ISSN: 2230-9926

*Available online at http://www.journalijdr.com*

IJDR

*International Journal of Development Research*
*Vol. 09, Issue, 02, pp.25678-25684, February, 2019*

ORIGINAL RESEARCH ARTICLE OPEN ACCESS

# EPIDEMIOLOGY OF PREGNANCY - SPECIFIC HYPERTENSIVE DISEASE IN AMAZONIA AND ITS PERINATAL IMPACT - ANALYSIS FROM 2015 TO 2016

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**ARTICLE INFO**

***Article History:***
Received 22nd November, 2018
Received in revised form
29th December, 2018
Accepted 14th January, 2019
Published online 27th February, 2019

***Key Words:***
Epidemiology, Pregnancy,
Specific hypertensive disease,
Perinatal Impact.

**ABSTRACT**

The objective of this study is to characterize the epidemiological, clinical and obstetric profile of puerperae with the pregnancy-induced hypertension and its perinatal repercussions. A total of 493 pregnant women who delivered from March 2015 to January 2016 were included, and 2% of these pregnant women had twin pregnancies, resulting in 503 newborns. Regarding gestational data, there was a significant incidence of primigravidae. In addition, 95.9% of the patients started prenatal care, but 41.1% had less than 6 visits. Blood pressure at hospital admission was identified as greater than 160x110mmHg in 58.2% patients, being compatible with severe preeclampsia. The main neonatal complications were respiratory distress and acute fetal distress. In relation to the newborns of patients with severe preeclampsia, more than 50% were small for gestational age and in 74.2% there was a need for neonatal intensive care unit. Of the total number of newborns who required resuscitation in the delivery room, 62.4% were in the context of mothers with severe preeclampsia, and 64% of them presented the need for positive pressure ventilation.



***Citation: Hassan Musa Mohammad Aldaw, 2019.*** "Epidemiology of pregnancy - specific hypertensive disease in Amazonia and its perinatal impact - analysis from 2015 to 2016", *International Journal of Development Research*, 9, (02), 25678-25684.

## INTRODUCTION

Hypertensive pregnancy syndromes deserve special attention in the world and national public health scenario. These syndromes are currently a cause of maternal mortality in Brazil, with about 5 to 17% of pregnant women. Due to their severity, they are among the most important causes of hospitalization in intensive care units (ICU) (Oliveira *et al.,* 2016). Maternal mortality, due to its size and negative consequences, has been considered a crucial public health problem and can be prevented in more than 90% of cases. It can be considered one of the indicators of health care for women and, for this reason, reveals the quality of health care and, indirectly, the living and health conditions of the population (Soares *et al.,* 2009). Hypertensive disorders are identified as the most prominent medical complications during the pregnancy period. The specific hypertensive disease of pregnancy (SHDP) is one of the most common complications and of increased maternal and perinatal morbidity and mortality, occupying the first place among the specific conditions of the pregnancy-puerperal cycle (Bezerra *et al.,* 2005). In a systematic review, the World Health Organization (WHO) reports that hypertensive disorders contribute to 16% of maternal deaths in developed countries, 9% of maternal deaths in Africa and Asia, and around 26% in Latin America and the Caribbean. In countries where maternal mortality is high, most deaths are attributed to eclampsia rather than pre-eclampsia. The worst morbidity associated with preeclampsia and eclampsia includes renal failure, stroke, cardiac dysfunction, respiratory compromise, coagulopathies, and hepatic failure (Khan *et al.,* 2006 and Duley, 2009). The fetal and neonatal consequences related to preeclampsia vary according to locality. Approximately 12-25% of fetal growth restrictions and small fetuses for gestational age, as well as 15-20% of all preterm births are attributed to preeclampsia. In developing countries, 25% of all fetal and neonatal deaths are associated with eclampsia or pre-eclampsia. In addition, the infant mortality rate from these factors is three times higher in these countries compared to the developed countries. This is mainly due to the fact that there is a shortage of neonatal

