Nigerian Medical Journal
NIGERIA MEDICAL ASSOCIATION
Print ISSN 0300-1652, E-ISSN 2229-774X

Original Article

Caesarean Deliveries in Internally Displaced Parturients at a Tertiary Hospital in Sub-Saharan Africa: A Five-Year Robson-Based Review

Ushakuma Michael Anenga[1]*, Matthew Sesugh Iorfa[2], Yakaka Mustapha Tatabe[3], Juliet Adamezie Nkemdeme[4], Yusuf Alfa[5]

[1]Department of Obstetrics and Gynaecology, College of Health Sciences, Benue State University, Makurdi, Benue State, Nigeria, [2]Department of Obstetrics and Gynaecology, Benue State University Teaching Hospital, Makurdi, Benue State, Nigeria, [3]Department of Obstetrics and Gynaecology, University of Maiduguri Teaching Hospital, Maiduguri, Borno State, Nigeria, [4]Department of Obstetrics and Gynaecology, Federal Teaching Hospital, Owerri, Imo State, Nigeria, [5]Department of Obstetrics and Gynaecology, Federal Medical Centre, Bida, Niger State, Nigeria

Abstract

Background: Caesarean section (CS) is a common but important obstetric procedure that saves maternal and neonatal lives when complications occur. However, rising CS rates, especially among vulnerable populations such as internally displaced persons (IDPs), raise concerns about appropriate use, equity, and outcomes. Aim: This study aimed to assess the frequency, pattern, and outcomes of caesarean deliveries among IDP women in a tertiary hospital in sub-Saharan Africa using the Robson Ten-Group Classification System.

Methodology: A retrospective, descriptive study was conducted at Benue State University Teaching Hospital, Nigeria, Sub-Saharan Africa, over a five-year period (March 2018 to February 2023). Data were obtained from clinical records of 167 IDP women who underwent CS. Deliveries were categorised using the Robson classification. Maternal, foetal, and obstetric characteristics were analysed using descriptive statistics.

Results: The mean age of respondents was 27.3 ± 6.3 years. Most were multiparous (88.0%), married (94.6%), and engaged in farming (74.9%). Only 13.2% were booked for antenatal care. Robson group 3 (multiparous, term, spontaneous labour, no previous CS) was the largest contributor to overall CS (26.3%), followed by group 5 (multiparous with previous CS; 19.2%) and group 7 (multiparous breech; 18.5%). The overall CS rate was 46.5%. Most patients (91.0%) had no postpartum complications. Live births accounted for 87.4% of deliveries, while 10.2% were stillbirths and 2.4% early neonatal deaths. APGAR scores at the 5th minute were ≥7 in 88.5% of cases.

Conclusion: The CS rate among IDP women was high, with Robson group 3 contributing the most, even though composed of women often considered low-risk. These findings show the importance of close monitoring in labour, antenatal care and audit systems to improve outcomes in displaced populations.

Keywords: Antenatal care, Caesarean section, Displacement, Robson classification, Sub-Saharan Africa.

***Correspondence:** Dr. Ushakuma M. Anenga, Department of Obstetrics and Gynaecology, College of Health Sciences, Benue State, University, Makurdi, Benue State, Nigeria. Email: uanenga@yahoo.com

How to Cite: Anenga UM, Iorfa MS, Tatabe YM, Nkemdeme JA, Alfa Y. Caesarean Deliveries in Internally Displaced Parturients at a Tertiary Hospital in Sub-Saharan Africa: A Five-Year Robson-Based Review. Niger Med J 2026; 67 (1): 2514-2523. https://doi.org/10.71480/nmj.v67i1.1137

Quick Response Code:

Introduction

Caesarean section (CS) or Caesarean delivery refers to the delivery of a foetus, placenta, and membranes through abdominal and uterine incisions after the age of viability.[1] Caesarean section (CS) is a life-saving surgical procedure for both mothers and their newborns when complications arise during pregnancy or labour.[2] Even though it is relatively safe, increasing Caesarean section rate is a major challenge to obstetricians because women undergoing Caesarean section incur the highest risk of postpartum haemorrhage and haemorrhage-related morbidity, compared to vagina delivery.[3]

