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## Prenatal Consultation Associated with Maternal and Fetal Complications during Delivery in Military Hospital of Soavinandriana Madagascar

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### Abstract

Maternal and fetal complications represent a public health problem. The aim of this study is to identify the effects of prenatal consultation (PNC) in pregnant women to the maternal and fetal complications of deliveries in Military hospital of Soavinandriana (CENHOSOA). This is an analytical study using "Historical Cohort" comparing two groups of population, one group have done PNC or "PNC+" and the other group without PNC or "PNC-".

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The study was conducted in the CENHOSOA over a period of 13 months from 01 May 2012 to May 31, 2013. During the study period, we have include 296 (23.2%) belonged to the group of PNC- and 982 (76.8%) to the PNC+. The proportion of term birth is lower in PNC- than PNC+ (80.4% versus 93.3%,  $p < 10^{-6}$ ). The cesarean section was high in the PNC- group in comparison with the "PNC+" (32.1% versus 24.1%  $p < 10^{-2}$ ). Group of PNC- have a relative risk  $RR = 6.64$ , 95% CI [1.22 – 36.05] of dyspnea. Infections and phlebitis are non significant in the two groups. Concerning fetal complication, PNC- group had  $RR=1.99$ , 95% CI [1.13 – 3.52] to have APGAR score $<7$  and  $RR=2.65$ , 95% CI [1.58 – 4.47] of weight  $<2,000\text{mg}$ . Concerning complications conducting in deaths, mother with PNC- had  $RR=3.32$ , 95% CI [0.21 – 52.88] of maternal death and newborns had  $RR=2.65$ , 95% CI [0.72 – 9.82] to intrauterine fetal death. In brief, maternal and fetal complications have been more frequent among women who have not had PNC. The state should promote the practice of adequate and well-conducted PNC for the good of the mother and the baby.

**Keywords:** Prenatal consultation; pregnancy; complications; infection; intrauterine fetal death.

## **1. Introduction**

Currently, more than 350,000 women die each year from complications during pregnancy and childbirth around the world. Among these women, 99% live in the developing countries like Madagascar [1]. In Africa, 820 maternal deaths per 100,000 live births were recorded in 2005 [2]. Especially in Madagascar, 8 women die each day from complications of pregnancy and childbirth. In this context, the WHO had considered reducing the maternal mortality rate by three forth ( $\frac{3}{4}$ ) and the rate of children under five by two third from 1990 to 2015 [3]. This situation encouraged us to conduct this study which aims to identify the effects of prenatal consultation (PNC) in pregnant women to the maternal and fetal complications of deliveries in Military hospital of Soavinandriana (CENHOSOA) in Antananarivo.

## **2. Materials and methods**

### **2.1. Study design**

This is an observational and analytical retrospective study "Historical Cohort" comparing two groups of population, one group have done PNC or "PNC+" and the other group without PNC or "PNC-".

### **2.2. Study period**

This study has been carried out in the Department of Gynecology and Obstetrics of CENHOSOA Antananarivo which is a tertiary reference's hospital.

The study period concerns the period of 13 months from 01 May 2012 to May 31, 2013.

### **2.3. Study population**

This study included all women who came for delivery during the study period. Incomplete files and fetal expulsion before 22 weeks of amenorrhea represent the exclusion criteria. The "PNC-" group includes women

who gave birth in the service and who have not had PNC or who have only had one PNC during pregnancy. The "CPN +" group includes the women who gave birth in the service and who had at least two PNCs.

#### **2.4. Study parameters**

Study parameters were represented by age, gestational status, parity, number of PNC, gestational age, fundal height, mode of delivery, perineal wound, use of a fetal extraction instruments, the postpartum hemorrhage for the mothers. And for the fetus, they are represented by birth weight and Apgar Index in the 5th minute.

#### **2.5. Data collection methods**

The data were collected using the medical records of the women who were delivered, as well as the operation records for women who had a cesarean delivery.

