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**The Trend of Caesarean Delivery in A Tertiary Mission Hospital in Nigeria: A 5 Year Survey.**

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**Background:** Caesarean delivery (CS) is the commonest obstetric surgery worldwide. The rising rate in CS globally has been a source of concern. The aim of the study was to evaluate the incidence, indications, and outcome of caesarean section at Bowen University Teaching Hospital (BUTH), Ogbomoso. **Methods:** A retrospective descriptive analysis of all the CS carried out at BUTH between 1st January, 2017 and 31st December, 2021. The labor ward delivery and theatre operation register and mortality records were reviewed and data extracted. Results were presented using frequency tables and Chi-square test. **Results:** Out of 7,510 deliveries during the study period, 2,300 cases were by caesarean section, giving a CS rate of 30.6%. The rate was higher among booked patients 1680 (73.0%) and referred patients 1620 (70.4%). Previous scar was the commonest indication 460 (20.0%). There were 11 maternal deaths and 81 (6.6%) perinatal deaths. **Conclusion:** The rate of caesarean section has been increasing gradually and is associated with maternal and perinatal morbidity and mortality. There is need for education of the populace in order to reduce late presentation.

**Key words:** caesarean section, incidence, indications, outcomes, trend

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**INTRODUCTION**

Caesarean section (CS) is an essential part of obstetric practice that has evolved over centuries with the aim of improving maternal and perinatal outcomes. Caesarean delivery is the delivery of the fetus, the placenta and the membrane through an incision in the abdomen and the uterus. It is one of the commonest obstetric operations and the first documented caesarean section on a live patient was performed in 1610.1,2 There are two major types of caesarean delivery - elective CS which is done at a time suitable for the patient and the maternity team and emergency CS, usually performed when there is immediate threat to the life of the mother or fetus.3

Trends in caesarean delivery rate denotes the proportion of caesarean operation performed compared to all women that delivered in a particular period.4Studies have shown an inverse relationship between CS rates and maternal and infant mortality among populations in low income countries. Reduction in maternal morbidity and mortality following CS was due to important advancements during the last half of the 19th century which included the evolution of anaesthetic proficiency, improved surgical techniques, and the introduction of antiseptic procedures.5In spite of remarkable improvement in the safety of anaesthesia and surgical techniques, caesarean section has higher risks of maternal death when compared with normal vaginal delivery.6,7

The CS rate in the US increased from 5% in 1970 to 32.7% in 2014; while in England and Wales, the CSR is between 21% and 24.2% during similar period.7,8 The increasing use of CS as a mode of delivery in Europe and the USA is because of fear of malpractice litigation, increased use of epidural anesthesia and electronic fetal monitoring.

The incidence in most West African countries ranges from 15% to 21%, while in most teaching hospitals in Nigeria a rate of 20 to 30% has been reported. 1,7The major indications among this population are previous CS, fetopelvic disproportion, preeclampsia/eclampsia and obstructed labor. These teaching hospitals serve as referral centres with higher concentration of high risk patients.

The CS rate in Abuja and Sokoto was 21.4% and 11.3% respectively.1,7Studies from Abuja revealed that 80.2% were by emergency caesarean sections and elective caesarean section accounted for 406 (19.8%) cases1. In Ilorin, the rate of caesarean delivery was 9.1% with a rise from 1 in 26 deliveries in 1990 to 1 in 5 deliveries in 1999.9

The caesarean section rate of 10.4% rose to 27.6% in Enugu from 1989 to 2009.10

Studies revealed other reasons for the increase in CS rate include increase in primary CS rate for dystocia and failed induction, increase incidence of diabetes mellitus, Obesity and Multiple gestation and limited use of trial of labour after CS (TOLAC).4. In recent times, elective caesarean deliveries are increasingly being performed for a variety of indications including for pelvic floor injuries associated with birth, medically indicated preterm birth, to reduce the risk of fetal injury and for patient request.11  
    The rising rate in caesarean delivery globally has been a source of concern with CS rates varying from 10-30 percent12,13World Health Organization recommends caesarean section rate of 10-15% in any given population and any rate above this level is no longer associated with reduction in maternal mortality.13

A Christian medical Centre reported the Caesarean section rate ranged from 29.9% to 35.5% with the leading indication being previous Caesarean delivery.14Reseaerch shows that evidence-based approach to standardize and regulate CS rate in obstetrics practice can be achieved with the use of 10 Robson classification groups in relation to specific obstetrics scenario. 15,16.

