

## Research Article

DOI: 10.62046/gijams.2024.v02i05.003

### Adolescent Childbirth at Gao Hospital in Mali

<sup>1</sup>Cheickna SYLLA, <sup>1</sup>Kalifa TRAORE, <sup>1</sup>Bocary Sidi KONE, <sup>4</sup>Mahamoudou COULIBALY, <sup>3</sup>Séma keita, <sup>5</sup>Seydou Z Dao, <sup>2</sup>Siaka Amara SANOGO, <sup>2</sup>Seydou FANE, <sup>2</sup>Amadou BOCOUM, <sup>6</sup>Sitapha DEMBELE

<sup>1</sup>Mohamed VI Mother and Child Polyclinic in Bamako, Mali

<sup>2</sup>Gabriel Touré University Hospital in Bamako, Mali

<sup>3</sup>Fana Reference Health Centre, Koulikoro, Mali

<sup>4</sup>Kalaban Coro Reference Health Centre, Bamako, Mali

<sup>5</sup>Reference Health Centre of Commune II of the District of Bamako, Mali

<sup>6</sup>Fousseyni Hospital DAO of Kayes, Mali

\*Corresponding Author: Dr. SYLLA Cheickna | Received: 30.08.2024 | Accepted: 20.09.2024 | Published: 27.09.2024

**Abstract:** The aim was to assess the prevalence and maternal and perinatal prognosis of adolescent childbirth at the Gao Hospital. **Materials and methods:** This was a prospective and cross-sectional study from January 1, 2020 to December 31, 2020. **Results:** we recorded 655 cases out of 3010 deliveries, i.e. a prevalence of around 21.7% with an average age of 17.39 years. The majority of them were married (92.5%), and the pregnancy was not followed in 33.3% of cases. On admission for delivery, they had anaemia (19%), high blood pressure (2.6%), pre-eclampsia (1.2%) and even eclampsia (4.5%). Prematurity accounted for 10.1%. Deliveries were conducted vaginally (84%). The main indications for caesarean sections were immature pelvis (32.3%) and eclampsia (26.6%). Complications were soft tissue tears (5%), postpartum hemorrhage (2.74%). The maternal mortality rate was two cases out of a total of 655 and the stillbirth rate was 5.6%.

**Keywords:** Childbirth; Teenage girls; Maternal-fetal prognosis.

**Citation:** Cheickna SYLLA *et al.* Adolescent Childbirth at Gao Hospital in Mali. Grn Int J Apl Med Sci, 2024 Sep-Oct 2(5): 173-181.

## INTRODUCTION

Adolescence, which comes from the Latin verb "adolescere" which means to grow up to (ad: towards, olescere: to grow), is a phase of physical and mental human development that occurs during the period of human life from puberty to adulthood. According to the World Health Organization (WHO), this term includes people between the ages of 10 and 19. It is a period of physical, psychological and social maturation that extends between childhood and adulthood [1]. There are one billion adolescents in the world, 85% of whom live in developing countries [2]. Adolescent girls make up 22% of the female population in Africa [3]. In West and Central Africa, at least 12% of the population is aged 10 to 14, 11% is aged 15 to 19. In Mali, the population aged 10-14 is estimated at 13% and that aged 15-19 at 10% [4]. Statistics show that in West Africa 49% of women are married before the age of 19, and 40% are married in Central Africa [5]. More than 14 million adolescent girls give birth worldwide each year. Although these births occur in all societies; 12.8 million, or more than 90%, take place in developing countries [6]. In Mali, 40 to 42% of young girls give birth before the age of 18 [7]. In sub-Saharan

Africa, and specifically in Mali, the situation of teenage pregnancy is more complex because, when it occurs within a household, it is a factor of prosperity. This explains the high frequency of early marriages. On the social level, motherhood can have detrimental effects not only on the mother, who may lose an opportunity to continue her education or improve her economic situation, but also on the child and the child's father, especially if the child is an adolescent.