#### **2.6. Statistics**

They were analyzed with Epi Info 3.5.2. Version and the proportions were compared by the relative risk (RR) with confidence interval (CI) of 95%. Significant difference used in this study is  $p$  less than 0.05.

#### **2.7. Ethics consideration**

All data are treated anonymously and will be kept in confidentiality.

### **3. Results**

#### **3.1. Sample descriptions**

We found 1,577 women who gave birth in the service. Among them, 299 were excluded (18.9%). So, we included 296 (23.2%) belonged to the group of "PNC-" and 982 (76.8%) to the "PNC+". The average age of "PNC-" group was 28.64 years with extremes ranging from 13 to 45 years. For the "PNC+" group, the average age was 29.68 years with extremes ranging from 13 to 46 years. The average parity was 0.88 for the "PNC-" group and 1.06 for the CPN + group. Regarding fundal height, the women who had between 28 and 33 cm were the most represented.

The proportion of women with episiotomy or perineal laceration was almost the same for both groups. Instrumental extraction had been used in 2.01% of the "PNC-" group and 3.05% in "PNC+". In both groups, the rate of women who had postpartum hemorrhage was almost the same.

#### **3.2. Associated factors**

The proportion of term birth in the majority is lower in "PNC-" than "PNC+" (80.4% versus 93.3%,  $p < 10^{-6}$ ). The cesarean section was high in the "PNC-" group 32.1% versus 24.1% in the "PNC+" with  $p < 10^{-2}$ . Postpartum complications are depicted in Table 1.

**Table 1:** Distribution of maternal complications according PNC

	Maternal complications		Uncomplicated cases		RR	95%CI
	n	%	n	%		
<b>All complications</b>						
PNC-	18	6.1	278	93.9	1.11	0.66 - 1.86
PNC+	54	5.5	928	94.5		
<b>Infections</b>						
PNC-	14	4.7	282	95.3	0.96	0.51 - 1.82
PNC+	48	4.9	934	95.1		
<b>Dyspnea</b>						
PNC-	4	1.4	292	98.6	6.64	1.22 - 36.05
PNC+	2	0.2	980	99.8		
<b>Phlebitis</b>						
PNC-	0	0.0	296	100.0	NA* (p=0.34)**	
PNC+	4	0.4	978	99.6		

\*Non applicable \*\* Use of Fischer statistic test

**Table 2:** Distribution of newborns complications according PNC

	Newborns complications		Uncomplicated cases		RR	95%CI
	n	%	n	%		
<b>Apgar Score &lt; 7</b>						
PNC-	18	6.1	278	93.9	1.99	1.13 - 3.52
PNC+	30	3.1	952	96.9		
<b>Weight &lt; 2,000mg</b>						
PNC-	24	8.1	272	91.9	2.65	1.58 - 4.47
PNC+	30	3.1	952	96.9		

Regarding the newborns, the table 2 shows the repartition of complications. This study shows there are more deaths in PNC- group than the PNC+ group.

**Table 3:** Distribution of maternal and intrauterine fetal deaths according PNC

	Deaths		Alive		RR	95% CI
	n	%	n	%		
<b>Maternal</b>						
PNC-	1	0.3	295	99.7	3.32	0.21 - 52.88
PNC+	1	0.1	981	99.9		
<b>Intrauterine fetal</b>						
PNC-	4	1.4	292	98.6	2.65	0.72- 9.82
PNC+	5	0.5	977	99.5		

#### 4. Discussion

Many women still do not benefited PNC in Madagascar. In developed countries, such as France, the proportion of women who did not have PNC had fallen from 0.2% to zero between 1990 and 2010 [4]. In Guadeloupe, a study found a rate of 1.3% of women who did not have PNC [2]. Some behaviors of Malagasy women could explain this situation: ignorance, negligence and bad habit. Moreover, this situation may be due to a financial problem. Maria K and her team found in their study in Kinshasa in 2005 that the most important barriers to the practice of PNC were pecuniary expenses (37%) [5]. The average age of women who did not do PNCs was comparable to a study in Hungary which also found an average age of around 27 years [6]. Another study by Blondel found a higher rate of patients under 20 years who had not practiced PNC (32% versus 24% for those over 20 years) [7]. In rich countries, it has been confirmed that young age is a risk factor for the lower use of antenatal care services [8]. In Madagascar, the early entry of girls into sexual activity could explain this rate.

