

# Adolescent Childbirth: Epidemiological and Clinic Aspects, Maternal and Perinatal Prognosis in Tengandogo Teaching Hospital, Burkina Faso

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## Abstract:

**Background/Aim:** Adolescent pregnancy is considered as a public health issue. This study aims at describing the epidemiological and clinical aspects, as well as the maternal and perinatal prognosis of adolescent childbirth.

**Materials and Methods:** This was a descriptive and analytical study. Data were collected prospectively. The study population included all women admitted for delivery. Adolescents were sampled exhaustively. In order to identify factors associated with adolescent childbirth, we selected a control group of women aged between 20 and 39.

**Results:** Adolescent deliveries accounted for 12.6% of all deliveries. The average age was estimated at 18.2 years. Patients aged 19 accounted for 55.1% of cases. Upon admission, 88.9% of adolescent girls were nulliparous. Adolescents were referred in 93.5% of cases. As for admission reasons, abdominopelvic pain with uterine contractions accounted for 39.81% of cases. In 21.3% of cases the gestational age as below 37 weeks of amenorrhea. Fetal breech presentation was observed in 8.3% of cases. Caesarean section was the mode of delivery in 60.2%. In our series, two adolescent girls presented a hemorrhage of deliverance. One case of maternal death was recorded. The prematurity birth rate was estimated at 20.4% and neonatal resuscitation concerned 24.9% of newborns. The perinatal mortality rate is estimated at 11.2% corresponding 112 deaths per thousand births.

**Conclusion:** Adolescent childbirth, compared to that of adult women is still associated with a poor prognosis. There is the need to enhance appropriate measures in education, contraception, prenatal care and the fight against early marriage need to reduce the rates of early pregnancy and obstetric complications in this high-risk population.

**Keywords:** adolescent childbirth; clinic aspect prognosis; tengandogo; burkina faso

## Introduction

The World Health Organization defines adolescents as young people aged between 10 and 19 [1]. Adolescent pregnancy is considered as a public health issue because of the risk of maternal and fetal morbidity and mortality [2]. About 12.8% of pregnant adolescents are affected by childbirth complications, with eclampsia and post-partum hemorrhage being the most frequent ones and death the major complication [3]. Adolescent pregnancy is also risky for the baby to be born [4]. Therefore, adolescent mothers are more likely to give birth to low-birth-weight babies than adults [4]. The risk of prematurity is higher in mothers aged under 20 than in others [4].

High fertility in adolescent is a concern in Burkina Faso. Indeed, the fertility rate for adolescents aged 15-19 is estimated at 130 per thousand [5]. As a solution to the problem, Burkina Faso has adopted a strategic plan for adolescent health for the period 2015-2020. Despite these measures and strategies, the problem remains persistent, hence the need to conduct in-depth studies on this issue, which is a pressing health concern. This study aims at describing the epidemiological and clinical aspects, as well as the maternal and perinatal prognosis of adolescent childbirth in the mother-child department of the Tengandogo Teaching Hospital (CHUT) in order to contribute to the fight against maternal and perinatal morbidity and mortality.

## 1. Materials and methods

This was a descriptive and analytical study conducted within the mother-child department of Tengandogo Teaching Hospital. Data were collected prospectively. The study was held from January 1st, to December 31st, 2021. The study population included all women admitted for delivery in the mother-child department of Tengandogo Teaching Hospital during the concerned period. Adolescents were sampled exhaustively. In order to identify factors associated with adolescent childbirth, we selected a control group of women aged between 20 and 39.

The control person of an adolescent who gave birth is the immediate person to have given birth on the delivery register. All the adolescents and control groups had a gestational age of at least 28 weeks' amenorrhea. Data were collected from interviews with patients and/or their companions, from patient clinical records including delivery registers, admission registers and pregnancy follow-up booklets. Study variables were socio-demographic characteristics, clinical data and maternal and perinatal prognostic elements. Refusal to participate in the survey and being admitted for a postpartum complication were the exclusion criteria.

Data entry and analysis were carried out on a microcomputer through KoBoCollect software version 1.30.1. In addition, EPI Info software version 7.2.3.0, Excel and Word from the Microsoft Office package were used for drafting and designing tables. Percentages were compared using the Chi2 test with a significance level of 5%. Odds ratios were also calculated for a confidence interval of 95% to measure the strength of the association

between variables. The study was carried out with the authorization from the Director General of Tengandogo Teaching Hospital. Patients' informed consent was verbally obtained and the anonymity and total confidentiality of the participants was kept.