Teenage pregnancy remains one of the leading causes of maternal and child mortality and contributes to the cycle of ill health and poverty. Early pregnancies are frequent in Gao because of the socio-cultural context, the low rate of schooling and the low rate of contraception. This situation is also reinforced by early marriage and gender inequalities. Faced with this situation, we considered it useful to conduct this study, which is the first of its kind in the Gao region, in order to evaluate the frequency, maternal and perinatal prognosis of adolescent childbirth in the Obstetrics and Gynecology Department of the Gao Hospital.

**Objectives**

The aim was to assess the prevalence and maternal and perinatal prognosis of adolescent childbirth at the Gao Hospital.

**MATERIALS AND METHODS**

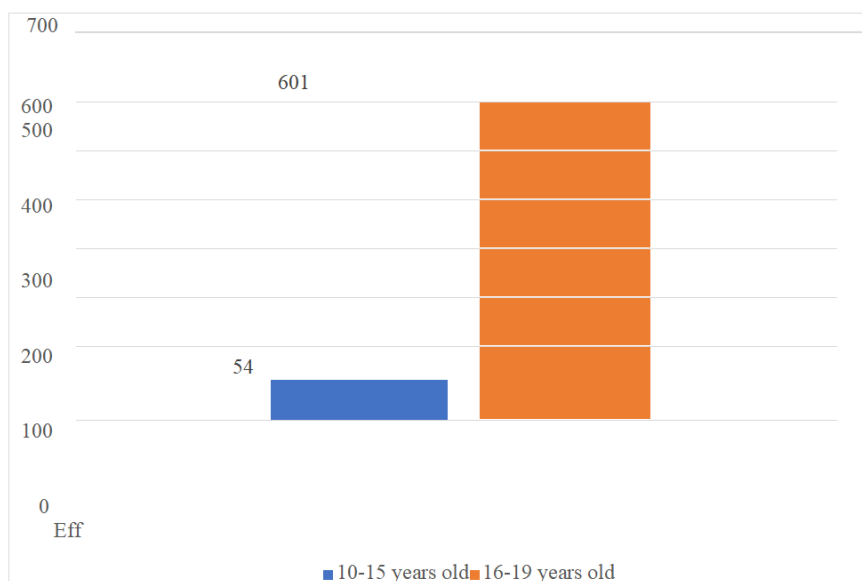
It was a prospective, descriptive cross-sectional study from January 01 to December 31, 2020, i.e. one (1) year at the Gao hospital. The study population consisted of all the women who gave birth in our department during the study period. All parturients aged 10 to 19 years who gave birth in the department during the study period were included. Not all parturients over the age of 19 who gave birth in our department were included; teenagers who have given birth in other structures but have been referred to our centre for care. The following variables were studied: age, occupation, ethnicity, marital status, number of consultations, residence, level of education, mode of admission, gynecological, obstetrical, medical, surgical history, blood pressure, height, uterine height, uterine contraction, fetal heart sounds, term of pregnancy, presentation of the fetus, pelvis, mode of delivery, indication for caesarean section, complication, newborn weight, Apgar, maternal-fetal prognosis.

**Data support:** our data were collected on individual survey sheets from: obstetric records; delivery registers; operative report records. The questionnaires were analysed manually. The data collected was captured and analyzed using the Sphinx software. The final document was written using Word and Excel 2016 for tables and graphs. The study was carried out with the informed consent of the parturients and/or their parents, after explaining the benefits of the study. All parturients agreed to participate in the study.

