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(RESEARCH ARTICLE)

# Trends in caesarean section in Esut teaching hospital, Esuth, Parklane, Enugu, Nigeria: A five-year review

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## Abstract

**Background**: Caesarean section, also known as caesarean delivery, is the surgical procedure, by which one or more babies are delivered through an incision in the mother's abdomen. Caesarean section use continues to rise globally, now accounting for more than 21% of all childbirths. This work studied the trends of caesarean section in ESUT Teaching Hospital, Enugu, Nigeria.

**Aim:** To review the trends of Caesarean section in ESUT Teaching Hospital, Enugu, Nigeria.

**Study design:** This was a 5-year retrospective study of the trends of Caesarean section in ESUT Teaching Hospital, Enugu, Nigeria from 31st December, 2022 to 1st January, 2018.

**Methodology:** This was a hospital based retrospective sytudy of all caesarean deliveries done in ESUT-TH Enugu from 31st December 2022 to 1s January 2018. The case notes from the medical records were reviewed and a total of 8,496 deliveries were recorded within the time under study. Out of this total 3,488 had caesarean delivery. The relevant data obtained from the case notes included age, educational level, occupation, religion, address, marital status, ethnicity, parity, booking status, indications for caesarean section, year of each caesarean section, and outcomes of the procedure. The total number of deliveries and number of caesarean sections, over the study period, were also obtained.

**Statistical analysis:** These data were analyzed using Statistical Product and Service Solution (SPSS) version 25.0 to yield frequencies and percentages. The results were presented in tables.

**Result:** Out of the 8496 deliveries, 3488 (41.05%) had Caesarean section, during the period. This gave a prevalence of 41.05% over the 5-year period. The lowest number of CS, 539(37.38%) was in 2021, while the highest number of CS 860(44.29%) occurred in the year 2019 without a definitive pattern of progression

Most patients, that had CS were aged 27 to 37 years (51.5%), business women/traders(34.7%), Christians (92.2%), married (86.4%), Igbos (89.6%), and those who had secondary education (48.4%). The major indications of CS were fetal heart rate abnormalities 473(13.6%), previous uterine scars 452(12.96%) and obstructed labour 396(11.4%),

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while hand prolapse, suspected chorioamnionitis, non-reassuring biophysical profile and HELLP syndrome contributed the least.

**Conclusion:** There were high rates of CS in ESUT-TH without any definitive progression pattern and the major indications were fetal heart rate abnormalities, previous uterine scars and obstructed labour.

**Keywords:** Trends; Caesarean Section; Parklane; Enugu; Five-Year

## 1. Introduction

Caesarean section is a life-saving surgical procedure, when certain complications arise during pregnancy and labour. However, it is a major surgery, associated with immediate maternal and perinatal risks, and may have implications for future pregnancies, as well as long-term effects, that are still being investigated.[1-4]

The first documented Caesarean section, on a living human, was performed in 1610.[5] Caesarean section rates continue to evoke worldwide concerns because of their steady increase, lack of consensus on appropriate CS rate and the associated short and long term risks and costs.[6]

The use of CS has increased dramatically worldwide in the last decades, particularly in the middle and high income countries, despite the lack of evidence supporting substantial maternal and perinatal benefits, with CS rates higher than a certain threshold, and some studies showing a link between increasing CS rates and poorer outcomes.[7, 8] The reasons for the increase, are multifactorial. Changes in maternal characteristics and professional practice styles, increasing malpractice pressure, as well as economic, organizational, social and cultural factors have all been implicated in this trend.[9-12]

A similar study conducted in this centre showed a caesarean section rate of 29.6% over a 3-year period spanning from 2018 to 2020.[13]Over the years, global caesarean section (CS) rates have significantly increased from around 7% in 1990 to 21% today, surpassing the ideal acceptable CS rate, which is 10% to 15%, according to World Health Organisation.[14]

## 2. Materials and methods

This was a retrospective study of all patients, who had caesarean section, in ESUT Teaching Hospital, Enugu, from 31st December, 2022 to 1st January, 2018. The case notes were pulled from the medical records unit and relevant date extracted for the study. Such data included age, educational level, occupation, religion, address, marital status, ethnicity, parity, booking status, indications for caesarean section, year of each caesarean section, and outcomes of the procedure.

## 3. Results

Out of the 8496 deliveries, 3488(41.05%) were caesarean sections, during the period. This gave a prevalence of 41.05% over the 5-year period. The lowest number of CS, 539(37.38%) was in 2021, while the highest nuber of CS 860(44.29%) occurred in the year 2019.