## 2. Results

During the study period, 216 adolescents gave birth out of a total of 1,714 deliveries in the mother-child department of the Tengandogo Teaching Hospital. Adolescent deliveries accounted for 12.6% of all deliveries.

The average age was estimated at 18.2 years, with extremes of 15 and 19 years. Patients aged 19 accounted for 55.1% of cases. Those living with a partner (married or cohabiting) accounted for 80.5% of cases. Adolescents with at least a post-primary educational level accounted for 52.7% of cases while those with an employment (traders, farmers and salaried employees/civil servants) accounted for 84.2% of cases. Adolescent girls living in urban areas accounted for 74.1% of cases. Upon admission, 88.9% of adolescent girls were nulliparous.

Adolescents were referred in 93.5% of cases. The average number of prenatal consultations was 3.4 with extremes ranging from 0 to 5. Patients had less than 4 prenatal visits in 48.6% of cases. As for admission reasons, abdominopelvic pain with uterine contractions accounted for 39.81% of cases. The distribution of adolescents according to the admission reason is presented in table 1.

Admission reason	Number	Percentage (%)
<b>Direct admission</b>	<b>14</b>	<b>6.5</b>
Abdominopelvic pain	12	5.6
External consultation	2	0.9
<b>Reason for evacuation</b>	<b>202</b>	<b>93.5</b>
Acute fetal distress	10	4.6
Delivery labor	74	34.3
Severe anemia	8	3.7
Pelvic abnormalities	11	5.1
Pre-eclampsia/ eclampsia attack	31	14.4
Fetopelvic disproportion	25	11.6
Retroplacental hematoma	2	0.9
Fetal macrosomia	6	2.8
Threat of premature delivery	2	0.9
Fetal death in utero	2	0.9
Placenta previa	3	1.4
Premature rupture of membranes	5	2.3
Prolapsed cord	2	0.9
Breech presentation	10	4.6
Pre-rupture/ Uterine rupture	6	2.8
Others	5	2.3
<b>Total</b>	<b>216</b>	<b>100</b>

**Table 1:** Distribution of adolescents according to the admission reason (n=216).

In 21.3% of cases the gestational age as below 37 weeks of amenorrhea. Fetal breech presentation was observed in 8.3% of cases. 18.5% of adolescents had a clinically impracticable pelvis. Labor beginning was spontaneous in 88.4% of adolescents. Acute fetal distress was observed in

39.3% of cases. Caesarean section was the mode of delivery in 60.2%. The distribution of adolescents according to cesarean section indications is presented in table 2.

Indication for Caesarean section	Frequency	Percentage (%)
<b>Maternal indication</b>	<b>84</b>	<b>64.6</b>
Bone dystocia	16	12.3
Dynamic dystocia	23	17.7
Eclampsia/Pre-eclampsia	30	23.1
Scarred uterus	3	2.3
Pre-rupture syndrome	12	9.2
<b>Feto-anexial indication</b>	<b>46</b>	<b>35.4</b>
Acute fetal distress	24	18.5
Retroplacental hematoma	1	0.7
Beating cord prolapse	1	0.7
Fetal macrosomia	3	2.3
Vicious presentations	13	10
Premature rupture of membrane	2	1.5
Triplets' pregnancy	1	0.7
Fetal death in utero	1	0.7
<b>Total</b>	<b>130</b>	<b>100</b>

**Table 2:** Distribution according to caesarean section indication (n=130)

In our series, two adolescent girls presented a hemorrhage of deliverance. 81.4% of the adolescent girls who gave birth vaginally received an episiotomy. 11.6% of adolescent girls who gave birth vaginally had perineal tears. Eight patients corresponding to 3.7% presented an endometritis puerperal infection, 29 adolescent girls with decompensated anemia corresponding to 13.4% of cases were identified. One case of maternal death was recorded.

As for the live births, the APGAR score was less than 7 at the 1st minute in 19.9% of cases. The average weight was 2645 grams and low birth weight

concerned 31.1% of newborns. The prematurity birth rate was estimated at 20.4% and neonatal resuscitation concerned 24.9% of newborns. At the end of delivery, 21 stillbirths were recorded corresponding to 9.3% among which 16 fresh stillbirths and 5 macerated stillbirths. The total number of early neonatal deaths was 4 corresponding to 2% of cases. The perinatal mortality rate is estimated at 11.2% corresponding 112 deaths per thousand births.

In multivariate analysis, there was a statistically significant association at a 5% threshold between adolescent birth and certain factors. The results of this analysis are presented in tables 3 and 4.