According to recent WHO figures, the global rate of CS has increased from around 7% in 1990 to 21% in 2019 and is likely to rise further over the next decade. The rates are rising unacceptably high in developing countries, including sub-Saharan Africa.[4,5] The incidence of CS is about 20% to 30% in most teaching hospitals in Nigeria and varies between under 5% and up to 75% around the world.[6] The World Health Organization (WHO) recommends that caesarean section rates should neither be too low to pose danger to mothers and babies, nor too high to potentially expose women to unnecessary surgical risks.[4]

Internally displaced persons (IDPs) are particularly vulnerable due to disrupted access to healthcare, poor antenatal follow-up, and increased exposure to unfavourable psychosocial and physical factors.[7] Pregnant IDP women are at increased risk of obstetric complications, which may contribute to higher caesarean section rates in this population.[8,9]

Sub-Saharan Africa has experienced a growing number of IDP population due to conflict, insurgency, and climate-related displacements. According to the United Nations Global 2023 Report on Internal Displacement (GRID), Sub-Saharan Africa accounts for 46% of 75.9 million people were living in internal displacement globally.[10] In Nigeria, there are 3.7 million IDPs across 14 states as a result of insurgencies in the North-East and North-west, and about half (1.5 million) of this population are resident in Benue State.[11,12] Despite the growing number, there is paucity of evidence on caesarean section trends and decision-making among internally displaced women

To ensure standardized evaluation of CS indications, outcomes, and policy implications, the Robson Ten-Group Classification System (RTGCS) has been recommended by WHO and the International Federation of Gynecology and Obstetrics (FIGO). It is a simple, clinically relevant, accountable, replicable and verifiable tool for assessing, monitoring and comparing CS rates within healthcare facilities over time as well as between them.[13] This study therefore aims to assess the pattern, frequency, and indications of caesarean sections in IDP women at Benue State University Teaching Hospital, using the Robson classification. The findings will help in quality improvement, training, and resource allocation in tertiary healthcare facilities that serve displaced populations. The study will also contribute to the regional and global evidence and can be used to compare with future studies and formulation of healthcare policies.

Materials and Methods

Study Design

This was a retrospective, descriptive review of all deliveries among internally displaced women managed at Benue State University Teaching Hospital (BSUTH) over a five-year period (1 March 2018 to 28 February 2023). The study population comprised 359 deliveries among internally displaced women, irrespective of mode of delivery.

Study Setting

The study was conducted at Benue State University Teaching Hospital (BSUTH), a tertiary healthcare facility with a 300-bed capacity located along Gboko Road in Makurdi, Benue State. Benue State accounts for 1.5 million IDPs located at 22 IDP camps across the state, the largest ones found in Makurdi, Guma, Gwer-west, Logo, and Agatu local government areas.[11,12] BSUTH serves as a referral hospital for patients across the state with a functional referral arrangement (including transportation and feeding) and free healthcare provided for the IDP women by the Benue State Government, International Committee of the Red Cross and Doctors without Borders (MSF) during the study period.

Study Population

The study included internally displaced women referred from the IDP camp who delivered via caesarean section at BSUTH during the study period. Of the 359 deliveries among internally displaced women during the study period, 167 were delivered by caesarean section, while the remaining deliveries were vaginal. Inclusion criteria were women who were classified as IDPs, as identified in their medical records, and delivered via caesarean section within the study period. Women whose pregnancies were less than 28 weeks gestation, delivered via vaginal delivery, and those with incomplete records were excluded from the study.

Sample Size

The study population was 167 internally displaced parturients who underwent CS at Benue State University Teaching Hospital during the study period. This sample was determined based on the availability of complete medical records for the study period.

Data Collection

Data were collected from patient records, labour ward registers, and theatre records at Benue State University Teaching Hospital (BSUTH), Makurdi, North-central Nigeria using a proforma. The information collated included parity (nulliparous, multiparous, number of previous CSs), onset of labour (spontaneous, induced, prelabour CS), foetal presentation (cephalic, breech, transverse), gestational age (preterm, term) and the number of foetuses (single, multiple). Each caesarean section was classified according to the Robson Ten-Group Classification System (RTGCS)[13], which categorizes deliveries into ten mutually exclusive groups.

