

Original Article

Analysis of Caesarean Deliveries (CD) at a Tertiary Hospital in Northeastern Nigeria: A 5 Year Review.

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Abstract

Background: One of the most commonly performed surgical procedures in Obstetrics is caesarean delivery (CD), and certainly the oldest surgical operation. Caesarean delivery is life-saving, especially when there is a failure or contraindication to vaginal delivery. However, the health risk and the cost of the surgery may be quite challenging, especially in low-resource countries like Nigeria. The observed increased prevalence rate in recent times is alarming and has become a major public health concern, calling for regular appraisal of its indications in order to reduce the prevalence. This study was undertaken to determine the prevalence, trend, indications, maternal and foetal outcomes at Modibbo Adama University Teaching Hospital, Yola, Adamawa State, Nigeria.

Methodology: It was a hospital-based retrospective study of all the cases of CD undertaken between 1st January 2018 and 31st December 2022. Names and hospital numbers of patients were identified; the case folders were traced and retrieved. Necessary information was obtained and analyzed using SPSS version 17 software. Results were presented in percentages, simple graphs, and ratios.

Results: During the years under review, there were 8568 deliveries, out of which 2707 had cesarean delivery, giving a cesarean delivery rate of 31.6%. The major maternal indication was prolonged obstructed labor, 627 (23.09%), while that of foetal indication was foetal distress, 418 (15.44%). The trend of caesarean delivery in this study showed a steady increase between 2018 and 2019 and 2021 to 2022, with a drop in 2020. This was due to the lockdown following the COVID-19 pandemic in that year. The maternal mortality ratio was 776/100,000 live births, and case fatality was 0.8%, while perinatal mortality was 41/1000 births.

Conclusion: The caesarean delivery rate in this study was very high when compared to most teaching hospitals in Nigeria. Effort should therefore be made to reverse the ugly trend. Therefore, a thorough and meticulous assessment of patients should be done before a decision is taken for surgery, especially elective caesarean deliveries.

Keywords: Caesarean delivery, trend, outcome, tertiary hospital, Northeastern Nigeria.

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Quick Response Code:



Introduction

Caesarean delivery (CD) is the commonest surgical procedure carried out worldwide [1, 2]. It is defined as the surgical procedure to deliver the baby (babies), the placenta, and the foetal membranes after the age of viability through abdominal and uterine incisions [2-5]. The origin of the procedure dates back to antiquity and is lost in mythology; however, the first documented and successful caesarean delivery on a living human was performed in 1610 [2-4].

Although vaginal delivery remained the safest and the best mode of delivery with fewer complications when compared to caesarean delivery [6-8, 11] Caesarean Delivery still remain a viable option to vaginal delivery especially when there is threat to life of the mother or foetus requiring urgent delivery and or when vaginal delivery is not feasible, in such cases with contracted pelvis and other contraindications to vaginal deliveries [12-16]. Generally, CD is undertaken to improve maternal and foetal outcome and to reduce anticipated complications from labour and vaginal deliveries [1-3, 11, 17-20].

Caesarean delivery can be performed as an emergency (unplanned) or as an elective (planned) [21-25]. In emergency cases, the decision is taken when the woman develops complications, such as in the case of cord prolapse with live foetus [21-24]. On the other hand, elective CD is a planned surgery as in the case of two or more previous caesarean section scars [24, 25]. The caesarean delivery rate has been on the increase worldwide in recent times. The reasons are largely attributed to improved success rate, availability of blood transfusion services, improved aseptic techniques, and Anesthesia. Others include fear of litigation, availability of antibiotics and analgesia [1, 2, 5-11]. The worldwide CD rate varies from one nation to the other and even within the same country, it varies from one region to the other and from one hospital to the other [1, 2,4,11-13]. The CD rate recommended by the World Health Organization (WHO) was quoted to be not more than 5-25% [10-13,17]. In the UK and Northern Ireland, the prevalence was reported to be 20% while that of the USA was 25%.^{1,11-13} A prevalence of 11.8% was reported in Maiduguri, northeastern Nigeria.²⁴ Generally, the prevalence of CD in Nigeria ranges between 5-35% across the country[14-16,20-22]. Due to increasing complications associated with the procedure WHO suggested in 2010 that no institution in any country should have a CD rate beyond 10-15% [11-13, 17].

