

Mothers' Level of Schooling, Monitoring of Their Pregnancy and Perinatal Prognosis at the Reference Health Centre of Commune V of the District of Bamako

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Abstract

Introduction: The level of schooling of mothers is a determining factor in the follow-up of pregnancy and consequently the prognosis of childbirth and the quality of the newborn. **Objective:** The aim was to assess the impact of the level of education on the follow-up of their pregnancy and perinatal prognosis at the Reference Health Centre of Commune V of the District of Bamako. **Materials and Methods:** This was a prospective, cross-sectional and analytical study aimed descriptive from August 15 to December 15, 2021. We included in this study all pregnant women who had a gestational age of at least 22 weeks of amenorrhea and who gave birth or were received in the immediate postpartum period at the maternity ward of the Reference Health Center of Commune V. **Results:** Out-of-school parturients accounted for 60% of cases. Among the parturients in school, 18% had a higher level. In our study, 14.3% of women in labour knew the date of the last menstrual period. In our series, 100% of mothers in higher and secondary school had completed an antenatal consultation (CPN) compared to 90.7% in the out-of-school mothers. CPN1 was performed in the first trimester of pregnancy in 21.1% among out-of-school parturients compared to 83.5% among higher-level parturients. The number of NPCs was

greater than or equal to 4 in 47.9% of parturients. **Conclusion:** Women's schooling has an impact on their socio-economic conditions on the one hand and on the monitoring and prognosis of pregnancies on the other.

Keywords

Level, Schooling, Mothers, Aftercare, Pregnancy, Prognosis

1. Introduction

Because of its impact on demographic and health statistics, maternal and perinatal health represents a key indicator of the standard of living and development of populations. According to the World Health Organization (WHO), more than half a million women die each year from complications during pregnancy or childbirth [1]. Developing countries are the most affected by this state of affairs. In recent years, these countries have focused efforts on strategies to reduce maternal and perinatal morbidity and mortality through several axes, including that of the schooling of young girls, knowing its preventive impact on the occurrence of early pregnancies, pregnancy monitoring, perinatal prognosis. Indeed, several studies agree that the level of schooling of mothers is a determining factor in the follow-up of pregnancy and consequently the prognosis of childbirth and the quality of the newborn [2]. Studies carried out in Africa on the subject have reported on the one hand that women's level of education is a factor favouring the use of antenatal care services, as in the case of Bakouan in 2011 in Burkina Faso [3] and in Cameroon in 2017 on constraints on access to maternal health care [4]. In Mali, according to the Demographic and Health Survey IV (DHS) [5] conducted in 2006, the higher the mother's level of education is all the more frequent: 96% of mothers who have reached at least secondary education go to prenatal consultation with a health professional compared with 87 percent of those with primary or basic education and only 67 percent of out-of-school mothers. Referring to the WHO report (2015), only 64% of women worldwide receive antenatal care at least four times during pregnancy [6]. In Africa, the proportion of pregnant women who made at least all four antenatal visits varies by country, 87.4% in Ghana in 2014, 78% in Gabon in 2012, 48% in Senegal in 2012, 57% in Guinea in 2012 and 33% in Niger in 2012 [7]. In Mali, 41% of pregnant women made at least four visits during pregnancy, 25% of whom made the first visit in the first trimester [8]. Schooling is considered the main channel for the dissemination of modern values in developing countries. It forms the personality of the individual and is in itself a health intervention.

2. Objectives

The aim was to assess the impact of educational attainment on pregnancy follow-up and perinatal prognosis.

3. Materials and Methods

This was a prospective, cross-sectional and analytical study for descriptive purposes that took place at the maternity ward of the Reference Health Center of Commune V from August 15, 2017 to December 15, 2021. Our study focused on women and their newborns in the immediate postpartum period at the Reference Health Center of Commune V of Bamako. The sample consisted of all parturient women who had given birth or had been referred in the immediate postpartum period and their newborns at the Reference Health Center of Commune V from which the data were collected. We included in this study:

- All pregnant women with a gestational age of at least 22 weeks of amenorrhea;
- All parturients who have given birth or be received in the immediate postpartum period and their newborns at the Reference Health Center of Commune V.

