

## Caesarean Section Rate And its Indications in An Urban Private Hospital in Jos, North Central Nigeria: A 15-Year Survey.

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**Abstract :** Caesarean section reduces the morbidity and mortality associated with complicated childbirth when it is performed for the right indication.

**Objective:** We reviewed the rate and indications for caesarean section in an urban private hospital in Jos.

**Methods:** It was a retrospective study of 228 women who delivered by caesarean section in a private hospital.

**Results:** The mean age of the patients was  $26.4 \pm 5.8$  years. The caesarean section rate was 8.9%. Of these, 64 (28.1%) were elective while 164(71.9%) were emergency procedures. The commonest indication for caesarean section was cephalopelvic disproportion (40.0 %), followed by preeclampsia/eclampsia (18.0%) and previous caesarean (11.8%). The least frequent indications were uterine rupture and maternal sickle cell disease, both at 0.4%.

**Conclusion:** Indications for caesarean section in this private hospital was similar to public hospitals in the same country. A regular review of indications for caesarean section in any facility is an important aspect of auditing obstetric care services. A universal guide for obtaining and keeping patients records should be developed. This would go a long way in enhancing reliable data generation for future research and ultimately, improving obstetric care service.

**Keywords:** Caesarean section, Indications, private hospital, Nigeria.

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### I. Introduction

Caesarean section (CS) is an obstetric surgery that has existed since ancient times and was historically performed on a dead or dying mother, to deliver a baby from its mother's womb with the intention of either saving the baby's life or to fulfil religious laws which required the mother and baby to be buried separately; the purpose was not to save the mother's life [1, 2]. From the era of this historical practice to current day obstetric practice, the purpose of CS has evolved. Now a commonly performed obstetric procedure, CS is a well-recognized intervention for saving the lives of both mother and baby when the process of childbirth is associated with life threatening complications [3, 4]. This life saving attribute of CS is possible because of advancement in surgical skills combined with aseptic techniques, availability of anesthesia, use of antibiotics and blood transfusion as well as improved neonatal services.

Worldwide, approximately 1 in 5 women give birth to their babies via CS [5]. CS rates vary widely, and may be influenced by factors such as financial resources, cultural practices, characteristics of birth attendants and societal norms. The procedure could be performed as an elective or emergency surgery depending on the indication which could be medical (absolute or relative) or non-medical [6, 7, 8, 9]. The CS rate is one of the six emergency obstetric care indicators that assesses availability and utilization of obstetric services [10]. The international healthcare community considers a CS rate of 5% - 15% as an acceptable, and the World Health Organization (WHO) recommends that every effort be made to provide Caesarean section to women in need, rather than striving to achieve a specific rate [4, 10]. In 2014, according to data from a study involving 150 countries, the average CS rate globally was estimated to be 18.6%, with a range of 6.0% in the least developed regions to 27.2% in the more developed regions [5]. The study also recorded that West Africa of which Nigeria forms a part, had the lowest CS rates (3%), while South America subregion had the highest average CS rate in the world (42.9%) [5]. Overall, there is a global increase in CS rates as evidenced by reports stating that worldwide, CS rates increased from 6.7% in 1990 to 19.1% in 2014, and the rate of increase was lowest in the least developed countries [5]. In a trend analysis involving 121 countries during the same period 1990-2014, CS rates reportedly decreased in Nigeria from 2.9% -2.0% [5].

This increase in CS rates has become a cause for concern especially because it is not associated with the expected reduction in neonatal and maternal morbidity and mortality. Research findings have corroborated the statement that a CS rate above 10 – 15% at population-level, is not justified [11]. There have been speculations about the reasons for the rise in CS rates albeit they are not clearly understood [5, 9, 12]. CS is sometimes undertaken for non-medical reasons such as maternal request or indication of healthcare professionals in the absence of a medical indication, and this has generated a lot of debate [8,9]. Caesarean

delivery without medical indication has contributed to the high rate of CS and it has been associated with a risk of increased severe maternal outcome [9, 13, 14]. The International Federation of Gynecology and Obstetrics (FIGO) recommends that caesarean delivery should be undertaken only when indicated to enhance the well-being of mothers and babies and improve outcomes [15]. The WHO has concluded that the effectiveness of CS in saving maternal and infant lives is only beneficial when undertaken for medically indicated reasons [6]. High CS rates above the recommended level depict overutilization of caesarean delivery which commonly happens in developed countries [16]. Lower CS rates typically exist in the developing countries where together with financial constraints and limited resources, lack of skilled manpower and cultural aversion to CS all contribute to underutilization of CS [17]. Very low and very high CS rates are both associated with adverse neonatal and maternal outcomes [9, 18, 19].