Data Analysis

The data obtained were coded and analysed using SPSS statistical software version 27.0 (Armonk, NY: IBM Corp.). Descriptive statistics were used to summarise the data. Categorical variables such as age groups, parity, marital status, booking status, Robson classification groups, maternal complications, and neonatal outcomes were presented as frequencies and percentages. Given the descriptive audit nature of this study and its focus on caesarean section patterns using the Robson classification, inferential statistical analyses and tests of association were not performed.

Ethical Considerations

Ethical approval for this study was obtained from the Research Ethics Committee of Benue State University Teaching Hospital, Makurdi, with reference number BSUTH/MKD/HREC/2024/0785. To ensure patient confidentiality, personal identifiers were not included in the dataset. Patients or the public were not involved in the design, conduct, reporting, or dissemination plans of our research. Due to the retrospective nature of the study, informed consent was not required.

Results

During the study period, a total of 359 internally displaced women delivered at BSUTH, of whom 167 underwent caesarean section, giving an overall caesarean section rate of 46.5% (167/359). The average age of the women was 27.3 ± 6.3 years. The majority (73.1%) were between the ages of 20 and 34 years, and most were multiparous (88.0%). Almost all the respondents were married (94.6%), and farming was the dominant occupation (74.9%), followed by unemployment (16.8%) and petty trading (7.2%). The average gestational age at delivery was 37.7 ± 2.5 weeks, with the majority (80.8%) delivered at term, while about one-fifth (19.2%) delivered pre-term. Previous caesarean section had been performed in 28.7% of the women. In terms of antenatal care, a vast majority (86.8%) were unbooked (Table 1).

Table 1: Socio-demographic and Obstetric Characteristics of IDP women who underwent CS (N = 167)

Variable	N	%
Age (years)		
<20	18	10.8%
20–24	39	23.4%
25–29	46	27.5%
30–34	37	22.2%
≥ 35	27	16.2%
Parity		
Nullipara	20	12.0%
Multipara	147	88.0%
Marital Status		
Married	158	94.6%
Single	9	5.4%
Occupation		
Farmer	125	74.9%
Unemployed	28	16.8%
Petty Trader	12	7.2%
Teacher	2	1.2%

Gestational age at delivery		
Pre-term	32	19.2%
Term	135	80.8%
Booking Status		
Booked	22	13.2%
Unbooked	145	86.8%

The Robson Ten-Group Classification System was applied to all 359 deliveries among internally displaced women during the study period. Caesarean sections (n = 167) were identified within this cohort, and the contribution of each Robson group to the overall caesarean section rate was calculated using the total number of deliveries as the denominator. It was revealed that Group 3 (multiparous women without previous CS with spontaneous labour at term) was the largest, accounting for 27.9% of all deliveries and contributing 12.3% to the overall caesarean section rate. Group 10 (preterm deliveries) followed closely with 25.3% of deliveries, contributing 5.8% to the caesarean section rate. Group 5 (multiparous women with a previous CS) constituted 11.4% of deliveries but contributed a high 8.9% to the total CS rate, with a group CS rate of 78.0%. Group 7 (multiparous breech) and Group 6 (nulliparous breech) had very high CS rates of 93.9% and 100%, respectively. The overall caesarean section rate was 46.5%, with Group 3 contributing the highest proportion of caesarean deliveries (26.3% of all CS) followed by Group 5 (19.2%) and Group 7 (18.5%) (Table 2).

Table 2: Robson's 10-group Classification for Caesarean Deliveries Among IDP Women at BSUTH (N = 359)

Group no.	Classification	Total Deliveries	Total CS	Group size (%)	Group CSR (%)	Absolute group contribution to overall CSR (%)	Relative group contribution to overall CSR (%)
1	Nulliparous, single cephalic, ≥ 37 weeks in spontaneous labour	37	10	10.3	27.0	2.8	6.0
2	Nulliparous, single cephalic, ≥ 37 weeks induced (including prelabour CS)	7	4	1.9	57.1	1.1	2.4
3	Multiparous, single cephalic, ≥37 weeks, (excluding CS), in spontaneous labour	100	44	27.9	44.0	12.3	26.3