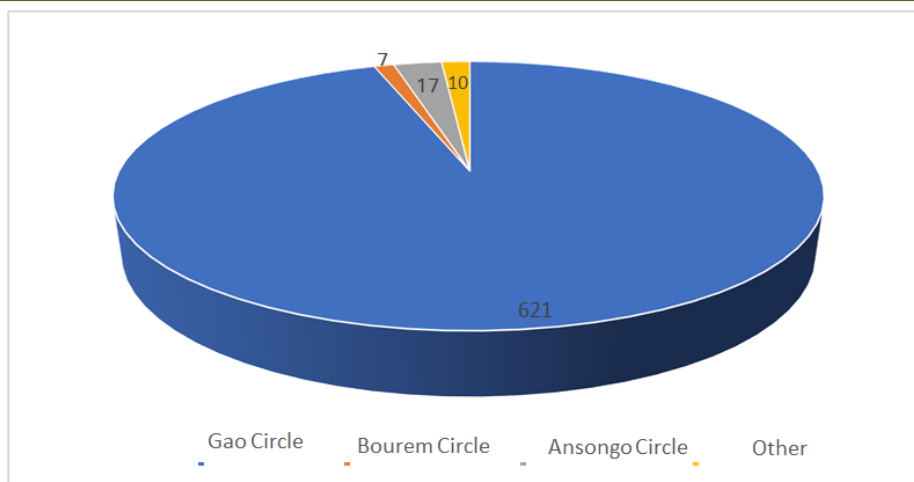
**RESULTS**

**Epidemiological aspects**

From January 1 to December 31, 2020, we recorded 655 adolescent deliveries out of 3010 deliveries, i.e. a prevalence of 21.76%. The most represented age group was 16-19 years old. The mean age was 17.39 years (standard deviation = 1.24 years) with extremes of 13 years and 19 years. They resided in the Gao circle in 94.8%. Out-of-school parturients accounted for 73.6%. Students accounted for 26.4% of our study, alongside housewives, who accounted for 73.3% of cases. Married women were the most represented. These epidemiological aspects are presented in Figures 1, 2 and Table 1.



**Figure-1: Distribution of parturients by age**



**Figure-2: Distribution of parturients by origin**

**Table-1: Epidemiological aspects of adolescent childbirth from January 1, 2020 to December 31, 2020 at the Gao Hospital in Mali.**

Level of education	Eff	%
Not in school	482	73,6
Primary	149	22,7
Secondary	23	3,5
Upper	1	0,2
<b>Total</b>	<b>655</b>	<b>100</b>
Profession	Eff	%
Housewives	480	73,3
Merchant	2	0,3
Student	173	26,4
<b>Total</b>	<b>655</b>	<b>100</b>
Marital status	Eff	%
Bride	606	92,5%
Bachelor	49	7,5%
<b>Total</b>	<b>655</b>	<b>100%</b>
Profession	Eff	%
Worker	196	44,9
Merchant	104	23,9
Farmer	51	11,7
Officials	48	10,9
Breeder/Shepherd	26	5,9
Pupil/Student	12	2,7
<b>Total</b>	<b>437</b>	<b>100</b>

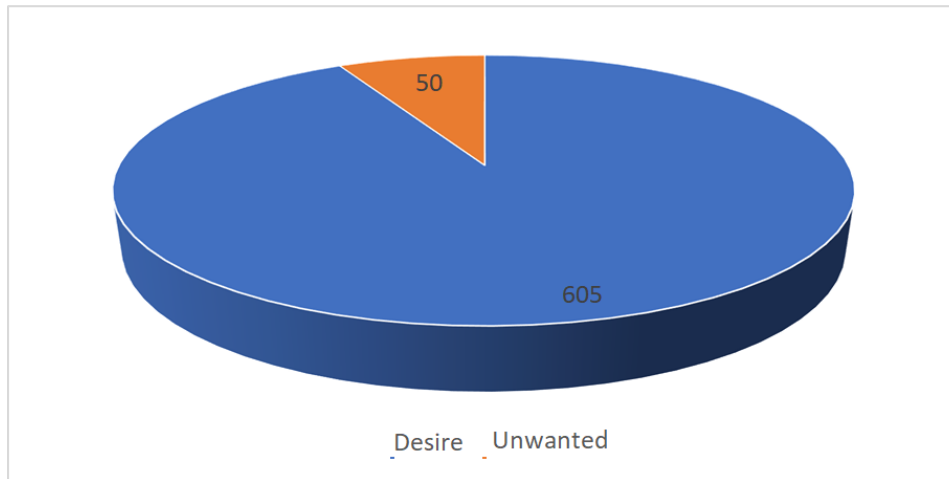
**Clinical aspects**

The vast majority of women are admitted directly, i.e. 77%. Those who had no medical history represented 99.5% of the workforce. However, among them, 3.6% had a history of caesarean section. They were primiparous in 73.6% with a percentage of 4.3%

history of abortion. Of these, 19% suffered from anaemia and 92.4% wanted to be pregnant. The fetus was alive at admission in 95% of adolescents. The rate of prenatal consultations was 33.3%. These clinical aspects are presented in Table 2 and Figure 3.

