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Original Research Article

## Maternal outcomes of the childbirth among primiparous teenagers in South Kivu, RD Congo

Ntamulenga Innocent<sup>1\*</sup>, Mukanire Ntakwinja<sup>1</sup>, Imani Prince<sup>1</sup>, Kasereka Kikwaya<sup>1</sup>,  
Nyakio Olivier<sup>1</sup>, Mukwege Denis<sup>1</sup>, Sengeyi Dieudonné<sup>2</sup>

<sup>1</sup>Department of Gynecology and Obstetrics, Evangelic University, Democratic Republic of the Congo

<sup>2</sup>Department of Gynecology and Obstetrics, University of Kinsasha, Democratic Republic of the Congo

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**\*Correspondence:**

Dr. Ntamulenga Innocent,

E-mail: [ntamulengainnocent@gmail.com](mailto:ntamulengainnocent@gmail.com)

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### ABSTRACT

**Background:** Adolescent births remain at high risk. The aim of this study was to determine the maternal prognosis of births among primiparous teenagers in South Kivu.

**Methods:** A case-control study of 250 primiparous teenagers (cases) and another group of 500 primiparous adults aged 20-34 years (control) was performed in 4 General Reference Hospitals of South Kivu in Republic Democratic Congo. The study period was from January to December 2017. A survey sheet was used to collect the data. The analysis were performed using SPSS 22.0 and EPIINFO version 7.2.2.6.

**Results:** Out of a total of 8490 deliveries recorded at the 4 General Reference Hospitals in South Kivu in 2017, authors recorded 250 deliveries of primiparous teenagers, or 2.9%. The maternal prognosis of adolescent deliveries was more marked by a high rate of caesarean section (OR=13.5), the presence of complications (OR=7.37), prolonged labor (OR=4.51), lesions soft tissues (OR=3.92), intraoperative bleeding (OR=3.26) and fever by puerperal infection (OR=2.13).

**Conclusions:** The frequency of childbirth among primiparous teenagers and maternal-neonatal prognosis has been determined and is of concern. The prevention of adolescent obstetric complications includes the respect for the legal age of marriage, adequate antenatal care and childbirth in a specialized hospital setting.

**Keywords:** Childbirth, Maternal prognosis, Primiparous, Teenagers

### INTRODUCTION

According to WHO, every year, there are about 16 million adolescent girls aged 15-19 who give birth, which accounts for 11% of all deliveries worldwide.<sup>1</sup> Adolescent pregnancy has become a major public health problem in both developing and industrialized countries, with significant increases in fertility rates below the age of 18, and significant medical and psychological risks and social problems to which both mother and child are exposed.<sup>2</sup> The situation worsens when the young woman

finds herself in an environment dominated by immaturity, irresponsibility, poor socio-economic conditions and sometimes the illegitimacy of pregnancy, from which the foeto-maternal prognosis becomes clouded.<sup>3</sup> Two million girls under the age of 15 give birth each year to the world, and half of all teenage births occur in seven countries, including Bangladesh, Brazil, the United States of America, Ethiopia, the United States, and the United States. India, Nigeria and the Democratic Republic of Congo.<sup>4</sup> In the DRC, data on the frequency of deliveries among primiparous teenagers are not sufficiently documented. In South Kivu, the extent of adolescent

deliveries is not sufficiently documented, except for a study conducted by Lushenga in Panzi in 2013 which showed that pregnancies among women under 18 years of age played a significant role with 4.9%. Most of these women under 18 come from urban areas with 74.7%. The majority of deliveries were eutocic [75.3%]. Most newborns had a weight greater than or equal to 2500g [91.8%] and APGAR greater than or equal to 7 [89.9%], the most common dystocia were pelvic anomalies.<sup>5</sup> In view of the above, authors ask themselves the following question: what are the maternal complications of teenage deliveries in South Kivu? The aim of present study was to contribute to the improvement of maternal-neonatal complications of deliveries in primiparous teenagers in South Kivu.

## METHODS

This study is of the control type, involving 250 adolescent female deliveries who were cases and 500 adults (controls), two adult patients who were followed by an adolescent were maintained. Over a 12-month period from January 1 to December 31, 2017. Authors included all primiparous girls aged 13 to 19 who gave birth in the Gynecology and Obstetrics department of the four selected hospitals during the study period.

The dependent variable of this study was maternal complications. The independent variables are: The sociodemographic characteristics of the respondents, pathologies that occurred during the pregnancy, report of the operation, the postoperative consequences. For the selection of topics included in this study, authors used the non-probability sampling technique of convenience.

## Statistical analysis

The statistical tests were done with SPSS software version 22 and EPIINFO 7 in a complementary way using the Chi2 test (P <0.05) for qualitative or Fisher variables when their application conditions were met. For the comparison of the means, authors used Student's T test and the intensity of the association was made thanks to the Odds Ratio association measure and its 95% confidence interval.

This study was authorized and approved by the provincial ethics commission, respecting the anonymity and confidentiality of the information collected.

