

# Maternal Fetal Prognosis: Pregnancy and Delivery in Women of 40 Years Old and Over in a Second Reference Hospital in Bamako

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## Abstract

**Introduction:** Late pregnancies are considered a public health problem linked to maternal mortality due to their complications. These risks, which worsen with maternal age, should be better known and taken into account in monitoring these pregnancies. **Objective:** To evaluate the impact of age on the prevalence of obstetric and neonatal complications among parturients of 40 years old and over. **Methodology:** This was an 11-year retrospective analytical case control study from January 1, 2007 to December 31, 2017. The study population was female patients of 40 years old or older for cases and female patients younger than 40 years of control case. **Results:** In total, we collected 640 cases of parturients of 40 years old and over out of a total of 84,234 deliveries during the study period; *i.e.* a frequency of 0.76%. Spontaneous abortion increased in patients of 40 and over with 8.28%. Hypertension and diabetes were higher of women of 40 and over, 52.65%. Concerning the method of admission: 55% of parturients of 40 and over were referrals. Incidents occurring among women of 40 and over were more pronounced than in control cases. Complications during vaginal delivery, cervical tear, perineal tear, uterine dehiscence and uterine rupture are high in our cases, *i.e.* 11.88%; 3.59%; 2.19%; 2.66. During our study, depending on the type of delivery, the

cesarean rate was much higher among women of 40 and over than among control cases, *i.e.* 54.22% versus 12.24%. Hemorrhages in the 3rd trimester were the main indications for cesarean section. Hemorrhages in the 3rd trimester were more frequent with women of 40 and over, *i.e.* 10.47%; 5.94% versus 1.74% and 0.42%. As for the different types of malformations in parturients, women under 40 years old fetal malformations were absent in 92.29%, on the other hand they were more frequent in patients with 40 years and over, *i.e.* a normal frequency of 36.72%. **Conclusion:** Pregnancy at a late age exposes the elderly patient and the newborn to several risks. During this study, an increase in maternal-fetal morbidity was observed with aged women.

## Keywords

Advanced Maternal Age, Childbirth, Risk, Mali

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## 1. Introduction

Advanced maternal age is traditionally considered to be an age above 35 years at childbirth, which, in fact, constitutes the reference age for most studies. The proportion of women with an advanced age at childbirth is steadily increasing, with an increase in the number of very elderly women, beyond 40 years old [1]. According to the demographic report published by INSEE in 2008, the average age of women at maternity in France is approaching 30 years. [2]. Likewise, the proportion of children born to mothers of 40 or over is increasing steadily, representing almost 4% of births in 2014 [2]. Women over the age of 40 have a high risk of gestational diabetes, preeclampsia, as well as thromboembolic complications [3]. Above 45 years old, there is an increased risk of hypertension, proteinuria, preeclampsia, premature rupture of membranes, second and third trimester hemorrhage, placenta previa or accreta, premature delivery and low birth weight [3]. A woman from 40 to 44 years old is four times more likely to give birth by cesarean than a woman of 20 to 29 years old, and a woman over 45 is 32 times more likely. The risk of placenta previa is six times higher for women from 40 to 44 years old and thirteen times higher for women over 44 [3]. These risks, which worsen with maternal age, should be better known, taken into account in monitoring these pregnancies and communicated to patients so as not to excessively trivialize these late pregnancies [3]. In addition, studies have demonstrated an increase in obstetric and perinatal risks linked to pregnancy in elderly women. To better understand this phenomenon in our context, we initiated a study whose aim is *to evaluate the impact of age on the prevalence of obstetric and neonatal complications among parturients aged 40 and over.*

## 2. Methodology

Our study took place in the gynecology-obstetrics department of the reference health center of commune VI of the Bamako district. The maternity ward of the

reference health center of commune VI is a level II maternity ward.

\*The variables studied were age, socio-professional level—method of admission.

