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Five-Year Review of Caesarean Sections Among Primiparous Women in A Semi-Urban Government Hospital in South-South Nigeria-A Retrospective Cross-Sectional Study

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ABSTRACT

Background: Primary Caesarean Section (CS), especially in primiparous women, significantly influences the mode of delivery in the next pregnancy. It is therefore important to identify the common indications and prevalence with a view to finding possible suggestions to reduce the rate**.** This article reviewed the CS rate and indications among primiparous women over a 5-year period in a semi-urban Government Hospital in South-South Nigeria.

Materials and Methods: This retrospective cross-sectional study reviewed eight hundred and eleven primiparous women who had CS at the Central Hospital Agbor (CHA), Delta state, from 1 January 2019 to 31 December 2023. The data was collected using a data collection proforma and the analysis was done using the Statistical Package for the Social Sciences (SPSS) computer software, version 25.0 for Windows, and the results were presented using descriptive statistics.

Results: A total of 5,951 deliveries were conducted, out of which 2,607 were delivered through CS, resulting in a CS delivery rate of 43.8%. The CS rate among the primiparous group was 13.6%. The commonest indications were foetal distress (14.8%), Nullipara breech (10.9%), obstructed labour (10.2%), and suspected foetal macrosomia (8.9%). The mean age of patients was 27.6 ±5.39 years, while the minimum and maximum ages were 16 and 44 years, respectively.

Conclusion: While the overall CS rate was high, the primary CS rate fell within the WHO recommended rate of 10-15%. The finding suggests that efforts to reduce unnecessary primary CS rate have been effective, but attention is needed to address the overall CS rate.

Keywords: Caesarean Section, Government Hospital, Maternal Health Services**,** Primiparous Women, South-South Nigeria

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INTRODUCTION

Caesarean Section (CS) is a life-saving intervention usually carried out to save the lives of the mother and Child. When vaginal delivery is not possible, CS is indicated to avoid foetal and maternal mortality. It is a surgical procedure in which incisions are made through a woman´s abdomen and her uterus to deliver one or more babies and remove the placenta and foetal membranes.[1]

Almost everyone with a strong interest in obstetrics and perinatology now recognizes that CS rates globally have been consistently increasing over the past few decades. The rise in CS rates has been attributed to advancements in anesthesia, enhanced surgical methods, the use of antibiotics, and the easy availability of blood for transfusions.[2] The increased rate of CS globally has also been attributed to the decrease in both operative vaginal deliveries and vaginal breech births, concerns over legal action in obstetrics, recognition of mothers at risk, as well the more frequent use of repeat Caesareans in women with a prior.[2] Repeat CS has been cited in many studies as the commonest indication for CS.[3-5] Women with a previous CS presenting with another co-morbidity or short inter-pregnancy interval are often offered CS to reduce maternal and child health complications. According to the World Health Organisation (WHO), the optimal rate of CS is 10–15%, and higher rates have not shown clear evidence of a decrease in maternal or foetal morbidity and mortality.[6] Despite the recommendation, the rate is significantly higher than this figure in many centers in Nigeria. [3,4,7,8] These findings therefore suggests that the procedure is being overused in most of the centres in Nigeria. CS on maternal request, and the decreasing aversion to CS has also increased, resulting in the increasing use of CS as an option for delivery.[9] Additionally, there is a widespread yet incorrect belief that CS is safer for both the mother and child. Compared to vaginal delivery, Elective CS is associated with a higher risk of maternal complications such as infections and problems in subsequent pregnancies.[10]Furthermore, there is a notably higher risk of maternal death due to blood clots, anesthesia complications, and other factors.[11]

A prior CS often results in more CS in the future. A review of first-time Caesarean sections in the United States observed that the majority of Caesarean deliveries annually, approximately 60%, are primary Cesareans. Additionally, 80% of women who undergo a primary CS delivery tend to have another CS for later childbirths.[11]The review concluded that healthcare providers must exercise caution when deciding on an initial CS, particularly for first-time mothers, to help curb the increasing trend of cesarean deliveries. Just like CS generally, the rate of CS for primiparous women varies globally and even within centres in the same region. Studies from Tanzania[12] and Conakry, Guinea[13] reported primiparous CS rates of 21.6% and 31% respectively. At the Benue University Teaching Hospital, Hilekaan et al[14] reported a primiparous CS rate of 8.9% while Ottun et al[15] reported a rate of 58.6% among primiparous women in a study at the Lagos State University Teaching Hospital. Adewuyi et al[16], in a comprehensive review of CS rate in Nigeria using the 2013 National Demographic and Health Survey data, reported an overall rate of 19.4% among first-time mothers in Nigeria.