We excluded from this study:

- Cases of expulsion of the product of conception before 22 weeks of amenorrhea;
- Cases of prophylactic caesarean sections and all parturients received in the late postpartum period.

A questionnaire was developed and validated followed by a pre-test before application to parturients. During our investigation we used three (03) sources of information based on the interrogation of the parturients itself, their CPN notebook and obstetrical records. Health authorities were briefed on all aspects of the protocol prior to the start of the investigation. All respondents were informed of the purpose of the study with a view to obtaining individual and informed consent on the one hand and to guarantee the confidentiality of the information to be collected on the other. Similarly, voluntary participation in the survey was preferred for data collection. The information collected has not been and will not be used for any other purpose. Data were entered and analyzed with SPSS 21.0, word processing with Microsoft Office Excel and Microsoft Office Word 2013. For the crossing of variables, we used the test (Pearson's Chi square) to conclude whether or not there was a relationship between the variables with a significant probability if $p < 0.05$.

4. Results

Our study involved a comprehensive sample of 1117 pregnant women. Female parturients in school had primary education 51.3% of cases. Housewives were the most represented 60.7%, followed by shopkeepers with 13.3%, female students with 11%, female employees with 9% and others with 6%. The pauciparous were the most represented with 37%, followed by the primiparous with 29%, the multiparous with 26.4% and the large multiparous with 7.6%. Pregnant women had a notion of contraceptive use in 41% of cases. The pregnant women had carried out the antenatal consultation in 41% of cases. Pregnant women do not

know the date of their last period in 86% of cases. Mothers were out of school in 60% of cases. The 20 to 29 age group was the most represented (51.4%). The epidemiological aspects are presented in **Figures 1-3**.

Clinical aspects

The pregnant had carried out at least 4 antenatal consultations in 48% of cases.

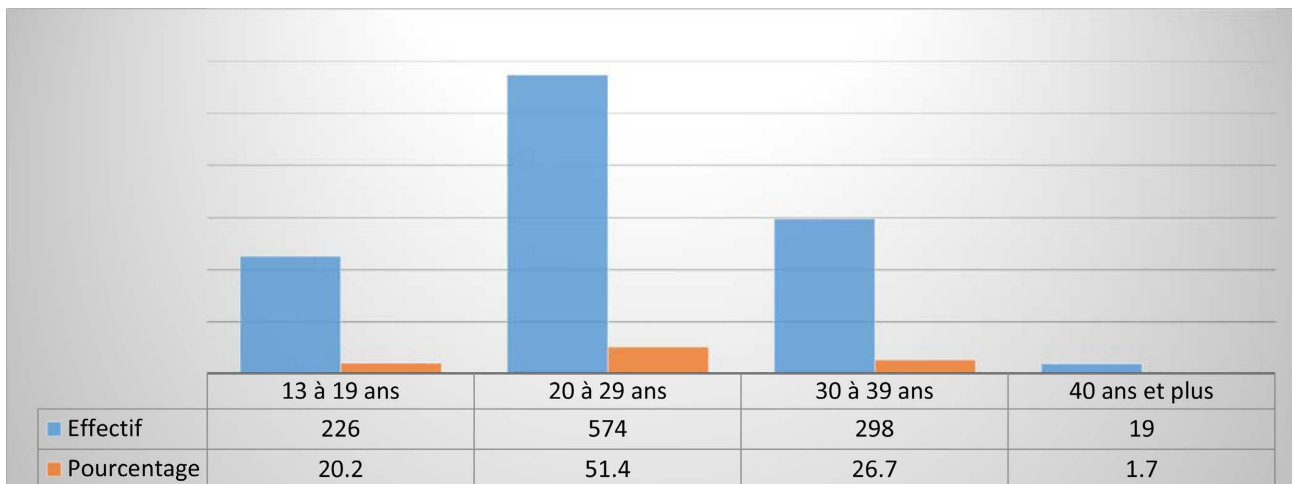


Figure 1. Distribution of mothers by age group.