\*Etiopathogenic factors (—Obstetric history: gestation, Parity, living, abortions, Associated medical pathology: hypertension, diabetes, Gestational age, Pathology linked to pregnancy, progress of the pregnancy, accidents during labor, fetal presentation, mode of delivery, characteristics of the newborn, maternal and infant morbidity and mortality). This was an 11-year retrospective analytical case control study from January 1, 2007 to December 31, 2017. The study population was female patients of 40 years or older for cases and female patients younger than 40 of control case. During the study period we recorded 640 cases. Data were collected on a survey form for each patient selected. Data collection was carried out from delivery registers, medical files, and operative report registers. The data was collected on a survey form; entered into Microsoft Word 2016 and Excel 2016 software and analyzed using “Epi info 6” software. The statistical tests used for the comparison of variables were the Chi square test, as well as the Fisher exact test (two-tailed) when one of the expected values was less than 5. Significance was retained for a “p” value less than 5% ( $p < 0.05$ ).

### 3. Results

#### 3.1. Frequency

In total, we collected 640 cases of parturients aged 40 and over out of a total of 84,234 deliveries during the study period; *i.e.* a frequency of 0.76%.

#### 3.2. Sociodemographic Characteristics

During our study, the majority of parturients on both sides were housewives, *i.e.* 73.24% versus 81.25%, and with married marital status, a majority of both populations 97.60% versus 92.35%.

Concerning gynecological-obstetric history and medical history: Spontaneous abortion increased in patients of 40 and over with 8.28% compared to 3.82% in those under 40. Hypertension and diabetes were higher among women of 40 years old and over 52.65% and 21.41% compared to 1.60% and 0.52% among those under 40. *The data are in Table 1.*

#### 3.3. Gynecological-Obstetric and Medical History

**Table 1.** Distribution according to gynecological-obstetric and medical history.

Background	15 to 39 years old		40 years and over		P
	Number	Frequency	Number	Frequency	
Gynecological-obstetric history					
Induced abortion	998	1.19	08	1.25	0.896
Spontaneous abortion	3198	3.82	53	8.28	$p < 10^{-3}$

**Continued**

Cystectomy	467	0.56	56	8.75	$p < 10^{-3}$
Myomectomy	1476	1.76	88	13.75	$p < 10^{-3}$
Placenta previa	1453	1.74	95	14.84	$p < 10^{-3}$
HRP	1203	1.74	65	10.16	$p < 10^{-3}$
GEU	641	0.77	23	3.59	$p < 10^{-3}$
Pathological pregnancy	5341	6.39	171	26.72	$p < 10^{-3}$
Pelvipерitonitis	55	0.06	03	0.47	$p < 10^{-3}$
None	68,762	82.26	78	12.19	$p < 10^{-3}$
Total	83,594	100	640	100	
Medical history					
Asthma	216	0.26	22	3.44	$p < 10^{-3}$
Sickle cell disease	345	0.41	37	5.78	$p < 10^{-3}$
Diabetes	432	0.52	137	21.41	$p < 10^{-3}$
HT	1342	1.60	337	52.65	$p < 10^{-3}$
None	81,259	97.21	107	16.72	$p < 10^{-3}$
Total	83,594	100	640	100	

**3.4. The Method of Admission**

Regarding the method of admission: 55% of parturients of 40 years old and over were references compared to 11.08% of control cases. And depending on the term of the pregnancy at the last PNC, the majority of control cases reach 37 weeks and more unlike our cases, *i.e.* 73% against 12.96%.

**3.5. Parity and Gestity**

In our series the majority of large multi-gestures were those of 40 and over, *i.e.* 55.31% compared to 13.16%. Among these 60.31% were grand multiparous unlike the control cases of which 22.67% were grand multiparous.

**3.6. The Number of PNC**

During our study, it appears that the number of PNC was high in patients under 40 years old with 3 PNC on average than in women of 40 years old and over, *i.e.* 72.03% compared to 22.65%.

**3.7. Incidents Occurring during the 1st Trimester, 2nd Trimester, or 3rd Trimester of Pregnancy**

Concerning incidents occurring during the 1st trimester, 2nd trimester, or 3rd trimester of pregnancy: Incidents occurring in women of 40 years old and over were more pronounced than in control cases. *The data are in Table 2.*

**3.8. State of the Basin and Presentation**

Concerning, the pelvis was normal in both ribs, *i.e.* 83.57% against 68.75%. Depending on the fetal presentation in the 3rd trimester, the vertex presentation

**Table 2.** Distribution according to incidents occurring during the 1st trimester, 2nd trimester, or 3rd trimester of pregnancy.

