the unbooked group either had no formal education or only had primary education (79.9%) compared with the booked who had either a secondary or postsecondary qualifications (87.8%,  $P=0.000$ ). More unbooked mothers were in the lower social class (72%); few were in the middle class (18.8) and even fewer were in the upper class (9.2%). This is in contrast to the booked mothers who were more in the middle and upper social classes (45.5% and 22.3% respectively), while

lesser percentage of them were in the lower class (32.3%).

In terms of parities, more of the booked mothers were in the 1-4 parity range, followed by 0 parity and lastly the  $\geq 5$  parity range. There is however higher percentage of primigravida and grandmultiparous women among the unbooked when compared with the booked (37% and 34.7% against 33.3% and 30.3%). Most of the booked women (80 %) leave within 20 km from the hospital, while most of the unbooked women (55%) leave >20 km from the hospital.

### Table II

All determinants of maternal complications and perinatal outcomes, with the exception of postpartum haemorrhage, were higher in the unbooked group when compared with the booked group. This difference was statistically significant ( $p=0.001$ ). Postpartum haemorrhage was higher in the booked mothers compared with the unbooked ones. Figure I Shows the changing pattern of proportion of booked and unbooked mothers in AKTH during the study period taken at six monthly intervals. There was a higher percentage of unbooked mothers at delivery in the period, 1<sup>st</sup>July-31<sup>st</sup>December, 2006 (33%) than the period, 1<sup>st</sup>January-31<sup>st</sup>June, 2009 (21%).

**Table I:** Sociodemographic characteristics of booked and unbooked mothers.

| Variables                     | Booked (N= 6,363) | Unbooked (N = 1,998) |
|-------------------------------|-------------------|----------------------|
| <b>Age Group</b>              |                   |                      |
| < 20                          | 252(4)            | 180(9)               |
| 20-39                         | 6003(94.3)        | 1768(88.3)           |
| ≥40                           | 108(1.7)          | 50(2.7)              |
| <b>Educational level</b>      |                   |                      |
| None & primary                | 776(12.2)         | 1596(79.9)           |
| Secondary                     | 3328(52.3)        | 302(15.1)            |
| Post-secondary                | 2259(35.5)        | 100(5)               |
| <b>Social class</b>           |                   |                      |
| Upper                         | 1419(22.3)        | 184(9.2)             |
| Middle                        | 2889(45.4)        | 376(18.8)            |
| Lower                         | 2055(32.3)        | 1439(72.0)           |
| <b>Parity</b>                 |                   |                      |
| 0                             | 2118(33.3)        | 740(37)              |
| 1-4                           | 2310(36.4)        | 566(28.3)            |
| ≥5                            | 1924(30.3)        | 692(34.7)            |
| <b>Distance from hospital</b> |                   |                      |
| < 20km                        | 5090(80)          | 899(45)              |

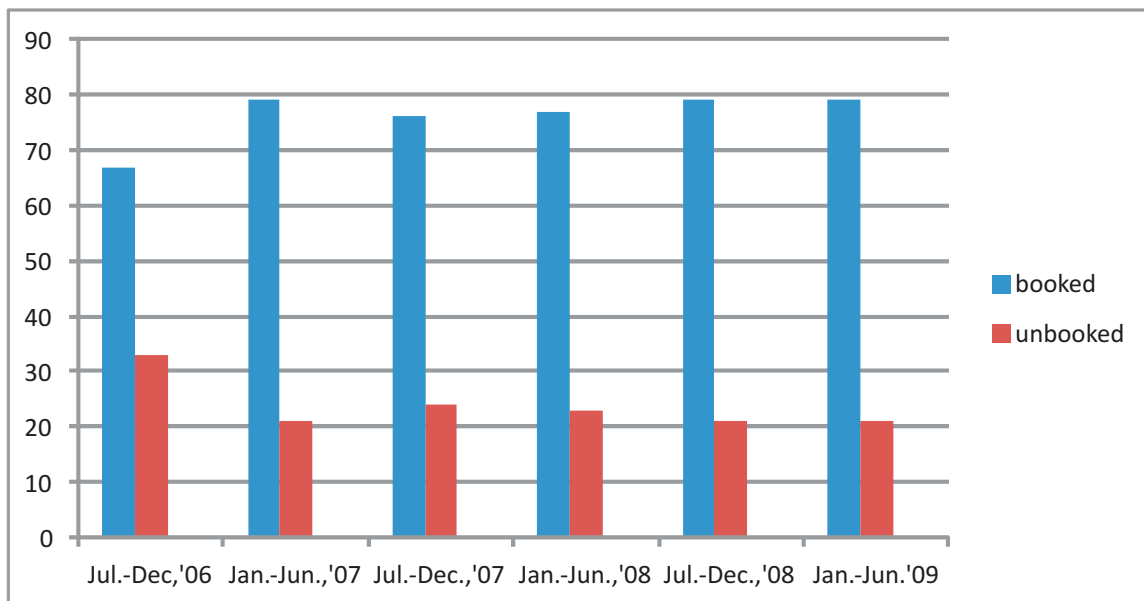
**Table 2:** Pattern of maternal complications and perinatal outcome among booked and unbooked mothers.