## RESULTS

From a total of 8490 deliveries recorded in the 4 General Reference Hospitals of South Kivu during the period from 1 January to 31 December 2017, authors recorded 250 deliveries in women under 20, a prevalence 2.9%. (ZS IBANDA, KABARE, WALUNGU and NYATENDE, 2017). From this table 1, authors note that the average age of teenagers is  $17.62 \pm 1.07$  years versus  $26.34 \pm 4.10$  years in adults, note that this difference is statistically significant. Childbirth among teenagers were unprofessional (87.6%) were more without a job function while (30%) of adults were employed in the public service, with a statistically significant difference (p <0.000). For marital status, (19.6%) teenagers were single. Authors also note a positive statistical association between occupation, marital status, and respondent groups. (P <0.0001). With OR (IC) = 7.88 (4.18-15.06) (Table 1).

**Table 1: Sociodemographic characteristics of study population in relationship of age.**

Parameters	n (%)	Teenagers <20 years n (%)	Adults 20-34 years n (%)	OR (95% IC)	P
<b>Age in years</b>		17.62±1.07 ANS	26.34±4.10 ANS		0.000
<b>Professional status</b>					
Unemployed	635 (84.7)	219 (34.5)	416 (65.5)		
Traders	39 (5.2)	6 (15.4)	33 (84.6)	3.94 (1.65-9.40)	0.000
Braiding	12 (1.6)	0 (0.0)	12 (100.0)		
<b>Marital status</b>					
Married	686 (91.5)	201 (30.6)	485 (69.4)	1	
Single	64 (8.5)	49 (76.5)	15 (23.5)	7.88 (4.18-15.06)	0.000

In both groups, several incision techniques were used, including the Adult Umbilical Incision (32.8%) and the Joël Cohen incision in the adolescent girl (35.7%). Cephalic extraction was the winner with (89.3%) adolescent girls and artificial delivery. Among the complications during caesarean section, teenagers had more abundant intraoperative bleeding than adults with (p <0.0001) (Table 2). With regard to vaginal complications, the results in Table 3 show that 14 (20.5%) of adolescent

deliveries were more likely to experience tears in the cervix, perineum, and endometritis than adults.

There was a statistically significant difference between adolescent girls and adults with respect to postoperative complications (p=0.008). Adolescent girls were more likely to develop postoperative complications, including eclampsia, haemorrhage, malaria, and other deliveries (Table 3).

The maternal prognosis among teenagers was more marked by a high rate of caesarean section (OR = 13.5), the presence of complications (OR=7.37), a prolonged labor (OR=4.51), lesions of the parts marrows (OR=3.92), intraoperative bleeding (OR = 3.26) and fever (OR=2.13) with p <0.05.

In multivariate analysis, teenagers mothers were more likely to have complications and peroperative bleeding compared to women aged 20-34 years with p <0.05 (Table 4).

**Table 2: Surgical report of respondents according to age groups**

Parametres	n (%)	Teenagers n (%)	Adults n (%)	OR (95% IC)	P
<b>Delayed intervention</b>					
Yes	28 (15.5)	4 (7.1)	24 (19.2)	1	
No	153 (84.4)	51 (92.9)	102 (78.8)	0.33 (0.09-1.09)	0.070
<b>Cutaneous incision technique</b>					
IMSO	53 (29.3)	12 (21.4)	41 (32.8)	1	
Pfanennstiel incision	78 (43.1)	24 (42.9)	54 (43.2)	0.66 (0.27-1.58)	
<b>Extraction</b>					
Cephalic	152 (84.0)	50 (89.3)	102 (81.6)	1	
Breech	29 (16.0)	6 (10.7)	23 (18.4)	1.88 (0.67-5.53)	0.27
<b>Anesthetic complication</b>					
Yes	170 (94.0)	56 (100.0)	114 (91.2)		
No	11 (6.0)	0 (0.0)	11 (8.8)		<b>0,018</b>
<b>Intraoperative bleeding</b>					
Normal (≤500 cc)	100 (55.6)	44 (78.6)	56 (44.8)	0.72 (0.26-1.95)	0.62
Abundant (>500 cc)	81 (44.8)	12 (21.4)	69 (55.2)	1	
<b>Intraoperative accidents</b>					
Yes	13 (7.2)	0 (0.0)	13 (10.4)	1	
No	168 (92.8)	56 (100.0)	112 (89.6)	0.00 (0.00-0.82)	<b>0.010</b>

**Table 3: Distribution of our respondents according to the complications.**

Parametres	N	Teenagers n (%)	Adults n (%)	OR (95% IC)	P
<b>Complications by normal childbirth (102)</b>					
Cervical tears	22 (21.5)	14 (20.5)	8 (23.5)	1	
Perineal tears	30 (29.4)	20 (29.4)	10 (29.4)	0.88 (0.24-3.23)	0.039
Endometritis	50 (49.1)	34 (50.1)	16 (47.1)	0.82 (0.25-2.68)	0.920
<b>Postoperative complications (n=138)</b>					
Heamorrhage	20 (14.4)	14 (15.9)	6 (13.6)		0.008
Pelvipерitonitis	10 (7.8)	6 (6.8)	4 (9.0)		
Endometritis	30 (21.7)	18 (20.4)	12 (27.2)		
Thrombophlebitis	6 (4.3)	2 (2.2)	4 (9.0)		
Malaria	38 (27.5)	28 (31.8)	10 (22.7)		
Eclampsia	10 (7.2)	8 (9.0)	2 (4.5)		
Pariatal infection	18 (13.0)	12 (13.6)	6 (13.6)		

