Full Length Research Article

DEMOGRAPHIC AND OBSTETRIC DETERMINANTS OF CAESAREAN SECTION AMONG PATIENTS IN LTH, OGBOMOSO

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ABSTRACT

Background: Public health concerns have heightened due to the increasing rate of caeserean section (CS).
Aim: To identify demographic and obstetric determinants of CS in aTeaching Hospital.
Material and Methods: The records of all cases of Caesarean delivery carried out in LAUTECH Teaching Hospital (LTH), Ogbomoso between January 2011 and December 2013 were retrieved. Data from the records were entered and subjected to simple descriptive statistical analysis using SPSS version 16, measures of association was carried out using chi-square and student t-test, all put at P value < 0.05.
Results: A total of 1,097 deliveries were recorded for the period of the study. A total of 244 caesarean sections (CS) were performed during the period giving the CS rate of 22.2%. Majority 115(72%) of the patients had emergency caeserean section. The modal age –group among the women who undertook CS was 25 – 29 years. Most of the women who had CS were booked pregnant women 163(75.8%). Forty-four percent of the women with CS were primiparous. Cephalopelvic disproportion, previous CS, and fetal distress were the commonest indication for CS with 24.2%, 17.7% and 14.0%, respectively. Emergence CS was statically significant with being a single mother (P <0.001), body weight more than 70Kg (P = 0.026), primiparous (P< 0.001) and 1or 2previous CS (P<0.001).
Conclusion: The rate of CS in this study can be compared to those obtainable in other parts of World. Previous CS and cephalopelvic disproportion were the most common indication for CS. Strategies to improve antenatal care and post natal care should be strengthened to reduce the risk and complications that could arise from CS.

INTRODUCTION

One of the major focus of the millenium development goals (MDGs) is the reduction of both maternal and infant mortality (WHO, 2007; WHO, 2000 and UN, 2009). However, access to skilled attendants and crucial intervention during pregnancy and childbirth in developing countries health sectors are still grossly inadequate (Inyang-Etoh *et al*., 2013 and Kwawukume, 2001). CS is usually employed as a salvage surgical procedure to facilitate the delivery of fetus when the benefit to deliver outweighs the risk of continuing the pregnancy. The rate of CS has been on the increase around the world through the years (Jaiyesimi *et al*., 2003; Mutihir *et al*., 2005; Pang *et al* 2007 and Leung *et al.,* 2001). This could largely be due to a shift in emphasis from the method and technique of delivery to a greater concern about perinatal

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outcome following delivery. Patients' preference for CS is regarded as a common cause behind increasing elective caesarean delivery rate especially in the developed countries (WHO, 2007; Pang *et al*., 2007). The incidence of CS globally ranges from 10% to up to 35% (WHO, 2002; Mutihir *et al*., 2005 and Lee *et al*., 2004). The CS rate rose from 4% in the 1970s to 21.5% in 2001 in the United Kingdom, from 30.3% in 1978-1979 to 50.8% in 1994 in Brazil, from 11.1% in 1988 to 38.1% in 2000 in South Korea, and from 4.7 to 22.5% over the past three decades in Shanghai.4,6-8 In Hong Kong, the CS rate rose from 16.6 to 27.4% between 1987 and 1999, representing a 65% increase over 12 years (Pang *et al*., 2007; Leung *et al*., 2001; Lee *et al*., 2004; Igberase *et al*., 2009; Dobson, 2001 and Gomes *et al*., 1999). The rising caesarean section rate in developed countries could be attributed to the use of continuous cardiotocographic monitoring during labor, defensive practice and repeat caesarean sections; in a developing country like Nigeria, primary caesarean sections result largely from severe pre-eclampsia, eclampsia and

cephalopelvic disproportion (Lee *et al.*, 2005; Tang *et al.*, 2006 and Festin *et al.*, 2009). One other important reason of growing rate of CS can be attributed to the increase of institutional - setting births (Nwobodo *et al.*, 2011; Ozumba *et al.*, 1993). Among other reasons, demographic profiles of mothers, fear of litigation among caregivers physician's convenience, insurance facility and mode of hospital payment and profit-oriented private health care system are found to be associated to the rise of CS delivery (Ugwu *et al.*, 2011; Sufang *et al.*, 2007 Tollanes *et al.*, 2009). CS rate have been reported to be higher in private hospitals in developing countries with the ulterior motive of the recurring financial gains (Karim *et al.*, 2011 and Kaur *et al.*, 2013). Cephalopelvicdisproportion, repeat caesarean sections and fetal distress have been noted as the most ccommon indications for caesarean section in Nigeria (Inyang-Etoh *et al.*, 2013; Jaiyesimi *et al.*, 2003 and Igberase *et al.*, 2009. The purpose of this study is to identify the demographic, past and present obstetric determinants of caesarean section in LTH Ogbomoso.