Currently, because there is no universal internationally acceptable classification system for CS, it is difficult to suitably assess any comparison between CS rates across different regions or facilities. WHO proposes to develop guidelines for the use of the Robson classification system as a global standard for assessing, monitoring and comparing CS rates within healthcare facilities over time and between facilities [4, 20].

Local studies in Nigeria have cited CS rates in facilities across the country ranging from between 3% - 21% and 9.9 – 35.5% [21, 22]. Most of the cited studies were in public hospitals including two done in Jos [23, 24]. Though many private hospitals exist, and they also provide obstetric services including CS, most of the studies recorded are focused on CS in public hospitals. This research was undertaken to identify the common reasons for carrying out CS deliveries in women at a private hospital in Jos over a 15 year period, the result of which could serve as an audit towards improved care and outcomes in pregnancy and labor, not only to the understudied facility but also to other similar facilities in the community. The introduction of the paper should explain the nature of the problem, previous work, purpose, and the contribution of the paper. The contents of each section may be provided to understand easily about the paper.

## **II. Materials And Methods**

The study was carried out in a private hospital located in the urban city of Jos, the Plateau state capital. It is a 17 bed hospital equipped with an outpatient unit, laboratory, labor ward and operation theatre as well as trained staff. The hospital offers services to patients of both sexes and all ages. It is one of many private hospitals located in the state capital where government owned primary, secondary and tertiary healthcare institutions also exist. It was a retrospective study involving a 15 year review of operation theatre records of all women who delivered by CS from 1st January 2000 to 31st December 2014. Records with incomplete information were excluded from the study. Labor ward records were also reviewed to ascertain the total number of deliveries during the period under survey. Data obtained from the operation theatre records included the patient's age, parity, gestational age, booking status, indication for CS, type of CS (elective or emergency). Ethical clearance for the study was obtained from Jos University Teaching Hospital Ethical Review Committee. All information obtained was kept anonymous and confidential. The data was analyzed using Epi info version 7 statistical software package (CDC, Atlanta GA), and variables were presented as frequencies and percentages.

## **III. Results**

### **3.1. Obstetric characteristics of patients**

There were a total of 2549 deliveries, and 228(8.9%) of them were via CS. Of the total CS cases, 64 (28.1%) were by elective CS while 164(71.9%) were by emergency CS. The patients were aged between 16 to 45 years (mean age 26.4 + 5.8 years), and the highest number of patients was found in the age group 25 to 29 years. Majority of the patients (45.6%) were multiparous and had term pregnancies (83.8%) however, less than half of them (41.2%) had booked for antenatal care. Obstetric characteristics of the patients are shown in Table 1.

### **1.2. Indications for CS**

A total of 19 indications for undertaking CS in the patients were identified. The most frequently occurring indication for CS was cephalopelvic disproportion which occurred in 40.0 % of cases, followed by preeclampsia/eclampsia (18.0%). Previous caesarean section was the third commonest indication that occurred and it was diagnosed in 11.8% of the subjects while fetal distress (11.4%) and abnormal presentation (10.1%) ranked fourth and fifth respectively among the five commonest indications for surgical delivery. The least common indication for CS seen in this group of patients was shared by maternal sickle cell disease and uterine rupture both of which occurred at a frequency of 0.4%. Table 2 shows the range of obstetric conditions for which CS was indicated in this survey.

**Table 1:** Obstetric characteristics of patients who had Caesarean section (n=228)

Variable	Frequency	Percentage (%)
<b>Age group</b>		
≤19	24	10.5
20 – 24	60	26.3
25 – 29	76	33.3
30 – 34	42	18.4
≥ 35	26	11.4
<b>Parity</b>		
Primiparous	91	39.9
Multiparous	104	45.6
Grand multiparous	33	14.5
<b>Gestational age</b>		
Preterm	30	13.2
Term	191	83.8
Post term	7	3.1
<b>Booking status</b>		
Booked	94	41.2
Unbooked	134	58.8
<b>Type of CS</b>		
Elective	64	28.1
Emergency	164	71.9

**Table 2:** Indications for Caesarean section in study subjects (n=228)

Indication*	Frequency	Percentage (%)
Cephalopelvic disproportion	91	40.0
Eclampsia/pre-eclampsia	41	18.0
Previous Caesarean section	27	11.8
Fetal distress	26	11.4
Abnormal presentation	23	10.1
Bad obstetric history	11	4.8
Multiple pregnancy	10	4.4
Precious baby	10	4.4
Abroptio placenta	9	4.0
Placenta previa	9	4.0
Failed induction	7	3.1
Maternal HIV	7	3.1
Cord prolapse	5	2.2
Uterine atony	5	2.2
Foetal abnormality	2	0.9
Foetal macrosomia	2	0.9
Previous myomectomy	2	0.9
Maternal sickle cell disease	1	0.4
Uterine rupture	1	0.4

\*Multiple indications existed in some patients.