Most patients, that had CS, were 27 to 37 year old, 51.5%, business women/traders, 34.7%, Christians 92.2%, married 86.4%, Igbos 89.6%, and had secondary education 48.4%. The major indications of CS were fetal distress 473(13.6%), previous uterine scars 452(12.96%) and obstructed labour 396(11.4%), while hand prolapse, suspected chorioamnionitis, non-reassuring biophysical profile and HELLP syndrome contributed the least.

**Table 1** Patients' sociodemographic characteristics

| Age group | Frequency | Percent | Percent | Cumulative Percent |
|---|---|---|---|---|
| 16-26 | 1295 | 37.1 | 37.1 | 37.1 |
| 27-37 | 1797 | 51.5 | 51.5 | 88.6 |
| 38 and above | 396 | 11.4 | 11.4 | 100.0 |
| Total | 3488 | 100.0 | 100.0 | |
| **EDUCATION LEVEL** | | | | |

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| No education | 214 | 6.1 | 6.1 | 6.1 |
| Primary | 317 | 9.1 | 9.1 | 15.2 |
| Secondary | 1689 | 48.4 | 48.4 | 63.6 |
| Tertiary | 1268 | 36.4 | 36.4 | 100.0 |
| Total | 3488 | 100.0 | 100.0 | |

| Occupation code | | | | |
|---|---|---|---|---|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Umemployed | 1008 | 28.9 | 28.9 | 28.9 |
| Professional | 125 | 3.6 | 3.6 | 32.5 |
| business/trader | 1210 | 34.7 | 34.7 | 67.2 |
| civil servant | 635 | 18.2 | 18.2 | 85.4 |
| Farmers | 36 | 1.0 | 1.0 | 86.4 |
| Apprentice | 474 | 13.6 | 13.6 | 100.0 |
| Total | 3488 | 100.0 | 100.0 | |

| RELIGION | | | | |
|---|---|---|---|---|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Christainity | 3216 | 92.2 | 92.2 | 92.2 |
| Indegenious | 37 | 1.1 | 1.1 | 93.3 |
| Muslem | 182 | 5.2 | 5.2 | 98.5 |
| Traditional | 53 | 1.5 | 1.5 | 100.0 |
| Total | 3488 | 100.0 | 100.0 | |

| Ethnicity | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Igbo | 3126 | 89.6 | 89.6 | 89.6 |
| Hauasa | 110 | 3.2 | 3.2 | 92.8 |
| Yoruba | 71 | 2.0 | 2.0 | 94.8 |
| Others | 181 | 5.2 | 5.2 | 100.0 |
| Total | 3488 | 100.0 | 100.0 | |

Most patients, that had CS, were 27 to 37 years old, 51.5%, business women/traders, 34.7%, Christians 92.2%, married 86.4%, Igbos 89.6%, and had secondary education 48.4%.

**Table 2** Annual rates of caesarean section per each year studied

| YEAR | NUMBER OF CS | Percentage (%) |
|---|---|---|
| 2022 | 612 | 41.24 |
| 2021 | 539 | 37.38 |

| | | |
|---|---|---|
| 2020 | 672 | 40.53 |
| 2019 | 860 | 44.49 |
| 2018 | 805 | 40.68 |

The lowest number of CS, 539(37.38%) was in 2021, while the highest number of CS 860(44.29%) occurred in the year 2019.

**Table 3** Indications for caesarean section

| **CS INDICATION** | | | |
|---|---|---|---|
| | **Frequency** | **Percent** | **Percent** |
| breech in labour | 250 | 7.2 | 7.2 |
| poor labour progress | 293 | 8.4 | 8.4 |
| Fetal heart rate abnormalities | 473 | 13.6 | 13.6 |
| suspected chorioamnionitis | 38 | 1.1 | 1.1 |
| HELLP syndrome | 39 | 1.1 | 1.1 |
| severe preeclampsia | 339 | 9.7 | 9.7 |
| failed IOL | 154 | 4.4 | 4.4 |
| non reassuring biophysical profile | 37 | 1.1 | 1.1 |
| placenta prevaia | 161 | 4.6 | 4.6 |
| compound presentation | 90 | 2.6 | 2.6 |
| hand prolaspse | 38 | 1.1 | 1.1 |
| abruptio placentae | 110 | 3.2 | 3.2 |
| transverse lie | 110 | 3.2 | 3.2 |
| previous uterine scar | 452 | 12.96 | 12.96 |
| obstructed labour due to CPD | 396 | 11.4 | 11.4 |
| borderline pelvis | 28 | .8 | .8 |
| bad obstetric history | 324 | 9.3 | 9.3 |
| cervical fibroid | 33 | .9 | .9 |
| cord prolapsed | 123 | 3.5 | 3.5 |
| Total | 3488 | 100.0 | 100.0 |

