



Predictive Factors of Childbirth by High in the City of Mbuji-Mayi (Democratic Republic of Congo)

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Abstract

Goal: Identifying predictors of cesarean delivery in the reference general hospitals of the city of Mbuji-Mayi. **Method:** Study is analytical case-control study in the city of Mbuji-Mayi precisely in all general hospitals of reference of this city during the period from 15 March to 14 June 2017 with 282 birth. A total of 94 caesarean which were considered as cases and 188 birth vaginally who were considered witnesses or 2 for each case of our series. Predictors of cesarean delivery were highlighted by the no logistic regression. **Results:** Predictors of cesarean delivery are: la parity of less than 4 [Oraj: 0.269 (0.108 - 0.670)]; prior dystocia [Oraj 11.99 (4.255 to 33.811)]. ISystolic hypertension [Oraj: 12.768 (1.791 - 91.029)]; Emergency evacuation [Oraj: 59.144 (16.053 - 217.904)]; lhas obstructed fetal presentation [Oraj: 10.092 (2.975 - 34.235)]; the abnormal appearance of the amniotic fluid [Oraj: 4.913 (2.035 - 11.862)] and APGAR 5 < 7 [Oraj: 4.133 (1.372 - 12.456)]. **Conclusion:** Predictors of cesarean delivery are: la parity of less than 4; prior dystocia; ISystolic hypertension; Emergency evacuation; lhas obstructed fetal presentation; the abnormal appearance of the amniotic fluid; and in the fifth minute Apgar < 7.

Subject Areas

Demography, Sociology

Keywords

Child Birth

1. Introduction

According to the World Health Organization (WHO), the expected value of the proportion of caesarean section should be between 5% and 15%. Because of the risk represented an abuse of caesarean section, values exceeding 15% could conclude that some sections are made unnecessarily. And conversely, if the minimum level of 5% is not reached, we can conclude that women who needed a caesarean section have not benefited. The priority is now to improve the supply and implementation of cesareans done wisely. Caesarean section is one of the most common surgeries in the world and the rate of caesarean delivery is increasing, especially in countries with high or middle income. Although it allows saving lives, often it is practiced without being medically necessary, so could expose the mother and child to health problems in the short, medium and long terms. The frequency of caesarean sections varies from one country to another and also from one institution to another [1].

Outside the country and levels of institutions, obstetric risk factors are instrumental in predicting the mode of delivery. The risk of caesarean section is increased in the presence of at least one of the following risk factors: fetal distress, vicious fetal presentation, Obstructed labor due to pelvic abnormality, preterm delivery, gestational diabetes, premature rupture of membranes, multiple pregnancy, hypertension blood and transfer to childbirth, primipara old, previous caesarean section... primiparous have a slight increased risk of caesarean section during labor compared with women whose gender is 2 to 4. The pair therefore has an influence even when it is low-risk pregnancy [2]. As for the age, the caesarean women are generally a little older than those delivered vaginally. In addition, the uterus scar history remains one of the main causes of iterative caesarean sections in many countries, including France [3].

In 2008, the WHO working group on "Maternal Health" led by Marsden Wagner noted the frequency of Caesarean sections in countries of the world respectively 45.9% in Brazil, 41.9% in Iran, 38.2% in Italy, 37.8% in Mexico, 37.7% in Korea, Argentina 35.2%, 30.3% in the United States, 28.0% in Hungary, 27% in Germany, 27.1% in Austria, 25.9% in Spain, 25.9% in China, 21.4% in Denmark, 18.8% in France, 17.4% in Japan, 17.3% in Sweden, 16.6% in Norway, 16.3% in Finland, 15.9% in Belgium, 8.5% in India and Egypt 27.6% [4].

Currently, in some areas of the world, the caesarean rate exceeds 30%. According to Statistics Canada, in 2009, the caesarean rate was 26.8% in the country. Provincial rates ranged from 20.2% in Manitoba to 31.5% in Newfoundland and Labrador [5].

In Europe, the caesarean rate per pregnancy reaches 23%. It is 35.6% in the

Americas and 24.1% in the Western Pacific region, according to latest available figures from the WHO. Only Africa (3.8%) and South Asia (8.8%) appear to escape this phenomenon [4].