One other major problem associated with CD is the cost of the surgery, especially in middle and low-resource countries like Nigeria, where the majority of people are poor, most especially in the northern region, where some women may not afford to pay for the surgical bill. The other barrier to CD is aversion towards the procedure; it is a known fact that many women dislike the procedure due to religious and sociocultural reasons [4, 13-16]. It was recommended that vaginal birth after caesarean (VBAC) is one of the viable and strong modalities to reduce the cesarean section rate. It should therefore be encouraged [14-16]. Due to the rising trend of the CD worldwide, there is a need to continuously review the indications and outcomes with the aim of reducing the CD rate. Most of the studies conducted on CD were conducted elsewhere in Nigeria. To the best of the Authors' knowledge, there was no similar study conducted previously in our setting. The paucity of data on the subject matter in our environment prompted us to undertake this study to determine the prevalence of CD in our center, and the study may add to the body of knowledge. It will also serve as a baseline study for feature studies.

Objective of the study:

The objective of the study was to determine the cesarean delivery rate, types of cesarean delivery, trend, indications, maternal and fetal outcome of caesarean delivery at Modibbo Adama University Teaching Hospital (MAUTH), Yola, Adamawa state. Northeast Nigeria, West Africa.

Materials and Methods

The study was approved by the Hospital's Research and Ethics Committee of the hospital (MAUTH/SUB/S.3/VOL.II/313). It is a retrospective descriptive study of all the cases of caesarean delivery performed from 1st January 2018 to 31st December 2022. The CDs conducted at the center during the year under review were retrieved and studied. Names and hospital numbers of the patients were retrieved from the theater register, labor ward register, and special care baby unit records, as well as the postnatal ward register. Their case files were traced from the central medical records department of the hospital. Information extracted includes socio-demographic characteristics - age, educational and marital status, occupation, parity, booking status, indications, type of cesarean delivery, maternal and perinatal outcome. Information retrieved were transferred onto a structured proforma. Analysis was done using SPSS version 17 software. Results were presented using simple percentages, graphs, and ratios.

Results

During the study period, there were 8568 deliveries, and 2707 had caesarean delivery, giving a caesarean delivery rate of 31.6%.

Table 1: Shows various routes of deliveries in MAUTH. Most patients 65.1% had spontaneous vertex delivery (SVD), while Caesarean delivery was a mode of delivery in 31.6% of cases. Other routes of delivery constitute assisted breech vaginal delivery 1.92%, vacuum delivery 0.84%, forceps delivery 0.23% and destructive operation 0.16%.

Table 2: Socio-demographic characteristics. Most 42.1% of the patients were within the 20-29 year age group, followed by the 30-39 year age group in 28.6%. Similarly, 50% of the patients were of low parity, Para 0-1, followed by para 2-3 (26.48%), and the least 9.2% were para 5 and above. The educational status indicates that the majority, 35.2% of the subjects, attained secondary school level of education, followed by the tertiary 19.3%. While those with no formal education constitute 4.5%. The majority, 52.5% were Christians, and 43.2% were Muslims. Most patients, 92.7% were married, while 5.5% and 0.5% were singles and divorcees, respectively. Most patients (63.2%) were housewives, while 20.3% and 13.5% were civil servants and engaged in business, respectively.

Table 1: Routes of Deliveries in Modibbo Adama University Teaching Hospital, Yola

Variable	Number	percentages
Spontaneous vertex delivery	5587	65.2
Cesarean section	2707	31.2
Assist. Breech	165	1.93
Vacuum	72	0.84
Forceps	20	0.23
Destructive deliveries	17	0.2
Total	8568	100

Table 2: Socio-Demographic Characteristic

Variable	number	percentage
1. Age in years		
<19	587	21.6%
20-29	1140	42.1%
30-39	774	28.6%
40 and above	206	7.7%
Total	2707	100
2. Parity		
0-1	1354	50%
2-3	717	26.48
4-5	387	14.3
>5	250	9.2
Total	2707	100
3. Educational status		
No formal education	393	14.5%
Primary school	494	18.3
Secondary school	953	35.2
Tertiary	523	19.3
Others	344	12.7
Total	2707	100
4. Religion		
Christianity	1421	52.5
Islam	1169	43.2
Others	117	4.3
5. Marital status		
Married	2509	92.7%
Single	149	5.5
Widowed	35	1.3
Divorced	14	0.5
Total	2707	100
6. Occupation		

Unemployed / Housewife	1711	63.2
Business	366	13.5
Civil servants	550	20.3
Others	80	3
Total	2707	100

Table 3: Shows booking status. Most of the patients (64.3%) were unbooked, and 35.7 were booked.

Figure 1: Showed Emergency CD 75% was the commonest, followed by elective in 25% of cases.