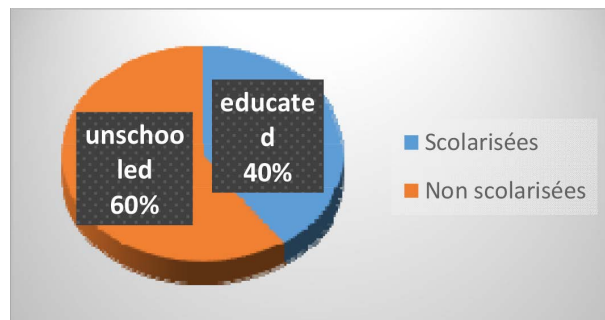


Figure 2. Distribution of mothers by school enrolment.

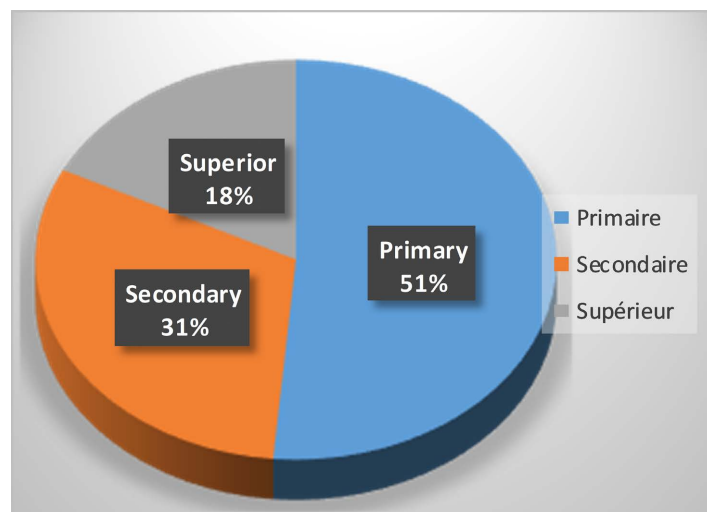


Figure 3. Distribution of mothers in school by level of education.

Pregnant women had performed their first NPC in the second trimester in 45% of cases, in the first trimester in 36% of cases and in the third trimester in 19% of cases. In our study, 78.8% of pregnant women had performed an obstetric ultrasound, 83.3% had performed blood grouping and rhesus factor and 82.9% had performed urine strip. Pregnancy pathology occurred in 33.8 of the pregnant women. Pregnancy was full-term in 87.7% of pregnant women, non-term in 10.7% and post-term in 1.7%. In our study 77% of pregnant women were self-employed, 22% had been evacuated and 1% were referred. Painful uterine contractions were the most represented reason for admission, 67% of cases, followed by fluid loss (7.4), bleeding during pregnancy (7.1%), stationary dilation (4.7), hypertension (2.9%), lack of expulsive effort (2.5%). In our series, 58.8% of parturient women were in active labour at admission, 24.6% in the latent phase, 10.3% in the expulsive period. Parturients had a complication in the immediate aftermath of childbirth in 31% of cases compared to 69% who had not presented a complication. Immediate postpartum hemorrhage was the main complication with a frequency of 46%. Uterine atony was the leading cause of postpartum hemorrhage with a frequency of 43.5%. In the study, 94% of newborns were alive at discharge from maternity compared to 6% who had died. Newborns had a weight of less than 2500 g in 17% of cases, a point between 2500 and 4000 g in 78% of cases and a weight greater than 4000 g in 5% of cases. Newborns had been referred to paediatrics in 29% of cases against 71% of non-referrals. These clinical aspects are presented in **Table 1**.

Aspects on correlations between level of education and pregnancy follow-up.

Housewives were the most represented in the group of out-of-school mothers with 77% of cases. The difference in proportions was statically significant with a probability $P < 0.05$. A significant proportion of 11.1% of mothers in the out-of-school group had all achieved more than 6 parities. Upper school birth patients accounted for the largest proportion of contraceptive users, at 81%. The difference between the proportions was statically significant with the probability $P < 0.05$. The first ultrasound was performed in the first trimester of pregnancy by the majority of parturients enrolled in higher education, *i.e.* 91.0% of cases. 100% of mothers enrolled in higher and secondary school respectively had achieved. Women in higher education had the highest proportion of pregnancies at term, at 94.9% of cases. The occurrence of an immediate postpartum complication was also inversely proportional to the educational attainment of women in labour with probability $P < 0.05$. The proportion of low birth weight was inversely proportional to the educational attainment of parturient women with a significant probability $p < 0.05$. The number of newborn referral cases was statically inversely proportional to the educational attainment of parturient women with a probability $P < 0.05$. Aspects of correlations between educational attainment and pregnancy follow-up are shown in **Tables 2-4** and **Figure 4**.

