

# Adolescent Pregnancies: Maternal and Fetal Complications In Yaounde University Hospitals

Essiben Félix<sup>1,2\*</sup>, Njotang Nana Philip<sup>1,2</sup>, Damtheou Sadjoli<sup>3</sup>, Moukouri Same Gertrude Françoise Sophie<sup>3</sup>, Ojong Samuel<sup>3</sup>, Ngate Anicet<sup>3</sup>, Eko Eko Filbert<sup>2</sup> and Robinson Enow Mbu<sup>1,2</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Faculty of Medicine and Biomedical Sciences (FMBS), The University of Yaoundé I, Cameroon

<sup>2</sup>Department of Obstetrics and Gynecology, Yaoundé Central Hospital, Yaoundé, Cameroon

<sup>3</sup>Faculty of Medicine and Biomedical Sciences (FMBS), The University of Yaoundé I, Cameroon

## \*Corresponding author

Essiben Félix, Department of Obstetrics and Gynecology, Faculty of Medicine and Biomedical Sciences (FMBS), The University of Yaoundé I, Cameroon, E-mail:essibenx@yahoo.com

Submitted: 14 Oct 2017; Accepted: 26 Oct 2017; Published: 29 Oct 2017

## Abstract

**Introduction:** Childhood pregnancies pose problems in their follow-up and care. We described complications observed in adolescent pregnancies in four reference hospitals in Yaoundé.

**Methodology:** This cross-sectional descriptive study took place from January 1 to December 31 2011 at the Yaoundé Central Hospital, the Yaoundé General Hospital, the Yaoundé Gynae-Obstetric and Pediatric Hospital and the Yaounde University Hospital Centre. We studied the socio-demographic and clinical characteristics as well as the prognosis of 340 adolescent pregnancies. The data were collected from their medical records and analyzed using the SPSS 18.0 software.

**Results:** We registered 9287 deliveries of which 1247 were by teenagers, giving a proportion of 13.42% (1247/9287). Among them, 27.2% (340/1247) had complications and 26.2% (89/340) of the latter were seropositive for HIV. Adolescents aged 15 to 17 outnumbered the rest (47%, 160/340). The educational level was often primary (39.7%, 135/340) and secondary (38.2%, 130/340). More than half of teenage girls were dropping out of school (56.8%, 183/340). The pregnancy-related complications encountered in our patients included: anaemia (77.6%, 264/340), threatened abortion (24.4%, 83/340), preterm labour (20.6%, 70 / 340) and hypertensive diseases (19.4%, 66/340). As regards postpartum complications, 87.4% (297/340) of our patients developed postpartum haemorrhage, 22.6% (77/340) presented with endometritis and 11.2% (38/340) developed eclampsia. Neonatal asphyxia accounted for 18.2% (62/340) of the complications. The maternal mortality rate was 240 / 100.000 live births and the peri natal mortality rate was 91/1000 births.

**Conclusion:** Early pregnancies are associated with high morbidity and high maternal and neonatal mortality. There is a real need for family life education in schools and sexuality education at home.

**Keywords:** adolescent, adolescent delivery, adolescent pregnancy, pregnancy complications, Yaoundé

## Introduction

Adolescent sexuality can lead to unpredictable and serious consequences. Sexual intercourse exposes them to sexually transmitted infections and unwanted pregnancies. Aside being fearsome, these could evolve leading to consequences that could definitely affect their lives. According to the WHO, 11% of the world's births in 2008 were attributable to adolescent girls and 95 per cent of childbirths occurred in developing countries [1]. Authors around the world have found prevalence between 4% and 26% [2-5]. In Cameroon, the prevalence

varies per region, between 8.7% and 14.23%. Adolescent pregnancies may end in clandestine abortions. However, those that lead to childbirth can cause problems before, during and after childbirth. [6-10].

The problems posed by teenage pregnancies are not specific to them, but they occur in a particular context. Single-parenthood and financial constraints can be discussed as associated factors. Similarly, on the biological level, the immaturity of the adolescent body predisposes them to a greater frequency of complications and severity when these occur. Althabe et al associate the risks incurred by the pregnant teenager more with this biological immaturity than

with the socio-economic factors and the care given to her before and during childbirth.

