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Pregnancy and Childbirth in Unmarried Adolescents at the Commune V District Hospital in Bamako, Mali

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Abstract

Introduction: Pregnancy and childbirth are frequent among adolescents and carry a high risk of maternal and foetal morbidity and mortality in unmarried adolescents. We undertook this study with the aim of investigating the factors associated with pregnancy and childbirth in unmarried adolescents at the Hospital of Commune V, District of Bamako, Mali. **Materials and Methods:** This was a cross-sectional study with retrospective data collection and case-control analysis over 60 months. The variables studied were sociodemographic, in relation to maternal morbidity and mortality, and in relation to perinatal morbidity and mortality. **Results:** For a minimum sample size of 460 cases and 920 controls, we collected 540 cases and 1080 controls. Births of unmarried adolescents accounted for 1.35% of all births. The most common age group was 16 to 17 years old, *i.e.* 64.1%, with an average age of 17.5 years old. Pupils/students were in the majority, accounting for 11.66% of cases compared with 3.70% of controls. Almost all the pregnancies were unwanted. We recorded 9.38% caesarean deliveries among the adolescent cases, compared with 12.34% among the controls. Eclampsia was the most common complication at 1.2%, followed by endometritis (0.24%) and breast abscess (0.12%). The

APGAR score was morbid in 4.38% of cases versus 2.96% of controls (p = 0.000). There were twelve maternal deaths, five in the cases (infection (2), eclampsia, anemia and HIV) and seven in the controls PPH (3), post caesarean section peritonitis (2), eclampsia and heart disease (p = 0.344). Our study enabled us to identify links between various factors, including: the father's information and his profession, the parents' family situation and communication within the family, the mother's working hours and communication within the family, the parents' financial situation and the adolescent's family situation, the reproducer's level of education and knowledge, the reproducer's level of education and profession, parity and the occurrence of pre-eclampsia. **Conclusion:** Childbirth in unmarried adolescents is associated with a poor prognosis. The use of contraceptive methods and high-quality antenatal, peripartum and postnatal care improve indicators of maternal and neonatal morbidity and mortality.

Keywords

Pregnancy, Childbirth, Unmarried Adolescent, Bamako, Mali

1. Introduction

Adolescence is the period of human growth and development between childhood and adulthood, between the ages of 10 and 19 [1]. It represents a critical transition period in life and is characterized by a significant rate of growth and change [2]. The definition of the upper limit of adolescent pregnancy is debated. Some authors use 19, others 18, 17 or 16 [3]. This rate is estimated at 23% in Mali [4]. Teenage pregnancy is a real concern. In Dakar, 7.9% of women aged from 15 to 19 have already had a child or are pregnant, compared with 44.3% in Kédougou [5].

Pregnancy is possible in 50% of girls of 13 years old. In Mali, the median age at first sexual intercourse is 12 [6]. The risk of maternal and foetal complications is very high [7].

In addition, although our review of the literature provided references on teenage pregnancy, we did not come across any studies on unmarried teenagers.

Faced with this problem, we undertook this study, the aim of which was to determine the frequency of pregnancy and childbirth among adolescents, to describe their sociodemographic characteristics and to assess the maternal and perinatal prognosis during childbirth among unmarried adolescents at the district of Commune V hospital in Bamako.

2. Methodology

This was a cross-sectional study with retrospective and analytical data collection of the case-control type, one case for one control of 60 months. It focused on adolescent girls who had given birth at the maternity ward of the district of commune V

hospital during the study period from August 1st, 2019 to September 30th, 2023, *i.e.* a period of 60 months. Cases were unmarried pregnant or labouring adolescents who consulted and delivered in the department during the study period. Controls were married women over 19 years old matched with cases according to residence.

Sampling was done for convenience.

To calculate our sample size, we used the following formula:

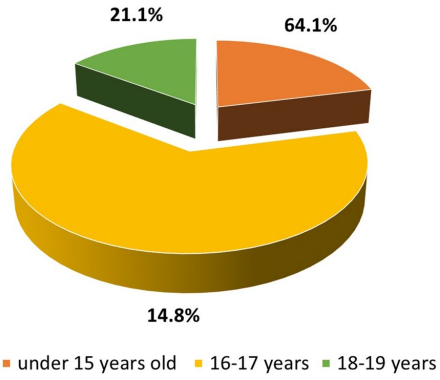
$$n = \left[\frac{(p*q)*\{1+(1/c)\}*(\varepsilon_\alpha + \varepsilon 2\beta)^2}{(p_0 - p_1)^2} \right]$$

Variables relating to maternal morbidity and mortality, and variables relating to perinatal morbidity and mortality. An individual survey form was drawn up for this purpose. The questionnaires were counted manually.

