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Original Article

Obstetric indices at a Private University Teaching Hospital in Jos, North Central Nigeria

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Abstract

Background: Clinical audit of maternity services to ascertain the obstetric indices is vital for improvement in the quality of obstetric care. This study sought to determine the obstetric indices in an emerging private teaching hospital in Nigeria.

Methodology: This was a retrospective review of obstetric records at Bingham University Teaching Hospital, Jos over a 3-year period. Data were extracted from the wards and intensive care unit records, delivery and operation registers and analyzed using SPSS version 16 (SPSS Inc., Chicago, IL, USA).

Results: There were 3817 deliveries conducted during the period under review. The mean age of the women was 29.3 ± 5.2 years and 78.3% of them booked for antenatal care. The cesarean section rate was 31.5%, instrumental vaginal delivery rate was 1.2%, and episiotomy rate was 19.5%. The most common indications for caesarean section were failure to progress in labor (19.7%), obstructed labor (11.6%) and previous successful obstetric fistula repair (11.2%). The average birth weight was 3.4 ± 0.6 kg, while 17.5% of the babies were macrocosmic. Male:Female babies' ratio was 1.1:1 and the twinning rate was 2.3% of all deliveries. Maternal mortality ratio was 530/100,000 live births, while the stillbirth rate was 3.5%. Severe preeclampsia/eclampsia was the commonest cause of maternal death.

Conclusion: Most of the obstetric indices are comparable to those from other teaching hospitals in Nigeria. It is however essential to review intra-partum management of parturients in order to decrease cesarean deliveries arising from failure to progress in labor in this maternity unit.

Key words: Bingham University Teaching Hospital, Jos, obstetric indices

Introduction

Audit of clinical practice is essential for assessing the quality of health care and identification of areas that need improvement.[1] This is especially relevant in an obstetric unit where its indices are a reflection of the quality of health care services as well as indicators for some millennium development goals.[2,3] Obstetric indices vary among health institutions, type of population and countries. Nigeria constitutes 1.7% of the world population but contributes 10% of the global burden of maternal deaths.[4] Maternal mortality ratio varies in different hospitals in Nigeria with reported figures of 2151, 740, and 963/100,000 live births in Sokoto, Jos, and Ibadan, respectively.[5-7]

Cesarean section rates differ among countries with reported figures of 10% in Sweden, 17.8% in Abakaliki, Nigeria and 38.1% in Nairobi, Kenya.[8-10] Episiotomy and other perineal injuries are etiological factors for development of perineal pain, sexual dysfunction and pelvic organ prolapse.[11] The World Health Organization (WHO) recommends restrictive use of episiotomy over routine use, with a suggested ideal rate of 10% of all vaginal deliveries.[12,13]

This study was undertaken to ascertain obstetric indices at this Private University Teaching Hospital to fill gaps in knowledge and establish a baseline for future research. Its findings may also serve as pointers to areas that need improvement.

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Methodology

Obstetric records from the wards and intensive care unit, and delivery and operation registers of the department were reviewed over a 3-year period, from September 2010 to August 2013. The data extracted included sociodemographic and obstetric features of the women that delivered in the hospital including booking status, type of pregnancy, mode of delivery, use of episiotomy, sex and weights of babies delivered, cesarean section and its indications, instrumental deliveries, Apgar scores as well as the number of maternal deaths and stillbirths.

Bingham University Teaching Hospital, Jos, formerly ECWA Evangel Hospital, is the Teaching Hospital of the College of Health Sciences, Bingham University, Karu. It was established with an additional aim of training under-graduate students in Medicine and Surgery. It is also a known center for postgraduate training in family medicine and serves as a referral center for hospitals throughout Plateau State and neighboring states. It is 250-bed hospital and the Obstetrics and Gynecology Unit has 30 beds including 6 delivery beds. It has a well-established vesico-vaginal fistula (VVF) center, offering free treatment to patients with obstetric fistula mainly from the three geo-political zones in northern Nigeria as well as free antenatal care and caesarean section for such patients when they are pregnant following successful obstetric fistula repair.

The data were entered into a computer data base and analyzed using SPSS version 16 for windows (SPSS Inc., Chicago, IL, USA). Simple descriptive statistics was done and variables presented as simple percentages and mean ± standard deviation. Ethical clearance was obtained from the Human Research and Ethics Committee of the Hospital.