Semi-urban government hospitals function as crucial points of care for large catchment populations, often managing a mix of low and high-risk pregnancies and receiving time-sensitive referrals from peripheral clinics. Such facilities may face challenges that influence intrapartum decision-making, especially with limited availability of continuous fetal monitoring, variability in partograph use, delays in referral and theatre access, and workforce constraints. All these are factors that can both necessitate and inadvertently inflate the CS rate. The balance between timely intervention and avoidance of unnecessary surgery is therefore delicate in these settings.

Antenatal care (ANC) and childbirth, including CS, are offered for free at the CHA where this review was conducted. The high expense of CS has been noted as a reason why some women refuse the procedure, particularly in areas lacking effective health insurance systems.[17-20]This is particularly relevant in a country like Nigeria, where the absolute poverty rate is 40.1%.[21]By reducing the financial burden of childbirth and CS in CHA, it is expected that more women, including primiparous women, will consider CS as a viable delivery option with an antecedent increase in uptake, hence the need to document the rate and common indications for CS among first-time mothers.

This five-year retrospective review examines CS among primiparous women in a semi-urban government hospital in South-South Nigeria. The objectives are to determine the prevalence and identify factors associated with primiparous CS.

It is anticipated that the outcomes of this review will contribute to enhancing the planning and development

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of maternal health policies to guarantee the continuation of the free health program.

MATERIALS AND METHODS

Study setting and Design: This was a retrospective review of all CS for primiparous women carried out at the CHA, Delta State, Nigeria, from January 2019 to December 2023.The hospital is a 250-bed secondary health facility established in the year 1906. The Obstetrics and Gynaecology department is led by two consultants who are fellows of the National Postgraduate Medical College of Nigeria and the West African College of Surgeons. The hospital attracts a monthly antenatal booking of over two hundred women, and the delivery rate in the past 5 years has been approximately 1100/year.

In November 2007, the Delta State Government launched a comprehensive free maternal and child health program, which successive governments have continuously sustained. This initiative encompasses the full spectrum of maternal care, including antenatal care, delivery (including CS), postpartum, and postnatal care up to six weeks after delivery, as well as the provision of essential drugs, supplies, laboratory investigations, and surgical management of ruptured ectopic pregnancy and blood transfusion. This program has been a vital component of the state's healthcare strategy, ensuring that pregnant women and new mothers have access to quality care, regardless of their financial situation.

Ethical clearance: Ethical approval for the study was obtained from the Research and Ethics Committee of the hospital in March 2023, with protocol no AMZ/CHA/3/12/24/005. The collected data were entered and kept in a password-protected computer, maintaining the confidentiality of patients' records. The authors are available and ready to supply the data upon any request.

Data collection: The obstetric theatre registers and labor ward delivery records were examined to identify primiparous patients who underwent a CS during the study period. At our centre, the labor ward delivery register records include patient demographics, date, parity, gestational age, reasons for CS, type of CS, Apgar scores, single or multiple births, birth weight, and the baby's and mother's condition until discharge while, the labor ward theatre register records age, parity, reason for CS, type of CS, time and duration of surgery, anesthesia technique, ranks of the anesthetist, surgeon, and assistant, and any major intraoperative complications. If information was incomplete in one record, the other was used to fill in the gaps, reducing missing data. The information was collected using a data extraction form designed specifically for this purpose.

***Data Analysis*:** The generated data were keyed into the Statistical Package for Social Sciences (SPSS) computer software version 25.0 for Windows. The results were analysed using descriptive statistical methods.

RESULTS

Over the five years, the total number of deliveries was 5,951, with 2607 delivered through CS, giving an overall CS rate of 43.8%. Among the patients who had CS, 811 were primiparous CS, giving a CS rate of (811/5,951) 13.6% among this group. The mean age of the participants was 27.63±5.29 years, with a minimum and maximum age of 16 and 44 years, respectively.