During pregnancy, adolescents have a high incidence of hypertensive diseases, anemia, gestational diabetes, complications of childbirth, and increased maternal and fetal mortality [2, 11]. Some authors describe a higher incidence of low birth weight, stillbirth and fetal distress [6, 7, 12, 13]. Neonatal complications and infant mortality are more frequent [12, 14].

The circumstances surrounding the discovery of these pregnancies are often difficult and especially marked by the avoidance of those around these teenagers [15]. This makes it difficult to monitor pregnancy optimally. Early management of these pregnancies could avert adverse situations (hypertensive diseases, anaemia and complications of childbirth...) if pregnancy monitoring was early and regular. Given the prevalence of adolescent pregnancies in our environment, this study investigated the incidence of maternal and fetal complications, and further analyzed the epidemiological and clinical profile of adolescents with these complications.

### Methods

We carried out a descriptive cross-sectional study that took place over a period of 12 months, from January 1 to December 31 2011, in the maternity wards of the 4 university teaching hospitals in the city of Yaoundé, namely: Yaoundé Central Hospital, Yaoundé General Hospital, Yaoundé Gynaeco-Obstetric and Paediatric Hospital and the Yaoundé University Centre Hospital.

We retained all of the 10- to 19-year-old parturients followed-up during the study period, and who had a pregnancy termination of 28 weeks and above and any complication during pregnancy or during and after childbirth. After giving birth and agreeing to participate in the study with the informed consent of the adults accompanying them, we interviewed the adolescent girls and a pre-established data collection sheet was filled. Subsequently, their medical records were consulted in order to supplement the information sought. The sampling was consecutive and comprehensive throughout the study period.

The variables studied included: age, level of education, school status (dropout), HIV status of the patient, pathologies presented during pregnancy, maternal complications during pregnancy, childbirth and postpartum, maternal outcome after childbirth, fetal and newborn complications, newborn outcome, as well as the causes of maternal and neonatal death where appropriate. The data was analyzed using the SPSS software version 18. The results were presented in the form of frequency, tables and figures. We calculated the maternal mortality ratio and the perinatal mortality ratio.

### Results

During the study period, there were 9287 deliveries in all four hospitals. Among these deliveries, 1247 occurred among adolescent girls giving a proportion of 13.42% (1247/9287). Among these adolescents, 27.2% (340/1247) had complications. The maternal mortality ratio was 240/100000 and the perinatal mortality ratio was 91/1000.

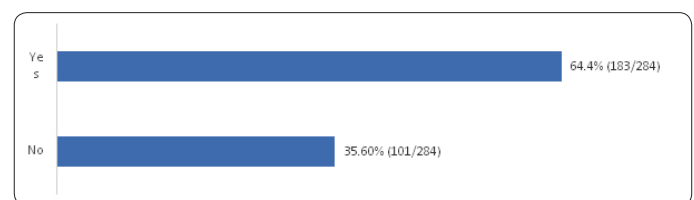
#### Sociodemographic characteristics of patients

The socio-demographic characteristics of the adolescent girls are described in (Table 1).

**Table 1: Adolescent socio-demographic characteristics (N=340)**

Variables	Numbers (n)	Frequency (%)
<b>Age</b>		
≤ 15	94	27.7
[15-17]	160	47.0
≥17	86	25.3
<b>Marital status</b>		
single	183	53.8
married	152	44.7
divorced	4	1.2
Widow	1	0.3
<b>Religion</b>		
Christian	161	47.3
Muslim	142	41.8
animist	37	10.9
<b>Educational level</b>		
Never been to school	56	16.5
Primary school	135	39.7
Secondary school	130	38.2
Higher education	19	5.6
<b>School drop out</b>		
Yes	183	56.8
No	147	43.2

The average age of the adolescent girls was 15.6 years ± 2.1 with extremes of 10 years and 19 years. Adolescents in the age group [15-17] were the most represented with 47% (160/340) of the cases. Single adolescents accounted for 53.8% (183/340) of the cases. Regarding schooling for adolescents, 16.5% (56/340) had never attended school, 39.7% (135/340) had a primary education level and 38.2% (130/340) had a level secondary education. Nevertheless, 56.8% (183/340) of them were school dropouts (**Figure 1**).



