

## CAESAREAN DELIVERY AND POSTNATAL DEPRESSION IN A TERTIARY HOSPITAL IN SOUTHERN NIGERIA.

### ABSTRACT:

**Background:** Postnatal depression is one of the most devastating of the mental disorders affecting women six weeks postpartum, accounting for more than 20% of maternal deaths after childbirth. It is said that young children of mothers with postnatal depression have greater behavioural problems than those of non depressed mothers. Mode of delivery with other risk factors has been implicated as a predictive factor and caesarean section in any form is said to be most implicated. This study intends to contribute to the raging arguments on the relationship between caesarean section and postnatal depression.

**Objective:** To examine the relationship between caesarean sections and postnatal depression.

**Method:** Women visiting the postnatal clinic six weeks postpartum who consented to the study, were interviewed and screened for depression using the study designed questionnaire and the Edinburg postnatal depressive scale (EPDS). Data obtained were analysed using the statistical package for social sciences (SPSS) version 23.0, p values <0.05 were statistically significant.

**Results:** Out of 405 women who participated in the study, 135 (33.3%) had an EPDS score of  $\geq 12$  points. Among the risk factors isolated which included co-habiting, death of children, children challenges and partner violence, caesarean section showed a very strong association  $p=0.001$ , OR 1.68, 95% CI=1.10-2.58. Emergency caesarean section showed a stronger association  $p=0.001$ , OR 3.6, 95% CI=2.35-5.69.

**Conclusion:** Emergency caesarean section has a strong significant impact on the development of postnatal depression.

**Keywords:** Postnatal depression, EPDS, Caesarean section, predictors.

### INTRODUCTION

Postnatal depression is the most common of the mood disorders in women after delivery, 15% of women are known to have severe depression within six weeks of delivery [1]. It is a significant health problem with severe consequences on mothers, children and the entire family. It accounts for more than 20% of maternal deaths after child birth [2] (Confirm in reference (2) the frequency of 20% mentioned in this paragraph). It affects maternal-infant interaction including infant feeding outcomes [3], and causes emotional, cognitive and behavioural problems, and low social competence [4]. It is said that children of mothers with

postnatal depression have greater behavioural problems than those of non- depressed mothers [5].

Risk factors predisposing women to postnatal depression, have been discussed across the globe and the discussions are still ongoing because no consensus has been reached. Among several risk factors, mode of delivery has been implicated as a predictive factor [6,7]

Conventional modes of delivery include all types and manoeuvres of vaginal delivery and the caesarean sections (C/S). The caesarean sections are either elective or emergencies. The elective C/S appears to be a preferred mode of delivery to some women, since it affords them the opportunity to choose the date, the day, the choice of surgeon and place of surgery. It also allows them to plan their programmes and career profile. This observed preference and other reasons have steadily increased the rate of C/S worldwide in the past decades, to a rate exceeding 20% [8,9]. Although C/S can prevent maternal and perinatal mortality and morbidity, they are also associated with risks which can extend beyond the delivery, affecting mother and child health and even future pregnancies [10,11]. Studies have shown that C/S in any form is a predictive factor to postnatal depression [12,13]. Other studies insist that emergency C/S as against elective C/S are predictive factors to postnatal depression [14,15] while others found no association [16,17]. This study intends to contribute to this raging discussion between C/S and postpartum depression.

## **METHOD**

The study was carried out in the Rivers State University Teaching Hospital, Port Harcourt Nigeria. As a tertiary health institution, it serves as a referral centre to all the secondary health facilities within the region. The postnatal clinic of the hospital attends to all mothers who must have delivered their babies within the hospital in the last six weeks. The clinic therefore reviews the health conditions of women six weeks postpartum. The study criteria included all women who were delivered of children within the hospital in the last six weeks, who were visiting the postnatal clinic for review during the period, who were in good physical health and were not psychotic and who had a minimum of primary education. All women who met the criteria and who consented to the study were requested to sign a consent form which also explained the study to them. Only women who consented ~~to the study~~ were allowed to take part in the study.

### **Data collection and study instruments**

Each participant responded to two questionnaires; The study designed questionnaire which contained the socio-demographic variables and the risk factors, and the English version of Edinburgh Postnatal Depression Scale (EPDS). The study questionnaire also considered socio-economic variables and obstetrics history.

