

■ Original Research Article

A Four-Year Review of Caesarean Section at a Secondary Healthcare Facility in Abuja, Northcentral Nigeria

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Abstract

Background: Caesarean section (CS) rates have been on the increase worldwide for various reasons. Despite the global increase in rates, there still exist wide disparities in rates between regions, countries and within countries. The indications for CS have evolved to include non-medical indications such as maternal and obstetricians' preferences, and for social reasons. **Aim:** The aim of the study was to determine the rate, indications, outcomes and complications of CS in a secondary healthcare facility in Abuja, Northcentral Nigeria. **Materials and method:** This was a retrospective study of all cases of CS performed at Maitama District Hospital, Abuja between 1st January 2019 and 31st December 2022. The relevant data were extracted from the patients' records in the hospital's Electronic Medical Records database and also from the delivery registers in the labour ward, and operating theatre records. Data analysis was done using SPSS version 26. Results were presented in tables as frequencies and simple percentages. **Results:** During the study period, there was a total of 6,438 deliveries, with 2,800 CS, giving an overall CS rate of 43.5%. Emergency CS was the commonest type (53.3%). The commonest indications for the CS were CPD (38.7%), fetal distress (26.4%), and two or more previous CS (11.1%). Anaemia was the commonest maternal postoperative complication accounting for 25.6% of cases. There were six maternal deaths (0.2%). Majority (81%) of the babies had good Apgar scores with 14.9% having various degrees of birth asphyxia. There were 106 perinatal deaths (4.1%). **Conclusion:** The CS rate in this study is substantially higher than both the WHO recommended rates and Nigeria national average. Indications were varied with contributions from CPD, fetal distress, breech presentation, previous CS and maternal request worthy of note. Maternal and perinatal outcomes were good, despite the high proportion of emergency CS. Measures to improve access to antenatal care and labour management practices, plus patient education, will help stem the rising CS rates.

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Keywords: Caesarean section, indications, outcome, complications, Abuja

INTRODUCTION

Caesarean section (CS) is a common surgical intervention in obstetrics practice. It refers to the delivery of the fetus, placenta and membranes through an abdominal and uterine incision after the age of fetal viability. It is often performed for maternal or fetal indications, or both.¹ Caesarean section has become increasingly common in both developed and developing countries with wide variations between regions, countries and within countries.^{2,3} The World Health Organization (WHO) recommended a Caesarean section rate (CSR) of between 10-15% with a declaration that there was no justification for CSR to be higher than 10-15% in any region of the world.² However, available evidence suggests that there is lack of consensus on what the appropriate CSR should be worldwide.³

Globally, the CSR is rising due to many factors. These include overdiagnosis of fetal distress due to the advent of electronic fetal monitoring and increased confidence in the general safety of caesarean section due to better surgical techniques and anaesthesia, increasing induction of labour, over-estimation of risk with labour after a prior caesarean section, maternal and obstetrician preferences.^{4,5}

Currently, the global average is 21.1%, ranging from 5% in sub-Saharan Africa to 42.8% in Latin America and the Caribbean, and is projected to rise to 30% by 2030, with both unmet need and overuse coexisting.⁴ While the national average for CSR in Nigeria remains relatively low at 17.6%, hospital-based data from tertiary and private facilities show higher rates. Reported rates in Nigeria range between 5.8%-51.3%.⁶⁻¹⁸ The disparities in the rates, indications and complications of CS in facilities across the geopolitical zones of Nigeria are thought to be influenced by urban-rural differences, socioeconomic factors and access to healthcare services.^{17,18}

Traditionally, CS has been classified according to the indication as elective or emergency. The common indications for CS include previous CS, malpresentation, cephalopelvic disproportion (CPD)/obstructed labour, fetal distress, antepartum haemorrhage, medical conditions in pregnancy such as hypertensive disorders of pregnancy, failed induction of labour and maternal request.¹⁻⁵

CS is not without risks. It is associated with complications to both mother and the baby. Recognised complications include haemorrhage, intra-operative injury to visceral organs, post-operative wound infection, anaesthetic complications, neonatal respiratory morbidity, increased maternal and perinatal mortality, anaemia, more extended hospital stay, and compromise of the woman's obstetric career as a result of repeated CS.¹⁹

The aim of this study was to determine the rate, indications and outcome of Caesarean section in a secondary

healthcare facility in Abuja, Northcentral Nigeria. The specific objective was to audit the practice in our facility and provide evidence-based institutional data, being the first of its kind in the facility.

