

Maternal Health Related Quality of Life at Twelve Weeks following Emergency and Elective Caesarean Section in Enugu, Nigeria

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Abstract:

Background: Very few studies have compared the impact of emergency and elective caesarean section on Health-related Quality of Life (HRQoL). This study compared the maternal HRQoL at 12 weeks following emergency and elective CS in Enugu, Nigeria.

Materials and Methods: A cross-sectional analytical design was conducted on 88 mothers (45 emergency CS, 43 elective CS) attending the out-patient clinic at three selected public hospitals from December 2015 and November 2016. A consecutive sampling technique was used to enroll the study respondents until the required sample sizes for the two arms of the study were reached. HRQoL was assessed using the standardized RAND-36 Short Form (SF-36) questionnaire. Collected data was analyzed using descriptive statistics and Mann-Whitney U test at a 5% significance level.

Results: The Emergency CS group (EmCS) had low HRQoL in Role limitation due to physical problems (mean 32.5(20.1), 68.9%) and Role limitation due to emotional problems (mean 36.8(31.4), 62.2%), while Vitality was moderate (mean 50.6(41.5); 48.9%). The Elective CS group (EleCS) had moderate values in Role limitation due to physical problems (mean 55.7(38.2), 44%). The EmCS had significantly lower Role limitation due to physical problem and Role limitation due to emotional problem compared to the EleCS ($p < 0.001$). Social function was generally good between them, but it was significantly less in the EmCS ($p = 0.003$).

Conclusion: Impaired role function due to physical and emotional problems is more among women who had EmCS. Physical and psychological follow-up care is recommended for such women.

Key Word: Quality of Life; caesarean section; mothers; elective surgical procedures; Nigeria.

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I. Introduction

Quality of Life (QoL) has grown in relevance in the field of maternal and child health. Mothers with newborns must make social, environmental, occupational, physical, and psychological adjustments to accommodate infant care. The rate at which the adjustment occurs may restrict the mother's capacity to care for her infant and ultimately impair her QoL at each point in time during the postpartum period. The Health-Related Quality of Life (HRQoL) represents the subjective sensation of comfort, pleasure, and satisfaction with everyday activities as expressed in physical, psychological, and social functioning.¹ Within a broader perspective, the World Health Organization (WHO) describes QoL to be the perception that an individual has of his life in line with his goals, expectations, standards, and concerns in the context of the culture and value systems in which he lives. More so, the extent to which postpartum HRQoL is affected by birth-related remains unresolved, hence a topical subject of inquiry.²

The postpartum period is the most important but often ignored moment in the lives of mothers and newborns. It begins immediately after childbirth and could be laden with physical, emotional, and social difficulties arising from birth experiences that negatively impact mothers' HRQoL. In some situations, maternal postpartum health may deteriorate into depression and mental distress, urinary incontinence, anemia, genital and breast problems, physical complaints, fatigue, pain, sleep problems, and difficulty in resuming sexual roles.³ Although the symptoms are transitory, it could result in an impaired maternal role function and depressed emotional state nonetheless. To better care for postpartum mothers, it has become imperative to identify, understand, and predict the most essential services mothers may need following birth experiences such as caesarean section.⁴

Caesarean section (CS) is a life-saving obstetric procedure that retains all the risks associated with surgical interventions for example blood loss. It involves the surgical retrieval of offspring through one or more

incisions made into a mother's abdomen and uterus. It is used when a vaginal birth might endanger the fetus or mother's life and health. It is frequently one of the few obstetric choices available for high-risk pregnancies such as twin gestations, large fetuses, breech presentations, obstructed labor, and HIV/AIDS.⁵ When indicated, a CS incidence of 5-15% is considered appropriate internationally by the World Health Organization.^{6,7} Sometimes, CS is also performed on-demand without a medical reason or indication, but this is highly discouraged by professional medical and nursing organizations.^{8,9} It has been categorized in many ways by diverse views, but the most prevalent classification method is based on the necessity and urgency of conducting CS (elective and emergency CS).^{3,10}

An elective CS is a planned surgical birth. It is scheduled in advance rather than performed as an emergency.¹¹ It confers the ability to perform surgical childbirth when hospital resources are optimal, such as daytime rather than night-time.¹² Some scholars argue that elective CS may put some unique strain on the QoL of mothers that may differ from those of spontaneous vaginal birth.³ It is noted in systematic reviews that the average hospital stay after elective CS is about 60-120 hours, which is greater than the 24-48 hours obtainable in spontaneous vaginal birth.¹³ It eventually brings to focus, possible questions on the long-term effect of elective CS on the mother's role function (HRQoL) during the postpartum period