The statistical test used for comparison was the Chi-square test, significant if $P \leq 0.05$. The test of association used was the odds ratio (OR) calculated with a 95% confidence interval. Ethical aspects were taken into account during the study.

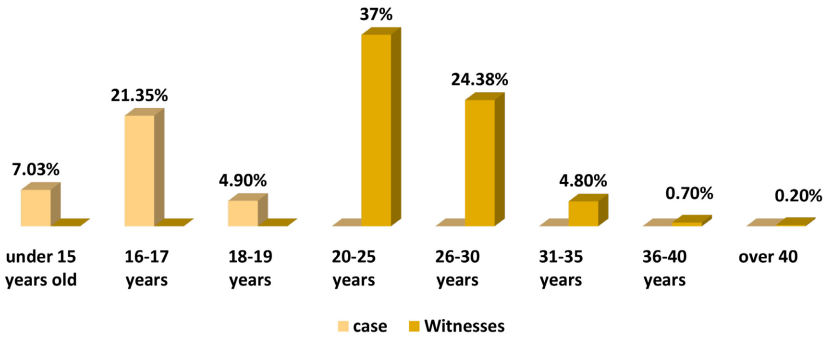
3. Results

Among 39,852 deliveries during the study period, we recorded 1,620 among adolescents, a frequency of 1.35% (Figures 1-4 and Tables 1-4).



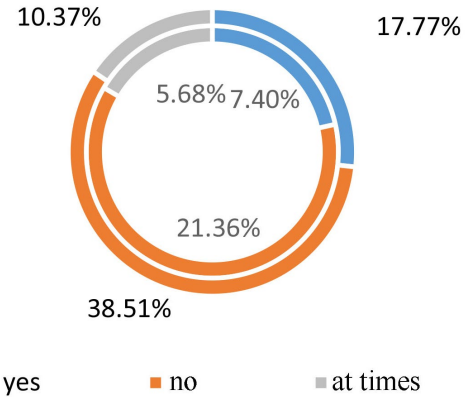
The 16 to 17 age group was the most represented.

Figure 1. Age distribution of cases.



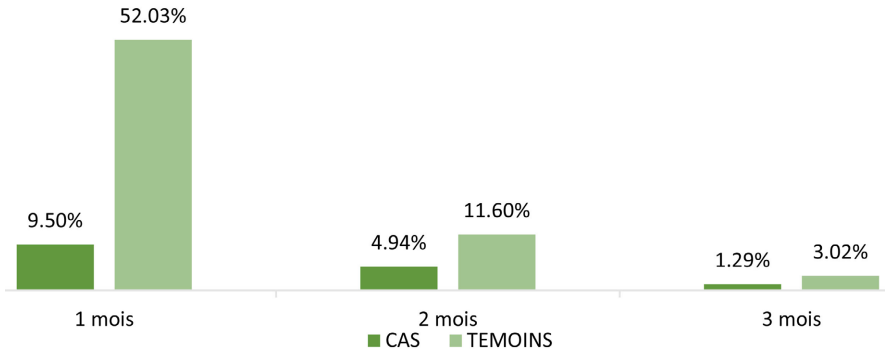
Chi-square = 1620.000[a], p = 0.000.

Figure 2. Distribution of patients by age.



Chi-square = 28.772[a], p = 0.000.

Figure 3. Breakdown of patients by contraceptive use.



Chi-square= 213.263[a], p = 0.000.

Figure 4. Distribution of patients by time of diagnosis of pregnancy.

Table 1. Breakdown of patients by route of delivery.

Route of delivery	Case n (%)	Witnesses n (%)	Total
Natural route	388 (23.95)	880 (54.32)	1268 (78.27)
Caesarean section	152 (9.38)	200 (12.34)	352 (21.73)
Total	540 (33.3)	1080 (66.7)	1620 (100)

Chi-square = 19.629[a], p = 0.000.

Table 2. Distribution of patients according to the occurrence of traumatic complications.