MATERIALS AND METHODS

This was a retrospective review of all cases of CS performed at the maternity unit of Maitama District Hospital (MDH), Abuja over a 4-year period, between 1st January 2019 and 31st December 2022. MDH is one of the public secondary level healthcare facilities in the cosmopolitan city of Abuja. It is located in the Abuja Municipal Area Council of the Federal Capital Territory (FCT). It is accredited for residency training in Obstetrics and Gynaecology, and serves as a referral centre for patients from both public and private health institutions in the FCT and its environs. The hospital operates an electronic medical records system (E-MRS).

For the study, data were collected from the patients' records in the E-MRS database and also from the delivery registers in the labour and postnatal wards, and operating theatre records. The relevant socio-demographic and obstetric characteristics of the patients obtained included: age, booking status, parity, indication for the CS, and maternal and perinatal complications and outcomes. Where more than one indication for the CS was stated, the main indication was taken for analysis. Similarly, only major maternal post-operative complications were considered for analysis.

The data extracted were analysed using Statistical Package for Social Sciences (SPSS) version 26 for windows (SPSS 26, IBM Inc., Chicago, IL USA). The results were presented in tables as frequencies and simple percentages. Ethical approval for the study was obtained from the Institution's Research and Ethics Committee.

RESULTS

A total of 6,438 deliveries occurred during the period of study. Out of these, 2,800 were caesarean sections, giving a CS rate of 43.5%. Emergency CS accounted for 1,491 (53.3%) while elective CS accounted for 1,309 (46.7%). Of the 2,800 CS cases, data on 256 cases were incomplete; hence only 2,544 case records were available for analysis (91% retrieval rate).

The general trend of CS over the study period remained fairly constant (42.4% in 2019; 42.2% in 2020; 46.2% in 2021; 43.7% in 2022). The slightly higher CSR (46.2%) in 2021 occurred during the first wave of COVID-19 pandemic, when the facility served as the only centre accepting referred cases.

Table 1: Demographic characteristics of the study participants

Variable	Frequency	Percentage
Age (years)		
≤20	140	5.5
21-30	1,182	46.5
31-40	886	34.8
>40	336	13.2
Booking status		
Booked	1,508	59.3
Unbooked	1,036	40.7
Parity		
0	1,067	41.9
1-4	986	38.8
≥5	491	19.3
Total	2,544	100.0

Table 2: Indications for caesarean section among the study participants

Indication	Frequency (n=2,544)	Percentage (%)
Cephalopelvic disproportion (CPD)	984	38.7
Fetal distress	672	26.4
2 or more previous CS	282	11.1
Malpresentation (mainly breech)	112	4.4
Hypertensive disorders in pregnancy (PE/E)	103	4.0
Failed vaginal birth after CS (VBAC)	94	3.7
Multiple pregnancy	60	2.4
Failed induction of labour (IOL)	54	2.1
Prolonged obstructed labour	45	1.8
Fetal macrosomia	30	1.2
Maternal request	22	0.9
Antepartum haemorrhage (APH)	20	0.8
Bad obstetric history (BOH)	17	0.7
Others*	49	1.9

PE/E=preeclampsia/eclampsia; *Others=cord prolapse, prevention of mother to child transmission of HIV (PMTCT), gestational diabetes mellitus (GDM), intrauterine fetal death (IUFD), elderly primigravida, prolonged premature rupture of fetal membranes (PROM), postdate, previous myomectomy

Table 3: Maternal and Perinatal outcomes and complications

Variable	Frequency	Percentage
Maternal complication*		
No complication	2,054	80.7
Anaemia	652	25.6
Postpartum haemorrhage (PPH)	308	12.1
Wound infection	234	9.2
Wound dehiscence	85	3.3
Pyrexia	40	1.6
Endometritis	20	0.8
Urinary tract infection (UTI)	12	0.5
Maternal death	6	0.2
Perinatal outcome		
Normal Apgar scores (>6)	2,112	81.0
Birth asphyxia	388	14.9
Perinatal death	106	4.1

*Some women had more than one complication;
Total birth = 2,606 (58 twins + 2 triplets)

As shown in Table 1, most of the women, 1,182(46.5%), were within the age group 21-30years; 886(34.8%) in the 31-40years age group, (Age range:17-42years). Majority, 1,508(59.3%), were booked. The commonest parity was Primigravida, representing 1,067(41.9%) of the cases. Multigravida (para1-4) accounted for 986(38.8%) and grandmultipara 491(19.3%).