Incidents	15 to 39 years old		40 years and over		P
	Number	Frequency	Number	Frequency	
Incidents occurring during the first trimester of pregnancy					
Clear egg pregnancy	302	0.36	26	4.06	$p < 10^{-3}$
Molar pregnancy	134	0.16	08	1.25	$p < 10^{-3}$
Vomiting during pregnancy	1321	1.58	06	0.94	$p < 10^{-3}$
Ovular detachment	540	0.65	49	7.66	$p < 10^{-3}$
GEU	55	0.07	05	0.78	$p < 10^{-3}$
Spontaneous abortion	51	0.06	11	1.72	$p < 10^{-3}$
Induced abortion	745	0.89	00	00.00	$p < 10^{-3}$
Cervico-isthmic gape	723	0.86	38	5.94	$p < 10^{-3}$
None	79,723	95.37	499	77.97	$p < 10^{-3}$
Total	83,594	82.26	640	12.19	$p < 10^{-3}$
Incidents occurring during the 2nd trimester of pregnancy					
Urinary infection	942	1.13	33	5.16	$p < 10^{-3}$
Cervical gape	356	0.42	36	5.63	$p < 10^{-3}$
Threat of abortion	188	0.22	23	3.59	$p < 10^{-3}$
Threat of premature birth	266	0.32	39	6.09	$p < 10^{-3}$
Anemia	156	0.19	16	2.50	$p < 10^{-3}$
Pregnancy vomiting	398	0.48	05	0.78	$p < 10^{-3}$
Diabetes	81	0.10	46	7.19	$p < 10^{-3}$
Metrorrhagia	1054	1.26	73	11.72	$p < 10^{-3}$
None	80,153	95.88	367	57.34	$p < 10^{-3}$
Total	83,594	100	640	100	
Incidents occurring during the 3rd quarter					
Placenta previa	745	0.89	46	7.19	$p < 10^{-3}$
HRP	350	0.42	58	9.06	$p < 10^{-3}$
MAP	410	0.49	39	6.09	$p < 10^{-3}$
Urinary infection	741	0.89	33	5.16	$p < 10^{-3}$
Metrorrhagia	928	1.11	75	11.72	$p < 10^{-3}$
Diabetes	45	0.05	46	7.19	$p < 10^{-3}$
Pre-eclampsia	356	0.43	11	1.72	$p < 10^{-3}$
Eclampsia	213	0.25	01	0.15	$p < 10^{-3}$
Premature delivery	2250	2.69	123	19.22	$p < 10^{-3}$
None	77,556	92.78	208	32.50	$p < 10^{-3}$
Total	83,594	100	640	100	

was the most represented, *i.e.* 25.47% in our case and 91.39% of control cases. This study showed the absence of fetal heart sounds in women of 40 years old and over was higher than that of control cases, *i.e.* 0.41% versus 12.19%. With an Apgar 0 at the 1st minute and at the 5th minute was higher in those of 40 years old and over than the control cases, *i.e.* 12.19% compared to 0.41%.

### 3.9. Complications during Vaginal Delivery and Types of Malformation

Complications during vaginal delivery, cervical tear, perineal tear, uterine dehiscence and uterine rupture are high in our cases, *i.e.* 11.88%; 3.59%; 2.19%; 2.66% versus 0.56%; 0.70%; 0.07%; 0.06% of control cases. As for the different types of malformations in parturients, women under 40 years old fetal malformations were absent in 92.29%, on the other hand they were more frequent with patients of 40 years and over, *i.e.* a normal frequency of 36.72%.

### 3.10. Presentation in the 3rd Trimester of Pregnancy, the Route of Delivery, the Main Indications for Cesarean Section

During our study, depending on the type of delivery, the cesarean section rate was much higher among women of 40 years old and over than among control cases, *i.e.* 54.22% versus 12.24%. Hemorrhages in the 3rd trimester were the main indications for cesarean section. 3rd trimester hemorrhages were more frequent among women of 40 years old and over, *i.e.* 10.47%; 5.94% versus 1.74% and 0.42%. *The data are in Table 3.*

**Table 3.** Distribution according to presentation in the 3rd trimester of pregnancy, the route of delivery the main indications for cesarean section.