Traumatic complications	Case n (%)	Witnesses n (%)	Total
None	532 (32.84)	1060 (65.49)	1590 (98.21)
Vulvar tear	1 (0.66)	12 (0.80)	13 (0.82)
Vaginal tear	4 (0.24)	0 (0)	4 (0.24)
Cervical tear	2 (0.12)	3 (0.18)	5 (0.30)
Uterine rupture	2 (0.12)	3 (0.18)	5 (0.30)

Chi-square= 170.139[a], p = 0.000.

Table 3. Distribution of patients by cause of maternal death.

Cause of death	Case n (%)	Witnesses n (%)	Total
Cause of death	535 (20.68)	1073 (66.23)	1608 (99.26)
Anemia	1 (0.06)	0 (0)	1 (0.06)
Heart disease	0 (0)	1 (0.06)	1 (0.06)
Haemorrhage	0 (0)	3 (0.18)	3 (0.18)
Infection	2 (0.12)	2 (0.12)	4 (0.24)
Eclampsia	1 (0.06)	1 (0.06)	2 (0.12)
HIV	1 (0.06)	0 (0)	1 (0.06)
Total	540 (33.3)	1080 (66.7)	1620 (100)

Chi-square= 6.753[a], p = 0.344.

Table 4. Distribution of patients by age and mode of delivery.

Age	Route of delivery				
	Natural routes		Caesarean section		
	Case n (%)	Witnesses n (%)	Case n (%)	Witnesses n (%)	Total
Under 15 years	94 (24.2)	0 (0)	20 (13.2)	0 (0)	114 (7.03)
16 - 17 years	277 (71.4)	0 (0)	69 (45.4)	0 (0)	346 (21.35)
18 - 19 years	17 (4.4)	0 (0)	63 (41.4)	0 (0)	80 (4.9)
20 - 25 years	0 (0)	502 (57)	0 (0)	98 (49.0)	600 (37)
26 - 30 years	0 (0)	329 (37.4)	0 (0)	59 (29.5)	388 (24)
31 - 35 years	0 (0)	40 (4.5)	0 (0)	37 (18.5)	77 (4.0)
36 - 40 years	0 (0)	7 (0.8)	0 (0)	4 (0.2)	11 (0.7)
Over 40 years old	0 (0)	2 (0.12)	0 (0)	2 (0.12)	4 (0.2)
Total	378 (23.33)	880 (54.32)	152 (9.38)	200 (12.34)	1620 (100)

Chi-square = 1268.000, p = 0.000.

4. Discussion

4.1. Frequency

During the study period, we recorded 1,620 deliveries meeting our inclusion criteria out of a total of 39, 852 deliveries from August 1st, 2019 to September 30th, 2023, *i.e.* a period of 60 months, at the maternity unit of the District Hospital of Commune V.

Births given by unmarried adolescents represented 1.35% of all births. Our rate is much lower than that of Drabo A. [8] who recorded 13.31% at the reference health Centre in commune II of the district of Bamako and Luhete PK *et al.* [9] who in Lubumbashi in the Democratic Republic of Congo found a frequency of 7.7%.

It is comparable to those of Iraqi B *et al.* [10] in Morocco in adolescent girls aged from 15 to 18 and Collins in Guyana [11] in 11 to 16 years old. They found 1.8% and 2.8% respectively.

This difference could be explained by the fact that Drabo A. [8], who worked on the same age group, did not exclude incomplete records and unassisted deliveries.

4.2. Socio-Demographic Characteristics

4.2.1. Age

The age group most commonly encountered in our study was 16 to 17 years old, *i.e.* 64.1%, with an average age of 17.5 years old. The discussion is fraught with difficulties given the different variations in the age of adolescence, which in fact vary from one country to another. For example, Iraqi B *et al.* [10] in Morocco worked on adolescent girls aged 15 to 18, and Collins OM. [11] in French Guyana focused on 11 to 16 years old.

We did not note any births among girls under 13. This could be explained by the rarity of sexual relations at this age.

4.2.2. Level of Education

We found that 15.43% of adolescent girls were educated, compared with 30.43% of controls. These educated adolescents, 10.37% had a primary education, 5.49% had a secondary education and 1% had a higher education ($p = 0.000$). Collins OM. [11] in Guyana found 98.58% of girls are educated, including 14.29% at primary level and 84.29% at secondary level. These were also married adolescent girls who continue their studies and are supported by their parents who have the necessary financial means, whereas in our country, especially in the limited living conditions, pregnancy is a cause of dropping out of school.