#### IV. Discussion

The results of this study show an overall CS rate of 8.9% and the commonest indication was cephalopelvic disproportion (40%). This rate falls within the range of 5% -15% CS rate recommended by WHO as ideal for intervening to save life. The rate is lower than 18.0% and 15.8% rates reported by other authors in Jos [23, 24], however this is not surprising because these other studies were both conducted in a government tertiary hospital which was equipped with more skilled staff, much bigger and therefore had a greater capability to handle a larger patient load compared to the smaller sized private hospital in this current study with a smaller patient load. Being a private hospital, the cost of services was likely to be more expensive than the government hospital, so this could have been another reason for the lower rate. Also, due to the urban location of the hospital, patients had the option of attending other private or public hospitals located in the same city. Compared to several other similar studies in various parts of Nigeria, the rate found in this study fell within the range reported by other authors in this country [21-31]. The CS rates recorded in most Nigerian tertiary hospitals were higher than the rate recorded in this study [21-25, 27-31], and it could easily be assumed that the higher rates were because of the larger patient population, however one tertiary hospital with a low patient population comparable to our study (in terms of study population size and length of review period), also recorded a high CS rate of 19.3% [25]. Plausible reasons for high CS rates in tertiary hospitals are more likely to be due to the availability of more skilled obstetric care specialists and contributions of referrals from lower cadre hospitals including some private hospitals overseen by non-obstetric care specialists. One secondary hospital had a lower rate than was recorded for this study, and it is thought that this could be attributed to referral of patients out to tertiary hospitals [21]. In contrast to our study which was in a private hospital in northcentral Nigeria, the CS

rate at a private hospital in southwest Nigeria was much higher at 34.6% and this may be related to the availability of obstetric specialists, the bigger size of the facility, and thus a greater capacity to accommodate a greater patient load [26]. This CS rate in our study is also much lower than CS rates recorded in other parts of the world [4, 32, 33]. One factor that has been linked with low CS rates in some parts of the developing world is a cultural aversion to operative delivery [34-36], and this may very well have played a role in our study. The literature acknowledges that rates of CS vary widely between health facilities based on differences in the mix of obstetric patients being catered for, in relation to their capacity and provisions, as well as clinical management protocol [4].

Our study showed the highest frequency of CS was in women aged 25-29 years, multiparous women, women who did not get antenatal care and women whose pregnancies were at term. A greater proportion of the CS was performed as emergencies. These similar characteristics were also seen in some other Nigerian studies, but unlike our study more of the patients in these other studies were booked for antenatal care [22, 25, 27]. The combined predominance of both unbooked patients and emergency CS occurring together suggests that unbooked patients are more likely to present late for delivery at which time it would be too late to consider an elective CS, and therefore end up having an emergency CS. This study therefore shows that there is a need to enlighten women and the community at large on the importance of seeking antenatal care during pregnancy and presenting early in labor. This would go a long way in reducing the rate of emergency CS which is known to be associated with more complications compared to elective CS [27].

Cephalopelvic disproportion, preeclampsia/eclampsia, previous CS, fetal distress and abnormal presentation were the top 5 commonest indications for CS. These same indications have featured commonly in other local studies as top ranking reasons for CS [22, 25, 27, 28, 30], and elsewhere in Africa [37]. This shows that in spite of varied rates of CS across facilities and populations, the commonly occurring indications are usually similar. Unlike in developed countries where maternal request and previous CS are commoner [5, 32], maternal request did not feature as an indication in our study and other local studies.

## V. Conclusion

The usual large number of patients that have been reported in other similar studies was not reflected in this study which had a smaller sample size, but it has still been able to demonstrate that the indications for CS are similar to what has been reported by other authors within the same geographical region in public hospitals. Such a review at any facility should be conducted regularly as a way of auditing this aspect of obstetric care services. A universal guide for obtaining and keeping patients records should be developed and used to ensure adequate documentation and monitoring of important patient information. This would not only enhance reliable data generation for future research but ultimately, improving obstetric care service. Though patients' obstetrics characteristics, indication for CS and type of CS as were reviewed in this current study are all factors that impact on the maternal and fetal outcome, these outcomes were not reviewed in the study due to insufficient data related to outcomes. The study was hospital based, so the results may not apply to the general population. Due to the study being a retrospective one, the authors could not control the quality of the data. More prospective studies in private hospitals can be done to assess maternal and fetal outcomes in relation to obstetric characteristics and indications for CS.

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