Postnatal depression was measured using the EPDS developed by Cox et al (1987), validated for detecting depression in both antenatal and postpartum. It is globally used to screen for postpartum depression [18,19]. It contains 10 specific questions with four likart (or likert?)

scale response options (most of the time, sometimes, not often and never), targeting stress indicators within the previous week. Scores are recorded as 0,1,2,3 or 3,2,1,0, according to symptom severity. It has a sensitivity and specificity of 86% and 76% respectively. Using the English version, the respondents who scored 12 points and above were considered as likely depressives.

### Data Analysis

Using the statistical package for social sciences SPSS version 23.0, all relevant descriptive statistical variables were computed using student t-test and chi-squared tests and associations between means of continuous variables and categorical variables were determined. Linear multiple regression analysis determined the predictors of postnatal depression at bivariate analysis p,0.05.

### RESULTS

This was a cross sectional study. A total of 405 women participated in the study, 135 had EPDS scores of 12 points and above giving a prevalent rate of 33.3% for postnatal depression. There was no difference between groups of delivery mode with regards to socio-demographic variables. The mean age of respondents was 38.28±27,76 ranging between 16 and 54years. Due to the education inclusion criteria, all the respondents had adequate education, and the variables of age and education had no strong association with depression. The majority of the women were house wives 96%, 11 were single while 3- (three) were co-habiting and all the 3 (three) were depressed. Socio-economic history across the groups did not show strong association with depression.

**Table 1: Obstetric history and depression**

Variables	Frequency/ %	Depressed	Not depressed	p-value
	N=405	N=135	N=270	
Gestational age				P=0.69
14-26	30 (7.4%)	12 (8.9%)	18 (6.79) = 6,70%	
27-40	288 (71.1%)	93 (68.9%)	195(72.2%)	
≥41	87 (21.5%)	30 (22.2%)	57 (21.1%)	

	405	135	270	
Planned Pregnancy				P=0.81
No	104 (25.7%)	36 (26.7%)	68 (25.2%)	
Yes	301 (74.3%)	99 (73.3%)	202 (74.8%)	
Family size				P=0.401
0	4 (1.0%)	2 (1.5%)	2 (0.7%)	
1	183(45.2%)	60 (44.4%)	123 (45.6%)	
2-4	213 (52.6%)	73 (54.1%)	140 (51.9%)	
≥5	5 (1.2%)	0(0.00%)	5 (1.9%) → 101,1%	
Death of Children				P=0.001 OR1.87 95%cl=1.27-2.62
0	322 (79.5%)	92 (68.1%)	230 (79.5%) 85,2%	
1	69(17.0%)	36 (26.7%)	33 (12.2%)	
≥2	14 (3.5%)	7 (5.2%)	7 (2.6%)	
Child health Challenges				P=0.002 OR2.9 95%cl=1.46-5.67
No	366 (90.4%)	113 (83.7%)	253(93.7)	
Yes	39 (9.6%)	22 (16.6%) 16,3%	17 (6.3%)	
Antenatal care				P=0.767
No	13 (3.2%)	5 (3.7%)	8 (3.0%)??	
Yes	392 (96.3) 96,8%	130 (96.3%)	130 (96.3%)??	
Preferred child Sex			≠270	P=0.001 OR 0.42 95%cl=0.31-0.72
Yes	200 (49.4%)	50 (37.0%)	150 (55.6%)	
No	205 (50.6%)	85 (63.0%)	120 (44.4%)	

\*Check changes marked in red

Table 1 showing obstetrics and maternal history with depression.

The mean gestational age was 37±3.80 weeks (p=0.69), planned pregnancy (p=0.81), family size (p=0.040), antenatal care (p=0.767), showed no strong association with depression. Death of children (p=0.001), child health challenges (p=0.002), showed strong association with depression. We suggest using parentheses

**Table 2: Mode of delivery and depression**

Variables	Frequency/% N=405	Depressed N=135	Not depressed N=270	P-value
Caesarean Section	227 (56%)	87 (64.4%)	140 (51.9%)	P=0.019 OR 1.68, 95%cl=1.10-2.55
Emergency C/S	198 (48.9%)	94(69.62) Only 69.2	104 (38.5%)	P=0.001 OR3.6, 95%cl=2.35-5.69
Elective C/S	29 (7.20%)	5 (3.7%)	24 ( <del>5.18%</del> )8.9%	P=0.081
Vaginal Delivery	178 (43.9%)	36 (26.6%)	152 (56.2%)	P=0.69

Table 2 showing mode of delivery and depression.