Hence this study will review the trend of Caesarean section in Bowen Teaching Hospital, Ogbomoso.

***Justification***

Bowen University Teaching Hospital (BUTH) is a religious based tertiary centre where women present with different gynaecological and obstetrics complaints including problems of labour. This study is essential to review the caesarean section rate, indications and complications among patients receiving care in this facility because there is no previous review on this subject in this centre. The rise in caesarean section (CS) rate has prompted increased interest in factors surrounding prevalence of CS. This study reviewed if there is any religious or other factors

influencing the use of caesarean delivery in this faith based tertiary centre.

The aim of this study was to evaluate the incidence, indications, and outcome of caesarean section in this hospital during the period under review. It also aimed to ascertain fetal and maternal outcomes associated with the procedure and make recommendations based on the findings observed.

**Materials and Methods**

This is a retrospective study where case notes of patients delivered by caesarean section between 1st January, 2017 and 31st December, 2021 at Bowen University Teaching Hospital were reviewed. The labor ward delivery register and theatre operation register and mortality records were also reviewed. The nature and indications for the procedure were analyzed. Other parameters that were analyzed include the sociodemographic parameters of the patients and their husbands, parity, the booking status of the patients, sources of referral, type of the caesarean section, anaesthesia used, cadre of the surgeon and the amount of blood loss. Maternal outcome was noted in terms of complications, patients being dead or alive. Fetal outcome was analysed in terms of number of fetus(es), Apgar scores and neonatal intensive care unit admission (NICU) . Results were presented using simple tables and percentages and analyzed using chi square test.

**Results**

During the period under review, there were 3758 deliveries with 1150 caesarean sections, giving a caesarean section rate of 30.6%. Of these, 452 (39.3%) were elective cases while 698 (60.7%) were emergency caesarean section.

Table 1 shows the sociodemographic characteristics of the patients. Most of them were between 25-29 years (64%), Christians (84%). Most of them (85%) were educated up to the secondary school.

Table 2 depicts the indications for the caesarean section. Previous caesarean section was the commonest (23%), followed by fetal distress (17%) and abnormal lie (13%).

Table 3 describes the characteristics of the surgery. Majority of the surgeries were done by residents (59%), with 1023 (89%) having spinal anaesthesia. 897 (78%) lasted less than one hour, most of them 863 (75%) were discharged within three days of the surgery.

Table 4 shows the outcome of the surgery. Eleven (1%) of the patients died while neonatal death was 81 (6.6%). Commonest complication following the surgery was surgical site infection. This was seen in 40 (3.5%) of the patients.

**Results**

Table 1. Socio-demographic Characteristics



Table 2: Indications for Caesarean Section

|  |  |  |
| --- | --- | --- |
| **Indication** | **Frequency** | **Percentage (%)** |
| Cephalopelvic disproportion | 127 | 11 |
| Poor progress of labour | 127 | 11 |
| Previous Caesarean section scar | 230 | 23 |
| Foetal Distress | 195 | 17 |
| Severe oligohydramnios | 35 | 3 |
| Abnormal lie | 150 | 13 |
| Maternal request | 23 | 2 |
| Severe preeclampsia/Eclampsia | 92 | 8 |
| Cervical dystocia | 23 | 2 |
| Poor Obstetric history | 23 | 2 |
| Cardiac disease | 11 | 1 |
| Antepartum Haemorrhage | 57 | 5 |
| Severe IUGR | 23 | 2 |

Table 3: Characteristics of the Surgery



Table 4: Outcome of Surgery



\*Multiple responses

**Discussion**

The overall caesarean section rate in this study is 30.6% and this is consistent with data from other Teaching Hospitals in Nigeria. The caesarean section prevalence vary from one country to another with 32% reported in USA, 25% reported in UK, 16–36.4% in China, 25.4% in India, and 35.4% in Latin America. 17,18,19 However, lower rates of 4–16% were reported in some countries in sub-Saharan Africa[3](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8356609/#R3). There are rate variations within the same country but the incidence is about 20 to 30% in most of the Teaching Hospitals.20

Contributing factors to the rising rate of caesarean section globally, may also have contributed to the rise in caesarean section rate in the centre. These include increased cultural acceptability and an improved level of awareness of this mode of delivery as two-fifth of these patients had tertiary education and as a result of the level of education are likely to be empowered and have maternal autonomy.21 Another reason for the increasing caesarean deliveries might be related to the specialist and mission nature of this Teaching Hospital as it serves as a referral centre for traditional birth attendants, primary and secondary health facilities.