Factors	Cases		Control groups		OR	[IC 95%]	P-value
	n	%	N	%			
<b>Mode of admission</b>							
Direct	14	6.5	97	22.5	1		
Referred	202	93.5	335	77.5	0.23	0.13-0.42	0.000
<b>Number of ANC</b>							
] 0-4 [	105	48.6	140	32.4	1.97	1.41-2.75	0.000
[4-7 [	111	51.4	292	67.6	1		
<b>Number of ultrasounds</b>							
] 0-1]	58	26.9	205	47.2	0.41	0.28-0.58	0.000
] 1-7 [	158	73.1	228	52.8	1		
<b>Term</b>							
Premature	27	21.3	65	15.1	0.80	0.49-1.30	0.405
At term	189	78.7	367	84.9	1		
<b>Basin</b>							
Normal	176	81.5	408	94.4	1		
Others	40	18.5	24	5.6	0.25	0.15-0.44	0.000
<b>Mode of the labor beginning</b>							
Spontaneous	191	88.4	423	97.9	1		
Induced	25	11.6	9	2.1	0.16	0.07-0.35	0.000
<b>Dystocia</b>							
Yes	166	76.8	260	60.2	2.19	1.51-3.18	0.000
No	50	23.1	172	39.8	1		

Table 3: Factors associated with ado delivery in multivariate analysis

Factors	Cases		Control group		OR	[IC 95%]	P-value
	n	%	N	%			
<b>Delivery method</b>							
Caesarian section	130	60.2	234	54.2	0.78	0.56-1.08	0.170
Vaginal delivery	86	39.8	198	45.8	1		
<b>Acute brain injury</b>							
Yes	56	24.9	83	18.5	1.46	0.99-2.14	.066
No	168	75.1	364	81.5	1		
<b>Episiotomy</b>							
Yes	70	32.4	83	19.2	2.01	1.38-2.92	0.000
No	146	67.6	349	80.8	1		
<b>Severe anemia</b>							
Yes	29	13.4	41	9.5	1.47	0.88-2.44	0.168
No	187	86.6	390	90.5	1		
<b>Low birthweight</b>							
Yes	70	31.1	58	13	3.02	2.04-4.49	0,000
No	155	68.9	389	87	1		
<b>Transfer to neonatology</b>							
Yes	20	8.8	17	3.7	2.56	1.30-5.05	0.011
No	205	91.2	430	96.3	1		
<b>Perinatal death</b>							
Yes	25	11.1	37	8.2	1.38	0.81-2.36	0.290
No	200	88.9	410	91.8	1		

**Table 4:** Factors at childbirth in adolescents in multivariate analysis (continued).

The number of prenatal consultations between 0 and 4 was higher in adolescent patients than in adult ones, respectively with proportions of 48.6% and 32.4%. The difference was statistically significant ( $p=0.000$ ). Compared with adult patients, adolescents have achieved less than 1.9 times prenatal consultations. Dystocia was more frequent in adolescent patients than in adult ones, respectively with proportions of 76.8% and 60.2%. The observed difference was statistically significant ( $p=0.000$ ). In comparison with adult patients, adolescent ones were 2.19 times more likely to experience dystocia ( $OR=2.19$ ;  $CI=1.51-3.18$ ).

Episiotomy was more common in adolescent patients than in adult ones respectively with proportions of 34.4% and 19.2%. The difference was statistically significant ( $p=0.000$ ). Adolescent patients were 2 times more likely to have an episiotomy than adult ones. The proportion of low birth weights (birth weight below 2500g) in newborns of adolescent mothers was estimated at 31.1%, against 13% in adult ones. The difference observed was statistically significant ( $p=0.000$ ). The risk of adolescent mothers delivering a low birth weight baby was estimated at 3 ( $OR =3.02$ ;  $CI=2.04-4.49$ ). 8.8% of newborns from adolescent mothers were transferred to neonatology against 3.7% of newborns born from adult mothers. The difference observed between the two proportions was statistically significant ( $p=0.011$ ), with newborns from adolescent mothers 2.5 times more likely to be transferred to neonatology ( $OR=2.56$ ;  $CI=1.30-5.05$ ).

### 3. Discussion

Our frequency is close to those reported by Traoré et al [6] in Mali, and Nayama et al [7] in Niger who respectively found 15.5% and 10.9%. It is higher than those reported by Leno DWA et al [8] in Guinea, and Soula [9] in Guyana, whose respectively are 2.6% and 2.7%. However, it is lower than the one found by Nguembi [10] in Central Africa, which was estimated at

30.3%. The high rate pregnancy and childbirth among adolescents observed in several African countries is related to several factors such as poverty, illiteracy and early marriage.

