

# Magnitude and Pattern of Caesarean Sections in a Teaching Hospital, Northwest Nigeria: A 5 Year Analysis

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**Abstract:** Background: The pattern of Caesarean section rate is on the rise with emergency surpassing elective caesarean deliveries. This could not be unconnected to the safety of anaesthesia in modern obstetrics. Method: Data on Caesarean deliveries conducted from January, 2005 to December, 2009 was analyzed using Epi Info Statistical Software. Results: The Caesarean section rate was 18.75%. The mean age was 28.02±5.86 years. Emergency Caesarean section was the majority (59.4%) while the remaining (40.6%) were elective. General anaesthesia was used for the majority (66.68 %) of the cases, while 33.32% had subarachnoid block. Univariate analysis, shows statistically significant association between the type of surgery and anaesthetic technique used ( $\chi^2=22.741$ , df = 1, p = 0.000). A statistically significant association was also established between age group of the patients and the anaesthetic technique ( $\chi^2=10.878$ , df = 2, p = 0.004). However, there was no statistically significant association between age group of the patients and the type of Caesarean section ( $\chi^2=0.224$ , df = 2, p = 0.894). Conclusion: The high rate of emergency caesarean intervention has been a persistent denominator in several studies. The root cause of these anomalies such as dearth of expertise at secondary facilities should be addressed. With effective pregnancy supervision, obstetric cases that would end with emergency intervention can be handled electively.

**Keywords:** Caesarean Sections, Magnitude, Northern Nigeria, Pattern, Teaching Hospital

## 1. Introduction

Pregnancy and parturition are physiological processes that mostly end with successful delivery of product of conception through os naturalis. These processes however do not always end this way. In situations where such is not feasible, alternative mode of delivery is employed to reduce risk of maternal and fetal morbidity and/or mortality. Among such modalities is caesarean section which is a surgical procedure for delivering fetus, placenta and membranes, through an abdominal and uterine incision<sup>1</sup>. It has been practiced since antiquity for several reasons<sup>2</sup>. Until the development of asepsis and anaesthesia in the 19<sup>th</sup> century, Caesarean section was bedeviled with poor outcome for both the mother and the fetus<sup>3,5</sup>.

The safety of this operation has tremendously increased the rate on a global scale but not without attendant complications. The impact on the resources of health care facilities as well as economic, social and psychological

burden to individual families and communities involved can be enormous<sup>6</sup>.

The World Health Organization (WHO) recommends that the Caesarean section rate should be 10-15%<sup>7</sup>. However, there is wide variation of this rate globally as well as locally<sup>8,9</sup>.

Although elective Caesarean section is considered safer for both mother and fetus, when compared with emergency Caesarean section, the latter continued to exact its dominance in frequency in most health facilities in Nigeria<sup>8,9</sup>. Regional anaesthesia is generally recommended over general anaesthesia in term of safety for both the parturient and the fetus<sup>10,11</sup>. This study is aimed at revealing the magnitude and pattern of Caesarean section at Aminu Kano Teaching Hospital Kano, Nigeria.

## 2. Materials and Methods

Data from operation and anaesthetic registers of pregnant women that had Caesarean section at Aminu Kano Teaching

Hospital, Nigeria from 1<sup>st</sup> January 2005 to 31<sup>st</sup> December 2009 were retrieved and information on age, type of operation, whether elective or emergency, and type of anaesthesia used were entered into a personal computer and analyzed using Epi Info statistical software version 3.5. The results were presented in tables; mean, mode and standard deviation were employed where applicable.  $\chi^2$  was used for test of significance. P value of less than 0.05 was used for test of significance.

### 3. Results

A total of 10,725 vaginal deliveries and 2011 Caesarean operations were done in the department from 2005 – 2009. The Caesarean section rate was 18.75%. The mean age was 28.02±5.86 years with the majority of the subjects (89.73%) within the age of 18 to 34 years (Table I).

Emergency Caesarian section was the majority 1315 (65.39%) while the remaining 696 (34.61%) were elective. General anaesthetic was administered to the majority 1341 (66.68%) of the cases, while 670 (33.32%) had the procedure performed under subarachnoid block (SAB) (Table II).

Univariate analysis, shows statistically significant association between the type of surgery (emergency or elective) and the anaesthetic technique used ( $\chi^2=22.741$ ,  $df = 1$ ,  $p = 0.000$ ). A statistically significant association was also established between age group of the patients and the type of anaesthesia used ( $\chi^2=10.878$ ,  $df = 2$ ,  $p = 0.004$ ).