MATERIALS AND METHODS

The records of all cases of Caesarean delivery carried out in LTH, Ogbomoso between January 2011 and December 2013 were retrieved. Information extracted from the records included socio-demographic status of the patients, anthropometric parameters, past obstetric history, intra-partum events, indication for caesarean section, type of caesarean section and past medical history. The operating theatre records as well as data pertaining to the number of deliveries during this study period were obtained. These were entered and subjected to simple descriptive statistical analysis using SPSS version 16, measures of association was carried out using chi-square and student t-test, all put at P value of less than 0.05.The approval for this study was obtained from the Ethical Committee of LTH Ogbomoso.

RESULTS

A total of 1,097 deliveries were recorded for the period of the study. A total of 244 CS were performed during the study period giving the prevalence of 22.2%. Two hundred and fifteen case notes with complete information required were eventually included in the study from the 244 case notes retrieved. This gives a case retrieval rate of 88.1%. Table 1 shows the socio-demographic status of the patient. The mean age in years of the patients was 28.31±4.08 with majority (47.9%) of the patient in the 25 – 29age group. Larger proportion were Yoruba (89.3%) and 82.3% are married. Majority are educated up to secondary school level (48.4%) with 34.9% of the patient with skilled labor and 38.1% of partner/husbands were unskilled. Table 2 shows the anthropometric parameters of the patients. The mean height in meters was 1.59±0.16 with majority (76.3%) having a height greater than 1.5metres. The mean weight in kg was 73.01 ± 5.27 with larger proportion (56.7) within 70 – 89kg weight. Majority of the patient 163(75.8%) were booked. One hundred and twenty (55.8%) were multiparous and 95(44.2%) were primiparous. Seventy-six (35.3%) had had previous vaginal delivery while 139(64.7%) had their previous deliveries by CS.

Table 1. Socio-demographic status of patients

Variable	Frequency (n = 215)	Percentage (%)
Age in years		
Mean Age = 28.31±4.08		
15-19	6	2.8
20-24	46	21.4
25-29	103	47.9
30-34	51	23.7
35 and above	9	4.2
Marital Status		
Single	38	17.7
Married	177	82.3
Tribe		
Yoruba	192	89.3
Igbo	19	8.8
Others (Which include Hausa & Fulani)	4	1.9
Religion		
Christian	151	70.2
Muslim	59	27.4
Traditionalist	5	2.3
Educational Status		
Primary	21	9.8
Secondary	104	48.4
Tertiary	90	41.9
Occupation		
Unskilled	73	34.0
Skilled	75	34.9
Professional	67	31.2

Table 2. Anthropometric parameters of the patients

Variable	Frequency (n = 215)	Percentage (%)
Height in meters (m)		
Mean height = 1.59±0.16		
<1.5	51	23.7
≥1.5	164	76.3
Weight in Kg		
Mean weight = 73.01 ± 5.27		
<50	7	3.3
50 - 69	72	33.5
70 – 89	122	56.7
90 and above	14	6.5

The last delivery was by emergency CS in 155(72.1%) patients and elective in the remaining 60 patients. Majority 155(72.1%) of the patients had an emergency CS while 66(27.9%) had elective CS during the study period. Table 3 shows Caesarean section profile of the patient. The mean gestational age at CS in weeks was 38.90±1.46, with majority (79.5%) within the 38.0 – 42.0weeks gestational age. Cephalopelvic disproportion was the indication for 24.2% of CS. The mean cervical dilation at CS was 4.16±2.90cm with majority (61.9%) had cervical dilation greater than 4cm. Sixty-nine (32.1%) had a station of presenting part of zero (0) when CS was done. Only 14.4% had induction of labor before CS with a higher proportion of them (74.2%) had misoprostol and oxytocin. Thirty eight percent had augmentation labor before CS. Table 4 shows the type of caesarean section and the socio-demographic characteristics of the patients. Marital status of the patient showed a significant relationship with the type of caesarean section had (p value <0.01) while age, educational status and occupation did not show any statistical relationship. Table 5 shows the type of caesarean section with the anthropometric parameters of the patients. Weight in kg of the patients was statistical significantly related to the type of caesarean section. Height did not show any statistical relationship.