In this study, two-third of the women who were within the ages of 25-29 years had the highest caesarean section rate, the same was revealed in a five-year survey of cesarean delivery at a Nigerian tertiary hospital in Abuja, Nigeria where this same age group had the highest caesarean section rate of 37.1%.1The rate of caesarean section in this study was higher (three-quarter of the cases) among booked patients, this is in contrast to the findings from another study where the rate of caesarean section was higher among the unbooked patients (63.5%) than booked patients (36.5%).1

Previous caesarean section scar was seen as highest indication for caesarean sections with one-third of cases followed by one-fifth with fetal distress, indication with the least cases was cardiac diseases. A similar finding was revealed in a previous study where having two previous caesarean sections was the leading indication for caesarean section in the hospital.22 A contrast finding was revealed in another study where cephalopelvic disproportion was the most common indication with 30.8% of patients.1

About one-fifth lasted more than one hour while others lasted less than 1 hour and three-quarter of them stayed less than 3 days in the hospital. The reason for this may be because of the availability of experienced doctors and required facilities as most of the caesarean sections were done by resident doctors and consultants. For the maternal outcome, 1% of the cases reviewed revealed maternal death while most of the respondents 99% survived. This is similar to the findings of a previous study with 0.8% of maternal death.1Complication was absent in 96.3% while 3.7% had complications, the reason for the low rate of complications may be because most of the patients were booked. Antenatal care service goes a long way in determining delivery outcomes while lack of antenatal care and late presentation in labour has been identified to be the major predisposing factors to maternal death.23,24

For neonatal outcome, 93.4% of the neonates were alive and 6.6% were dead, this was revealed by another previous study with a low rate of neonatal death (2.9%) that was due to birth asphyxia following emergency caesarean section.1Few babies, one-tenth of them, had SCBU admission where most of the conditions were due to sepsis, birth asphyxia, prematurity, and a few of them were due to hypoglycemia. The reason for this may be because most of the babies (85%) were from term pregnancies.

To reduce the trend towards a high caesarean section rate as seen in this study, efforts should be made to avoid a primary caesarean section. This is because the commonest indication found in this study was a previous caesarean section scar. These efforts should include improving accoucher’s skills in instrumental vaginal delivery and assisted breech delivery. Active management of labour has also been found to be useful in reversing the trend.25