The average age of the adolescent girls of our study was estimated at 18.2 years, a result similar to those of Fousou L et al [3] in Chad, Ouédraogo. A [11] in Burkina Faso and Sepou A et al [12] in Central African Republic, which were respectively estimated at 17.2, 17.9 and 17.8 years. However, Iloki [13] in Congo, Aboubacary [14] in Togo and Ba MG [15] in Senegal found lower average ages respectively estimated at 14.5, 15.1 and 15.5 years. This variability in the average age is explained by the disparity in the definition of the adolescence age limit, which was set at 19 years for Fousou [3] and Sepou [12], while Iloki's [13] and Aboubacary's [14] have set the upper limit at 17 years.

80.5% of adolescent girls in our study were married. These figures are in line with African literature data. Nayama et al [7] in Niger, Hamada et al [16] in Morocco and Traoré et al [6] in Mali have respectively found proportions of 77.2, 90.3 and 81.7. However, this rate is still higher than the one reported by Iloki et al [13], who found 16%. This high rate could be due to early marriage since African society does not generally tolerate pregnancy among unmarried women, and to certain social determinants such as mores, poverty, illiteracy and religious beliefs in Africa.

In our study, 48.6% of patients have achieved less than four antenatal visits. WHO [17] recommends to have at least 4 antenatal consultations during the nine months of pregnancy. Our data are in line with those from the literature. As an example, Iloki et al [13] in Congo, and Hamada et al in Morocco [16] respectively have found 22.1% and 22.6% of unfulfilled pregnancies. In addition to the various age-related risks, there is also a significant risk of late

detection of complications due to unfulfilled pregnancies. This situation highlights the need to monitor pregnancies so that to identify any complications in good time.

As for the delivery mode, the results of our study have showed that 60.2% of deliveries were made by caesarean section. This rate is higher than those reported by Ayuba [18] in Nigeria, Traoré B et al [6] in Mali and Fousou L et al [3] in Chad, who respectively found 23.9%, 21.4% and 17.5%. The high caesarean section rate in our series could be explained by the fact that our study took place in a hospital of last resort, where almost all parturients referred to us required surgical management.

Perinatal morbidity was assessed through prematurity, birth weight, Apgar score, notion of resuscitation and transfer to neonatology.

The prematurity rate observed in our series was estimated at 20.4%. Our rate is higher than that of Luhete [19] in Congo Brazzaville, who found 12.7% of premature babies born from adolescent mothers. Iacobelli [20] found an increased risk of prematurity among adolescent girls and even believes that there is a direct correlation between the mother's age and the risk of prematurity.

As for birth weight, the proportion of low-birth-weight newborns was 31.1%. Nayama [7] in Niger and Niang et al [21] in Senegal found rates similar to ours with respectively 28.7% and 36.1%. Some authors agree that low birth weight is a major characteristic of children born from adolescent mothers. Fraser AM [22] describes a nutritional competition between the young mother whose growth process is still underway and her fetus.

The Apgar score is one of the objective methods for assessing the newborn condition at birth. It enables to establish an early diagnosis of neonatal distress. In our study series, this first-minute score was above 7/10 in 80.1% of cases. Newborns with a poor score accounted for 19.9% of cases. Obstetric pathologies during labor and parturients' indocility during the expulsion phase could explain this rate. The perinatal mortality rate was estimated at 11.2%, a result similar to those of Nayama et al [7] and Fousou et al [3], who respectively found 11.2% and 12.7%. However, it is higher than that of Traoré et al [6], who found 9.3%. Low birth weight, neonatal distress and adolescent primiparity are interrelated factors with high perinatal mortality risk.

As limitations of the study we note a selection bias: the age of the patients was obtained by questioning. The comparison of this with that recorded on the national identity card having not been done, this could be the origin of a bias.

### Conclusion

The frequency of pregnancy among adolescents remains high. Adolescent childbirth, compared to that of adult women is still associated with a poor prognosis. There is the need to enhance appropriate measures in education, contraception, prenatal care and the fight against early marriage need to reduce the rates of early pregnancy and obstetric complications in this high-risk population.

### Ethics statement

The studies involving human participants were reviewed and approved by the authorization of the ethics committee. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

### Author contributions

Kain DP and Zamané H prepared the manuscript, Ouédraogo I collected the data, Kiemtoré S. analyzed the data, Ouédraogo A and Thiéba/Bonané B provided a useful review of this manuscript. All authors contributed to the article and approved the submitted version.

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## Conflict of interest

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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