Table 3. Caesarean section profile of the patient

Variable	Frequency (n = 215)	Percentage (%)
Gestational age at CS in weeks		
Mean GA = 38.90±1.46		
34.0 - 37.6	44	20.5
38.0 - 42.0	171	79.5
Indication for the CS		
Fetal distress	30	14.0
Antepartum hemorrhage	15	7.0
Hypertensive disorders in pregnancy	23	10.7
Postdatism	7	3.3
Failed induction of labor	8	3.7
Cephalopelvic disproportion	52	24.2
Malpresentation	43	20.0
Previous CS	37	17.2
Cervical dilatation in cm		
Mean = 4.16±2.90		
3 or less	82	38.1
4 or more	133	61.9
No of times patient had hadCS		
1	102	47.4
2	83	38.6
3	30	14.0
Induction of labor before CS	31	14.4
Method on induction of labor		
Ripening with Foley's catheter +oxytocin	8	25.8
Ripening with misoprostol + oxytocin	23	74.2
Augmentation of Labor	82	38.1
Agent used for augmentation of labor		
Oxytocin	82	100.0

Table 6 shows the type of caesarean section with obstetric profile of the patients. Number of times patient had CS and Cervical dilatation in cm showed statically significant relationship with the type of caesarean section (p value <0.001). Although the mean gestational age in weeks of the patients that had elective caesarean section was marginally lower than those that had emergency caesarean section, this difference was not statistically significant (p-value = 0.289).The mean difference in the cervical dilation at CS of the two types of caesarean section had by the patients was statistically significant (p-value <0.001). Also, there was statistical significant relationship between the parity of the patients and type of caesarean section had (p value < 0.001).

DISCUSSION

The rate of caeserean section has been on the increase and several factors have been identified to be responsible for this trend (Inyang-Etoh *et al*., 2013; Kwawukume 2001& 2002). The overall ceaserean section rate in Nigeria is between 9.9 – 34.5% (Inyang-Etoh *et al*., 2013; Ibrahim *et al*., 2009 and Abiodun *et al*., 2009). The rate obtained in this study was 22.2 % which falls in between the earlier reported range. Majority (72%) of the patients had emergency ceaserean section. This is because most of the ceaserean section in Nigeria are performed as an emergency procedure to salvage the lives of

Table 4. Type of Caesarean section and the socio-demographic characteristics of the patients

	Types of Caesarean Section				
Variables	Emergency N(%)	Elective N(%)	Df	Pearson Chi-Square (x^2)	P-value
Age in years					
Less than 26	52(70.3%)	52(70.3%)	1	0.186	0.666
26 and above	103(73.0%)	103(73.0%)			
Marital status					
Single	38(100.0%)	0(0.0%)	1	17.868	<0.001*
Married	117(66.1%)	60(33.9%)			
Educational Status					
Primary	14(66.7%)	7(33.3%)	2	2.346	0.309
Secondary	80(76.9%)	24(23.1%)			
Tertiary	61(67.8%)	29(32.2%)			
Occupation					
Unskilled	58(79.5%)	15(20.5%)	2	3.414	0.181
Skilled	53(70.7%)	22(29.3%)			
Professional	44(65.7%)	23(34.3%)			

Table 5. Type of Caesarean section with anthropometric parameters of the patients

	Type of Caesarean Section				
Variables	Emergency N(%)	Elective N(%)	Df	Pearson Chi-Square (x^2)	P-value
Height in metres					
<1.5m	35(68.6%)	16(31.4%)	1	0.399	0.528
≥1.5m	120(73.2%)	44(26.8%)			
Weight in Kg					
< 70	64(81.0%)	15(19.0%)	1	4.939	0.026*
70 and above	91(66.9%)	45(33.1%)			

*Statistically Significant

Table 6. Type of Caesarean section with Obstetric profile of the patients

	Types of Caesarean Section				
Variables	Emergency N (%)	Elective N (%)	Df	Pearson Chi-Square (x^2)	P-value
No of times patient had had CS					
1	58(56.9%)	44(43.1%)			
2	75(90.4%)	8(9.6%)	2	25.551	<0.001*
3	22(73.3%)	8(26.7%)			
Gestational age in weeks	38.96± 1.66	38.73± 0.73		1.063	0.289
Cervical dilation at CS	5.45±2.12	1.83±1.80	213	14.904	<.0.001*
Parity			213		
Primiparous	58(61.1%)	37(38.9%)			
Multiparous	97(80.8%)	23(19.2%)		10.312	<0.001*