**References**

1. Isah AD, Adewole N, Zaman J. A five-year survey of caesarean delivery at a Nigerian tertiary hospital. Trop J ObstetGynaecol 2018;35:14-7.
2. Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY. Caesarean Delivery and Peripartum Hysterectomy. Williams Obstetrics. 23rd ed. McGraw Hill, New York. 2010; 544-564.
3. Royal College of Obstetricians and Gynaecologists. Classification of Urgency of Caesarean Section – A Continuum of Risks. RCOG. Royal College of Obstetricians and Gynaecologists. Good Practice No. 11. London: RCOG; 2010].
4. Berghella V, Landon MB. Caesarean Delivery. In:Gabbe SG, Niebyl RJ, Simpson JL, Landon MB, Galan HL, Jauauiauix ER, Driscol DA. Obstetrics Normal and problem Pregnancy. 6th ed. Elsevier Saunders Inc. China. 2012; 445-464..
5. Caesarean Section—Past and Present James Low, MD, FRCSC Department of Obstetrics and Gynaecology, Queen’s University, Kingston . JOGC. 2009: 131.
6. Gibbons L, Belizán JM , Lauer JA, Betrán AP ,Merialdi M, Althabe F. The Global Numbers and Costs of Additionally Needed and Unnecessary Caesarean Sections Performed per Year: Overuse as a Barrier to Universal Coverage World Health Report (2010) B
7. Aworinde OO, Olufemi-Aworinde KJ, Fehintola A, Adeyemi AB, Owonikoko KM, Adeyemi AS. Antiseptic skin preparation for preventing surgical site infection at caesarean section. Open Journal of Obstetrics and Gynaecology. 2016; 6(4):246-251
8. Sarmiento A. Trends in Cesarean Section [Internet]. Caesarean Section. InTech; 2018. Available from: <http://dx.doi.org/10.5772/intechopen.77309>. Accessed on 12/01/2024.
9. Ijaiya MA, Aboyeji AP. Caesarean Delivery: The Trend over a Ten year period at Ilorin, Nigeria. Nig J Surg Res 2001;3:11-18).
10. Ugwu EOV, Obioha KCE, OkezieOA,Ugwu AO. A Five-year Survey of Caesarean Delivery at a Nigerian Tertiary Hospital. Annals of Medical and Health Sciences Research .Ann Med Health Sci Res Jan 2011; 1(1) 77-84.
11. Ananth CV, Joseph KS, Oyelese Y, Demissie K. Trends in preterm births and perinatal mortality among singletons: United States 1989 through 2000. ObstetGynecol 2005;105:1084.
12. World Health Organization.(WHO) WHO statement on caesarean section rates. Accessed at www.who.int/repro ductivehealth/WHO/RHR/15.02 on 13/01/24.
13. Gordon CSS. Delivery after previous caesarean section. In: James D, Steer PJ, Crowther CA, Weiner CP, Robson SC, Gonik D. High Risk Pregnancy, Management Options 4th ed. Elsevier Saunders Inc. China. 2011;1261-1268.
14. Worjoloh A, Manongi R, Oneko O, Hoyo C, Daltveit A, Westreich D. Trends in cesarean section rates at a large East African referral hospital from 2005-2010. Open Journal of Obstetrics and Gynecology, 2012;255-261. doi: 10.4236/ojog.2012.23053.
15. Betrán AP, Vindevoghel N, Souza JP, Gülmezoglu AM, Torloni MR. A Systematic Review of the Robson Classification for Caesarean Section: What Works, Doesn't Work and How to Improve It . PLoS One. 2014; 9(6): e97769. doi: 10.1371/journal.pone.0097769PMCID: PMC404366
16. Akadri, A.A., Imaralu, J.O., Salami, O.F. *et al.* Robson classification of caesarean births: implications for reducing caesarean section rate in a private tertiary hospital in Nigeria. *BMC Pregnancy Childbirth* **23**, 243 (2023). <https://doi.org/10.1186/s12884-023-05557-x>
17. Villar J, Valladares E, Wojdyla D, Zavaleta N, Carroli G, Velazco A: Caesarean delivery rates and pregnancy outcomes: the 2005 WHO global survey on maternal and perinatal health in Latin America. Lancet. 2006, 367: 1819-1829. 10.1016/S0140-6736(06)68704-7
18. Feng XL, XU L, Guo Y, Ronman G. Factors influencing rising caesarean section rate in China 1998–2008. Bulletin of the WHO. 2012; 90:30–39.
19. Oumadigui A. Rising rates of caesarean section: the way ahead. India J Med Res. 2006; 124:119–122
20. Broadhead TJ, James DK. Worldwide utilization of caesarean section. Fetal Maternal Med Rev 1995;7:99-108
21. Gunn JKL, Ehiri JE, Jacobs ET, Ernst KC, Pettygrove S, Center KE, et al. Prevalence of Caesarean sections in Enugu, southeast Nigeria: Analysis of data from the Healthy Beginning Initiative. PLoS ONE. 2017; 12(3): e0174369. https://doi.org/10.1371/journal.pone.0174369
22. Ugwu EOV, Obioha KCE, Okezie OA, UgwuAOA. Five-year Survey of Caesarean Delivery at University of Nigeria Teaching Hospital, Enugu, Nigeria. Ann Med Health Sci Res 2011;1:77-84
23. Adetoro OO. Maternal mortality-A twelve year survey at the University of Ilorin Teaching Hospital(U.I.T.H) Ilorin, Nigeria. Int J GynecolObstet 1987;25:93-8.
24. Oladipo OT, Sotunsa JO and Sule-Odu AO. The rise in caesarean birth in Sagamu, Nigeria: reflection of changes in obstetric practice. J Obstet Gynecol 2004; 24: 377-381.
25. Akadri AA, Odelola OI. A six year review of caesarean section at Olabisi Onabanjo University Teaching Hospital Sagamu, south west Nigeria. Nigerian Medical Practitioner 2017; 71 (3–4): 53 – 7