| Variables                     | Booked. n= 6,363 (%) | Unbooked. n 1,998(%) | X2     | P Value |
|-------------------------------|----------------------|----------------------|--------|---------|
| <b>Maternal complications</b> |                      |                      |        |         |
| Caesarean section             | 412(6.47)            | 510(25.52)           | 562.65 | 0.001   |
| Antepartum eclampsia          | 55( 0.87)            | 119(5.94)            | 49.32  | 0.001   |
| Antepartum haemorrhage        | 30(0.47)             | 59(2.95)             | 88.91  | 0.001   |
| Postpartum haemorrhage        | 174(2.73)            | 21(1.07)             | 18.92  | 0.001   |
| <b>Perinatal outcomes</b>     |                      |                      |        |         |
| Low birth weight              | 459(7.22)            | 430(21.51)           | 327.19 | 0.001   |
| Low Apgar scores              | 273(4.29)            | 343(17.17)           | 369.42 | 0.001   |
| Stillbirth                    | 239(3.76)            | 90(4.48)             | 2.25   | 0.133   |
| Foetal macrosomia             | 163(2.56)            | 302(15.13)           | 456.20 | 0.001   |

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**Figure1:** Pattern of booked and unbooked mothers in AKTH, from 1<sup>st</sup> July, 2006 - 31<sup>st</sup> June, 2009

### DISCUSSION

Maternal mortality and morbidity remain an issue of serious research and concern in many parts of the world, especially the developing nation where the burden is more.

In our study, 75% of the patients were booked and 25% were unbooked. This proportion of unbooked mothers is similar to 29% reported from Ile-Ife by Owolabi, et al<sup>9</sup> but higher than 15% from South Africa by Basu.<sup>10</sup> The reason could be due to aversion to western oriented programmes in our environment probably due to poverty and illiteracy. It has been reported that 10-30% of deliveries in developing countries are unbooked.<sup>10</sup>

Analyses of socio-demographic characteristics showed that unbooked mothers were not significantly younger in age than booked mothers. Most unbooked

mothers belong to a lower socio-economic class than their booked counterparts. The association between age and booking status agrees with the observation of de Jong, et al<sup>11</sup>, but is in contrast to the observation by Owolabi and Adelusi.<sup>9</sup> As in this study also, Harrison has shown a correlation between education and maternal morbidity<sup>8</sup>.

This study also agrees with findings by Harrison, Owolabi, et al and de Jong<sup>8,9,11</sup> who reported that a higher proportion of the grandmultiparous patients were unbooked. A higher proportion of grandmultiparous mothers were unbooked possibly because they have gained personal experience in labour and tend to ignore antenatal care. Also, most primigravidae were unbooked when compared with those who booked in this review. Harrison<sup>7</sup> and Owolabi, et al<sup>9</sup> reported that their observation of a



significantly higher proportion of unbooked grandmultiparous mothers in their study, was most likely because these mothers had previous successful deliveries and therefore felt overconfident and refused to seek antenatal care leading to attendant increase in perinatal and maternal mortalities and morbidities in this group of mothers.

review, Harrison<sup>7</sup> and Owolabi, et al<sup>9</sup> reported that their observation of a significantly higher proportion of unbooked grandmultiparous mothers in their study, was most likely because these mothers had previous successful deliveries and therefore felt overconfident and refused to seek antenatal care leading to attendant increase in perinatal and maternal mortalities and morbidities in this group of mothers.

The result also shows a positive correlation between unbooked mothers and increased risk of maternal and foetal adverse outcomes. This agrees with the reports of Harrison<sup>8</sup> and Owolabi, et al<sup>13</sup> In both the booked and unbooked mothers, complications are higher in those less than 20 years of age and above 40 years of age, reasons being that certain conditions such as eclampsia and intrauterine growth restrictions are commoner in these age groups.<sup>12,13</sup>

Adequate antenatal care and hospital deliveries enable obstetricians to diagnose complications at an early stage when intervention will bring about better results.<sup>14</sup>

Pregnancy outcomes in the unbooked mothers were significantly poorer than in the booked mothers, due to high low birth

weight babies, and a very high incidence of Caesarean section rates.<sup>13</sup> Unbooked patients presented late with complications making surgical intervention inevitable because of foetal distress and prolonged obstructed labour with attendant high maternal and perinatal mortality.<sup>13</sup> The Caesarean section rate of 25.52% in the unbooked mothers was higher than 6.47% among the booked mothers. In our environment a Caesarean section rate of 10.2 - 34.7% has been reported in some Teaching Hospitals.<sup>15-16</sup> The higher rate have been shown by this study to be due to lack of utilization of antenatal and standard delivery facilities resulting in complicated labour necessitating operative abdominal deliveries. The higher incidence of antepartum complications such as antepartum eclampsia and antepartum haemorrhage among others like obstructed labour and anaemia as reported by Owolabi et al in Ile-Ife are factors that may lead to poor outcomes in the infant and the mother.<sup>9</sup> Some of the unbooked patients were admitted in labour in substandard facilities within and outside Kano metropolis only to be referred or abandoned to self-referral to our unit with prolonged labour and onset of complications.

There has however been a gradual decline in the number of unbooked patient from 33% to 21% in the period under review. The reason for this decline in unbooked patients was probably due to public enlightenment where obstetricians on radio and television programmes, educate women on the importance of antenatal care and the free antenatal services offered by the government in State hospitals. This is in contrast to reports in other parts of Nigeria which showed a trend of decline in

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antenatal attendance and hospital delivery rates because of rising hospital bills.<sup>17,18</sup> Some other studies in our environment elucidated other factors such as aversion for Caesarean sections, religious beliefs, illiteracy, poverty, and environmental and cultural prejudices, as barriers hindering women from utilizing prenatal care and hospital delivery.<sup>9,19</sup>

In conclusion unbooked mothers are at increased risks of maternal complications and adverse foetal outcome. Public

enlightenment on the importance of antenatal care and hospital delivery could improve the outcome of pregnancy. Training of health workers at the primary and secondary levels of care on identification of high risk patients and prompt referral when the need arises is key in reducing perinatal and maternal morbidities. Free antenatal and delivery services as rendered in some places would increase the number of booked patients and help reduce complication. ■■■

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