An emergency CS is the surgical birth procedure conducted in the presence of a crisis.¹¹ It is often done to avert possible life-threatening vaginal birthing complications. In comparison to elective CS, the outcome is often unpredictable.¹² Some scholars imply that although an emergency CS may be the only option in some situations, it also comes with some peculiar strain on the mothers' role function (HRQoL) that may also differ from those of elective CS.^{3,15} Generally speaking, the hospital stay after emergency CS is also similar to that of elective CS (60-120 hours).¹³ Although there exists an age-long cliché that CS is associated with a lower risk of chronic pelvic pain compared to vaginal birth, individual mother's demographic factors seem to be better predictors of the chronic scar pain experienced in CS rather than the degree of tissue damage.¹⁶ The experience of this unplanned (emergency) surgical procedure may have a potential effect on mothers' mental and physical HRQoL.⁴ To the naked eye nonetheless, the nature of Emergency CS and the increased risk of psychological distress for mothers makes it vital to gain more insight into the varied HRQoL outcomes for mothers who had this type of birth.¹⁷ Based on the premise that women's perception of their HRQoL reflects the quality of maternal and child health interventions, comprehensive knowledge on the influence of Emergency CS on women's HRQoL outcomes is expected to contribute to the improvement of maternity care.¹ Additionally, it has not been established if the HRQoL outcomes differ between elective and emergency CS using designs with matched socio-demographic variables.⁸ More knowledge is needed regarding the extent of deviations in the mothers' HRQoL between elective and emergency CS at one or more snapshots in time. The purpose of this assess and compare the maternal HRQoL outcomes at 12 weeks following elective and emergency CS in selected hospitals in Enugu, Nigeria.

II. Material And Methods

This cross-sectional analytical study was conducted on all consecutively selected consenting mothers who had caesarean birth at exactly 12 weeks before data collection between December 2015 and January 2016 in three tertiary hospitals in Enugu, Nigeria. A total of 88 mothers (45 emergency CS, 43 elective CS), aged more than 18 years, and attending the out-patient clinic at the three selected hospitals were examined for this study.

Study Design: Cross-sectional analytical study

Study Location: University of Nigeria Teaching Hospital, 82 Division Military Hospital, and Enugu State University Teaching Hospital (all in Enugu Metropolis).

Study Duration: December 2015 and January 2016.

Sample size: 88 respondents.

Sample size calculation: In the previous year (2014), the three selected hospitals had a combined total CS of 159, out of which 97 were emergency CS and 62 were elective CS. Also, Enugu has a fertility rate of 4.1%.¹⁸ The sample size was calculated using Cochran's formula $n = [Z^2 \cdot P(1-P)] \div e^2$, using the values of 5% margin of error (e), 1.96 distribution constant (Z), and a CS prevalence rate of 3.9% (P) for the southeast region of Nigeria.⁶ Thus, $n = [1.96^2 \times 0.039(1-0.039)] \div 0.05^2 = 58$. Given that the population is fewer than ten thousand, the finite population adjustment formula $nf = n \div [1 + (n \div N)]$ was applied.¹⁹ Therefore, $nf = 58 \div [1 + (58 \div 159)] = 43$. Furthermore, with the addition of a 10% fall-out rate, an appropriate sample size of 47 was computed. Hence, a sample size of 47 mothers who had emergency CS and 47 mothers who had elective CS was desired for this study.

Subjects & selection method: A consecutive sampling technique was used to enroll consenting mothers who had either emergency or elective CS at exactly 12 weeks before data collection. All the consenting mothers who had CS were consecutively enrolled on attendance for medical check-up at the maternal and child health outpatient clinic.