Table 1. Distribution of mothers by number of antenatal consultations (CPN).

| | Actual | Percentage (%) |
|---|---------------|-----------------------|
| Number of NPCs | | |
| 0 CPN | 65 | 5.8 |
| 1 NPC | 118 | 10.6 |
| 2 - 3 NPC | 399 | 35.7 |
| ≥to 4 CPN | 535 | 48.0 |
| Total | 1117 | 100 |
| Reason for admission | | |
| CUD | 748 | 67.0 |
| Fluid loss | 83 | 7.4 |
| Bleeding on pregnancy | 79 | 7.1 |
| Stationary dilation | 52 | 4.7 |
| HTA | 29 | 2.6 |
| Lack of expulsive effort | 28 | 2.5 |
| Fetal distress | 12 | 1.1 |
| Eclampsia attacks | 12 | 1.1 |
| Anaemia | 10 | 0.9 |
| Cord process | 12 | 0.6 |
| Other | 57 | 5.1 |
| Total | 1117 | 100 |
| Type of complication Sequences of layers | | |
| Postpartum hemorrhage | 159 | 46.0 |
| Eclampsia | 14 | 4.0 |
| Anaemia | 86 | 25.0 |
| HTA | 82 | 24.0 |
| Infection | 4 | 1.0 |
| Total | 345 | 100 |
| Causes of postpartum hemorrhage | | |
| Uterine atony | 20 | 43.5 |
| Placental retention/debris | 08 | 17.3 |
| Vaginal tears | 11 | 24.0 |
| Uterine rupture | 07 | 15.2 |
| Bleeding disorder | 00 | 00.0 |
| Total | 46 | 100 |

Table 2. Aspects of correlations between level of education and pregnancy follow-up.

| Profession | Educational attainment | | | | Total | P |
|----------------------------|------------------------|-------------------|-----------------|------------------|------------|----------------------------|
| | Primary | Secondary | Upper | None | | |
| Housewife | 117 (50.9%) | 44 (31.7%) | 2 (2.5%) | 515 (77%) | 678 | <10⁻³ |
| Merchant | 24 (10.4%) | 10 (7.2%) | 0 (0%) | 115 (17.2%) | 149 | <10 ⁻³ |
| Student | 52 (22.6%) | 17 (12.2%) | 54 (68.4%) | 0 (0%) | 123 | <10 ⁻³ |
| Official | 17 (7.4%) | 60 (43.2%) | 22 (27.8%) | 1 (0.1%) | 100 | <10 ⁻³ |
| Other | 20 (8.7%) | 8 (5.8%) | 1 (1.3%) | 38 (5.7%) | 67 | 0.099 |
| Total | 230 (100) | 139 (100) | 79 (100) | 669 (100) | 1117 (100) | |
| Parity | | | | | | |
| Primiparous | 85 (37%) | 42 (30.2%) | 40 (50.6%) | 158 (23.6%) | 325 | <10 ⁻³ |
| Paucipare | 85 (37%) | 71 (51.1%) | 31 (39.2%) | 225 (33.6%) | 412 | 0.002 |
| Multiparous | 50 (21.7%) | 25 (18%) | 8 (10.1%) | 212 (31.7%) | 295 | <10 ⁻³ |
| Large multiparous | 10 (4.3%) | 1 (0.7%) | 0 (0%) | 74 (11.1%) | 85 | <10 ⁻³ |
| Total | 230 (100) | 139 (100) | 79 (100) | 669 (100) | 1117 (100) | |
| Realization of CPNs | | | | | | |
| Yes | 227 (98.7%) | 139 (100%) | 79 (100%) | 607 (90.7%) | 1052 | <10 ⁻³ |
| No | 3 (1.3%) | 0 (0%) | 0 (0%) | 62 (9.3%) | 65 | <10 ⁻³ |
| Total | 230 (100) | 139 (100) | 79 (100) | 669 (100) | 1117 (100) | |