**Figure 1:** Distribution of adolescents with respect to the notion of school dropout (N=284)

#### Clinical characteristics of adolescent girls

The clinical data of patients with complications are presented in (Table 2). HIV-positive adolescents accounted for 26.2% (89/340) of the cases. A significant proportion of adolescent girls (40.9%, 139/340) were referred. Adolescent girls were often primiparous (56.5%, 192/340). Most of these adolescents had less than 4 prenatal consultations (64.7%, 220/340) while 10.3% did not access antenatal care. The Caesarean section rate was very high at 26.8% (91/140).

**Table II :Adolescent clinical data (N=340)**

Variables	Numbers (n)	Frequency (%)
<b>HIV positive</b>	89	26.2
<b>Referred</b>		
Yes	139	40.9
No	201	59.1
<b>Parity</b>		
P0	60	17.6
P1	192	56.5
P2 - 4	72	21.2
P>4	16	4.7
<b>Gestational age at delivery</b>		
< 37 Weeks	60	17.6
≥ 37 weeks	280	82.4
<b>Number of ANC consultations</b>		
None	35	10.3
1 - 3	185	54.4
≥ 4	120	35.3
<b>Delivery mode</b>		
Normal per-vaginam	160	47.0
Instrumental delivery	89	26.2
Caesarean section	91	26.8

### Complications of teenage pregnancy

The complications encountered during adolescent pregnancy are described in (Table 3). Anemia was the most frequent complication at 77.6% (264/340) followed by threatened abortion (24.4%; 83/340), preterm labor (20.6%; 70/340), hypertensive diseases (19.4%, 66/340) and third trimester hemorrhage (16.5%, 56/340). Complications encountered during childbirth and postpartum

**Table 3: Complications encountered during the pregnancy (N=340)**

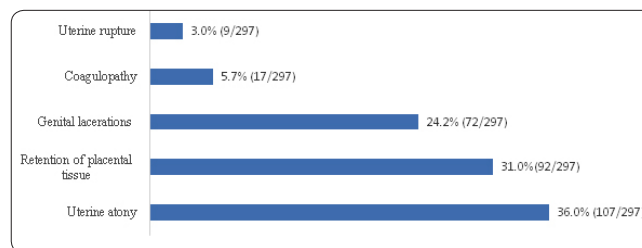
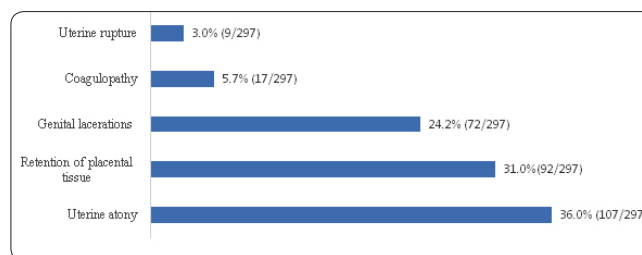
Variables	Numbers (n)	Frequency (%)
Anemia	264	77.6
Threatened abortion	83	24.4
Preterm labor	70	20.6
Hypertensive diseases in pregnancy	66	19.4
3rd trimester bleeding	56	16.5
IUFD	8	7.4

The complications encountered during childbirth and postpartum are shown in (Table 4). These complications were dominated by postpartum hemorrhage (87.4% (297/340), endometritis (22.6%, 77/340) and eclampsia (11.2%, 38/340). Low birth weight was the most prevalent fetal complication (35%, 119/340) followed by neonatal asphyxia (12.2%, 62/340).

**Table 4: Delivery and post-partum complications (N=340)**

variables	Number (n)	Frequency (%)
<b>Maternal complications</b>		
Bleeding during delivery and/or post-partum	297	87.4
Endometritis	77	22.6
Eclampsia	38	11.2
Baby blues	22	6.5
Symphysiotomy	21	6.2
Uterine Rupture	6	17.6
Maternal death	8	2.4
<b>Foetal complications</b>		
Neonatal Asphyxia	62	12.2
Low birth weight (<2500g)	119	35.0
Neonatal death	31	9.1

Uterine atony (36.0%, 107/297) and retention of placental tissue (31.0%, 97/297) were the leading causes of postpartum hemorrhage (Figure 2). Neonatal asphyxia (46.2%, 6/13) and uterine rupture (46.2%; 6/13) were the leading causes of neonatal death, while fetal death in-utero accounted for 38.0% (8/21) of perinatal deaths (Figure 3).