Inclusion criteria:

1. Had CS.
2. Female.
3. Aged ≥ 18 years.

Exclusion criteria:

1. Patients with birth complications.
2. Patients with previous history of gestational hypertension and diabetes.

Procedure methodology

Data were collected by three trained nurse-midwives using a structured questionnaire. The questionnaire was assembled by the research team and it comprised two sections (A and B). Section A includes items related to the background socio-demographic characteristics of the respondents such as age, parity, marital status, and highest educational level. Section B had 36 items from the standardized RAND-36 version 1.0 Short Form (SF-36) Health Survey questionnaire (Available for free in the public domain). The SF-36 assessed HRQoL on eight domains including physical function (4 items), role limitation due to physical problems (4 items), bodily pain (2 items), general health (5 items), energy/fatigue (4 items), social function (2 items), role limitation due to emotional problems (3 items), and perceived mental health (5 items). The score on each domain ranged from 0-100. The usefulness of the SF-36 in assessing maternal HRQoL is widely both in and outside Africa is widely documented in previous studies.²⁰ It has been shown to have split-half reliability of 0.87.²¹ More so, the cross-cultural adaptation of the SF-36 for Nigeria has also been reported as having test-retest reliability of 0.843.²² The SF-36 was considered a very reliable tool by the research team and was subjected to minimal adaptations for this study. The modifications included changing the line "during the last 4 months" to "within the last 4 days. The change was made because this study takes into account mothers at 12 weeks postpartum. The research team evaluated the reliability of the modified SF-36 questionnaire in a pilot study, and all of its scales satisfied the minimum split-half reliability criteria of >0.79 .²³ The consenting mothers were given a copy of the SF-36 (English version) to fill and return to an anonymous box positioned in a central location within the clinic.

Quality control measures

A pilot test of the instrument was done to identify impending problems with the instrument using an initial 10 respondents (5 from a state university teaching hospital and 5 from a Federal Medical Centre in the neighboring Abia State, Nigeria). The data from the pilot test was not included for data analysis. One-day training was given to the data collectors before the start of the study. The areas of training were on briefing the respondents on the purpose of the study, retrieval of the filled questionnaire, and ethical issues. Regular supervision of the trained nurse-midwives by members of the research team was done to ensure consistency in the main data collection process. On each data collection day, the filled questionnaires were checked manually first for completeness and then inputted into a data analysis computer application for storage and future analysis.

Statistical analysis

The SF-36 was graded in two stages. Initially, numerical values were assigned and recorded in line with the SF-36 scoring key.²⁴ The values for each domain were then summed on a scale of 0-100, with higher scores indicating greater HRQoL. Operationally, HRQoL was categorized as 0-39 = poor, 40-59 = moderate, and 60-100 = high as suggested by Ojukwu and colleagues.⁴ The information gathered was cleaned and put into Statistical Products and Service Solutions version 21 (IBM SPSS 21, Chicago, IL, USA). To ensure objectivity, incomplete questionnaires were excluded. To summarize the data, descriptive statistics were utilized. For the reasons of a skewed sample, the Mann-Whitney U test was used to determine differences between independent groups at a 5% level of significance.

Ethical Consideration

The Helsinki Declaration's guidelines were followed in this investigation. This study was approved by the University of Nigeria Teaching Hospital Ethical Review Board (ID number/UNTH/CSA/329/5). Administrative permission was obtained from the selected facilities before data collection. The respondents were fully informed about the study purpose and written informed consent was obtained from each respondent before data collection. All consenting respondents were kept anonymous and all obtained information was protected and kept confidential. Persons <18 years old were excluded from the study.

III. Result

Ninety-one mothers were identified by the set deadline for data collection, but three incompletely filled questionnaires were excluded (response rate = 96.7%). A total of 88 respondents took part in this study

(Emergency CS, n = 45; Elective CS, n = 43). The respondent groups were statistically equivalent ($p > 0.05$). The emergency CS (EmCS) group were predominantly 23-28 years old (48.9%), primipara (75.6%), married (80%), and had secondary education (57.8%). The elective CS (EleCS) group were mostly 35-40 years old (48.8%), primipara (55.8%), married (88.4%), and had secondary education (37.2%). Table 1 shows the Socio-demographic characteristics.

Table 1: Demographic information of the respondents

Variables	N = 88		χ^2	p value
	EmCS (n = 45) f (%)	EleCS (n = 43) f (%)		
Age				
23-28	22 (48.9)	12 (27.9)	7.79	0.051
29-34	8 (17.8)	4 (9.3)		
35-40	11 (24.4)	21 (48.8)		
41-46	4 (8.9)	6 (14.0)		
Parity				
Primip	34 (75.6)	24 (55.8)	3.81	0.051
Multip	11 (24.4)	19 (44.2)		
Marital status				
Single	9 (20.0)	5 (11.6)	1.15	0.283
Married	36 (80.0)	38 (88.4)		
Highest educational level				
Primary	7 (15.6)	13 (30.2)	4.29	0.117
Secondary	26 (57.8)	16 (37.2)		
Tertiary	12 (26.7)	14 (32.6)		

EmCS = emergency, CS, EleCS = elective CS, n = sample size, f = frequency, % = percent, χ^2 = Chi square

The majority of respondents in the EmCS group had low HRQoL values in Role limitation due to physical problems (mean 32.5(20.1), 68.9%) and Role limitation due to emotional problems (mean 36.8(31.4), 62.2%), while Vitality was moderate (mean 50.6(41.5); 48.9%). Physical function, General health, Bodily pain, Social function, and Perceived mental health were good. Table 2 shows the HRQoL of the EmCS group.