Table 2 shows the various indications for CS during the study period. Cephalopelvic disproportion (CPD) was the commonest indication, accounting for 984(38.7%), followed by fetal distress, 672(26.4%), and two or more previous CS, 282(11.1%). Hypertensive disorders of pregnancy (mainly severe preeclampsia/eclampsia) accounted for 103(4.0%). Failed VBAC and failed IOL accounted for 94(3.7%) and 54(2.1%) respectively. Malpresentation (due mainly to breech presentation) accounted for 60(2.4%), while maternal request accounted for 22(0.9%).

Table 3 shows maternal and perinatal outcomes and complications. Anaemia was the commonest maternal postoperative complication accounting for 25.6%, followed by PPH (12.1%), wound infection (9.2%), and wound dehiscence (3.3%). There were six maternal deaths (0.2%), giving a maternal mortality rate of 236/100,000 caesarean births. Some of the women had more than one complication. All the cases of PPH had blood transfusion ranging from two to five units of blood. Of the 2,606 neonates (including 58 twins and two triplets) available for analysis, 2,112(81.0%) had normal Apgar scores (>6) while 388(14.9%) had various degrees of birth asphyxia. There were 106 perinatal deaths (4.1%), giving a perinatal mortality rate of 41/1,000 total births.

DISCUSSION

The caesarean section rate (CSR) of 43.5% in this study is significantly higher than the WHO recommended rates of 10-15% and most rates in Nigeria.^{6,9,10,11,13} It is, however, comparable to the 43.8% reported by Maduka et al in Agbor,¹² and 42.4% by Allagoa et al in Yenogoa,⁷ both in Nigeria, and the 42.2% reported in Latin America and the Caribbeans.⁸ A rate of 21.4% was reported by Isah et al⁸ in a tertiary hospital located in a rural part of Abuja, within the same city where our study was conducted. A very high CSR of 51.3%, comparable to rates recorded in Egypt, Cyprus and Brazil, was reported by Babah et al in a teaching hospital in Lagos, Nigeria.¹⁶ This disparity in rates could be attributed to the differences in the study design, the patients' demographic characteristics, type of health facility, and institutional protocols among others. Higher rates are common in tertiary and regional facilities like ours, that manage complicated and referred high-risk cases.¹⁸

The policy of use of CS for breech in primigravidae, the restriction on the use of induction and augmentation of labour (IOL/AOL) for VBAC cases, and the lack of routine practice of ECV for breech presentation in our facility, are possible contributory factors to the high CS rate recorded in the study.²⁰ For instance, in our facility, CS is the only option for delivery in patients with one previous CS who fail to go into spontaneous labour at term, or who fail to progress in labour due to inefficient uterine action, where IOL/AOL could have been employed.

A National survey on caesarean section and associated factors in Nigeria by Adewuyi et al reported an overall prevalence of CS in Nigeria to be 2.7% with 5.2% in urban and 1.2% in rural areas, indicating unmet needs in use of CS, despite the reported high institutional-based rates.¹⁸ The lower rates of CS reported in rural areas compared to urban areas are attributable to lack of access to health care facilities, low acceptance of CS among women due to fear of complications, negative perception of CS as an abnormal mode of delivery, and high cost of the surgery.^{17,18,21} There is, thus, a concurrent overuse and underuse of CS in Nigeria.¹⁷

The vast majority of the women in the study were primigravida (41.9%) and in the age group 21-30 years (46.5%). This observation is in consonance with findings in other studies.^{6,8,12,13} Primigravidae are known to be prone to dysfunctional labours, including prolonged and obstructed labour (due to CPD), which are most often associated with fetal distress requiring operative interventions.²² A high rate of CPD and fetal distress was also observed in this category of parturients in our study. Ugwu et al, however, reported a higher proportion of CS (51.4%) in multigravida (para 1-4) compared with primigravida (41.5%) in Enugu.⁹ A lower rate of 7.1% was, however, recorded in grandmultipara in their study and they attributed their findings of higher CSR in women of low parity compared to grandmultiparous women to the fact that labour tends to be smoother and faster in multiparous women compared with primigravida. There were more booked (59.3%) than unbooked (40.7%) women in this study, reflecting the cosmopolitan nature of Abuja and our population of study which comprised mostly educated civil servants.