Table 4: Emergency CD was higher, with the leading indications being prolonged obstructed labour, previous uterine scar for emergency and elective CD, respectively. Most 23.16% who had emergency CD had prolonged obstructed labour, followed by foetal distress 15.44%. While for elective CD, 11.38% had a previous scar, followed by assisted breed delivery 4.62%.

Table 3: Booking status

Booking status		
Booked	967	35.7
Unbooked	1740	64.3
Total	2707	100

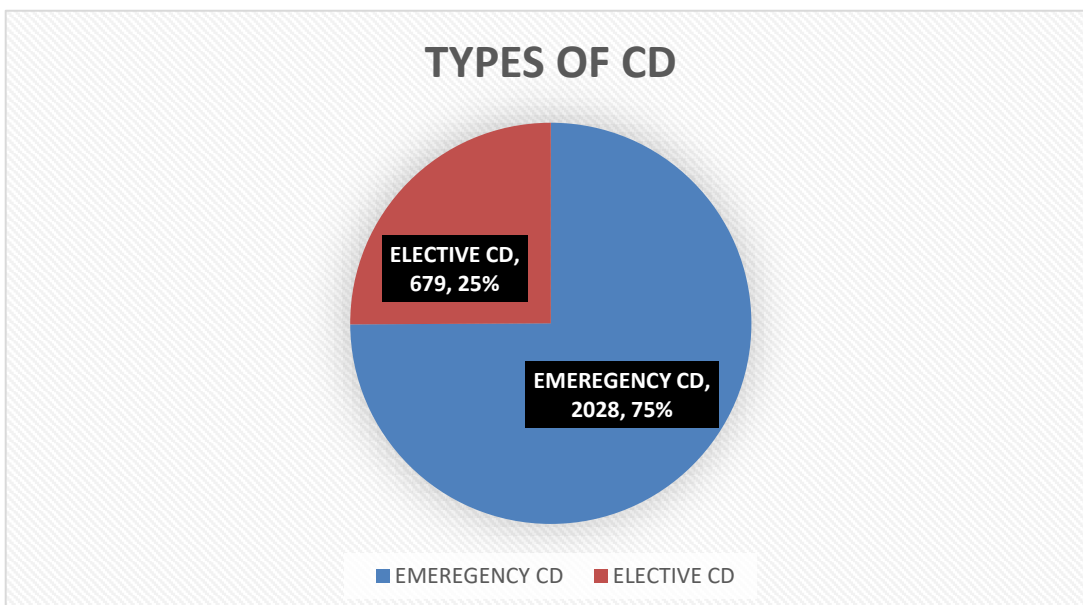


Fig 1. Types of caesarean delivery

Table 4: Indications for Caesarean Delivery

Indication	Number	Percentage
Prolonged Obstructed labor	627	23.16
Fetal distress	418	15.44
Severe pre-eclampsia/eclampsia	271	10.01
APH	242	8.94
Ruptured Uterus	151	5.58
Cord Prolapse	62	2.29
Previous scar	308	11.38
Breech	125	4.62
Bad Obstetric history	88	3.25
Multiple gestation	122	4.57
Others	293	10.82
Total	2707	100

Table 5: Perinatal outcome. Babies delivered via elective CD 90.2 % had normal APGAR scores. While those who were delivered via emergency CD 65.2% had normal APGAR scores. Those with mild to moderate asphyxia, 22.7% were delivered through emergency CD, while 9.8% were delivered through elective CD. This involved delivery of both singletons, twins, and triplets; there were 111 (5.4%) perinatal deaths.

Table 6: Postoperative complications. Haemorrhage 135 (46.2%) was the leading complication, followed by wound sepsis 119(40.8%). Puerperal sepsis had the least morbidity and accounted for 38(1.4%). There were 21 maternal deaths with a case fatality rate of 0.775.

Table 5: Perinatal Outcome

APGAR	Elective	Percentages	Emergency	Percentages
Normal	623	90.2	1341	65.2
Mild	59	8.5	300	14.6
Moderate	9	1.3	167	8.1
Severe	0	0	139	6.8
Perinatal Death	0	0	111	5.4
Total	691	100	2058	100

Table 6: Postoperative complications during the study period

Variable	number	percentage (%)
Hemorrhage	135	46.2
Puerperal sepsis	38	13.0
Wound infections	119	40.8
Total	292	100

Table 7: Shows the gradual increase in the trend of CD rate from 29.3% in 2018 to 30.3% in 2019, with a drop to 27.3% in 2020, perhaps due to the lockdown. Similarly, there was also a steady increase between 2021 and 2022 (from 34.7% to 35%) respectively.