*Statistically Significant

patients on referral from primary health care centres and those who had inadequate ante-natal care. The percentage of those who had emergency CS in this study is higher than what was obtained in a similar study (66.4%) undertaken at the University of Calabar (Inyang-Etoh *et al*., 2013). However higher emergency CS rate of 78.2%, 93.7% and 85.2% were recorded for studies conducted in Sokoto, Enugu and Jos, respectively (Mutihir *et al*., 2005; Nwobodo *et al*., 2011 and Ugwu *et al*., 2011). Furthermore, CS rate is expected to be high in Teaching Hospitals because of the number of expertise, and high rate of referral from primary and secondary health care centres. Other reasons of high rate of CS in this study included cases of referred patients who came in critical condition with history of trial of labour or complicated medical disorders. Emergency CS was done to save the life of mother and fetus.

Fetal distress, cephalopelvic disproportion and previous CS were the most common indication observed in this study. These were buttressed in similar studies conducted in Nigeria (Inyang-Etoh *et al*., 2013 and Nwobodo *et al*., 2011).This result (24.2% for cephalopelvic disproportion) is within the reported range of the findings of other studies in Nigeria where it remained the most common (25.6% and 15.5% respectively) as indication for emergency CS (Ikeako *et al*., 2009; Geidem *et al*., 2009). However, fear of childbirth on the part of the patients and fear of litigation on the part of medical personel are the most common causes of increase in CS rates in the developed nations (Nieminen *et al*., 2009). The modal age –group among the women who undertook CS in this study (25 – 29 years) is in tandem with those reported in previous studies in Nigeria (Inyang-Etoh *et al*., 2013; Jaiyesimi *et al*., 2003; Igberesa *et al*., 2009; Ikeako *et al*., 2009; Ozumba *et al*., 1993 and Ugwu *et al*., 2011). Forty-four percent of the women were primiparous while 55.8% were multiparous (Inyang-Etoh *et al*., 2013). observed similar trend of about 55.3% being multiparous while primiparous women who undertook CS accounted for 44.7% of the study population. The observed trend is also in support of the previous studies carried out in Nigeria (Ikeako *et al*., 2009 and Ugwu *et al*., 2011).

Previous studies have suggested that the height of a woman could serve as a crude index of the size of her pelvic cavity (Inyang-Etoh *et al*., 2013; Pang *et al*., 2007). The mean height in this study was 1.59± 0.16 m. Majority (76.3%) had height greater than 1.5m. Recent study opined that poverty and malnutrition, which is widespread in developing countries Nigeria inclusive, could be responsible for why girls do not attain optimal skeletal growth and pelvic maturity before they commence motherhood (Inyang-Etoh *et al*., 2013). The mean weight recorded in this study was 73.01 ± 5.27 kgwith a larger proportion of the study population (56.7%) had weight ranging between 70 and 89kg. This result is close to those obtained by Inyang – Etoh *et al* 2013 in which60.0% of the their study populace weighted between 70-89kg. The result of this study has revealed that most of the women who undertook CS were booked pregnant women (76%) while only 24% were unbooked. This is higher than findings from other Nigerian studies which reported 40.5% and 57.5%, respectively for booked and un booked women (Igberase *et al*., 2009 and Ugwu *et al*., 2011). It is however close to that of Inyang – Etoh *et al* ., 2013 who observed that a vast majority (79.3%) of

the women had booked and obtained antenatal care in the centre. This could be premised on the assumption that women have confidence in services rendered in tertiary health care centres as compared to the primary and the secondary health care centres. Also, some of the reffering centres are affiliated to the LAUTECH Teaching Hospital, Ogbomoso.

Conclusion

This study has shown that the rate of caeserean section in Ogbomoso can be compared to those obtainable in other parts of Nigeria. The modal age –group among the women who undertook CS in this study (25 – 29 years) and were mostly primiparous. Most CS were emergencies. Fetal distress and cephalopelvic disproportion, were the most common indication for emergency CS while previous CS could be a major reason for elective CS.

Recommendation

Strategies to improve antenatal care and post natal care should be strengthened to reduce the risk and complications that could arise from CS. Government and NGOs should targetinterventions towards improving the continuum of care for obstetric risk groups, especially multiple gestation, breech and preterm births.

Limitation of Study

The study might be affected from small sample size because of the age of the Teaching Hospital (being a newly established center). Case records not containing adequate patients' record were excluded.

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