**Table-2: Clinical aspects of adolescent childbirth from January 1, 2020 to December 31, 2020 at the Gao Hospital in Mali**

<b>Admission method</b>	<b>Eff</b>	<b>%</b>
Coming on her own	507	77,4
Evacuated/Referred	148	22,6
<b>Total</b>	<b>655</b>	<b>100</b>
<b>Medical history</b>	<b>Eff</b>	<b>%</b>
No history	652	99,5
HTA	1	0,2
Asthma	2	0,3
<b>Total</b>	<b>655</b>	<b>100</b>
<b>Caesarean section</b>	<b>Eff</b>	<b>%</b>
Yes	24	3,6%
No	631	95,9%
<b>Total</b>	<b>655</b>	<b>100%</b>
<b>Parity</b>	<b>Eff</b>	<b>%</b>
Primiparous	482	73,6
Paucipare	173	26,4
<b>Total</b>	<b>655</b>	<b>100</b>
<b>Abortion</b>	<b>Eff</b>	<b>%</b>
No	627	95,7
Yes	28	4,3
<b>Total</b>	<b>655</b>	<b>100</b>
<b>Pathologies in pregnancy</b>	<b>Eff</b>	<b>%</b>
Anaemia	125	19
Malaria	35	5,4
Eclampsia	30	4,5
HTA	17	2,6
HIV	1	0,2
Asthma	2	0,3
HRP	3	0,5
No	442	67,5
<b>Total</b>	<b>655</b>	<b>100</b>
<b>Number of ANC's performed</b>	<b>Eff</b>	<b>%</b>
0	218	33,3
1-3	363	55,3
≥ 4	74	11,3
<b>Total</b>	<b>655</b>	<b>100</b>
<b>BDCF</b>	<b>Eff</b>	<b>%</b>
Perceived	622	95
Uncollected	33	5
<b>Total obs.</b>	<b>655</b>	<b>100</b>



**Figure-3: Distribution of parturients according to the context of pregnancy**

**Aspects of maternal-fetal prognosis**

Among adolescents, the majority carried the pregnancy to term, i.e. 84.4%. They had a normal pelvis in 94.8% of cases. The vaginal delivery was the most common mode of delivery (84%). Instrumental extraction was required 31 percent in 10.1% of cases. The rate of soft tissue tearing was 5%. The immature pelvis was the most frequent indication for caesarean section, accounting for 32.4% of cases. Stillbirths were the most common among perinatal deaths, accounting for 62% of

cases. The vast majority of newborns, 94%, had a normal Apgar score of at least 8. Newborns with a birth weight of less than 2500g accounted for 10.5% of cases. As for the neonatal reference, 111 newborns or 16.9% were transferred to neonatology. Prematurity was the most frequent reference reason, i.e. 60.36% of cases. We have recorded two cases of maternal death from eclampsia. These prognostic aspects are summarized in Tables 3 and 4.

**Table-3: Aspects of the maternal-fetal prognosis of adolescent childbirth from January 1, 2020 to December 31, 2020 at the Gao Hospital in Mali.**

<b>Age of pregnancy</b>	<b>Eff</b>	<b>%</b>
Eventually	553	84,4
Preterm	66	10,1
Post-term	36	5,5
<b>Basin</b>	<b>Eff</b>	<b>%</b>
Normal	621	94,8
Immature	34	5,2
<b>Route of delivery</b>	<b>Eff</b>	<b>%</b>
<b>Low Lane</b>		
Spontaneous	484	73,9
Instrumental	66	10,1
<b>Caesarean section</b>	105	16
<b>Maternal complication</b>	<b>Eff</b>	<b>%</b>
Tearing of soft tissues	33	5
Symphyseal relaxation	1	0,2
No	621	94,8
<b>Indication for caesarean section</b>	<b>Eff</b>	<b>%</b>
Eclampsia in pregnancy	28	26,6
Presentation of the breech in a primigest	17	16,2
Immature Pelvis	34	32,3
SFA	8	7,6
Fetal macrosomia	6	5,7
Stationary Expansion	2	1,9
Prolapse of the swing cord	2	1,9
Pre-rupture syndrome	2	1,9
Bi-scarred uterus in labor	2	1,9
Condylomas Florida	1	1
Suction Cup Failure	1	1
Cross-Sectional Presentation	2	2