In our environment, cesarean section is a public health problem in all it is made of emergency without the pregnant woman are to be prepared for most cases. Given its cost many times unaffordable for some families, and that caesarean women consider it for their most taboo or is a matter of fear leading to death or making subsequent pregnancies at high risk. So we approached this study to identify predictors of cesarean delivery in our midst.

This study was overall objective is to contribute to the reduction of maternal and child morbidity and mortality cesarean in the city of Mbuji-Mayi. She is assigned the following specific objectives:

- To describe the sociodemographic characteristics of caesarean women;
- Identifying predictors of cesarean delivery in the reference general hospitals of the city of Mbuji-Mayi;
- Establish the relationship between cesarean delivery and caesarean certain characteristics of women and newborns.

2. Material and Method

A Framework

Our study was conducted in the Democratic Republic of Congo specifically in the diamond city of Mbuji-Mayi who is the head town of the province of Kasai Oriental.

Study Type

The study is analytical case-control study in the city of Mbuji-Mayi precisely in all general hospitals of reference of this city during the period from 15 March to 14 June 2017 is for 3 months.

Study Population

The population of our consists of all women who gave birth in different hospitals in the city of Mbuji-Mayi. Was included any woman césarienne during the period of our study, considered appropriate; or any woman who delivered vaginally after cesarean just as witnesses or 1 per 2 witnesses.

Collection and analysis of data

The study was submitted to the authority of the Chief Provincial Health Division of Kasai Oriental and managers Reference General Hospitals (Doctors leaders and administrators area managers HGR). Any information in relation to women in labor were confidential, accessible only to the investigator and the research team.

The data were submitted to quality control which was to verify and validate the survey forms every day and they were collected and processed using the software Epi-Info 2007, SPSS and Excel 2007 that allowed us to perform data analyzes, both univariate, bivariate multivariate that.

Statistical measurements were: frequencies; The odds ratio (OR) and confidence intervals and the ascending logistic regression Wald.

Ethical considerations

In our contacts with caesarean section and postpartum women, the first step had been to seek their free and informed consent and respect for the principle of anonymity. The investigator explained to the participants in the survey the validity of the research, the results will only be used for scientific purposes.

3. Results

Given this picture, we see: the age of the women over 35 years [GOLD: 25.3 (12.56 - 50.87)] ($p < 0.001$) previous Caesarean section [GOLD: 7.5 (2.657 - 21.211)] ($p < 0.001$), premature rupture of membranes [OR: 3.99 (2.35 - 6.79)] ($p < 0.001$), Obstructed childbirth history [GOLD: 5.14 (2.49 - 10.59)] ($p < 0.001$), the number of CPN less than 4 [GOLD: 1.9 (1.108 to 3.41)] ($p = 0.02$), fetal presentation obstructed [OR: 10.96 (4.91 to 26.65)] ($p < 0.001$) systolic hypertension [GOLD: 8.651 (1.79 - 41.60)] ($p = 0.001$) and emergency evacuation (59, 4 [20.3 to 173.5]) ($P < 0.001$) would form the basis for the occurrence of cesarean section.

In the light of this picture, we see that the male [1.621 (0.97 to 2.69)] and the APGAR less than 7 (10.919 [5.2 to 22.7]) (<0.001) would be at the base of the C-section.

Predictors of cesarean delivery remain parity less than 4 [Oraj: 0.269 (0.108 - 0.670)], prior dystocia [Oraj: 11.994 (4.255 to 33.811)], Systolic hypertension [Oraj: 12.768 (1.791 - 91.029)] The intake mode [Oraj: 59.144 (16.053 - 217.904)] The fetal presentation obstructed [Oraj: 10.092 (2.975 - 34.235)] The troubled look of THE [Oraj: 4.913 (2.035 - 11.862)] and a fifth minute Apgar at less than 7 [Oraj: 4.133 (1.372 - 12.456)]. But note that a parity less than 4 is a protective factor of occurrence of Cesarean [Oraj: 0.269 (0.108 - 0.670)].