Table 7: Yearly trend of caesarean section

Year	2018	2019	2020	2021	2022	Total
NQ of CD	480	570	421	573	664	2707
Total Deli.	1638	1882	1544	1650	1854	8568
Percentage	29.3	30.3	27.3	34.7	35	31.6

Discussion

In this study, the prevalence of cesarean delivery (CD) was 31.6% which was higher than the cesarean section rate reported by most Teaching hospitals in Nigeria [2-4, 5-7, 12-16, 22-25], and much higher than the WHO-recommended CD rate of 5-15% [1-4, 6-7, 11]. It is also higher than the CD rate of 11% reported in Maiduguri by Geidam et al [24]. However, the finding was comparable to the CD rate of 32.4% reported from the Niger Delta by Akonta et al and lower than 34.8% from Abakaliki southeast Nigeria by Mamah et al [10] and 35.9% reported from southwest Nigeria by Adekanle et al [22]. In the same vein, it was much lower than the cesarean section rate of 39.1% reported from Ethiopia [8]. In this study, most patients 65.1% had SVD, while Caesarean delivery was a mode of delivery in 31.6% of cases. Other routes of delivery constitute assisted breech delivery 1.92%, followed by vacuum delivery 0.84%, while destructive operation 0.2% was the least. These findings were in keeping with studies by Isah et al [4], Takai et al [16], and Geidam et al [24] reported from Abuja, Gombe, and Maiduguri, respectively.

Studies showed that 'Age' is an important factor that contributes significantly to the rate of CD worldwide [11-15]. In this Study, 42.1% were within the 20-29 year age group, followed by the 30-39 (28.6%) age group, while only 7.7% were patients who were 40 years or older. This suggests that CD rate decreases with advancing maternal age. This finding was similar to the findings reported across the regions in Nigeria [2, 4-7, 10, 24]. The finding was also similar to the findings reported in Ethiopia. Similarly, the parity showed CD was higher among the lower parity group 0-1 (50%), suggesting that the rate of CD decreases with increasing parity. The majority (35.2%) had a secondary level of education and were of Christian faith (52.5%), and were married (92.7%), with only 20.3% being gainfully employed. This finding was in keeping with similar studies by Takai et al [16] and Geidam et al [24]. It is, however, not in keeping with the findings reported from Ethiopia by Moges et al [9].

The majority, 64.3% of the patients, were unbooked, while 35.7% were booked. These findings were in keeping with the findings reported from the northwest [2], north-central [4], and Gombe [16]. But at

variance with the findings reported from the southwest [6, 7] of Nigeria. Where they reported that the majority of the patients were booked and gainfully employed [6, 7]. Perhaps in our environment, poor health-seeking behavior, lack of awareness, illiteracy, and poverty were the major factors. A total of 2749 babies were delivered during the period under review, including twins and triplets. The majority, 90.2% of the babies who were delivered via elective CD, had normal APGAR scores with no perinatal mortality, while those delivered via emergency CD, 65% had normal APGAR but with perinatal mortality of 5.4% and moderate to severe birth asphyxia, constituting 8.1 and 6.8% respectively. The findings were in keeping with the findings reported from other teaching hospitals in Nigeria [4,20, 24].

Emergency CD was higher, with the leading indications being prolonged obstructed labour and previous uterine scar for emergency and elective CD, respectively. The leading complications were haemorrhage 46.9% and wound sepsis 40.8% and CD has a case fatality rate of 0.775. These findings were similar to those reported from Abuja, Delta state, and Gombe [5,16-20,23-25]. The findings, however, were at variance with the findings reported from Ethiopia, where they reported that the commonest indication for CD in their study was non-reassuring foetal heart rate pattern followed by cephalopelvic disproportion [8,9].

There was a steady increase in the trend of CD rate from 29.3% in 2018 to 30.3% in 2019. Similarly, a steady increase from 34.7 in 2021 to 35% in 2022 was also noticed. This finding was consistent with the findings from other studies elsewhere [16, 20-25]. The sharp drop (27.3%) in the CD rate in 2020 was due to the lockdown down which affected almost every country worldwide.

Conclusion:

Based on our findings in this study, the prevalence of CD was high. Therefore, there is a need for meticulous and thorough assessment of patients to confirm the indication before a decision is taken for the surgery. Especially, those going for elective CD, to consider VBAC, being the previous scar was the commonest indication in this study.

Recommendation:

There is a need for continuous and meticulous review of the indications before operation. Virginal birth after caesarean should be encouraged to reduce the caesarean section rate. Creating awareness of the importance of antenatal care is key and will go a long way in reducing CD.

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