4	Multiparous, single cephalic, ≥37 weeks, induced labour or CS before labour	24	7	6.7	29.2	1.9	4.2
5	Multiparous, single cephalic, ≥37 weeks, previous CS	41	32	11.4	78.0	8.9	19.2
6	All nulliparous breech	3	3	0.8	100.0	0.8	1.8
7	All multiparous breech (including previous CS)	33	31	9.2	93.9	8.6	18.5
8	All multiple pregnancies (including previous CS)	16	9	4.5	56.2	2.5	5.4
9	All transverse or oblique lie (including previous CS)	7	6	2.0	85.7	1.7	3.6
10	All preterm single cephalic, ≤ 37 weeks, (including previous CS)	91	21	25.3	23.1	5.8	12.5

** Robson classification applied to all internally displaced women who delivered at BSUTH during the study period (N = 359).*

Maternal outcomes showed that most women (91.0%) experienced no postpartum complications. However, post-partum haemorrhage and wound dehiscence were each reported in 3.0% of cases, while infection occurred in 1.8%. There was one maternal death (0.6%) and one case of vesicovaginal fistula (VVF). Among the 175 babies delivered, 95.2% were singleton pregnancies and 4.8% were twins. The neonatal survival rate was 87.4%, with stillbirths occurring in 10.2% and early neonatal deaths in 2.4%. The mean birth weight was 3.0 ± 0.7 kg. Low birth weight (<2.5 kg) was observed in 28.1% of neonates, while 61.7% had normal birth weight (2.5–3.9 kg) and 1.2% were macrosomic (≥4.0 kg). APGAR scores at the fifth minute were analysed only among live births (n = 157), of whom 88.5% scored ≥7, while 11.5% scored <7. (Table 3).

Table 3: Maternal and Foetal Outcomes of caesarean deliveries of IDP women

Variables	N	%
Maternal Outcomes (N=167)		
None	152	91.0%
Post-partum haemorrhage	5	3.0%
Infection	3	1.8%
Wound dehiscence	5	3.0%
Maternal death	1	0.6%

Vesico-vaginal fistula	1	0.6%
Foetal Outcomes (N = 175)		
Number of foetuses		
Singleton	159	95.2%
Twin	8	4.8%
Neonatal Status		
Live birth	152	87.4%
Still birth	18	10.2%
Early neonatal death	5	2.4%
Birth weight		
Low (< 2.5 kg)	55	1.2%
Normal weight (2.5-3.9 kg)	110	28.1%
Macrosomia (≥ 4 kg)	10	61.7%
***APGAR Score at 5 min (N =157)**		
<7	18	11.5%
≥7	139	88.5%
* *APGAR scores calculated among live births only.*		

Discussion

This study evaluates the clinical and public health implications of caesarean sections (CS) among internally displaced persons (IDP) in a resource-constrained tertiary facility in Nigeria, Sub-Saharan Africa. The sociodemographic profile of the study population reflects a predominance of women in their reproductive prime, with 73.1% aged 20–34 years. This aligns with findings from Ochejele et al. in Makurdi,[14] where most caesarean section (CS) deliveries occurred in this age group. However, the 10.8% adolescent CS rate in our study surpasses that reported by Bello et al. in Ibadan (1.4%)[15] and Makinde et al in Yenogoa (2.5%),[16] shows increased vulnerability among displaced adolescent mothers. Adaeze et al[17] reported an adolescent caesarean section rate of 45% in Sokoto, Northern Nigeria, where early marriage and limited access to reproductive health services are common, findings that mirror the vulnerability observed among displaced adolescent mothers in our study.

Multiparity was notably high at 88%, consistent with observations in rural or displaced populations, where higher parity is common due to limited access to family planning services. In contrast, studies like Bello et al. reported a lower multiparity rate of 62.6%, reflecting differing reproductive patterns in more urban settings.

Antenatal booking was low (13.2%), compared to 99.7% found in Akadri et al.[18] in Ogun. Poor antenatal care attendance is associated with conflict displacement and the consequent health system collapse.[9] This unbooked majority also underscore why many of these women only presented in emergencies, a known risk for adverse foeto-maternal outcomes.

Farming as the predominant occupation reflects the agrarian nature of IDP settlements. The economic consequences of disruptions in farming activities as a result of conflict may explain the poor health-seeking behaviour, as income correlate with facility-based care.[19]

About a fifth (19.2%) delivered pre-term which is comparable to Bello et al (20.6%),[15] Akadri et al (19.0%) in Ogun[18] and 16.9% in Makinde et al in Yenagoa.[16] The similarity suggests underlying obstetric, or health system-related factors that predispose women to early delivery.

