

## Original Research Article

# Materno-fetal outcomes in pre eclampsia in a rural hospital of Antananarivo Madagascar

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**Received:** 18 February 2018

**Accepted:** 09 March 2018

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## ABSTRACT

**Background:** Pre-eclampsia is a human-pregnancy-specific disease defined as the occurrence of hypertension and significant proteinuria in a previously healthy woman on or after the 20th week of gestation. It is one of the leading causes of maternal and perinatal morbidity and mortality worldwide. The aim of this study is to determine the prevalence of pre-eclampsia and to evaluate its maternal and fetal outcomes in a rural area.

**Methods:** This is a cross-sectional study carried out at the Bejofo Mahitsy hospital. It is a District Hospital Referral Center, which is located on the outskirts of the capital, 32 km from Antananarivo, Madagascar. This work was carried out during 24 months, from January 2014 to December 2016. We have included all hospitalized pregnant patients with SBP  $\geq 140$  or DBP  $\geq 90$  mmHg, significant proteinuria  $> 300$  mg/24H with or without edema.

**Results:** During this period, we recorded 97 cases of pre-eclampsia, frequency of 1.68%. The mean age of the parturient was 28 years old and 46.39% of the patients were primiparous. At the admission to the hospital, 37 (38,14%) did not show any particular signs. Concerning the severe high blood pressure, 47 pregnant patients (48,46%) had SBP greater than 160 mm Hg and 26 women (26,80%) had DBP greater than 110 mm Hg. Caesarean section was the method of delivery widely adopted in 74.22%. Maternal morbidity was represented by eclampsia in 21.65%, Retroplacental Hematoma in 3% and HELLP syndrome in 4.12%. Fetal morbidity was important with 35% of premature newborns, 25.77% was small for gestational age and 12.37% was with neonatal asphyxia. Intra uterine fetal mortality was found in 11.34% and the perinatal mortality rate was 8.73%.

**Conclusions:** There is a high frequency of pre-eclampsia in our setting and the consequences of pre-eclampsia for neonatal mortality and morbidity outcome are alarmingly high pre-eclampsia. Prevention necessarily involves quality prenatal follow-up such as screening, early and appropriate care of hypertension during pregnancy.

**Keywords:** High blood pressure, Maternal and fetal complication, Pre-eclampsia, Pregnancy

## INTRODUCTION

Preeclampsia is a disorder of widespread vascular endothelial malfunction and vasospasm. It is a human-pregnancy-specific disease defined as the occurrence of

hypertension and significant proteinuria in a previously healthy woman on or after the 20<sup>th</sup> week of gestation.<sup>1</sup> The systolic blood pressure (SBP) is greater than or equal to 140 mmHg or the diastolic blood pressure (DBP) is greater than or equal to 90 mmHg or higher, on two

occasions at least 4hours apart in a previously normotensive patient; and a significant proteinuria is >0.3g/24H.<sup>2</sup>

Pre-eclampsia is one of the leading causes of maternal and perinatal morbidity and mortality worldwide. In the Anglo-Saxon countries, it is observed in 3 to 7% of primiparous and 1 to 3% of multiparous; its incidence tends to increase in developing countries.<sup>3</sup> Nearly one-tenth of all maternal deaths in Africa and Asia and one-quarter in Latin America are associated with hypertensive diseases in pregnancy, a category that encompasses pre-eclampsia.<sup>4</sup> Madagascar has a high incidence rate of pre-eclampsia. A study done in Antsirabe, a big city, by Rasolonjatovo and al, noted a pre-eclampsia incidence rate of 16.32%.<sup>5</sup>

The aim of this study is to determine the prevalence of pre-eclampsia and to evaluate its maternal and fetal outcomes in a rural area.

**METHODS**

This is a cross-sectional study carried out at the Bejofo Mahitsy hospital. It is a District Hospital Referral Center, which is located on the outskirts of the capital, 32km from Antananarivo, Madagascar.

This work was carried out during 24months, from January 2014 to December 2016. We have included all hospitalized pregnant patients with SBP ≥140 or DBP ≥90mmHg, significant proteinuria >300mg/24H with or without edema.

The parameters we studied were the characteristics of mothers (age, parity, maternal history), the delivery route, the birth weight of the newborn, the maternal and fetal complications. Data has been collected from hospital registers and clinical records and has been processed on microsoft Excel. Statistical analysis was done using Epi info 7.

**RESULTS**

Among the 5769-parturient screened during this period, we recorded 97 cases of pre-eclampsia, frequency of 1.68%. The mean age of the parturient was 28 years old with extremes of 18 to 44 years. With regard to parity, 46.39% of the patients were primiparous and 14.43% were pauciparous. The characteristics of mothers is shown in Table 1.

At the admission to the hospital, clinical signs were headache in 18.55% and edema in 8.24%. Thirty-seven women (38,14%) did not show any particular signs. Concerning the severe high blood pressure, 47 pregnant patients (48,46%) had SBP greater than 160mmHg and 26 women (26,80%) had DBP greater than 110mmHg. In this study, 11,34 % parturient had proteinuria ≥1g/l.