Results

A total of 3817 deliveries were conducted during the study period, of which 2616 and 1201 were by vaginal route and cesarean section, respectively. The average gestational age at delivery was 38.7 ± 2.1 weeks. Majority of the women [3393 (88.9%) delivered at term, 374 (9.8%) preterm while 50 (1.3) delivered postterm. The mean age of the women was 29.3 ± 5.2 years with a range of 15-44 years. Most of the women were booked (78.3%) and of parity 1-4 (50.9%) with an average parity of 1.5 ± 1.7. Table 1 depicts the sociodemographic and obstetrics features of the women.

Of the 2616 women, 511 women who delivered by vaginal route had episiotomy, giving an episiotomy rate of 19.5%. However, when the rate was assessed at 6-monthly intervals, there was a declining rate of episiotomy given to women during the study period. The trend is displayed in Figure 1. Vacuum deliveries constituted 1.2% (30/2616) of all vaginal deliveries, but there was no forceps delivery during the period under review.

Table 1: Sociodemographic and obstetric features of the women

Features	Frequency	Percentage
Age group (years)		
≤20	164	4.3
21-25	439	11.5
26-30	1664	43.6
31-35	718	18.8
≥35	832	21.8
Total	3817	100.0
Religion		
Christianity	3557	93.2
Islam	260	6.8
Total	3817	100.0
Gravidity		
1	1550	40.6
2-4	1584	41.5
5-7	618	16.2
8-10	65	1.7
Total	3817	100.0
Parity		
0	1599	41.9
1-4	1939	50.8
≥5	279	7.3
Total	3817	100.0

There were 87 twin and three triplet deliveries, giving a twin and triplet delivery rates of 2.3% (87/3817) and 0.08% (3/3817) respectively. About 181 (4.7%) of the fetuses were in breech presentation at the time of delivery at term. Of 3817 deliveries, 1201 were by caesarean delivery, giving a cesarean section rate of 31.5%. About 71.3% (856/1201) and 28.7% (345/1201) of the cesarean sections were emergency and elective, respectively. Failure to progress in labor (19.7%), obstructed labor (11.6%) and previous successful obstetric fistula repair (11.2%) were the most common indications for cesarean section. Table 2 shows the indications for cesarean section.

A total of 3910 babies were delivered, out of which 3772 (96.5%) were live births. Of these, 89 (2.4%) had varying degrees of birth asphyxia, while there were 138 stillbirths, though there was no differentiation into fresh and macerated stillbirths in the records. The average birth weight of the babies was 3.4 ± 0.6 kg. Most of the babies [2976 (76.1%)] weighed between 2.50 and 3.99 kg, 250 (6.4%) had low birth weight (<2.5 kg), while 684 (17.5%) of them were macrosomic (weight ≥ 4.0 kg). Average head circumference and length of the babies were 34.9 ± 2.1 cm and 49.7 ± 2.8 cm, respectively. The mean Apgar scores were 7.4 ± 1.7 and 9.0 ± 1.8 at 1st and 5th min respectively. Furthermore, 2041 and 1869 of the babies delivered were males and females respectively giving a male:Female ratio of 1.1:1.

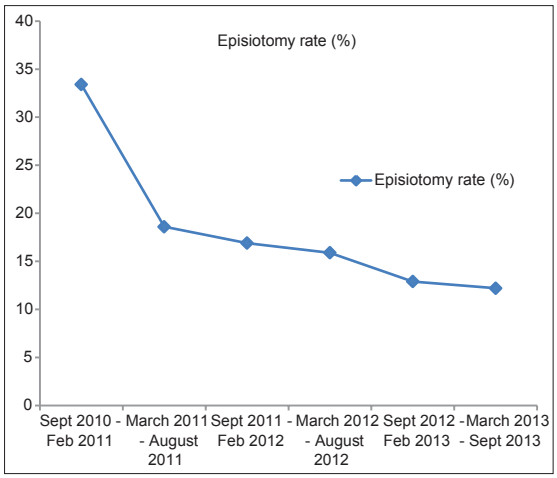

Figure 1: Trend of episiotomy rates at 6-monthly intervals during the study period