The overall CS rate of 46.5% observed in our cohort is comparable with findings of Bello et al in Ibadan (46.9%)[15] and Makinde et al in Yenagoa (48.4%).[16] These figures are significantly higher than the WHO-recommended optimal range of 10–15%.[2,5] This benchmark, however, may not fully apply to tertiary referral centres managing high-risk populations such as internally displaced women, where late presentation and obstetric complications are common, as observed in our study setting.

An important finding of this study was the unexpectedly high contribution of Robson Group 3 to the overall caesarean section rate, followed, followed by group 5 and group 7. This aligns with findings from a study in Yenogoa,[16] where group 3 was also the highest contributor. This, however, differs from several studies[14,15,18] where group 5 was the leading contributor to CS rates. Group 3 is traditionally considered low risk, comprising multiparous women at term with spontaneous labour and no previous caesarean section. However, among internally displaced women, this group may be disproportionately affected by late presentation in labour, prolonged or obstructed labour, inadequate intrapartum monitoring at peripheral facilities, and delayed referral to tertiary care. These factors may convert otherwise low-risk labours into obstetric emergencies necessitating caesarean delivery.

Group 5 (multiparous with previous CS), even though not the highest contributor to CS rates in our study, still made a significant contribution, consistent with global literature recognising the role of prior CS in predicting repeat abdominal delivery. The high CS rates in breech groups (6 and 7) are also supported by evidence in favour of CS as the safer delivery method in breech presentations to minimize perinatal mortality as against planned vaginal delivery.[20] These findings underscore the need for targeted maternal health policies for displaced populations, including strengthening referral systems, improving intrapartum care at peripheral facilities, and ensuring early identification of labour complications.

Despite the high-risk population, only 9% had maternal complications. Rates of postpartum haemorrhage and wound dehiscence were low (3.0% each), while others such as surgical site infection, VVF, and maternal death were rare. The single maternal death which was from uterine rupture, and vesicovaginal fistula recorded highlight the severe consequences of delayed presentation and obstructed labour, conditions commonly encountered among displaced women presenting late to tertiary facilities.

The stillbirth rate of 10.2% and the proportion of low-birth-weight neonates (28.1%) observed in our study are notably higher than the 4.5% and 21.6% reported by Bello et al.,[15] respectively. Similarly, Akadri et al.[18] documented a lower rate of low-birth-weight at 14.5%. In addition, 11.5% of neonates in our study had poor 5-minute APGAR scores (<7). These adverse outcomes may reflect the combined effects of late presentation, poor antenatal care, and the high rate of emergency deliveries often seen among displaced and underserved populations.

Limitations

This study was limited by its retrospective design and reliance on hospital records, with a case recovery rate of 83%. As a tertiary referral-based study, the findings may over-represent severe obstetric cases and may not be generalisable to all internally displaced women, particularly those with uncomplicated pregnancies. In addition, the absence of inferential statistical analysis limits causal interpretation of observed patterns.

Conclusion

The caesarean section rate among displaced women in our study was high, with the largest contribution unexpectedly coming from group 3 (multiparous, term, spontaneous labour, no previous CS), often considered low-risk. This challenges assumptions about labour risk stratification and reiterates the unpredictable nature of labour and delivery even in low-risk women.

Recommendations

Antenatal care for internally displaced women should be strengthened through mobile clinics and early booking advocacy. Routine use of the Robson classification is recommended to audit caesarean section practices. Intrapartum monitoring should be improved, even for low-risk women, for early detection of complications and prompt referral.

References

1. Ugwu EOV, Obioha KCE, Okezie OA, Ugwu AO. A five-year survey of caesarean delivery at a Nigerian tertiary hospital. Ann Med Health Sci Res. 2011 Jan;1(1):77–83.
2. Vidyadhar BB. Caesarean section –why is it performed so often? IOSRPHR. 2012 Jan;2(3):534–6.
3. Butwick AJ, Ramachandran B, Hegde P, Riley ET, El-Sayed YY, Nelson LM. Risk Factors for Severe Postpartum Hemorrhage After Cesarean Delivery: Case-Control Studies. Anesth Analg. 2017 Aug;125(2):523–32.
4. Orazulike N, Alegbeleye J. Pattern and outcome of higher order caesarean section in a tertiary health institution in Nigeria. Int J Trop Dis Health. 2016 Jan 10;17(4):1–6.
5. 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 Jan 1;30(1):1-31.