The primiparas had predominated in the "PNC-" group. The result of our study differs from other studies in developed countries showing that multiparity is a risk factor for non-use of antenatal care services [9]. In our study, women in the "PNC-" group had more preterm birth than women in the "PNC+" group. This is explained by the fact that the risk factors for prematurity are mostly detectable during PNC. In Hungary, there was a significantly higher rate of prematurity (33%) for women who have not had PCN compared to the women attending antenatal clinics (14% ; OR = 3.1) [6]. Thus, it has been accepted that antenatal care is effective in preventing prematurity.

Measuring fundal height is a simple way to assess fetal growth and to estimate fetal weight. For this study, patients with fundal height less than 28 cm at term are more important in the women "PNC-". This situation is due to th ignorance of the risk factors of retarded intra-uterine growth, precarious maternal nutritional intake and

organic causes that are not detected due to lack of PNC. This hypothesis coincides with that of Ouedraogo, who mentioned the significant association between retarded intra-uterine growth and the absence of PNC [10]. Women who have not had PNC had an episiotomy rate slightly higher than women who have had PNC. However, women in the "PNC+" group had more spontaneous perineal laceration compared to women in the "PNC-" group. This result shows that the absence of PNC protects against perineal wounds but is not statistically significant. It could also be explained by the fact that there are more babies born with low weight in the "PNC-" group. The use of instrumental extraction was 2.70% in the "PNC-" group compared to 3.05% in the other group. This result is related to the late arrival of parturients in the delivery room or maternal pushing problem and to avoid fetal suffering. The monitoring of the pregnancy is thus essential to inform the pregnant women about the signs of the beginning of the labour, to teach in advance the women to push during the labour. Furthermore, cesarean section was higher in the "PNC-" group compared to "PNC+" group. The difference was statistically significant. The absence of PNC increases the risk of an emergency Cesarean section. The results of our study differs from the MOMA group study (maternal mortality in West Africa) which showed that the absence of PNC is not a risk factor for dystocia. On the contrary, their study showed that this risk increases with PNC [11]. Similarly, Leticée found a significantly higher rate of Caesarean section among the women who come for antenatal care (18.33% vs. 13.55%,  $p = 0.006$ ) [12]. Indeed, these women know they have a risk pregnancy before delivery and choose the cesarean section. After delivery, complications were represented by infections in the majority of cases. These infections were mainly due to premature rupture of membranes. In addition, there were 2 cases of maternal death due to postpartum haemorrhage. With regard to fetal complications, our study is consistent with a study conducted by Andriamandimbison and his team at the University Hospital of Gynecology and Obstetrics of Befelatanana Antananarivo in 2011. They found the correlation between the absence of prenatal care and the intrauterine fetal death [13]. Line in 1996 in Nice also found that PNC decreases intrauterine fetal mortality rate from 4 PNCs [14].

## **5. Conclusion and recommendations**

PNC is a preventive activity for giving health education for future mothers in order to reduce the maternal and fetal complications of pregnancy. We conducted this study to find out the consequences of non-use of PNC. It was concluded during this study that 18.77 % of women have not had correctly the PNC. The issues of PNC- are significantly a lower of the proportion of term birth and more cesarean section. Group of PNC- have higher risk of dyspnea for the mother. Concerning fetal complication, PNC- group had higher risk of Apgar score <7 and weight <2,000mg. There are more maternal and intrauterine fetal deaths in PNC- group. Thus, the early and regular monitoring of pregnancies and the improvement of the quality of PNC are very important for screening high-risk pregnancies. The state should promote the practice of adequate and well-conducted antenatal care for the good of the mother and the baby.

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