The major indications for CS were fetal heart rate abnormalities 473(13.6%), previous uterine scars 452(12.96%) and obstructed labour 396(11.4%), while hand prolapse, suspected chorioamnionitis, non-reassuring biophysical profile and HELLP syndrome contributed the least.

## 4. Discussion

The aim of this study was to review the trend of Caesarean section in ESUT Teaching Hospital.

From the study, the prevalence of CS over the 5-year period in ESUT-TH was 41.05%. This was almost double the value from the same cenmtre as reported btOnyekpa et al,[13]in 2022. This could be due to the differences in the period studied and the number of participants. While the quoted study was a 3-year retrospective study between 2020 and 2018, ours was a 5-year study from 2022 to 2018. Secondly, as with all retrospective studies, data retrieval might have posed a challenge during data collection resulting in some unavoidable omissions.

However, the result is similar to the figure reported for Latin America and the Caribbean, by Anapilar B, et al, showing that 40.5% of all births were by CS.[6] The prevalence of CS from our study, is higher than figures reported for Africa, in

the same previous study documented by Anapilar B, et al, showing that Africa had the lowest average rates of CS with 7.3%, which was a weighted average between 3.5% in sub-Saharan Africa and 27.8% in Northern Africa.[6]

Compared to the 7.3% CS prevalence in Africa, according to the previous studies, the higher prevalence in ESUTTH could be because ESUTTH was a tertiary and referral centre, located in the state capital, while some of the cited previous studies in Africa, took place in the semi-urban areas and secondary health facilities.

Also, the CS prevalence, from our study, is far above the range of rates (10% to 15%) considered ideal by WHO, based on the article, which shows that over the years, global caesarean section (CS) rates have significantly increased from around 7% in 1990 to 21% today, surpassing the ideal acceptable CS rate, which is 10% to 15%, according to World Health Organisation.[14]

One previous study done in Enugu, South-East Nigeria, reported CS prevalence of 7.22%.[15]This is also lower than the prevalence of CS, found in our study.

Another study done in Nigeria, by Adewuyi O, et al, recorded a prevalence of 2.1% in Nigeria, and 4.7% in the South-West region of Nigeria.[16]Both 2.1% and 4.7% are lower than the prevalence of CS in ESUTTH, considering the index study.

Based on our study, the major indications for CS were fetal distress 473(13.6%), previous uterine scars 452(12.96%) and obstructed labour 396(11.4%), while hand prolapse, suspected chorioamnionitis, non-reassuring biophysical profile and HELLP syndrome contributed the least.

This is similar to the previous study done by Tahmina B, et al, which showed that the major indications for CS, were repeat CS, fetal distress and prolonged labour.[17]However, repeat CS ranked higher than fetal distress in their study, compared to ours, where fetal distress ranked higher than previous uterine scars. This variation could be because of misdiagnosis of fetal distress in ESUTTH.

From our study, most patients, that had CS, were 27 to 37 years old, 51.5%, business women/traders, 34.7%, Christians 92.2%, married 86.4%, Igbos 89.6%, and had secondary education 48.4%.

There was no specific correlation among the above-mentioned sociodemographic characteristics, comparing our study to other similar studies.

However, a previous study by Mizuki T, Carine E, et al, showed likelihood of higher CS rates among those aged 30years and above, and those that earned more income.[18]

## 5. Conclusion

There were high rates of CS in ESUTTH, major indications being fetal distress, previous uterine scars and obstructed labour.

### *Recommendation*

Effort should be made to reduce the rate of CS in ESUTTH, by ensuring accurate diagnosis of the indications, and embracing assisted /instrumental vaginal delivery.

Conflict of interest: There is no conflict of interest in the course of this study

Ethical considerations: This was a retrospective study requiring no strict ethical clearance but the hospital management gave an approval for the study

## Compliance with ethical standards

### *Disclosure of conflict of interest*

There was no conflict of interest.

*Statement of informed consent*

There was no need of any informed consent as the study was a retrospective study

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