Mode of delivery was 48.9% for emergency C/S, 7.2% for elective C/S and 43.9% for vaginal delivery giving an overall C/S rate of 56% in the hospital (The information is already described in the table). The indications for women who had elective C/S included recurrent sections and breech presentations. Emergency C/S were mainly referrals from peripheral hospitals with delayed first stage, foetal distress and other obstetrics complications as reasons for referral and surgery. In all, C/S showed a strong association with depression p=0.019 OR;1.68, 95%cl=1.10-2.58. Emergency C/S showed a stronger association p=0.001 OR;3.6, 95%cl=2.35-5.69, while elective C/S p=0.081. Table 2 shows the rest of the results.

## DISCUSSION

In this study, the rate of C/S in this tertiary hospital is 56%. This is relatively high compared with other studies from different regions of the country. Emmanuel Aduyeni et al 2019 [20] reported 2.1% from a population based cross-sectional study, Oluwarotimi et al 2014 [21] reported 40.1% from Lagos, Ashie BA et al 2019 [22], Gunn JKL et al 2017 [23] reported rates of 2.1% and 7.2% respectively from Eastern Nigeria, while Dennis Allagoa et al 2021 reported 42.4% from a three-year review. The variation in rates are largely due to several factors including location of study centres, research samples and methods.

The rate of postnatal depression at six weeks postpartum, with a cut off point of  $\geq 12$  for the EPDS was 33.3%. This rate is in keeping with several research works all over world and in Nigeria which considered all the other risk factors involved in postnatal depression [24,25,26]. In this study, mode of delivery was the focus even though other risk factors were accommodated. There was a strong association between mode of delivery and postnatal depression with C/S playing the major role, being responsible for >56% of the deliveries. There was a strong association between C/S as a whole against vaginal delivery p=0.019 OR;1.69, 95%cl=1.10-2.58. This is in keeping with Hossein Moameri et al 2019, who concluded after reviewing 32 articles that C/S regardless of the type is a risk factor for postnatal depression OR; 1.15, 95%cl=1.00-1.34.

This result is at variance with findings of Roshni R. Patel et al 2005 [27] who reported ‘no significant difference between C/S and vaginal deliveries’ and Carter Frances et al 2006 who after reviewing 24 studies concluded that no link has yet been found between C/S and postpartum depression. The emergency C/S when further analysed showed a stronger association  $p=0.001$  OR; 3.6, 95%ci=2.35-5.69. Emergency C/S as a strong predictive factor has earlier been highlighted by Boyce PM et al 1992, Haba Kamal M et al 2020, and Vincent Koo et al 2003.

Women who requested for elective C/S may have higher antepartum depression, but no different postpartum level as reported by Dennis Allagoa et al 2021. This may be the position of this report since elective C/S turned out without a strong association  $p=0.81$ . This finding was also reported by Rong Liu et al 2022 in a prospective study of 590 women [28]. In keeping with this report, Renske M Olieman et al 2017 [29] concluded that unplanned C/S may have a particularly negative psychological impact on mothers because they are unexpected, unusually mentally and physically stressful events.

## **CONCLUSION**

We observed that C/S, especially emergency C/S has a strong significant impact on the development of postnatal depression. There is therefore an urgent need to improve obstetrics care to reduce complications leading to emergency caesarean sections.

## **STUDY LIMITATIONS**

There are some limitations to this study, data were collected by a cross-section method, this may limit several other factors that may contribute to depression. EPDS is a screening test, and may require a diagnostic confirmation by a structured interview. This study allowed other women who had vaginal delivery and may have limited the desired number for the study.

## **CONSENT**

All respondents signed a written consent, and all the relevant authorities consented to the study.

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