**Table 4: Distribution of our respondents according to maternal prognosis.**

Parameters	Teenagers		Adults		OR brut (95% IC)	ORa (95%CI)
	N	%	N	%		
Presence of complications	49	86.0	8	14.0	7.37 (3.41-15.9)	5.85 (2.54-13.4)
caesarean	67	55.6	53	44.4	13.5 (5.2-34.3)	9.92 (3.78-25.9)
Vicious presentation	8	34.4	21	65.6	0.82 (0.35-1.94)	-
Lesions of the soft parts	15	78.9	4	21.1	3.92 (1.28-11.9)	3.54 (0.89-14.0)
Haemorrhage	7	70.0	3	30.0	3.26 (1.69-6.30)	2.67 (1.22-5.83)
Fever	7	87.5	1	12.5	2.13 (1.01-4.14)	2.04 (0.99-5.06)
Prolonged labour	13	81.3	3	18.8	4.51 (1.27-16.0)	3.31 (0.84-12.9)

## DISCUSSION

Present study identified two types of important findings: maternal prognosis and neonatal prognosis of adolescent deliveries. The maternal prognosis among adolescents was more marked by a high rate of caesarean section (OR=13.5), the presence of complications (OR=7.37), prolonged labor (OR=4.51), lesions of the parts marrows (OR=3.92), intraoperative bleeding (OR=3.26) and fever (OR=2.13) with  $p < 0.05$ .

With regard to caesarean section, other authors around the world have found results similar to ours including Evrim who found during her a study conducted in Turkey in 2017 found a high rate of caesarean sectional.<sup>5</sup> Luhete in the city of Lubumbashi and Mumba et al in the city of Mbuji-Mayi, these authors explain this high rate by pathophysiological mechanisms including the obstetric basin and the genital sector would be growing, which would lead to the increased risk of prolonged labor, the use of episiotomy, and in the worst case, more Caesarean sections are expected to be performed as documented by other authors such as Jolly in New Zealand and Smith in Scotland.<sup>6-9</sup>

Our results corroborate those of Evrim, who found during her study in Turkey in 2017 on maternal-fetal prognostic factors of adolescent deliveries, that adolescent girls had a high rate of premature deliveries, premature rupture of membranes and admission to a neonatal unit with a significant difference ( $p < 0.001$ ).<sup>5</sup>

Furthermore, at the end of present study, Authors noted the presence of complications in the course of teenage delivery compared to adults and the main complications recorded vaginally were endometritis, tearing of the perineum and cervical tear with a statistically significant difference ( $p = 0.039$ ), whereas in the postoperative period, Authors recorded the following complications: eclampsia, malaria, haemorrhage and parietal infection with  $p = 0.008$ .

In our series, eclampsia is the leading teenage postoperative complication. This association between eclampsia and adolescent girls has also been found in other studies.<sup>10</sup> It is well recognized that arterial hypertension is more common in very young women and the main factors of pathological entities of vasculo-renal syndrome are biological and endocrine immaturity, primigality and lack of prenatal follow-up.<sup>8,9</sup> This situation therefore affects the neonatal prognosis. The prevention strategies of vascular-renal syndromes involve interventions that go in the direction of fighting against these various identified risk factors and in the case where actions prove difficult, special attention will be paid to the gravida

Authors also noticed that women under the age of 20 had more postoperative malaria than adults. The only plausible explanation in this case is the low attendance at

antenatal clinics where preventive interventions such as intermittent prophylaxis against malaria are provided. The same observation was made by Rogerson et al. who had found that age greater than 20 appears to be a protective factor against malaria infection during pregnancy, thus, the apparent protection in primiparous women would be related to the older age in the adult group; this constant is explained by the fact that in the endemic environment immunity from premunition increases with age.<sup>11</sup>

Haemorrhage occurred in 3rd position as a complication with a high frequency in women under 20 years. Our results are in agreement with those of Leppälähti and Mahavarkar who find a high risk of developing anemia during childbirth in the adolescent group. This could be explained by the global immaturity of the genitals of women under 20 years of age. The other variables of the maternal prognosis, in particular the vicious presentation, can easily be explained by the immaturity of the maternal pelvis linked to the woman's every age, which can in turn lead to a premature rupture of the membranes.<sup>12,13</sup>

## CONCLUSION

Authors have identified that teenager childbirth is at high risk. The frequency of childbirth among primiparous teenagers was 2.9% in our environment. The maternal prognosis following childbirth among primiparous teenager was characterized by the high risk of cesarean section, the high risk of complications including eclampsia, puerperal infection and maternal hemorrhage.

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