Thus, the occurrence prediction equation of a caesarean can be written as follows:

$$P(\text{Cesarienne}/X = xi) = \frac{e^{-24.86-1.31x1+2.48x2+2.55x3+4.08x4+2.31x5+1.59x6+1.42x7}}{1+e^{-24.86-1.31x1+2.48x2+2.55x3+4.08x4+2.31x5+1.59x6+1.42x7}}$$

4. Discussion

This analysis shows that a woman giving birth over the age of 35 years had 25 times the chance of a caesarean [GOLD: 25.3 (12.56 - 50.87)] ($P < 0.001$) than under the age of 35 years. For against [6] show that the age group between 20 and 34 sets 3.4 times the risk of caesarean section [GOLD: 3.44 (1.62 - 7.29)] ($P < 0.005$) (Table 1). But [7] found that factors in their series had no association with the age of the pregnant woman as categorized. This would be the fact that these studies were conducted in different areas which also influence the characteristics of women who are quite different from one medium to another.

Women with a previous cesarean would risk 7.5 times of caesarean delivery than their counterparts without previous caesarean section [GOLD: 7.5 (2.657 - 21.211)] ($P < 0.001$) (Table 1). This corroborates the results found [7] according

to which the previous cesarean exhibits 26 times the risk of cesarean [OR: 26.52 (13.23; 53.14)] those that do not. This observation is also supported by the results of [8] which states that the antecedent of cesarean influenced mode of delivery ($\chi^2 = 136.51$, $df = 1$, $p < 0.001$). The previous Cesarean section is being established as a predictor, it appears that the exaggerated use of this intervention could be reduced in the future by instrumental delivery which, although controlled avoid some cesareans.

Pregnant with premature rupture of membranes had a probability of 3.99 times to know a cesarean section than those with intact membranes [OR: 3.99 (2.35 - 6.79)] ($p < 0.001$) (Table 1). These results are similar to those found by [9] who stated that the membranes rupture before admission predisposed to the emergency cesarean [OR: 5.9 (1.9 to 18)] ($P < 0.002$). Instead [7] had stipulated that other factors had no association with the mode of delivery to Kinkanda hospital: parity for membranes at the entrance of motherhood, age of the pregnant woman as categorized.

Table 1. Association between maternal characteristics and occurrence of cesarean.

Variables	Case	witnesses	OR/IC	p
Age				
<20	12 (31.6%)	26 (68.4%)	0.91 (0.43 to 1.89)	0.805
20 - 35	57 (31.8)	122 (68.2)		
>35	25 (38.5)	40 (61.5)	25.3 (12.56 - 50.87)	<0.001
Size of mother				
<150	4 (36.4)	7 (63.6)	1.14 (0.327 to 4.028)	0.827
≥150	90 (33.2)	181 (66.8)		
Weight				
<60	36 (38.3)	58 (61.7)		
≥60	58 (30.8)	130 (69.2)	1.39 (0.828 - 2.336)	0.211
Parity				
Primipare	47 (38.8)	74 (61.2)	1.5 (0.935 - 2.537)	0.088
2 - 4	20 (30.3)	46 (69.7)		
Over 4	27 (28.4)	68 (71.6)	0.71 (0.415 - 1.216)	0.212
gravidity				
Gravida	22 (44)	28 (56)	1.74 (0.935 - 3.258)	0.077
Paucigestes (2 - 3)	24 (36.9)	41 (63.1)		
Multigravidae (4 - 5)	20 (32.3)	42 (67.7)		
Multigravidae large (≥6)	28 (26.7)	77 (73.3)	0.611 (0.360 - 1.038)	0.067
Previous Cesarean section				
Yes	16 (76.2)	5 (23.8)	7.5 (2.657 - 21.211)	<0.001
No	78 (29.9)	183 (70.1)		