**Table-4: Aspects of the maternal-fetal prognosis of adolescent childbirth from January 01, 2020 to December 31, 2020 at the Gao Hospital in Mali.**

Route of delivery	Deliverance hemorrhage	Endometritis	Parietal suppuration	Anaemia
Low Lane	1	0	0	35
Caesarean section	1	2	4	30
<b>Total</b>	2	2	4	65
<b>Condition of the newborn</b>		<b>Eff</b>		<b>%</b>
Alive		618		94,4
Stillborn		37		5,6
<b>Type of stillbirth</b>		<b>Eff</b>		<b>%</b>
Fresh stillbirth		23		62
Macerated stillbirth		14		38
<b>Apgar score at the 1st min Eff</b>				<b>%</b>
≥ 8		583		94,2
≤ 7		35		5,8
<b>Weight in grams</b>		<b>Eff</b>		<b>%</b>
Less than 2500		69		10,5
From 2500 to 4000		577		88,1
4000 and over		9		1,4
<b>Causes</b>		<b>Eff</b>		<b>%</b>
Prematurity		70		63,1
Neonatal suffering		35		31,5
Fetal macrosomia		6		5,4
<b>Maternal prognosis</b>		<b>Eff</b>		<b>%</b>
Good		580		88,6
Complicated		73		11,1
Deceased		2		0,3

## DISCUSSION

### Epidemiological aspects

In the literature, the prevalence of adolescent childbirth is disparate. Our prevalence of 21.7% is significantly higher than that found in Morocco by Hamada H, which was 2.6% [10], and those obtained in Mali by Guindo A. [11] and Diarra E [12], which found 5.72% and 9.5% respectively. Our prevalence is lower than that of Dembélé S. in Dioila [13] which was 25%. Early marriage, poverty, low school enrolment rates for girls, socio-cultural and religious burdens are factors in adolescent childbirth. The mean age of our patients was 17.39 years with extremes of 13 years and 19 years. The 16-19 age group was the most represented with 92%. This result can be superimposed on that obtained by Drabo A. in Bamako [9], which was 92.4% for the same age group. However, the 10 - 15 age group was the least represented, at 8%. This could be explained by the scarcity of sexual activity and/or generally anovulatory cycles in these adolescents. The majority of the women who gave birth lived in the Gao district, i.e. a frequency of 93% due to the accessibility of the hospital, the adequacy of the technical platform and the quality of human resources. As for the other health districts that are a little far away (Ansongo, Bourem,

and even Ménaka), their low reference rate is explained in most cases by the impossibility of using ambulances, mainly due to insecurity. Housewives accounted for (73.3%) of the cases. Our rate is higher than those reported by Dembélé F [13] and Drabo A [9] who found 63.2% and 54.9% of housewives respectively. In our series, students accounted for 26.4% of cases. Our rate is lower than those of Dicko OH. [8] and Iloki L H in Congo [14] who found 36.67% and 41.66% of students.

The high frequency of students in our study is explained by early marriage. In our study, more than half of our teenage girls were married, i.e. 92.5% of cases. Our rate is higher than those reported by Traoré F [15] and Drabo A [9], Luhete P. K in Senegal [16] which found 62%, 73.6% and 81.4% respectively. We found 7.5% of singles in our series. Our rate is lower than those reported by Dembélé F [13], Dembélé S [17] and Iloki L H in Congo [14] who found 13.02%, 20.8%, and 84.06% of singles, respectively. Boisselier P.H. in France [18] found 75% of French teenage girls to be single compared to 15% of African teenage girls to be single. These high proportions of married adolescent

girls can be explained by early marriage, which is experienced as normal in most of our regions.