6. Isah AD, Adewole N, Zaman J. A five-year survey of cesarean delivery at a Nigerian tertiary hospital. Tropical Journal of Obstetrics and Gynaecology. 2018 Oct 10;35(1):14-7.
7. O'Heir J. Pregnancy and childbirth care following conflict and displacement: care for refugee women in low-resource settings. J Midwifery Womens Health. 2004 Aug;49(4 Suppl 1):14–8.
8. Jamieson DJ, Meikle SF, Hillis SD, Mtsuko D, Mawji S, Duerr A. An evaluation of poor pregnancy outcomes among Burundian refugees in Tanzania. JAMA. 2000 Jan 19;283(3):397–402.
9. Vural T, Gölbaşı C, Bayraktar B, Gölbaşı H, Yıldırım AGŞ. Are Syrian refugees at high risk for adverse pregnancy outcomes? A comparison study in a tertiary center in Turkey. J Obstet Gynaecol Res. 2021 Apr;47(4):1353–61.
10. United Nations High Commissioner for Refugees. Global forced displacement. Global trends: forced displacement in 2023. United Nations; 2024. p. 6–14.
11. Iorbo R, Sahni SP, Bhatnagar T, Andzenge DT. Social Inclusion and Justice for the Internally Displaced by the Herdsmen-Farmers Conflict in Benue State, Nigeria. J Migr Hum Secur. 2024 Jun;12(2):96–109.
12. Discourse H, Inyang EB, Effiong EN. Humanitarian intervention in Nigeria: A case of internally displaced people in Benue State, 2018–2021. SSRN Electron J. 2022. Available from: https://doi.org/10.2139/ssrn.3998209
13. Savchenko J, Ladfors L, Hjertberg L, Hildebrand E, Brismar Wendel S. A step towards better audit: The Robson Ten Group classification system for outcomes other than cesarean section. Acta Obstet Gynecol Scand. 2022 Jul;101(7):827–35.
14. Ochejele S, Emoekpere H, Nkawu M, Alagh M. Robson classification of Caesarean sections at the Federal Medical Centre, Makurdi. Tropical Journal of Obstetrics and Gynaecology. 2021;38(3):261-5.
15. Bello OO, Agboola AD. Utilizing the Robson 10-Group Classification System as an Audit Tool in Assessing the Soaring Caesarean Section Rates in Ibadan, Nigeria. J West Afr Coll Surg. 2022 Aug 23;12(1):64–9.
16. Makinde OI, Osegi N. Towards Optimizing Caesarean Section: Robson Ten Group Analysis of Caesarean Section and It's Determinants in a Tertiary Hospital in South-South, Nigeria. J Matern Child Health. 2023 Nov 16;8(6):682–95.
17. Adaeze CJO. Egwu C, Chukwu C, Atibinye Dotimi D. Analysis of Caesarean Delivery in General Hospitals in Sokoto State Using Robson's Ten Classification: A Cross-Sectional Study. Texila International Journal of Public Health. 2023 Dec 29;11(4):126–39.
18. Akadri AA, Imaralu JO, Salami OF, Nwankpa CC, Adepoju AA. Robson classification of caesarean births: implications for reducing caesarean section rate in a private tertiary hospital in Nigeria. BMC Pregnancy Childbirth. 2023 Apr 12;23(1):243.
19. Malebranche M, Norrie E, Hao S, Brown G, Talavlikar R, Hull A, et al. Antenatal care utilization and obstetric and newborn outcomes among pregnant refugees attending a specialized refugee clinic. J Immigr Minor Health. 2020 Jun;22(3):467–75.
20. Hannah ME, Hannah WJ, Hewson SA, Hodnett ED, Saigal S, Willan AR. Planned caesarean section versus planned vaginal birth for breech presentation at term: a randomised multicentre trial. Lancet. 2000 Oct;356(9239):1375–83.