Continued

Uterine height				
<33 cm	46 (29.1)	112 (70.9)	0.65 (0.395 to 1.070)	0.089
≥33 cm	48 (38.7)	76 (61.3)		
State membranes entry				
Intact	51 (54.3)	43 (45.7)		
Broken	43 (22.9)	145 (77.1)	3.99 (2.35 - 6.79)	<0.001
Amniotic liquid				
Clear	34 (18.3)	152 (81.7)		
Not clear	60 (62.5)	36 (37.5)	7.4 (4.274 to 12.990)	<0.001
previous dystocia				
Yes	26 (66.7)	13 (33.3)	5.14 (2.49 - 10.59)	<0.001
No	68 (28)	175 (72)		
Follow EIC				
Yes	77 (32.9)	160 (67.1)	0.85 (0.436 to 1.66)	0.643
No	16 (36.4)	28 (63.6)		
Number of CPN				
<4	42 (27.3)	112 (72.7)	1.9 (1.108 to 3.41)	0.02
≥4	35 (42.2)	48 (57.8)		
fetal presentation				
Cephalic	63 (25.9)	180 (74.1)		
obstructed	31 (79.9)	8 (20.1)	10.96 (4.91 to 26.65)	<0.001
systolic hypertension				
Yes	8 (75)	2 (25)	8.651 (1.79 - 41.60)	<0.001
No	86 (32.1)	186 (67.9)		
Hypertension Diastolic				
Yes	7 (53.8)	6 (46.2)	0.410 (0.134 - 1.256)	0.108
No	87 (32.3)	182 (67.7)		
Fashion intake				
evacuated	53 (93)	4 (7)	59.4 (20.3 - 173.5)	<0.001
one came	41 (18.2)	184 (81.8)		

Pregnant with a history of dystocia run 5.14 times the risk of a cesarean than those without a history. [GOLD: 5.14 (2.49 - 10.59)] (P < 0.001) (**Table 1**). These results are similar to those found by [6], in which the history of dystocia would be one of the determinants of emergency caesarean [GOLD: 5.11 (1.05 - 24.71)] (P < 0.001).

Pregnant having followed less than 4 sessions might CPN 1.9 times cesarean section as having followed 4 or more times [OR: 1.9 (1.108 to 3.41) (p = 0.02)] (**Table 1**). These results are lower than those found by [9] according to which in

their series, pregnant who had followed less than 4 sessions CPN would be four times more likely to cesarean that those following 4 sessions and [GOLD 4.3 (0.9 - 19.7)] ($P = 0.05$). This would be due to our sample size is small.

Fetal presentation obstructed expose 10.91 times the risk of cesarean section as cephalic presentation [OR: 10.96 (4.91 to 26.65)] ($P < 0.001$) (**Table 1**). These findings corroborate those of [7] that a presentation other than cephalic were more likely to be associated with a cesarean section. Breech presentation were 35 times more likely than the cephalic presentation (OR: 35.13, 95% CI 8.11 to 152.2, $p < 0.001$) and a transverse presentation were 22 times more likely than the cephalic (OR: 22.19, 95% CI 2.19 to 185.5; $p < 0.001$).

Women with systolic hypertension might 8, 65 times a cesarean section than those with normal systolic [GOLD: 8.651 (1.79 - 41.60)] ($p = 0.001$) (**Table 1**). These results are in the same direction as those found by which blood pressure was one of the signs associated with emergency cesarean section ($p = 0.02$; [OR = 3.5; CI = 1.3 to 9.1]). This would be the basis of pre-eclampsia is one of the indications of cesarean section.

The likelihood of cesarean delivery was 59 times more for a pregnant evacuated as for that came directly from home [OR: 59.4 (20.3 to 173.5)] (<0.001) (**Table 1**).

Newborn male would be 1.6 times from a cesarean section than female [OR: 1.621 (0.97 to 2.69)] ($p = 0.062$) (**Table 2**).

The probability that a child with APGAR is depressed from mother césarisée is 10 times more than for the ned childbirth eutocic [OR: 10.919 (5.2 to 22.7)] (<0.001) (**Table 2**). These results are in the same direction as those found [9] according to which infants by cesarean emergency had a high risk of neonatal asphyxia (Apgar score $< 7 \pm 5$ th minute; $P < 0.001$; OR = 1.8, CI = 1.3 to 16.2). On the other hand [10] states that the SGA (OR = 3.84; coeff. $\beta = 1.346$ CI: 1.009 to 14.618) would be predictive of Caesarean is the basis of the depressed APGAR.

Table 2. Association between the characteristics of the newborn and occurrence of cesarean.