### Clinical profile of adolescent girls

Although the hospital is a second-reference structure whose main mission is to take care of complicated cases from peripheral structures, the vast majority of women, 77%, were admitted directly. The evacuation rate was only 22.4%. Our admission rate can be superimposed on that of Dembélé F [14] which reported 77.08% came on their own and 22.92% were evacuated. The purpose of the prenatal consultation is to detect high-risk pregnancies and safeguard the health of the woman during pregnancy, to enable her to give birth to a healthy child and finally to teach her how to care for the newborn. In our study, 33.3% of adolescent girls did not have any prenatal consultations. This rate is higher than those reported by Diallo A [19], Traore B [20] and Hamada H. in Morocco [10] who found 30.02%, 23.7% and 23% of adolescent girls who did not follow their pregnancies, respectively. The lack of follow-up among these adolescents could be explained by the denial of pregnancy, the lack of information on the follow-up of a pregnancy, the low geographical coverage of health facilities, and the non-implementation of the strategy put forward in certain health areas due to insecurity. In our study, 73.6% of our parturients were first-time mothers. Our frequency is lower than those of Drabo A [9] and Dembélé S [17] who found 82.4% and 87.7% respectively. This relatively high early parity in our study is linked on the one hand to the ultra-early << >> predominant nuptiality in our country, especially in rural areas, and on the other hand to the lack of post-natal surveillance and the non-use of contraception. Clinical appearance of the pelvis: In our study, the pelvis is clinically normal in 94.8% of cases, therefore compatible with vaginal delivery; whereas 5.2% had an immature pelvis. This rate can be superimposed on that of Dembélé F [13] which found 92.18% of normal pelvis among adolescent girls and 7.82% of abnormal pelvis.

### Pathologies associated with pregnancy

In our study, anemia was the most common pathology with a frequency of 19%, followed by high blood pressure and its complications. Our result is higher than those of Diallo O H. [21] and Dicko OH. [8] who had found 4.7% and 14.3% respectively. Our rate is comparable to data from the literature that the rate of adolescent anemia ranges from 12.5 to 25% [22, 23]. The relatively high frequency of anaemia in our study could be explained by malnutrition and polyparasitism that are rampant in tropical regions and in particular in Mali, but also by iron deficiency during pregnancy, dependent on poor prenatal follow-up.

### Maternal-fetal prognosis

Mode of delivery: In our study, natural births accounted for 84% of cases. This rate confirms those in the literature according to which the rate of vaginal

delivery among adolescents varies between 75.9% and 94.8% [25, 27]. Cupping was the only technique used for instrumental deliveries and accounted for 10.5% of deliveries. Our rate is lower than those of Borg A. [25] in France, Laghzaoui Boukaidi M. in Morocco [26] and Dicko OH [8] which found respectively 12.9%, 20.25% and 20.65%, instrumental delivery. We recorded 16% of cases of caesarean delivery in adolescents, with indications dominated by immature pelvis (32.3%) and eclampsia (26.6). Our rate is higher than those reported by Ndiaye O in Senegal [27], Soula O. in French Guiana [23], Sanogo MM in Mali [28] and Alouinia S in Madagascar [24] which found 7.2%, 11%, 13.75% and 13.72% of caesarean sections in adolescent girls respectively. Our rate is lower than that reported by Niane M [29] who found 24.1%. In our study, the majority of parturients had given birth without complications, i.e. 94.8% of cases. Our frequency is higher than Dicko OH [8] which had reported 89.5% of uncomplicated deliveries. In our study we found 5% of soft tissue tears. This fairly high rate of soft tissue tears in adolescent girls could be explained by the immaturity of the perineal musculature, the narrowness of the vulva, the poorly conducted instrumental delivery, and the lack of cooperation of the parturient. We found 10.5% of newborns with low birth weight. Our rate is lower than those reported by Borg A. [27], Guindo A [23] and Thera T [30] who found 11.3%, 17.9% and 26.7% low birth weight (<2500g) respectively. Many authors agree that low birth weight is a major characteristic of children born to adolescent mothers in Africa. In addition, the results of the multivariate study performed by Forum et al. [31] do not show a significant association between maternal age and the delivery of a low birth weight newborn. For our study in particular, this may be due to poor nutritional conditions, high blood pressure, anaemia, malaria and poor prenatal follow-up. This low birth weight is detrimental to these newborns, whose survival depends on rigorous monitoring by the family and neonatology workers. Perinatal deaths were found in 5.7% of adolescent girls. Our rate can be superimposed on those of Fouelifack [32] in Cameroon and Dicko OH [8] which reported 5.8%, 5.67% of perinatal deaths in adolescents, respectively. Our level could be explained by certain pathologies related to pregnancy such as anemia, high blood pressure and its complications and the absence of prenatal consultations. APGAR at the first minute: The Apgar score is one of the determinants of newborn morbidity. In our study, Apgar was generally good, it was greater than or equal to 8 in 93.7% of cases. Only 6.3% of newborns had an Apgar score less than or equal to 7. Our Apgar score in the first minute is higher than those reported by Sanogo MM. [28] and Dembélé S. [17] who found 21% and 9.4% respectively. The risk of maternal death during pregnancy, childbirth and in the aftermath of childbirth evokes a tragedy when this event occurs in a teenager who has her whole life ahead of her. We had recorded two cases of maternal death, following eclampsia. Our