Table 3. Aspects on correlations between level of education and pregnancy follow-up.

| | Educational attainment | | | | Total | P |
|---------------------------------------|------------------------|-------------|------------|-------------|------------|-------------------|
| | Primary | Secondary | Upper | None | | |
| Date 1st ultrasound | | | | | | |
| 1 st Quarter | 96 (44.4%) | 89 (65%) | 71 (91%) | 93 (20.7%) | 349 | <10 ⁻³ |
| 2 nd quarter | 98 (45.4%) | 44 (32.1%) | 7 (9%) | 226 (50.3%) | 375 | <10 ⁻³ |
| 3 rd quarter | 22 (10.2%) | 4 (2.9%) | 0 (0%) | 130 (29%) | 156 | <10 ⁻³ |
| Total | 216 (100) | 137 (100) | 78 (100) | 449 (100) | 880 (100) | |
| Term of pregnancy | | | | | | |
| Eventually. | 209 (90.9%) | 129 (92.8%) | 75 (94.9%) | 567 (84.8%) | 980 | 0.002 |
| No in the long term | 19 (8.3%) | 5 (3.6%) | 3 (3.8%) | 92 (13.8%) | 119 | <10 ⁻³ |
| Post-term | 2 (0.9%) | 5 (3.6%) | 1 (1.3%) | 10 (1.5%) | 18 | 0.23 |
| Total | 230 (100) | 139 (100) | 79 (100) | 669 (100) | 1117 (100) | |

5. Discussion

Our study involved an exhaustive sample of 1117 pregnant women. Difficulties were encountered, especially in data collection. These difficulties were related to

Table 4. Aspects on correlations between level of education and pregnancy follow-up.

| | Educational attainment | | | | Total | P |
|--------------------------------------|------------------------|-------------|------------|-------------|------------|-------------------|
| | Primary | Secondary | Upper | None | | |
| Complication of diaper suites | | | | | | |
| Yes | 47 (20.4%) | 16 (11.5%) | 9 (11.4%) | 273 (40.8%) | 345 | <10 ⁻³ |
| No | 183 (79.6%) | 123 (88.5%) | 70 (88.6%) | 183 (59.2%) | 772 | <10 ⁻³ |
| Total | 230 (100) | 139 (100) | 79 (100) | 669 (100) | 1117 (100) | |
| Newborn weight (g) | | | | | | |
| <2500 | 27 (11.7) | 12 (8.6) | 6 (7.6) | 146 (21.8) | 191 | <10 ⁻³ |
| [2500 - 4000] | 194 (84.3) | 118 (84.9) | 68 (86.1) | 490 (73.2) | 870 | <10 ⁻³ |
| >4000 | 9 (3.9) | 9 (6.5) | 5 (6.3) | 33 (4.9) | 56 | 0.687 |
| Total | 230 (100) | 139 (100) | 79 (100) | 669 (100) | 1117 (100) | |
| Newborn reference | | | | | | |
| Yes | 49 (21.3%) | 29 (20.9%) | 11 (13.9%) | 231 (34.5%) | 328 | <10 ⁻³ |
| No | 181 (78.7%) | 110 (79.1%) | 68 (86.1%) | 438 (65.5%) | 789 | <10 ⁻³ |
| Total | 230 (100) | 139 (100) | 79 (100) | 669 (100) | 1117 (100) | |