	15 to 39 years old		40 years and over		P
	Number	Frequency	Number	Frequency	
Fetal presentation in the 3rd trimester					
Summit	76,398	91.39	163	25.47	$p < 10^{-3}$
Seat	835	1.00	141	22.03	$p < 10^{-3}$
Transverse	77	0.09	68	10.63	$p < 10^{-3}$
Face/forehead	244	0.29	67	10.47	$p < 10^{-3}$
Others	6040	7.23	199	31.09	$p < 10^{-3}$
Total	83,594	100	640	100	
Indications for cesarean section					
Boundary basin	5589	6.69	11	1.72	$p < 10^{-3}$
BGR	2791	3.22	03	0.47	$p < 10^{-3}$
Flattened pelvis	23	0.03	01	0.15	$p < 10^{-3}$
Presentation of the front	128	0.15	33	5.16	$p < 10^{-3}$
Presentation of the face	116	0.14	35	5.47	$p < 10^{-3}$
Presentation of the headquarters	835	1.00	101	15.78	$p < 10^{-3}$

**Continued**

Transversal presentation	77	0.09	67	10.47	$p < 10^{-3}$
RPM	1002	1.20	42	6.56	$p < 10^{-3}$
PP	1453	1.74	67	10.47	$p < 10^{-3}$
Hemorrhage	56	0.07	02	0.31	$p < 10^{-3}$
HRP	350	0.42	38	5.94	$p < 10^{-3}$
Pro ulna of the cord	677	0.81	23	3.59	$p < 10^{-3}$
Normal	64,457	77.11	18	2.81	$p < 10^{-3}$
Others	6040	7.23	199	31.09	$p < 10^{-3}$
Total	83,594	100	640	100	
The type of delivery					
Low way	67,323	80.53	94	14.69	$p < 10^{-3}$
High way	10,231	12.24	347	54.22	$p < 10^{-3}$
Others	6040	7.23	199	31.09	$p < 10^{-3}$
Total	83,594	100	640	100	

**4. Discussion**

We carried out a retrospective, descriptive and cross-sectional study over a period of 132 months (January 1, 2007 to December 31, 2017) on all cases of pregnancy and childbirth among women of 40 years old and over admitted to the gynecology and obstetrics department of the reference health center in commune VI of the Bamako district. This type of study over a long period makes it possible to take stock of a given question in a given environment, during a given period, taking into account the realities on the ground. The data collection carried out retrospectively for such a large sample was very restrictive and required close collaboration between several students and a supervisor for at least 12 months for this phase of finalizing the file. During this study we encountered certain difficulties, the main ones being: the loss of the files of certain parturients, incomplete information in certain files, the tearing and obsolescence of certain registers, which complicated our study.

**4.1. Pregnancy Frequency**

During the period of this study conducted, the total number of pregnant women was 84,234 or 9.37%, among which 83,594 parturients were under 40 years old and 640 parturients were 40 years old and over, or 0.76%. During our study, we recorded a frequency of 0.76%, this rate is similar to that of Yogev *et al.* [4] which was 0.2%. But is lower than those of others found in the literature, thus Dao SZ [5], Loué V *et al.* [6], ZONGO Georges Fructueux [7], Cyrielle Cuvillier [8] had respectively found a frequency of 1.68%; 2.8%; 2.81%; and 3.17%. This low rate can be explained by a natural drop in fertility at this period of genital life probably linked to ovulation disorders [2].

## 4.2. Characteristics of Pregnancy

Spontaneous miscarriage: the frequency of abortion is 8.28% in our study. This rate is much lower than the results of other studies; Dao SZ, a Danish study [5] [9] [10], which respectively found 15% and 54% miscarriage, while the overall risk is 8% at 22 years [3]. In our study, there is no associative link between the occurrence of ectopic pregnancy and maternal age, *i.e.* OR = 0.08 [0.03 - 0.21]. This result would be similar to that of Cissé MI in Benin [11]. But this result is contrary to that of Hook EB [12], who found that maternal age greater than 35 years is associated with a risk of ectopic pregnancy four to eight times higher than that experienced by younger women. During our study we recorded a frequency of 1.25% of molar pregnancy. This result is lower than that of Mazzanti *et al.* [13] who had registered 17.70%. A review of the literature reveals that as age advances, the frequency of molar pregnancy increases. This corroborates the idea that egg quality deteriorates and genetic defects are more expressed after 35 years.