rate is comparable to those reported by Cissé A in Senegal [29], Dicko OH. [8] and Guindo A. [11] found 0.3%, 0.67% and 1.02% maternal deaths among adolescents, respectively. Indeed, early detection of hypertensive states could reduce complications related to this pregnancy pathology, the majority of parturients were not diagnosed due to a number of prenatal consultations less than or equal to three.

#### Difficulties encountered

During this study period, some difficulties were encountered, including the non-availability of ANC records in some cases during childbirth; insufficient completion of the partograph and obstetric records; and the difficulty of seeing parturients again after delivery to inquire about news of newborns and postpartum periods.

#### CONCLUSION

Adolescent childbirth remains frequent in our department. Early motherhood is a decisive stage that influences the life of the adolescent in several areas, hence the need to delay the birth of the first child by means and methods such as abstinence, or by the use of contraceptives, the accessibility of which to adolescents should be facilitated through the improvement of the quality of health services.

**Conflict of interest:** none.

#### BIBLIOGRAPHICAL REFERENCES

1. WHO. World Adolescent Health Day: Safe Motherhood: Delaying Births, Geneva, April 1998.1-3.
2. Barabara Shane. Planned Parenthood book saves lives: adolescent girls and reproductive health. 3rd ed. Washington: Inc Washington DC, 1996: P15-18.
3. Yattasaye A. Adolescent Childbirth at the Maternity Hospital of the University Hospital Gabriel Touré, Thesis of Medicine, Bamako, 1998, N°74, 83p.
4. UNFPA. Report on Adolescents and Youth: West and Central Africa. 2018:28-30
5. WHO. Adolescent Health and Development: The Key to the Future. 61st ed. Geneva; 1995.
6. McIntyre, Peter, and World Health Organization. Pregnant adolescents: bringing global promises of hope. Geneva: Report of the World Health Organization, 2007. 28P.
7. EDS V. Planning and Statistics Unit. Ministry of Health, National Directorate of Statistics and Informatics, Ministry of Economy, Industry and Trade. Bamako - Mali. 2012.
8. Dicko. OH. Teenage Pregnancy and Childbirth in the Reference Health Center of Commune VI of the District of Bamako: A case-control study. Thesis in medicine, Bamako, 2019. N°342.2-76p
9. Drabo A. Adolescent pregnancy and childbirth at the reference health centre of commune II of the district of Bamako. Thesis Med. Bamako 2012, no 15M85.
10. Hamada H *et al*. Adolescent pregnancy and childbirth: characteristics and profile about 311 cases at the Orangers maternity hospital, Rabat, Morocco. Journal of Gynecology, Obstetrics and Reproductive Biology Vol 33, N° 7 - November 2004 pp. 607-614
11. Guindo A. Maternal and Perinatal Prognosis of Adolescent Childbirth in the Gynecological-Obstetric Department at the Sikasso Hospital. Thesis in Medicine Bamako 2020, N°262. 40-53p
12. Diarra E. Adolescent childbirth: Maternal-fetal prognosis at the Cs ref of the Bamako CV. Thesis Med. Bamako 2016, 48p
13. Dembélé F. Adolescent childbirth at the reference health centre in commune IV of the district of Bamako. Thesis Medicine 2015, n° 80