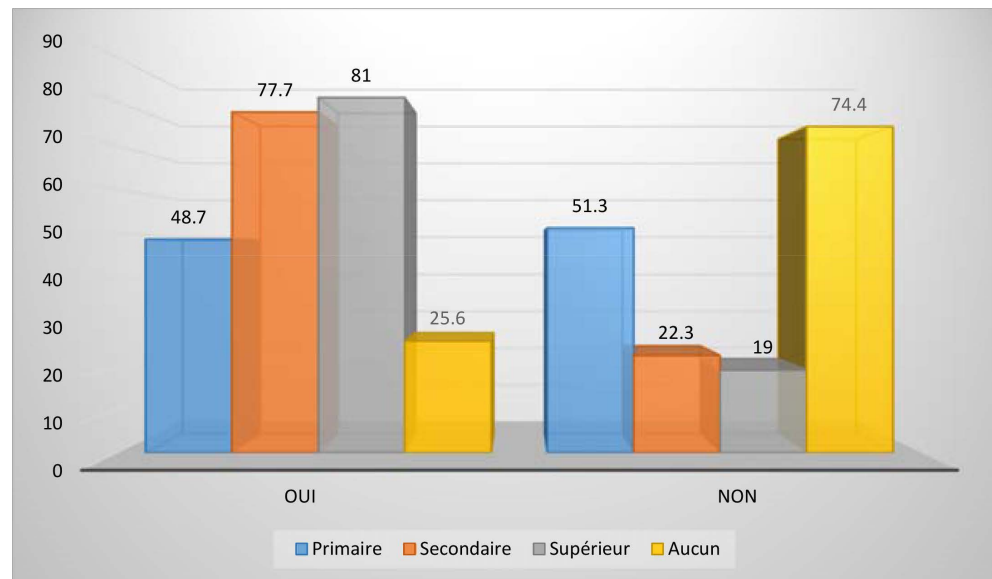


Figure 4. Relationship between mothers' educational attainment and contraceptive concept.

the low level of education of parturient women unable to provide complete information on the course of pregnancy. It should also be noted that the social and health workers fill in the poor filling of the media upstream (CPN booklets, reference sheets and medical records). The 20 - 29 age group was the most represented with a frequency of 51.4%. This result is similar to that of Sagara J. who had found 50.2% [9]. This percentage could be explained by the fact that it is the most sexually active age group.

In 60% of cases, women in labour were out of school. Of the women in child-birth, only 18 per cent had reached a higher level. Maïga A. found that 55.5% of pregnant women were out of school and 9% of pregnant women in school had a higher level [10]. This result would accurately reflect the problem of girls' schooling in developing countries. Housewives were the most represented in our study, 60.7% against 13.3% of shopkeepers. Our result is different from that of Maïga A. who found 83.5% of housewives and 1.5% of female employees [10]. Depending on the level of education, housewives accounted for 77% of out-of-school mothers compared to 2.5% of mothers in higher education. In terms of parity, educational attainment was inversely proportional to the number of deliveries. Our parturients were pauciparous in 37% of cases or 33.6% of mothers not in school against 39.2% for mothers in higher education. This result was lower than that of Gbessemehlan A. who had found 48.4% of the palms [11]. These results could be explained that although in Africa men can be identified by the number of children, women today by their level of education seem to be aware of the high risks associated with multiparity. Our parturients had a notion of family planning use at 25.6% in the group of out-of-school mothers compared to 81% for mothers in higher education with an overall proportion of 41% of the sample. Bakouan E. in Burkina Faso [3] found that 44% of pregnant women surveyed had used a contraceptive method before pregnancy. These results would testify to the positive influence of educational attainment on the use of family planning services, which is an important and effective measure for reducing maternal and neonatal mortality [12]. The majority of parturients had performed at least one NPC or 94%. This rate is much higher depending on the level of education; 100% of mothers in higher and secondary school had achieved at least one NPC compared to 90.7% of out-of-school mothers. School enrolment appears to play a positive role in adherence to antenatal consultations. Our results are comparable to those of the DHS-MICS4 survey [13] which revealed in 2010-2011 that 60% of women with no level of education had received antenatal care during pregnancy, compared with 89% of women with primary education and at least 98% when the mother has secondary or higher education. CPN1 was performed in the first trimester of pregnancy at 36.3% with only 21.1% in the out-of-school group compared to 83.5% in the parturient school group. These results are far superior to those of Bakouan E. [3] which had found that educated women who came to CPN1 in the 1st trimester of pregnancy were 24.66% against 12.22% for the uneducated. Women in school appear to seek antenatal services early. Thus, delay in CPN1 is a limiting factor for proper monitoring of pregnancy [12].