**Figure 2: Aetiologies of post-partum haemorrhage in adolescent girls (N=297)****Figure 3: Causes of perinatal death (N=21)**

### Discussion

Teenage pregnancy results in anxiety for the patient, her entourage and the medical staff because the risks of complications for the mother and for the fetus are real. Unfortunately, the frequency of adolescent pregnancies is high and deliveries are frequent. The prevalence of teenage births varies across countries and regions. We found a prevalence of 13.42% in the four university teaching hospitals in Yaoundé, a student city in which teenage girls have access to information about the risks associated with early sexuality. Egbe et al. found a similar prevalence in Buea, another student city in Cameroon in 2015 [8]. But Tebeu et al. found a higher prevalence of 26.54% in Maroua, in northern Cameroon,

a region where adolescent marriages are common [16]. This is partly because it is a predominantly Muslim city, but also due to the cultural habits of the populations in this region.

Early marriages are frequent with low levels of scolarisation for the girl child. The prevalence that we found in our study was close to that which other authors have described elsewhere in the literature [4, 5]. We found that 27.2% of teenage girls had complications related to their pregnancy. Owono et al. in Cameroon found a small proportion of adolescents (6.1%) among women admitted to the intensive care unit for obstetric complications [17]. Indeed, adolescent pregnancy is associated with a higher incidence of perinatal complications than maternal complications, which could justify this difference in results [5, 18].

Pregnancy often occurs between 16 and 19 years of age [1]. The average age of adolescents with complications in our study was 15.6 years. Authors before us in Cameroon found that maternal age is a determining factor in the occurrence of complications [8,12]. Pregnant teenagers are often illiterate [19]. Education protects against early pregnancy [1]. Most of the adolescent girls in our study were either dropping out of school or never attended school. Once pregnant, adolescents are often forced to drop out of school [20]. The level of education and especially the school environment could enable the girl better understand the problems related to early sexuality, as well as the messages intended for her and above all to shelter her from the marriage proposals of her entourage.

Adolescent girls with pregnancy complications in our study were often referred to other health facilities. The precariousness in which they live (single parenthood, financial constraints) means they cannot afford follow-up in health facilities with qualified staff. The girls are therefore obliged to seek assistance from more qualified staff when unfortunately, the complications arise.

The complications that we have found are similar to those described in the literature. Anemia was the most common complication during pregnancy. Many authors have found a high frequency of anemia in adolescent pregnancies [3,19]. The poor management of malaria during pregnancy is a major determinant for anemia in pregnancy in our environment [19]. The poor follow-up of pregnancy leads to the lack of anti-anaemic and anti-malarial prophylaxis.

The majority of adolescent girls (64.7%) did not meet the required number of prenatal consultations according to national guidelines. Nayama et al in Niger found that 28.2% of adolescent girls had no antenatal consultations, compared with 10.3% in our study [21]. The poor follow-up of pregnancy begins with a late onset of prenatal consultations [18, 19]. Consultations begin late because of ignorance, fear of consequences, stigma or limited access to care [15]. According to Taghizadeh et al, there is a relationship between the perception of risk of complications and maternal age [22]. Prenatal consultations will help to improve the perception of risk during pregnancy.

As with other authors preterm births were frequent in our study, which would also explain a higher incidence of low-birth weight babies [5, 13, 14]. On the one hand, this could be explained by a high frequency of sexually transmitted infections in adolescent girls. Hikororo in Tanzania found that half of pregnant teenagers had sexually transmitted infections [23]. Adolescent girls tend to

have multiple partners and unprotected sex [1, 24]. We found a higher prevalence of HIV infection than in the general population. On the other hand, some authors explain the higher frequency of low-birth weight babies by evoking the immaturity of the cervico-uterine blood circulation that initiates the stimulation of prostaglandin secretion, leading to preterm labor [25].