4.2.3. Marital Status

In our study, all the adolescent girls were single. Our rate is different from those of other authors. In the study by Iraqi B *et al.* [10] in Morocco, 98% of teenage mothers were married and only 2% were single. Collins OM. [11] found that 74.12% of women were married, 21.18% were in common-law unions and 4.71% were single. This indicates the precociousness of marriage and its outcome, which is pregnancy and childbirth among adolescent girls. We preferred to study unmarried adolescents to identify the associated factors.

4.3. Clinical Characteristics

4.3.1. Antenatal Consultations

Failure to perform ANC was an anomaly observed in adolescents, with 5.37% compared with 6.60% in controls, with a significant statistical difference ($p = 0.000$). In the study by Collins OM. [11] in French Guyana, only 1.22% of adolescent girls had not undergone ANC, with an 80.49% rate of effective ANC.

4.3.2. Type of Presentation

The presentation of the foetus was predominantly cephalic in 31.66% of cases and

65% of controls, with no significant statistical difference. This was followed by breech presentation in 1.60% of cases and 1.81% of controls. The transverse position accounted for 0.06% in both groups.

4.3.3. Mode of Delivery

Natural vaginal delivery accounted for 23.95% of cases compared with 54.32% of controls, with a significant statistical difference (p = 0.000). However, among these deliveries, instrumental vacuum extraction was performed in 5.99% of adolescents compared with 1.42% of controls, with a significant statistical difference (p = 0.000). Collins OM. [11] in French Guyana found that 78.26% of deliveries were by the natural route and 6.52% by instrumental forceps or vacuum extraction.

We recorded 9.38% of Caesarean deliveries among adolescents, compared with 12.34% among controls—a statistically insignificant difference. This could be explained by the fact that district hospitals receive referrals of complications from first-level facilities, which would contribute to an increase in the caesarean section rate. Our rate is close to those of some authors, such as Iraqi B *et al.* [10] in Morocco, who found that 16.5% of adolescents gave birth by caesarean section compared with 17.3% of women in the control group, and Collins OM. [11] in French Guyana who found 14.13% of caesarean sections and 6.52% of vacuum deliveries (**Figure 5**).

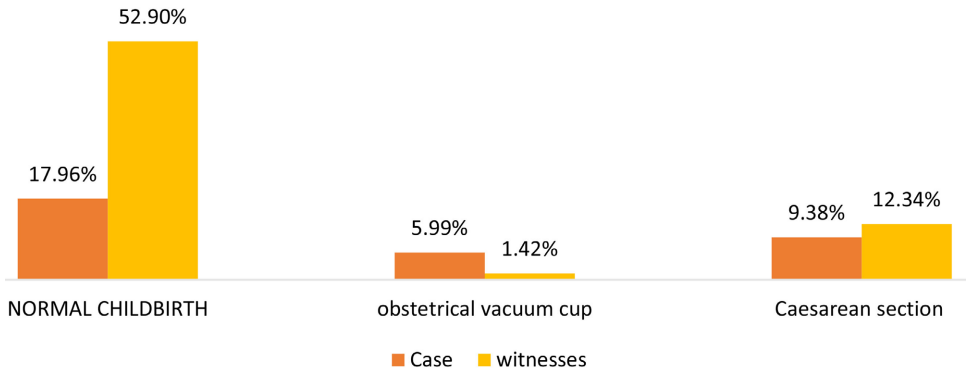


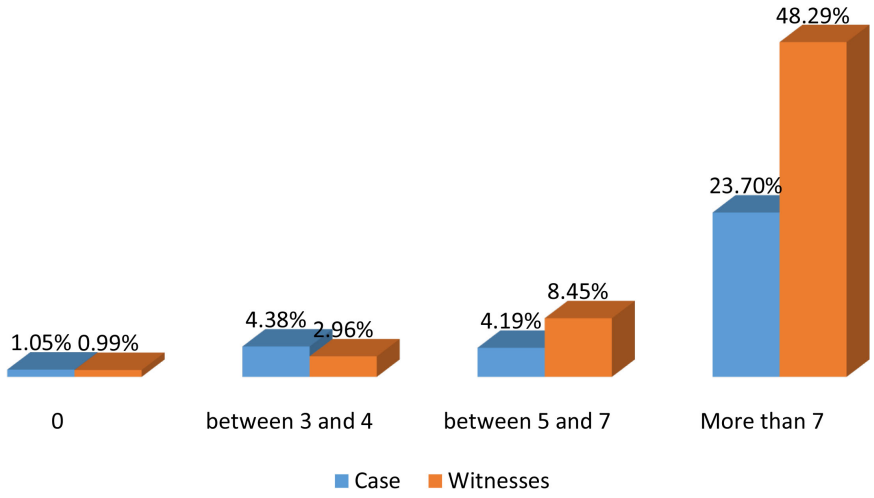
Figure 5. Distribution of patients by type of delivery.