Table 2: HRQoL of mothers after 12 weeks of having emergency CS N = 45

HRQoL Domains	Mean (SD)	Low f (%)	Moderate f (%)	High f (%)
Physical function	75.3 (15.2)	4 (8.9)	5 (11.1)	36 (80.0)
Role limitation due to physical problems	32.5 (20.1)	31 (68.9)	10 (22.2)	4 (8.9)
Bodily pain	68.2 (19.6)	6 (13.3)	7 (15.6)	32 (71.1)
General health	73.1 (16.8)	3 (6.7)	6 (13.3)	36 (80.0)
Energy and fatigue (Vitality)	50.6 (41.5)	13 (28.9)	22 (48.9)	10 (22.2)
Social function	62.3 (17.6)	9 (20.0)	14 (31.1)	22 (48.9)
Role limitation due to emotional problems	36.8 (31.4)	28 (62.2)	13 (28.9)	4 (8.9)
Perceived mental health	67.2 (23.2)	7 (15.6)	7 (15.6)	31 (68.9)

SD = Standard deviation, n = sample size, f = frequency, % = percent

The majority of respondents in the EleCS group had moderate values in Role limitation due to physical problems (mean 55.7(38.2), 44%). Physical function, Bodily pain, Role limitation due to emotional problems, General Health, Vitality, Social function, and Perceived mental health were good. Table 3 shows the HRQoL of the EleCS group.

Table 3: HRQoL of mothers after 12 weeks of having elective CS N = 43

HRQoL Domains	Mean (SD)	Low f (%)	Moderate f (%)	High f (%)
Physical function	84.8 (12.5)	1 (2.3)	2 (4.7)	40 (93.0)
Role limitation due to physical problems	55.7 (38.2)	11 (25.6)	19 (44.2)	13 (30.2)
Bodily pain	79.1 (18.2)	2 (4.7)	4 (9.3)	37 (86.0)
General health	77.3 (18.5)	2 (4.7)	7 (16.3)	34 (79.1)
Energy and fatigue (Vitality)	63.4 (19.0)	9 (20.9)	18 (41.9)	16 (37.2)
Social function	75.1 (18.5)	3 (7.0)	7 (16.3)	33 (76.7)
Role limitation due to emotional problems	61.2 (45.1)	8 (18.6)	20 (46.5)	15 (34.9)
Perceived mental health	73.4 (17.2)	4 (9.3)	3 (7.0)	36 (83.7)

SD = Standard deviation, n = sample size, f = frequency, % = percent

Respondents in the EmCS group had a significantly lower score on Role limitation due to physical problem (32.5(20.1) vs. 55.7(38.2), $p < 0.001$) and Role limitation due to emotional problem (36.8(31.4) vs. 61.2(45.1), $p < 0.001$) compared to the EleCS group of respondents. Although social function was generally good between the groups, it was significantly less in the EmCS group of respondents (62.3(17.6) vs. 75.1(18.5), $p = 0.003$) compared to the EleCS group. Table 4 shows a the comparison of HRQoL between the EmCS and EleCS groups.