The number of NPCs was greater than or equal to 4 in 47.9% of parturients. This result was higher than those of the EDSV [8] which had found 28% and the authors of the DHS 2003 [14] had found that the frequency of NPC was a function of educational level. In our study, only 29.9% of out-of-school women had completed 4 or more CPNs compared to 92.4% of those at the higher level. Only 14.3% of our parturient women knew the date of their last period but with a slightly high proportion in the group of schoolgirls. It was 3.1% in the group of

out-of-school mothers compared to 48.1% of those at higher level. Traoré I. [15] had found 21.5%. This low rate would be linked to the fact that the majority of our pregnant women (60%) were out of school and with an early dropout of studies in 51.3% of cases since primary level. In our study 78.8% of parturient women had performed an ultrasound during pregnancy, which was higher than those of Traoré I. [15] which had yielded 46.5%. This difference could be explained by the increasing interest of health workers and pregnant women in this examination. The latter is essential in more ways than one for a good follow-up of the pregnancy. However, the first ultrasound was performed in the first trimester by 39.7% of our parturients. Compared to performing biological examinations during pregnancy, 83.3% of our parturients had groupage/rhesus at admission. Goita N. [16] reported that 99% of respondents had performed groupage/rhesus. This would be explained by the fact that women are gradually becoming aware of the interest of these so-called routine examinations during NPCs. In 33.8% of cases, a pathology had occurred during pregnancy and 10.2% of parturients had experienced hospitalization during pregnancy. The difference was statistically significant with a probability $p < 0.05$ in both cases according to the educational attainment of the parturients. This further proves that educational attainment is a factor in preventing disease. Depending on the low birth weight of the newborn (weight < 2500 g), out-of-school mothers occupied the first place with 21.8%. This proportion was inversely proportional to the level of education of parturient women with a statistically significant difference in proportions with $P < 0.05$. It was 21.8% in the group of out-of-school mothers compared to 7.6% of mothers in higher education. A 2015 study reported that women without any degree have a higher risk (50%) of giving birth to a low-weight newborn than those with a high school degree [17]. The high proportion of low birth weight of newborns among out-of-school parturients is due to nutritional insufficiency, a consequence of the precariousness often among these parturients. In our study, 35.7% of newborns of out-of-school mothers were referred compared to 13.9% of mothers with higher education. In addition, 94% of newborns had been released alive to the maternity ward. There was a statically significant difference in proportion with probability, $P < 0.05$ in (02) cases. In 31% of cases, a complication occurred in the immediate post-diaper period. Among maternal complications occurring in the immediate postpartum period, postpartum hemorrhage occupied the first place with 46.1% of cases followed by anemia and hypertension at 24.9% and 23.8% respectively. Our results were different from those of Fomba D.D. at the CHU Gabriel TOURE (Mali) [18] who had found that high blood pressure occupied 76% of cases followed by anemia 10% and hemorrhages of delivery 6% of cases. This difference could be explained by the fact that the CHU Gabriel TOURE which is a level III reference center is much more solicited for the management of high-risk pregnancies with their complications. However, we recorded one case of maternal death, a frequency of 0.08%. This is a 19-year-old parturient, not in school, married, 2nd gesture, primiparous, 1 abortion, evacuated by a Community Health Center for

immediate postpartum hemorrhage. It had not produced a CPN. She had been received at the Reference Health Center of Commune V in a table of hypovolemic shock by immediate postpartum hemorrhage.

The limits: This survey allowed us to note that women's schooling has an impact on their socio-economic conditions on the one hand and on the follow-up and prognosis of pregnancies on the other.

In order to support these findings, it would be desirable to consider a multi-centre study integrating other urban health structures and those in rural areas (where the proportion of women who have never attended school is considerable). In addition, other criteria such as the quality of antenatal consultations, high-risk deliveries (mothers referred to higher-level health facilities), the fate of the mother-newborn couple in the week following delivery should be integrated in order to better understand the impact of educational attainment on maternal and perinatal health.

6. Conclusion

Women's schooling has an impact on their socio-economic conditions on the one hand and on the monitoring and prognosis of pregnancies on the other.

Conflicts of Interest

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

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