## 4.3. Characteristics of Childbirth

The number of deliveries was 81,944 among those under 40 and 503 among women over 40, representing a frequency of 0.78%. This result was lower than those found by Ziadeh *et al.* [9], *i.e.* a frequency of 1.80%. During our study we did not find a higher risk of diabetes in women aged 35 and over. The increased risk of gestational diabetes was always linked to age but also to obesity and excess weight before pregnancy. Indeed, even if the results published in the literature are sometimes discordant, most studies find an increase in the prevalence of gestational diabetes in this age group. Thus in the literature we find that the incidence of gestational diabetes is three to four times higher in older women (from 7% to 12% in women over 40; 20% in women aged over 50 years), compared to the 3% incidence seen in the general obstetric population [14] [15]. In our series, those of 40 years old and over have 1.8 times the risk for all types of hypertension combined. In their study Luke B *et al.* found an incidence of chronic hypertension to be two to four times higher in women of 35 years old or older than in women aged between 30 and 34 [16] within In the general obstetric population, rates of preeclampsia are between 3% and 4% [16]. According to Paulson RJ *et al.* [17] these rates increase to 5% to 10% in women over 40 years old and can reach up to 35% in women over 50 years old [16]. The risks of placenta previa were linked to age and parity, in our study an OR = 0.1 [0.08 - 0.13]. After age 35, the risk of placenta previa increases. It remains significantly associated with age regardless of parity. Different studies show that the risk of placenta previa is higher in older pregnant women, and independently of parity; ZONGO Georges Fructueux [7] 4.95% in patients aged 40; according to data from AUDIPOG [18] hemorrhagic placenta previa affects 0.82% of women between 40 and 50 years old, according to Ananth *et al.* [19] also there is 2.6 times more risk of placenta previa after 40 years. In our study, the frequency of re-



troplacental hematomas was 9.04% with an OR = 0.04. This result is similar to that of the study conducted by Ananth *et al.* [19] who showed that HRP increases with age and especially parity. While other authors like Bianco *et al.* [20] conclude that there is no correlation. During our series, the frequency of premature rupture of membranes was 1.2% in patients aged 35 and over compared to 6.56% in younger women. In her series Cyrielle CUVILLIER [8] observed a significant increase in premature rupture of membranes in patients aged 40 and over, compared to younger women. Concerning the mode of delivery, the cesarean rate was much higher among women of 40 years old and over than among control cases, *i.e.* 54.22% compared to 12.24% in our study. This high rate corresponds to the results of many other series, Jo-Ann Johnson *et al.*, AUDIPOG, Audrey Meyer respectively, Panel A *et al.* [1] [18] [21] [22] 50%, 43%, 40%, 43, 5%. In their study Dao SZ [5] *et al.* found a lower cesarean section rate; its cesarean rate is 16.7%, three times higher in exposed patients than in unexposed patients, *i.e.* 5.8%. There are multiple causes to explain this high rate of cesarean sections among women of 40 years old and over, including a history of cesarean section, pregnancy pathologies, presentation anomalies, macrosomia, etc.

#### 4.4. Fetal Prognosis

The endpoint was the Apgar score ranging from 0 to 10. This score was systematically evaluated in our department at the 1st and 5th minute. In our series, Apgar 0 at the 1st minute is high in frequency among those aged 40 and over than in control cases, *i.e.* 12.19% versus 0.41%. In their series, Loué V, [6] *et al.* and found neonatal morbidity assessed by an APGAR index between 0 and 3 at the fifth minute is 20.22% in cases compared to 6.74% in witnesses. During our study, the frequency of malformation remains the highest 12.19%. This is explained by the lack of prenatal follow-up and the low sample rate in the study population. In the literature, some authors note an increase in fetal malformations with age. Hollier LM [23] obtained 3.5% of fetal malformations around 20 years of age and 5% above 40 years of age. In their series, Loué V, *et al.*, [6] found no cases of malformation.

#### 5. Conclusion

Pregnancy at a late age exposes the elderly patient and the newborn to several risks. During this study it was revealed a difference between the population of elderly and young women regarding the monitoring of pregnancy, and childbirth, an increase in maternal morbidity is observed with age and for newborns, the advanced maternal age is more likely to cause fetal death and fetal malformation.

#### Conflicts of Interest

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

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