**Table 1: Characteristics of mothers.**

	Number (n)	Proportion (%)
<b>Age (years)</b>		
< 18	8	8,24
18-24	26	26,80
25-30	28	28,86
31-35	16	16,49
36-40	11	11,34
> 40	8	8,24
<b>Parity</b>		
1	42	43,39
2-4	48	49,39
> 4	7	7,22
<b>Maternal history</b>		
Aspirin	1	1,03
Tobacco	4	4,12
Pré-éclampsia	5	5,15
Family history of hypertension	5	5,15
Estrogen/progesterone therapy	13	13,37
High blood pressure	14	15,12
No history	55	56,70

**Table 2: Description of newborn.**

	Number (n)	Proportion (%)
<b>Gestational age (weeks)</b>		
< 32	11	11.34
32-37	23	23.71
≥ 37	50	51.54
Unknown	13	13.40
Singleton	92	94,85
Twin pregnancy	5	5,15
<b>Birth weight</b>		
Normal	72	74,23
Small for gestational age	25	25,77
<b>Mode of delivery</b>		
Vaginal delivery	6	6.19
Induced labour	19	19.59
Caesarean section	72	74.22

Caesarean section was the method of delivery widely adopted in 74.22%. Description of newborns is shown in Table 2.

The most common complication associated with pre-eclampsia found in this study were eclampsia (21.65%), retroplacental hematoma (3%) and HELLP syndrome (4.12%).

Concerning the newborns, the repercussion was also very important. The prematurity was found in 35,05% of the cases, the small for gestational age was observed in 25,77% of the cases and 12,37% of the neonates had

presented a neonatal asphyxia. Intra uterine fetal death or stillborn was observed in 11.34%. The perinatal mortality rate was 8.73% and it was associated with a gestational age of less than 37SA.

## DISCUSSION

Preeclampsia affects 5 to 10% of pregnancies and is a common condition in developing countries.<sup>1</sup> The prevalence of preeclampsia found in our study was 1.68%. The major problem found was the poor management of hypertensive states. In fact, the shortcomings noted in prenatal follow-up did not make it possible to detect the high blood pressure in a timely manner. The women are sometimes unable to afford the cost of proper health care, or even because some people mistrust expert medical care and reluctant to use it even when available. Advanced maternal age is recognized as a risk factor for preeclampsia.<sup>6</sup> They are the ones most likely to develop complications. Some authors even find that the risk is multiplied by 2 to 4 times for an age >35 years.<sup>7</sup> Similarly, preeclampsia and pregnancy-induced hypertension occur more frequently in primiparous women.<sup>8,9</sup> In this study the mean age of the parturient was 28 years old. It is probably because we are dealing with women from rural developing country, where early marriage is more common.

The mode of delivery in our series was caesarean section (74.22%). In front of uncontrolled high blood pressure or persistent signs of eclampsia and/or abnormal fetal heart, to stop the pregnancy is the only specific obstetric treatment.<sup>10</sup> When there was a maternal risk or a serious chronic fetal distress, we immediately had done caesarean section. Artificial induction of labor may be proposed if the obstetrics conditions are favorable, taking into account maternal and fetal criteria: stable blood pressure, satisfactory heart rate, absence of signs of hypoxia and possibility of permanent monitoring during labor.<sup>11</sup>

In terms of morbidity, the main maternal complications of preeclampsia are represented by eclampsia with a high rate of 21.65% in our study. The existence of inaugural crises reported by some authors is a lack of screening for elements of the syndrome of preeclampsia.<sup>12</sup> The retroplacental hematoma is observed in 3 to 5% of preeclampsia, the HELLP syndrome in 10 to 15%, during our work. This frequency seems to be underestimated because among the 97 parturients recorded, only 8 (4.12%) have benefited from biological assessments to diagnose the pathology. It was because of lack of money.

Preeclampsia, a condition characterized by decreased uteroplacental blood flow and ischemia, is a significant risk factor in the development of intrauterine growth restriction (IUGR) and represents the most common cause of IUGR in the nonanomalous infant.<sup>6</sup> It can also lead to preterm birth. The rate of prematurity encountered in our study was 35.05%. In the literature, this rate is variable, ranging from 32-35%.<sup>13</sup> The small for

gestational age, was observed in 25.77% of the cases in our study. In the literature this rate of hypotrophy is also variable, ranging from 27% to 60%.<sup>11</sup> Guinean study said prematurity and hypotrophy was correlated with proteinuria.<sup>14</sup> Perinatal mortality rate (deaths in utero, stillborn) was 11.34% in our study. This rate is increased compared to those in the literature which is 4.3%.<sup>6</sup> This better fetal outcome was due to effective neonatal care in neonatal intensive care unit with a good back up by efficient paediatricians. But main factors determining perinatal mortality was the lack of regular antenatal checkups, complicated cases of pre-eclampsia and lack of awareness regarding significance of symptoms like decreased fetal movements and late arrival at hospital, all contributing to stillbirths.<sup>15</sup>

## CONCLUSION

There is a high frequency of pre-eclampsia in our setting and the consequences of pre-eclampsia for neonatal mortality and morbidity outcome are alarmingly high pre-eclampsia. Prevention necessarily involves quality prenatal follow-up such as screening, early and appropriate care of hypertension during pregnancy.

## ACKNOWLEDGEMENTS

Authors would like to thank all those who contributed in the realization of this study.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Randriamahavonjy R, Tsifiregna RL, Andrianirina ZZ, Andrianampanalinarivo HR. Materno-fetal outcomes in pre eclampsia in a rural hospital of Antananarivo Madagascar. *Int J Res Med Sci* 2018;6:1064-7.