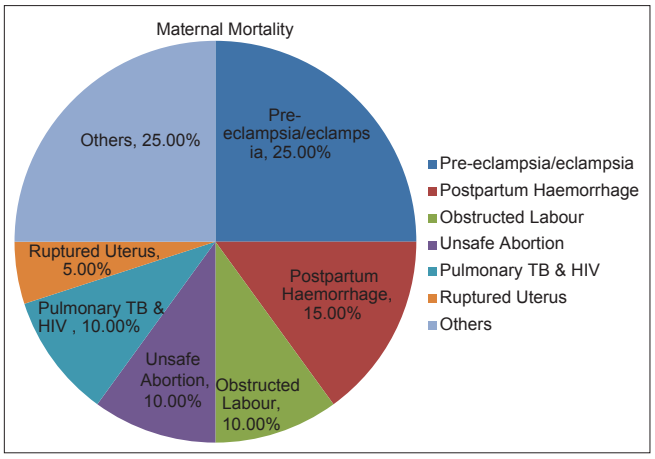

Figure 2: Causes of maternal mortality. Others: Hypertensive heart failure, vaso-occlusive crisis with severe anaemia, suspected amniotic fluid embolism, chronic liver disease in pregnancy, and anaesthetic cause

Table 2: Indications for caesarean section

Indications	Frequency	Percentage
Failure to progress in labor	236	19.7
Obstructed labor	139	11.6
Previous successful obstetric fistula repair	135	11.2
Suspected fetal distress	119	9.9
Breech presentation	108	9.0
Two or more caesarean section	92	7.7
Preeclampsia/eclampsia	72	6.0
Placenta previa	60	5.0
Prelabor ROM with oligohydramnios	33	2.8
Abruptio placentae	32	2.7
Bad obstetric history	27	2.2
Failed induction of labor	25	2.1
Prolonged pregnancy and previous caesarean section	24	2.0
Transverse lie in labor	19	1.6
HIV in pregnancy at term	15	1.2
Cord prolapse	14	1.1
Others‡	51	4.2
Total	1201	100.0

ROM - Rupture of membranes. ‡Include previous myomectomy and third degree perineal tear, transverse vaginal septum, genital warts, long history of infertility, contracted pelvis due to poliomyelitis and fracture, patient's request, retained second twin

There were 20 maternal deaths and 138 stillbirths during the study period giving a maternal mortality ratio of 530/100,000 live births and stillbirth rate of 3.5%. Seventy five percent (15/20) of the women that died were unbooked. Preeclampsia/eclampsia (25.0%) was the commonest cause of maternal death. Figure 2 shows the causes of maternal mortality.

Discussion

In this review, the cesarean section rate was 31.5%, which is much higher than figures of 17.8% and 10.2% reported from other tertiary health centers in Abakaliki and Kaduna respectively[9,14] and almost 2 times the figure of 15.8% reported from a neighboring teaching hospital in Jos.[15] However, it is comparable to figures of 26.5% in Enugu and 34.6% in a private hospital in Lagos.[16,17] The reported high cesarean section rate is expected as this hospital deliver pregnant women with history of successful obstetric fistula repair from all over the northern part of the country routinely by caesarean section. Its well-established VVF center repair obstetric fistulae suffered by women from this part of the country. These women present when pregnant following a successful fistula repair and because the antenatal care and the caesarean delivery are free, they come for delivery irrespective of where they are residing. Furthermore, the excellent reputation of the hospital as a center for repair of obstetric fistulae following obstructed labor likely enhances the number of referrals to the maternity unit due to obstructed labor. Cesarean section due to previous successful fistula repair accounted for 11.2% of the cases and constitutes 3.5% of all deliveries.

In addition, being a teaching hospital and a referral center, complicated and unbooked cases contributed to this high rate of cesarean section as reflected in cases of obstructed labor (11.6%) as well as high rate of emergency cesarean section in this study. Emergency caesarean section accounts for 71.3% of the procedure and this high rate of emergency cesarean section was also noted in other teaching hospitals in Nigeria with reported figures of 85.2% and 74.3% from Jos and Onitsha, respectively.[15,18] Also worthy of note as a contributory factor to the high caesarean section rate in this center was the relatively high rate of procedures done as a result of failure to progress in labor (19.7%). However, not recorded in the delivery registers was how these diagnoses of failure to progress were made, such as the stage of labor the patients were, how many of the patients were attempting vaginal birth after caesarean section and failure at attempts to augment labor. This underscores the need to review protocols for intra-partum management of women in this facility so as to increase vaginal delivery rate, which will at the end lower the caesarean section rate.