However, there was no statistically significant association between age group of the patients and the type of Caesarean section ( $\chi^2=0.224$ ,  $df = 2$ , (Table II)

**Table I.** Age Group of Patients. Majority of the patients were within the age of 18 to 34 years

Age Group	Frequency	Percentage (%)
<18	31	1.54
18-24	729	36.25
25-29	700	34.81
30-34	295	14.67
≥35	256	12.73
Total	2011	100.00

**Table II.** Type of Caesarean Section and Anaesthetic technique. Emergency Caesarean section was higher than elective and General anaesthesia was administered more than Subarachnoid block

Feature	Frequency	Percentages (%)
<b>Caesarean section</b>		
Emergency	1315	65.39
Elective	696	34.61
Total	2011	100.00
<b>Anaesthesia</b>		
GA	1341	66.68
SAB	670	33.32
Total	2011	100.00

$\chi^2=22.741$ ,  $df = 1$ ,  $p = 0.000$

**Table III.** Association between Age group and Anaesthetic technique. There was statistically significant association between Age group and Anaesthetic technique

Age Group (years)	Anaesthetic technique		Total
	GA	SAB	TOTAL
<18	29	2	31
18-24	520	218	738
25-29	500	213	713
30-34	301	76	377
≥35	86	66	152
Total	1436	575	2011

GA=General Anaesthesia; SAB=Subarachnoid block  
 $\chi^2 = 10.878$ ,  $DF = 2$ ,  $P = 0.004$

**Table IV.** Age Group and the Type of caesarean section. There was no statistically significant association found between Age group and type of caesarean section

Age group (years)	Type of C/S		Total
	Emergency	Elective	
<18	18	13	31
18-24	498	289	787
25-29	357	206	563
30-34	293	81	374
≥35	149	107	256
Total	1315	696	2011

$\chi^2 = 0.224$ ,  $DF = 2$ ,  $P = 0.894$

### 4. Discussion

The Caesarean section rate, over the period was 18.75%. This was higher than the figures of 9.1%, 10.5% and 11.8% reported by Ijaiya<sup>12</sup>, Obuna et al<sup>13</sup> and Geidam et al<sup>14</sup> in Ilorin, Abakaliki and Maiduguri respectively, all in Nigeria. This was also higher than the 10-15.0%<sup>7</sup> recommended by the World Health Organization (WHO). This could not be unrelated to the nature of the tertiary hospital as a major referral centre for complicated deliveries within Kano and neighbouring states. More importantly though, the dearth of adequate Obstetricians and Physician Anaesthetists in State owned Health facilities to manage complicated deliveries makes the Federal tertiary health facilities such as ours a hub for referral.

The mean age of the patients was 28.02±5.86 SD years which is similar to the finding by Ijaiya et al<sup>12</sup> in Ilorin, Nigeria. This could be attributed to the similarity of the two study community being in the northern part of the country and are both predominantly Muslims. Majority of the patients (85.7%) were within the ages of 18-34 years. Geidam<sup>14</sup> reported high incidence (52.8%) of Caesarean section within similar age group. This is mainly due to high fertility rate among this age group and the high fertility rate of the region<sup>14</sup>. Majority of the caesarean sections (65.4%) were emergency compared with only 34.6% of elective Caesarean delivery. Geidam et al<sup>14</sup> and Mutahir et al<sup>15</sup> reported similar findings. This high rate of emergency Caesarean section could be attributed to the fact that these are tertiary health facilities which serve as referral centres where complicated labours could be managed more effectively. In most cases, the lifesaving CS remains the only choice<sup>15</sup>. Another

possibility is the dearth of expertise at secondary health facilities in these regions. Therefore, experts that could manage complicated labour are only available at the tertiary health facilities. Up to 66.7% of the patients had a general anaesthetic. Nwobodo *et al*<sup>9</sup> revealed 53.6% of the patients that had Caesarean section in Sokoto also had general anaesthesia. This contrasts sharply with the trend in the UK (78%) and a private hospital based study in Kano, Nigeria (87%)<sup>16,17</sup>. Both figures from UK and the private hospital in Kano had all the anaesthetics administered by skilled Physician Anaesthetists. During the period under study, non-physician anaesthesia providers constituted more than 90% of the workforce who lacked the skill to perform regional technique, which favoured the general anaesthetic. This brings to fore the need to encourage training of specialist anaesthetists and uphold the existing training program of non-physician anaesthesia providers with requisite skill to perform regional anaesthesia techniques, as stop gap measure in order to bridge the dearth of manpower in primary and secondary health facilities in the country. This will reduce cost of surgical intervention as well as reduce burden of health budget planning for health managers.

In this study there was significant association between the type of surgery, the age group of the patients and the type of anaesthesia ( $X^2= 22.74$  and  $10.88$ ;  $P<0.05$  respectively) but no statistically significant difference between the age group of the patients and the type of Caesarean section.

## 5. Conclusion

The high rate of emergency caesarean intervention has been a persistent denominator in several studies. The root cause of these anomalies such as dearth of expertise at secondary facilities should be addressed. With effective pregnancy supervision, obstetric cases that would end with emergency intervention can be handled electively.

Training of non-physician anaesthesia providers in the provision of subarachnoid block should be encouraged. More importantly, concerted effort should be made to increase the number of Physician anaesthetists to discourage the reliance on general anaesthetic for CS.

These measures will not only reduce the burden of caesarean delivery on health facilities but will also improve outcome and reduce the burden on the individual families and the community.

There is need to conduct a prospective study to look into the root causes of major Obstetric delays in the community in order to find lasting solution to rising caesarean section rate in our community.

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