As expected, the majority of the women (62.1%) were in the age range of 20-29, while only 1.8% were women 40 years and above. (Table I)

Table I: Age of participants and Number of CS

Variable	Freq (N=811)	Percent
Age (years)		
<20	32	3.9
20 – 29	504	62.1
30 – 39	260	32.1
≥40	15	1.8

Table 2: Yearly Distribution of CS Among Primiparous Women

Year	**# CS in Primipara**	**Total delivery**	**Primipara CS rate (%)**
2019	113	1234	9.16
2020	169	1090	15.50
2021	175	1225	14.29
2022	187	1208	15.48
2023	167	1194	14.00
Total	811	5951	13.63

The delivery rate over the study period was 1,190 per year. Although the rate was higher in 2019, the rate of primiparous CS was, however, lower. (Table II)

Table 3: Indications for Primary CS

Indication	Frequency (N=811)	Percentage (%)
Fetal distress	120	14.8
Breech	88	10.9
Obstructed	83	10.9
Macrosomia	72	8.9

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PIH	70	8.6
Prolonged	62	7.6
Fibroid in pregnancy	41	5.1
CPD	33	4.1
Retained Second Twin	33	4.1
Oligohydramnios	33	4.1
Failed IOL	30	3.7
Placenta previa	26	3.2
Maternal request	11	1.3
Others	109	13.4

PIH=pregnancy induced hypertension. CPD= Cephalopelvic disproportion. IOL=Induction of Labor

Fetal distress, Nulliparous Breech, and obstructed labour were the leading indications for CS in the review. Maternal request was the reason for CS in 1.3% of the participants

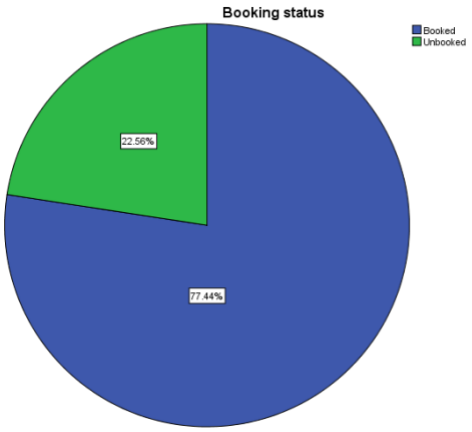

Fig. 1: Pie chart of the booking status of the participants.

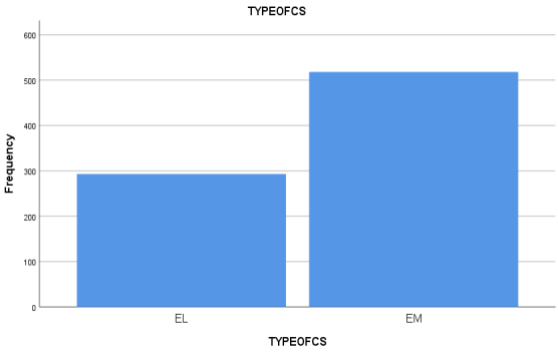

Fig 2: Bar chart of the type of CS

The majority of the participants (628), making up 77.4% were booked in the facility, while the remaining 22.6% were referred to the hospital as emergencies. (Fig 1)
Emergency CS was done for 518 (63.9%), while 36.1% had Elective CS. (Fig 2)
The average birth weight among the primiparous CS group was 3.05 ± 0.56Kg. Singleton delivery among the primiparous CS patients was 770, while Twins and triplets were 36 and 5, respectively. There were 18 perinatal deaths (13 fresh stillbirths and 5 macerated stillbirths). Over the 5-year review period, the facility recorded 24 maternal deaths, with 15 occurring from CS and 3 from the primiparous CS group, with a case fatality rate of 0.11%

DISCUSSION

This study aimed to review the rate and indications of CS in the primiparous women population over five years. The overall CS rate during the period was 43.8% which was high compared to the recommended rate of 10-15 % by the WHO. The CS rate among the primiparous women was 13.6%. This is similar to the 8.9% and 12.6% reported in Markudi and Abakiliki by Hilekaan et al[14] and Mamah et al [22,] respectively, but lower than the 46.80% and 58.60% reported by Ismail et al [3] in Ibadan and Ottun et al [23]in Lagos. The wide variation in the rate of CS among the primiparous women in the different centres reflects the interplay of many factors, ranging from patient factors, facility factors, hospital policies and protocols, cultural beliefs and preferences of the communities, data collection and reporting among the centres. Women who present at advanced maternal age in their first pregnancy are more likely to have CS. In societies where women pursue careers at the expense of childbearing, the CS rate among primiparous women is likely to be higher. This is more likely in Urban society compare to a semi-urban society like this study area. In facilities where vaginal birth after a CS (VBAC) and assisted vaginal breech deliveries are conducted, the CS rate among multiparous women is likely to be lower, resulting in an apparent increase in primiparous CS. At the CHA, patients are offered a trial of labour after CS and assisted breech deliveries based on institutional protocol and criteria. Fetal monitoring and labour ward practices like the use of cardiotocographs and partographs are likely to influence the rate of CS. The longer duration of labour among the primiparous women and the use of labour care devices like cardiotocograph (CTG) may increase

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the possibility of diagnosis of fetal distress. This may account for why the commonest indication for CS in this review was fetal distress.