The rate of caesarean section in our study was 26.8%, a rate comparable to that of Wang et al [18]. This rate is higher than the national average and those found by other authors [26]. The high caesarean section rate in our study could be because deliveries took place in hospitals of last resort where adolescent girls were referred to for pathological pregnancies or dystocia. Other reasons include; macrosomia associated with an immature pelvis and the susceptibility of health care providers or even parents. Most of teenagers in our study delivered vaginally as in other studies [3, 27].

Complications during childbirth and postpartum were dominated by postpartum hemorrhage and endometritis. The fact that adolescents are often referred from other health facilities exposes them to prolonged labor, which is a risk factor for genital bleeding and endometritis. Moreover, the relative immaturity of the tissues in adolescent may predispose them to tears of the genital tract. Like many other authors we found that adolescent girls often presented with hypertensive diseases of pregnancy. While the cause is often unknown, hypertensive diseases occur often in extreme ages or during the first pregnancy [2, 12].

Pregnancy in adolescents is associated with neonatal and foetal complications. We found a high perinatal death rate that could be related to the high frequency of preterm deliveries, Low birth weight babies and neonatal asphyxia, as previously described by Egbe et al in our environment [8]. However, there were some limitations to this study. First, we undertook our study in health facilities where most pregnancy complications are addressed, hence the risk of overestimating the frequency of complications of teenage pregnancies. In addition, adolescent girls with complications after discharge from hospital were not counted hence the risk of bias.

## Conclusion

Adolescent pregnancies are associated with complications. Unmet family planning, early sexuality, unwanted pregnancies and high costs for reproductive health issues are contributory factors. Strengthening access to family planning services may help to reduce maternal and fetal morbidity and mortality among adolescents.

## Acknowledgments

The authors wish to acknowledge the administrative staff of the four university teaching hospitals: Yaoundé Central Hospital, Yaoundé General Hospital, Yaoundé Gynaeco-Obstetric and Paediatric Hospital and the Yaoundé University Centre Hospital, who allowed us to carry out the study at their institution. This study received no grants from any funding agency be it public, commercial, or non-profit organization.

## References

1. WHO (2012) Early Marriages, Adolescent and Young Pregnancies. WHO, Geneva.
2. De Azevedo WF, Diniz MB, da Fonseca ESVB, de Azevedo