14. Iloki L H. Adolescent pregnancy and childbirth in Congo about 276 cases at the Brazzaville University Hospital. J. Gynecol. Obstet. Reprod. 2004 ; 33(1): 37-42
15. Traoré F. Consequence of early pregnancy in the peri-urban area of Bamako. Thesis Medicine 2002, n°103.
16. Luhete P.K *et al*. Study of maternal and perinatal prognosis during adolescent childbirth in Lubumbashi, Democratic Republic of Congo. The Pan African Medical Journal. 2017 ; Jul 26:182
17. Dembélé S. Adolescent birth at the Dioïla reference health center. Thesis Medicine 2012 n° 12 M 185
18. Boisselier PH. Pregnancy in adolescents, Revue française de gynécologieobstétrique et biologique de la reproduction 1985, 14: 607-611.
19. Diallo A. Adolescent childbirth at the reference health centre of commune VI. Thesis Med. Bamako 2013, n°146.
20. Traoré B. Adolescent childbirth at the maternity ward of the Centre Hospitalier Régional de Ségou. Med. Afr Noire 2010; 57(10): 449-454
21. Diallo A. Adolescent childbirth at the reference health centre of commune VI. Thesis Med. Bamako 2013, n°146.
22. Reynold H, Wright K, Olukoya A, Neelofur-kan D. Maternal Care in Adolescent Girls Optic'Jeune, Reproductive Health and HIV/AIDS Serial; 2004, 11: 1-4.
23. Soula O. Pregnancies and childbirth among adolescents under 15 years of age. Study of 181 cases in French Guiana. Journal of Gynecology, Obstetrics and Reproductive Biology, Vol 35, N° 1- January 2006, pp. 53-61.
24. Alouinia S *et al*. Risk factors for pregnancy, childbirth and postpartum of adolescent girls in the Loiret department. J Gynecol Obstet Biol Reprod. 2015 ; 44 (5): 443-450
25. Borg A. Teenage pregnancy: Obstetrical and fetal complications at the Regional University Maternity Hospital of Nancy [Thesis]. Henri Poincaré



- University, Nancy I, Albert Fruhinsholz School of Midwives. 2010, 46p.
26. Laghzaoui B, Bouhya S, Bennani O, Hermas S, Soummani A, Aderdour M. Adolescent pregnancy and childbirth. *Maroc Médical* 2002, 24 (3): 181-185
  27. Ndiaye O. *et al*. Obstetric and neonatal risks associated with adolescent childbirth. Paediatrics Department at the University Hospital of Dakar, Senegal; Gynaecology and Obstetrics Department at the University Hospital of Dakar, Senegal. *Arch Pediatr* 2002; 8: 874-5
  28. Sanogo M M. Adolescent childbirth at the reference health center of Commune VI of Bamako. Thesis Med. Bamako 2012, n°45
  29. Niane M. Epidemio-clinical approach to adolescent pregnancy at the Fousseini DAOU Regional Hospital in Kayes. Thèse de médecine, Bamako, 2000, No 99, 47p
  30. Théra T, Kouma A, Tégouété I, Traoré Y, Kanté I, Traoré ZO, Coulibaly A. Maternal and perinatal prognosis of adolescent childbirth in the district of Bamako. FIGO/SAGO/SOGOBA 2016 Joint Congress. Communication N°14, P132-252.
  31. Fourn L, Slobodan D, Louise S. Factors associated with the birth of low birth weight: a multivariate analysis. *Cahiers d'études et de recherches francophones/Santé* 1999, 9 (1): 7-11.
  32. Fouelifack FY, Tameh TY, Mbong EN, Nana PN, Fouedjio JH, Fouogue JT, Mbu RE. Outcome of deliveries among adolescent girls at the Yaoundé central hospital. *BMC Pregnancy Childbirth*. 2014 Mar 17 ; 14 : 102.