Other contributing factors to rising cesarean section rate worldwide may also have contributed to the high reported rate in this center. This includes liberal use of caesarean section for breech presentation as noted in this study where breech presentation was responsible for 9.0% of cases of cesarean section and decreasing skills for operative vaginal delivery including destructive operations in cases of intra-uterine fetal death associated with obstructed labor. This stresses the importance of training Obstetricians on the skills and techniques of external cephalic version, assisted breech and operative vaginal deliveries.

Of the 2616 women who had vaginal delivery, 19.5% of them had episiotomy. This is higher than the recommended rate of 10% by WHO.[12,13] However, it is lower than reported figures of 40.1%, 34.3%, and 35.6% from Port Harcourt, Ogbomosho, and Zaria, respectively.[19-21] Though the episiotomy rate is lower than figures from other tertiary health centers in Nigeria, there is the need to strictly practice restrictive episiotomy thereby offering it to only women that need it. However, it is encouraging to note that the rate of episiotomy was declining in this center as depicted in Figure 1 after concerns were raised in the unit. This again underscores the need for audit of clinical practice in any unit of a health facility.

The instrumental vaginal delivery rate was 1.2% and this was exclusively vacuum deliveries. This is lower than figures of 7.1% in Abakaliki,[9] but within the range of 0.5-3.0% reported from other centers in Nigeria.[22-24] Lack of forceps delivery was also reported elsewhere[9,24] and this may not be unconnected to the fact that necessary skills for forceps delivery is declining among Obstetricians and probably because it is associated with more materno-fetal complications compared to vacuum delivery. Acquiring these skills may lower caesarean section rate and points out the need for training of Obstetricians in the art of forceps delivery.

The mean birth weight in this study was 3.4 kg and this is almost similar to 3.3 kg reported from Nnewi, while the male:female ratio of 1.1:1 was reversed in the same center[24] but similar to the ratio in Abakaliki.[9] The twinning rate was 2.3% of all deliveries and is similar to findings elsewhere.[9,24]

The stillbirth rate was 3.5% and is higher than 2.1% reported from elsewhere.[24] There were however no records of differentiation into fresh and macerated stillbirths. This is a challenge on the need to improve the standard of antenatal and intra-partum care in Nigeria so as to improve perinatal outcomes in our health facilities. Though the proportion of unbooked women presenting with intra-uterine fetal deaths could not be ascertained in this study, the need for public education to highlight the importance of antenatal care for all women cannot be overemphasized so as to reduce the rate of fetal deaths.

The maternal mortality ratio of 530/100,000 live births is lower compared with figures that ranged between 740 and 3392/100,000 live births reported from other teaching hospitals across the country[5-7,9] but higher than figure of 243/100,000 live births reported from Nnewi, South-East Nigeria.[24] Though this maternal mortality ratio is comparable to the national figure of 545/100,000 live births,[25] it is still unacceptably high. The need for affordable or free antenatal care for all women may reduce these deaths as most of the affected women in this study were unbooked patients. The main cause of maternal death is severe preeclampsia/eclampsia, which is in contrast to reports of postpartum hemorrhage as the commonest cause in other studies.[5-7,26] Antenatal care is indispensable to maternal health as it is crucial for early detection and management of hypertensive disorders in pregnancy thereby leading to reduction in maternal deaths due to these conditions.

Limitations of this study include its retrospective nature and the fact that some variables that were relevant which would have helped in providing additional information about the obstetric practice in this center were not included in the delivery register. However, the findings reported will serve as a baseline for future assessment of obstetric indices in this unit and may be used to effect changes in some areas of clinical practice.

Obstetric indices in this hospital are comparable to those from other teaching hospitals in Nigeria. There is the need to review intra-partum management of parturients so as to reduce the number of caesarean section due to failure to progress in labor.

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