4.3.4. Complications of Pregnancy and Childbirth

Eclampsia was the most common complication cases (1.2%), followed by endometritis (0.24%) and breast abscess (0.12%). In controls, hemorrhage was the most frequent complication with 1.48%, followed by post-partum endometritis and anemia with 0.24% each with a significant p at 0.000.

4.3.5. APGAR Score for Newborns

At the first minute, the APGAR score was morbid in 4.38% of cases versus 2.96% of controls, with a significant statistical difference (p = 0.000). The score was between 5 and 7 in 4.19% of cases versus 8.45% of controls, with a significant statistical difference (p = 0.000) (**Figure 6**).



Chi-square = 46.915[a], p = 0.000.

Figure 6. Distribution of newborns according to Apgar score at 1 minute.

At five minutes, it was morbid in 1.17% of cases versus 0.98% of controls, with a significant statistical difference (p = 0.000). The score was between 5 and 7 with 4.38% of cases versus 3.14% of controls, with a significant statistical difference (p = 0.000).

4.3.6. Maternal Mortality

We noted twelve maternal deaths, five in cases (infection [2], eclampsia, anemia and HIV) and seven in controls (IPPH [3], post caesarean peritonitis [2], eclampsia and heart disease) with a non-significant statistical difference (p = 0.344). Iraqi B *et al.* [10] in Morocco and Collins OM [11] in French Guyana did not record any maternal deaths during their study period.

5. Conclusion

Childbirth in unmarried adolescents is associated with a poor prognosis. The use of contraceptive methods and high-quality antenatal, peripartum and postnatal care improve indicators of maternal and neonatal morbidity and mortality.

Conflicts of Interest

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

References

[1] OMS (1998) Maternité sans risque: Retarder les naissances. 1-3.

[2] Dadoorien, D (2005) Grossesse adolescents. Editions Eres, 136 p.

[3] Chineta, R., Michael, K. and William, L. (2002) Risk of Adverse Pregnancy Outcomes in Young Adolescent Parturient in an Inner-City Hospital. *American Journal of Obstetrics and Gynecology*, **186**, 918-920. https://doi.org/10.1067/mob.2002.123986

[4] Yattassaye, A. (1998) Grossesse chez les adolescentes à la maternité du CHU Gabriel Touré. Medical Thesis, Bamako, 83 p.

[5] WHO Technical and Financial Partners Recommend Implementation of an Emergency Plan to Improve Maternal and Newborn Health. Progress Report 2023.

[6] Institut national de la statistique (INSTAT/MPATP) INFO-STAT, ICF (2013) Enquête démographique et de santé du Mali 2012-2013. 577 p.

[7] Ongoiba, A. (199) Grossesse et accouchement chez l'adolescente à l'hôpital du Point G. Medical Thesis, Bamako, 95 p.

[8] Drabo, A. (2015) Teenage Pregnancy and Childbirth at the Commune II Referral Health Centre in the Bamako District. Master's Thesis, Bamako University of Science, Technology and Engineering. 65 p.

[9] Luhete, P.K., Mukuku, O., Tambwe, A.M., Kalenga, P. and Kayamba, M. (2017) Etude du pronostic maternel et périnatal au cours de l'accouchement chez l'adolescente à Lubumbashi, République Démocratique du Congo. *The Pan African Médical Journal*, **26**, Article 182.

[10] Iraqi, B., Knoun, H.I. and Barkat, A. (2013) Adolescent Pregnancy and Childbirth: Characteristics and Profile of 308 Cases. Rabat.

[11] Collin, O.M. (2018) Pregnancy and Childbirth in Adolescents under the Age of 16 in French Guyana. https://hal.univ-lorraine.fr/hal-01733967