IV. Discussion

This study assessed and compared the maternal HRQoL outcomes at 12 weeks following elective and emergency CS at selected hospitals in Enugu, Nigeria. The study revealed that at least three in five mothers (60% approx.) who had emergency CS had low HRQoL scores on Role limitation due to physical and emotional problems (mean 32.5(20.1) and 36.8(31.4) respectively). Additionally, this study found that nearly half of them had moderate HRQoL scores in Vitality (mean 50.6(41.5)). Moreover, they had good scores (mean >60) on Physical function, General health, Bodily pain, Social function, and Perceived mental health. The reason for this could be because women who had emergency CS have a high risk of experiencing childbirth negatively.²⁵ Emergency CS was identified in a previous study as a risk factor for Post-traumatic stress which results in emotional problems.²⁶ This finding corroborates with an Iranian study that found that at 12-16 weeks postpartum, mothers who had CS had low scores in Role limitation due to physical and emotional problems (mean 35.7(36.0) and 39.9(36.3) respectively)²⁷ The similarity in findings was not surprising as both this study and the Iranian study utilized the SF-36 for assessing HRQoL. This finding did not completely support a Saudi Arabian study that found low HRQoL at 12 weeks postpartum after CS on Physical function and Role limitation due to emotional problems (mean 38.9(13.28) and 39.6(11.3) respectively).²⁸ The dissimilarity in findings was quite expected. The respondents in this study were selected from tertiary level hospitals whereas in the Saudi Arabian study the respondents were drawn from secondary health centers. Tertiary-level hospitals offer more specialized care compared to secondary-level hospitals.

This study found that about two in five mothers (44%) who had elective CS had moderate HRQoL on Role limitation due to physical problems (mean 55.7(38.2)). Nonetheless, they had good scores (mean >60) in Physical function, Bodily pain, Role limitation due to emotional problems, General Health, Vitality, Social function, and Perceived mental health. The reason for the moderate Role limitation due to physical problems could be related to the idea that the experience of elective CS positively correlates with the development of traumatic symptoms.²⁹ The traumatic symptoms may impact role function. This finding did not completely corroborate with an Egyptian study that found moderate scores (ranging between 40 and 57) for eight subscales of the HRQoL at 12 weeks following CS.³⁰ The dissimilarity in findings was rather unexpected since the mothers were at 12 weeks postpartum. The reason for the dissimilarity in findings could be linked to the sampling technique utilized. This study used the consecutive sampling technique whereas the Egyptian study utilized the convenience sampling technique. Based on the premise that the reproducibility of non-probability sampling is very low, it perhaps explains the dissimilarity. Additionally, this finding did not support a study set in Pakistan that found low values in Bodily pain (mean 39.8) and moderate values in Role limitation due to physical problems (mean 42.0), General Health (mean 47.8), Role limitation due to emotional pain (mean 49.2), and Vitality (mean 51.2).³¹ This dissimilarity in findings was expected owing to the fact the Pakistani study contaminated its sample of postpartum mothers who had elective CS by including mothers at 6-8 weeks (23%) and 14-16 weeks (27%) postpartum. The inclusion may have unduly influenced the mean values obtained.

This study demonstrated that mothers who had emergency CS had significantly lower scores on Role limitation due to physical problems ($p < 0.001$), Role limitation due to emotional problems ($p < 0.001$), and Social function ($p = 0.003$) compared to mothers who had elective CS. This finding was expected based on the reasons that a previous study has documented an increased risk of physical trauma and depressive symptoms among mothers who had emergency CS.^{25,32} Additionally, a Nigerian study reported that emotional satisfaction with childbirth was significantly less among mothers who had emergency CS compared to elective CS.³³ Furthermore, fetal complications are higher in emergency CS than in elective CS and may worry the mother.³⁴ This finding agrees completely with a Spanish study that found large variations in Role limitation due to physical and emotional problems and social function between mothers who had an emergency and elective CS at six weeks and at 6 months postpartum ($p < 0.010$).³⁵ Nonetheless, this finding did not support a French study that reported that there was no significant difference between emergency and elective CS in terms of emotional impact.³⁶ It also disagrees with an Italian study that found no association between the CS mode of birth and emotional experience.³⁷ This finding could imply that the social function of mothers who had emergency CS is influenced by their role limitation due to physical and emotional problems arising from undergoing the unplanned surgical procedure.

The strength of the study is that it is the very first study of this kind to be conducted in Nigeria, and one of the few ever done worldwide. The limitation of this study is the design. Although less practical and less feasible due to ethical considerations, a randomized control trial would have been more appropriate for a study of this nature. A cross-sectional analytical design can only produce a level IV quality of empirical evidence as it possesses some low internal validity due to uncontrolled confounding variables. Additionally, a non-probability-based sampling technique (consecutive) was utilized in this study, hence a higher chance of type 1 error. The results of this study should be interpreted with caution if it were to be used for generalization outside this study population.

V. Conclusion

At 12 weeks postpartum, women who had emergency CS were more likely to exhibit impaired role function due to physical and emotional problems. Follow-up physical and psychological care is hence recommended for women who had undergone emergency caesarean birth.

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