Variables	case	witnesses	OR/IC	p
Gender Newborn				
Male	60 (38)	98 (62)	1.621 (0.97 to 2.69)	0.062
Female	34 (27.4)	90 (72.6)		
Weight Newborn				
<4000 gr	86 (32.5)	179 (67.5)	0.54 (0.201 - 1.445)	0.215
≥ 4000 gr	8 (47.1)	9 (52.9)		
In the fifth minute APGAR				
<7	38 (77.6)	11 (22.4)	10.919 (5.2 - 22.7)	<0.001
≥ 7	56 (24)	177 (76)		

In these tests it was found that pregnant women with less than 4 parity are 0, 2 when exposed to a cesarean delivery than those with higher parity or equal to 4 [Oraj: 0.269 (0.108 - 0.670)] (Table 3). these results are not similar to those found by [6] according to which the high parity was a determinant of cesarean section. This would be due to the fact that our sample consists mostly primiparous who are predisposed to abnormal uterine activity, cervical abnormalities and those with soft tissue especially since their pool was never his evidence then high parity and multiparous are exposed to the problems of pregnancy and labor as vicious presentations and uterine bleeding inertia that would expose a caesarean section.

Pregnant with dystocia history were 12 times more at risk of a caesarean section than those with normal previous deliveries [Oraj 11.99 (4.255 to 33.811)] (Table 3). These results are supported by those found by [6] according to which Gynecologic obstetrical history as dystocia and cesarean section were determinants of cesarean [Oraj = 3.85 (1.75 to 3.11)].

Systolic hypertension exposed 13 times to pregnant caesarean section [Oraj: 12.768 (1.791 - 91.029)] (Table 3). Rather [10] found that the normal blood pressure was found as a protective factor (adjusted OR = 0.340; coeff. β = -1.08 CI: -3.127 to 0.055). These results corroborate those in the literature [11] that the emergency pmyptension poorly tolerated blood explain the indication of caesarean section. This would be the basis of pre-eclampsia is one of the indications of cesarean section.

Pregnant evacuees had 59 times the risk of a caesarean section that pregnant came themselves to motherhood [Oraj: 59.144 (16.053 - 217.904)] (Table 3). These results are supported by those found by [8], according to which the transfer is predictive of dystocia [OR: 3.218 (2.139 - 4.843)] (P < 0.001). This is justified by the simple done in our midst this mode of admission is a severity marker and is often carried out after the failure of all obstetric maneuvers carried out by the staff of the first level of health service.

Table 3. Predictors of cesarean delivery after multivariate analysis method Wald.

explanatory factors	coeff. β	ES	Wald	Oraj	95%		p-value
					Inferior	Superior	
Parity < 4 (x1)	-1.314	0.466	7.953	0.269	0.108	0.670	0.005
prior dystocia (x2)	2.484	0.529	22.077	11.994	4.255	33.811	<0.001
systolic hypertension (x3)	2.547	1.002	6.459	12.768	1.791	91.029	0.011
Admission Mode (x4)	4.080	0.665	37.601	59.144	16.053	217.904	<0.001
Presentation fetal obstructed (x5)	2.312	0.623	13.759	10.092	2.975	34.235	<0.001
Look not clear LA (x6)	1.592	0.450	12.528	4.913	2.035	11.862	<0.001
APGAR 5 < 7 (x7)	1.419	0.563	6.357	4.133	1.372	12.456	0.012
Constant	-24.859	3.487	50.830				

The obstructed fetal presentation was noted as a factor explaining caesarean [Oraj: 10.092 (2.975 - 34.235)] (**Table 3**). These results point in the same direction as those found [6] according to which the antecedent obstetric gynecology (including the breech presentation) were the determinants of emergency caesarean [Oraj: 3.25 (1.75 - 3.11)] ($p < 0.001$). This would be due to the fact that the presentation other than cephalic prevent the progression of fetal mobile which can cause dystocia.

Failure to clear Amniotic fluid is an occurrence of a risk factor for cesarean [Oraj: 4.913 (2.035 - 11.862)] (**Table 3**). This would justify by infections of the amniotic fluid and frequent fetal distress due to dystocia.

The probability of a newborn from a Caesarean section has a depressed Apgar is 4 times a newborn of a normal delivery [Oraj: 4.133 (1.372 - 12.456)] (**Table 3**).

5. Conclusion

After analyzing the data, we got the following results: Predictors of cesarean delivery are: la parity of less than 4; prior dystocia; lSystolic hypertension; Emergency evacuation; lhas obstructed fetal presentation; the abnormal appearance of the amniotic fluid; and APGAR 5 < 7. Thus we reject the null hypothesis of our research. Thus to promote reproductive health and to improve prenatal care these results should be taken into account as well to develop the health education messages.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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