The cultural beliefs and religious practices of the communities served may also affect the rate of CS, especially among primiparous women, who may be perceived as being lazy.[9,20]In a survey among antenatal patients at the Nnamdi Azikiwe University Teaching Hospital by Ajemba et al, 32.4% of participants agreed that CS was against their culture, while 20.6% also regarded CS as an abnormal way of delivery.[24]For medicolegal reasons, it has been documented that practitioners tend to go for CS at any opportunity to avert any adverse fetal and maternal outcome.[25]In facilities where CS is free, it is expected that the acceptance of CS as a preferred delivery mode will be higher. In the facility where this review was conducted, vaginal delivery, CS, and surgery for Ectopic pregnancy are offered free. This may have contributed to the high CS rate generally, although the rate among the primiparous women fell within the WHO-recommended 10-15%. The data collection from various centres, like in our setting, is usually done manually with attendant difficulty in information retrieval. This may also have an effect on the various reported rates of CS among the primiparous women in the different centres.

The highest indication for primiparous CS in the study was Fetal distress (14.8%). The facility utilizes a sonicaid for monitoring fetal well-being and employs CTG in high-risk situations. Diagnoses of fetal distress can vary between observers, depending on their expertise and training. CTG use during labor can sometimes lead to false positives for fetal distress, resulting in unnecessary interventions like forceps or cesarean deliveries.[26,27]This highlights the need for standardized diagnostic criteria, objective assessment methods, and adherence to evidence-based guidelines to accurately identify and manage real cases of fetal distress, thereby reducing unnecessary interventions and improving maternal-fetal outcomes. To decrease the chances of false positives when interpreting CTG readings and utilizing other labor ward equipment, it is recommended that labour ward staff undergo thorough training in the use of this equipment. This education should emphasize CTG trace interpretation, proper use of labor ward tools, and adherence to protocols. Such measures are expected to enhance the accuracy of fetal monitoring and reduce the risk of unnecessary procedures.

Emergency CS was 63.9% while 22.6 % were unbooked in the facility. The Hospital serves as a major referral centre for primary health centres, private health facilities and traditional birth homes. The majority of the patients from these referral centres presented with obstetric emergencies and most commonly, obstructed labour.

Fetal macrosomia as an indication for primiparous CS was the fourth most common indication. However, in some of the deliveries, the babies were of normal average weight,underscoring the need for proper evaluation and complementing physical examination with other modalities like Obstetric ultrasound assessment.

This study provides valuable insights into the prevalence and determinants of primary CS among primiparous women in a secondary health facility. The findings indicate that the rate of CS deliveries in this cohort falls within the WHO-recommended rate,however, there is a need for ongoing assessment of clinical practices and decision-making processes to further reduce the rate without compromising maternal and foetal health. Factors such as fetal distress, Breech presentation, obstructed labour and fetal macrosomia were identified as influential in the decision to perform a Cesarean delivery. Implementation of standardized guidelines and continuous staff training aimed at minimizing unnecessary CS will go a long way in improving maternal and neonatal health outcomes. Additionally, future research should explore the long-term effects of primary cesarean deliveries on both mothers and their infants, as well as interventions that might reduce the overall CS rate without compromising patient safety.

Strengths and Limitations: The free ANC and delivery, including CS in this centre, made this review unique as it allowed the inclusion of women from all socioeconomic classes. The review, however, is a facility-based review and the findings may differ from the general population. The record-keeping and tracking of information were done manually, as such, the possibility of not capturing some cases cannot be excluded.

CONCLUSION

Primiparous CS increases the chances of having a CS in subsequent deliveries. Therefore, while the necessity of CS in certain clinical scenarios remains undisputed, efforts to refine its application, particularly among primiparous women, are essential. Striking a balance between maternal and fetal health needs and the

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judicious use of Cesarean delivery will ultimately contribute to improved healthcare quality.

Declarations

Ethical approval: This study was approved by the Agbor Medical Zone Ethical Committee

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Conflicting Interest: Nil

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Data availability: The data used to support the findings of this study are available upon reasonable request.

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