Emergency CS was the commonest type of CS noted in this study (53.3%). Several other studies reported similar findings.⁶⁻¹¹ Majority of these emergency CS were performed in the unbooked, and referred patients. Maduka et al, however, reported a higher proportion of elective CS (52.9%) in their study in a secondary health facility.¹²

The indications for CS in this study were many and varied. The commonest indication was CPD (38.7%), followed by fetal distress (26.4%), and two or more previous CS (11.1%). Similar findings were reported in

other studies.^{7,8} This is not surprising as CPD and fetal distress are common features in primigravidae who accounted for majority of the cases. Failed VBAC, ending in emergency CS, accounted for 3.7% of the indications. This, with the contribution from two or more previous CS (11.1%) accounted for a significant 14.8% of the indications for CS in this study.

It is also worthy of note that maternal request accounted for nearly 1% of indications in this study. The reasons for maternal request for CS in our study included concerns about fetal wellbeing and uterine rupture during trial of vaginal birth after a previous CS (VBAC), intolerable pain and fear of uterine rupture during induction of labour, advanced maternal age, history of prolonged infertility, previous traumatic experience during vaginal delivery, and desire to have a baby on a specific day and/or date. Chigbu et al reported a prevalence of CS on request of 4.4% in their study, citing previous infertility and advanced maternal age at first pregnancy as the common reasons for the request.⁵ Several other studies have reported on the implications of non-medically related maternal request for CS on the health of the mother and baby, and on increasing CSR.^{5,23}

Although CS can be a life-saving intervention for both mother and baby, it is also associated with short- and long-term complications including higher risk of maternal and perinatal morbidity and mortality.¹⁹ Our study showed that the commonest post-operative maternal complication was anaemia, which was in tandem with the findings by Isah et al in Abuja,⁸ Ugwu et al in Enugu⁹ and John et al in Portharcourt.¹³ Other maternal complications recorded in this study include postpartum haemorrhage (PPH), wound infection, and wound dehiscence. All of the women with PPH received blood transfusions.

There were six maternal deaths (0.2%), giving a maternal mortality rate (MMR) of 236/100,000 caesarean births. All of the maternal deaths occurred in emergency CS cases, and all were unbooked referred cases, most of whom arrived the facility in moribund state. Three of the maternal deaths occurred in patients with eclampsia, two following PPH, and the remaining one from sepsis following prolonged obstructed labour. The maternal mortality rate observed in this study is low compared to the rates of 0.7% (MMR 700/100,000) and 0.8% (MMR 800/100,000) reported by Isah et al⁸ and Ugwu et al,⁹ respectively.

Majority of the babies delivered within the study period had good Apgar scores (81%) while 14.9% had various degrees of birth asphyxia, with more than half of these being delivered by emergency CS. There were 106 perinatal deaths (4.1%), giving a perinatal mortality rate of 41/1,000 total births. This finding is comparable to the rates reported in other studies.^{8,24,25}

A cursory look at the various indications for CS in this study shows that patient education, improved access to antenatal care, promotion of VBAC, ECV and assisted vaginal breech delivery practices, optimising IOL and consistent management of labour with partograph, will help in reducing the rising CS rate.

CONCLUSION

Our CS rate of 43.5% is substantially higher than both the WHO recommended rates and Nigeria national average. Indications were varied with contributions from CPD, fetal distress, breech presentation, previous CS and maternal request worthy of note. Both maternal and fetal outcomes were relatively good despite the high proportion of emergency CS.

Limitation of the study

This is related to its retrospective design with its recognised drawbacks including loss of data. The indications for CS were multiple in some cases necessitating the selection of only the one considered as the main indication. The diagnosis of fetal distress was clinical and not supported with fetal scalp sampling for pH studies.

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