- LMR, Evangelista CB (2015) Complications in adolescent pregnancy: systematic review of the literature. *Einstein* 13: 618-626.
3. Sagili H, Pramya N, Prabhu K, Mascarenhas M, Reddi Rani P (2012) Are teenage pregnancies at high risk? A comparison study in a developing country. *Arch Gynecol Obstet* 285: 573-577.
  4. Chotigeat U, Sawasdiworn S (2011) Comparison outcomes of sick babies born to teenage mothers with those born to adult mothers. *J Med Assoc Thai* 94: 27-34.
  5. Althabe F, Moore JL, Gibbons L, Berrueta M, Goudar SS, et al. (2015) Adverse maternal and perinatal outcomes in adolescent pregnancies: The Global Network's Maternal Newborn Health Registry study. *Reproductive Health*.
  6. Njim T, Agbor VN (2017) Adolescent deliveries in semi-urban Cameroon: prevalence and adverse neonatal outcomes. *BMC Res Notes* 10:227.
  7. Njim T, Choukem SP, Atashili J, Mbu R (2016) Adolescent Deliveries in a Secondary-Level Care Hospital of Cameroon: A Retrospective Analysis of the Prevalence, 6-Year Trend, and Adverse Outcomes. *J Pediatr Adolesc Gynecol* 29: 632-634.
  8. Egbe TO, Omeichu A, Halle-Ekane GE, Tchente CN, Egbe EN, et al. (2015) Prevalence and outcome of teenage hospital births at the Buea Health District, South West Region, Cameroon. *Reprod Health* 12:118.
  9. Tebeu PM, Kemfang JD, Sandjong DI, Kongnyuy E, Halle G, et al. (2010) Geographic Distribution of Childbirth among Adolescents in Cameroon from 2003 to 2005. *Obstetrics and Gynecology International*.
  10. Iacobelli S, Robillard PY, Gouyon JB, Hulsey TC, Barau G, et al. (2012) Obstetric and neonatal outcomes of adolescent primiparous singleton pregnancies: a cohort study in the South of Reunion Island, Indian Ocean. *J Matern Fetal Neonatal Med* 25: 2591-2596.
  11. Elfenbein DS, Felice ME (2003) Adolescent pregnancy. *Pediatr Clin North Am* 50: 781-800.
  12. Kongnyuy EJ, Nana PN, Fomulu N, Wiysonge SC, Kouam L, et al. (2008) Adverse perinatal outcomes of adolescent pregnancies in Cameroon. *Matern Child Health J* 12: 149-154.
  13. Cavazos-Rehg PA, Krauss MJ, Spitznagel EL, Bommarito K, Madden T, et al. (2015) Maternal age and risk of labor and delivery complications. *Maternal and Child Health Journal* 19: 1202-1211.
  14. Mukhopadhyay P, Chaudhuri RN, Paul B (2010) Hospital-based perinatal outcomes and complications in teenage pregnancy in India. *J Health Popul Nutr* 28: 494-500.
  15. Leftwich HK, Alves MV (2017) Adolescent Pregnancy. *Pediatr Clin North Am* 64: 381-388.
  16. Tebeu PM, Tantchou J, Obama MT, Mevoula D, Leke R (2006) Adolescent deliveries in extreme North region of Cameroon : inadmissible proportions. *Rev Med Liège* 61: 124-127.
  17. Owono E, Metogo M, Tchokam L, Danwang C, Kago T, et al. (2017) Obstetric complications in Intensive care service: epidemiology, diagnosis and prognosis. *Health Sci and dis* Vol 18.
  18. Wang CS1, Chou P (1999) Characteristics and outcomes of adolescent pregnancies in Kaohsiung County, Taiwan. *J Formos Med Assoc* 98:415-421.
  19. Brabin L, Verhoeff FH, Kazembe P, Brabin BJ, Chimsuku L, et al. (1998) Improving antenatal care for pregnant adolescents in southern Malawi. *Acta Obstet Gynecol Scand* 77: 402-409.
  20. Ndioubnand M, Gondje S, Khachani M, Chemry I, Kharmach M, et al. (2010) Adolescent pregnancies: about 150 cases. *Médecine du Maghreb* 175: 40-48.
  21. Nayama M, Dan Malan BR, Nayoussa M, Hamani R, Moustapha F, et al. (2007) Management of delivery in adolescents at Issaka Gazobi maternity of Niamey: a 3 years retrospective study of 976 cases. *Médecine d'Afrique Noire* 54: 414-418.
  22. Taghizadeh Z, Cheraghi MA, Kazemnejad A, Pooralajal J, Aghababaei S (2017) Difference in Perception of Pregnancy Risk in Two Maternal Age Groups. *J Clin Diagn Res* 11: 09-12.
  23. Hokororo A, Kihunrwa A, Hoekstra P, Kalluvya SE, Changalucha JM, et al. (2015) High prevalence of sexually transmitted infections in pregnant adolescent girls in Tanzania: a multi-community cross-sectional study. *Sex Transm Infect* 91: 473-478.
  24. DHS-MICS (2011) Demographic and Health survey and Multiple Indicators Cluster Survey in Cameroon [FR260] -[Cited 20 April 2017].
  25. De Vienne CM, Creveuil C, Dreyfus M (2009) Does Young Maternal Age Increase the Risk of Adverse Obstetric, Fetal and Neonatal Outcomes: A Cohort Study. *Eur J Obstet Gynecol Reprod Biol* 147: 151-156.
  26. Tebeu PM, Kouam L, Obama MT, Ngassa P, Kamdom M, et al. What would be the age of adolescent early parity in Cameroon? 5 years' experience at Yaoundé University Hospital Centre. *Médecine d'Afrique Noire* 49: 438-442.
  27. Iloki LH, Koubaka R, Itoua C, Mbemba Moutounou GM (2004) Adolescent Pregnancy and Delivery in Congo. About 276 cases at the Brazzaville University Hospital. *J Gynecol Obstet Biol Reprod* 33: 37-42.

**Copyright:** ©2017 Essiben Félix, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.