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intensive care (Duley, 2009). SHDP is diagnosed around the 24th (twenty-fourth) week of gestation and persists throughout the gestational period, thus imposing quality prenatal care, since this clinical picture shows severity of variable intensity. It is not possible to prevent the occurrence of pre-eclampsia and its clinical manifestations, it is fundamental to prevent their evolution into severe forms. Thus, the access of all pregnant women to quality prenatal care has been the main weapon of developed countries in early diagnosis of preeclampsia, reducing the occurrence of complications and, consequently, maternal morbidity and mortality rates due to (Febrasgo, 2011). Pregnancy hypertensive syndromes in developed countries occur between 2% and 8% of pregnancies, which in Brazil can reach 30%, representing the third cause of maternal death in the world and the main cause of maternal death in Brazil. These high mortality rates are due to a large number of complications such as progression of hypertension, superimposed preeclampsia, eclampsia, placental premature detachment of normoinserid, HELLP (Hemolysis, Elevated Liver enzymes levels, Low Platelet count) syndrome, thromboembolism, pulmonary edema, cerebral haemorrhage, encephalopathy, insufficiency renal and hepatic (Souza *et al.,* 2010). Maternal mortality rates in underdeveloped and developing countries are quite high. In countries such as Bolivia and Peru, the maternal mortality ratio exceeds 200 deaths / 100,000 live births. The maternal mortality ratio in Brazil estimated for 2006 was 77.2 / 100,000 live births (Ministry of Health, 2006). According to Alves *et al.* (2014), Maranhão is one of the Brazilian states with a high rate of maternal mortality. In São Luís, maternal mortality is equal to 96.8 / 100,000 live births (2006), and complications related to pregnancy, childbirth and the puerperium are the fifth cause of death in women of childbearing age (Maranhão, Superintendence of Epidemiological Surveillance and Health, 2006). In Pará, in the city of Belém, the ratio of maternal and fetal mortality is underreported. According to the WHO, maternal mortality correlates negatively with the functioning of the health system: when it is high, it must be concluded that the health system is not adequate. Therefore, in order to consider acceptable rates of maternal mortality as high as 20 deaths per 100,000 live births, both Brazil and the North region can be classified as having high maternal mortality rates, demonstrating an inefficient health system. Considering the importance of high-risk pregnancies in the maternal-fetal health-disease binomial, early identification of these pregnancies is necessary, so that adequate medical care can be provided and satisfactory results can be obtained, since deaths due to complications of pregnancy are mostly preventable (Morais *et al.,* 2013). Hypertensive syndromes also present a high rate of perinatal morbidity and mortality ranging from 5% to 20%, caused by uteroplacental insufficiency, causing intrauterine growth restriction (IUGR) and complications secondary to prematurity. Mild hypertension is associated with 33% of premature births and 11% of gestational age (GI) neonates. While severe hypertension has been associated with 62-70% of preterm deliveries and 40% of small for gestational age. In addition, fetal complications include restricted growth, prematurity, neonatal infection, meconium aspiration syndrome and respiratory distress syndrome (Morais *et al.,* 2013).

## METHODS

This is a retrospective cross-sectional study with a quantitative approach. Held at the Santa Casa de Misericórdia Foundation of Pará (SCMFP) in the municipality of Belém-PA. The study had as a sample parturients with clinical and / or laboratory diagnosis of hypertensive disorder and their respective concepts (including stillbirths related to SHDP). It was carried out from March 2015 to January 2016, after approval by Plataforma Brasil. It began after the release of those in charge of the Permanent Education Center of the maternity ward and with the approval of the Research Ethics Committee of the Santa Casa de Misericórdia Foundation of Pará under opinion No. 1,472,389. The main variables related to SHDP were studied, such as: age, parity, blood pressure, type of delivery, prenatal and family history and use of medications; and variables related to perinatal repercussions such as gestational age, birth weight and height, need for resuscitation, Apgar score and presence of related pathologies, if the neonatal ICU or combined accommodation was indicated. Regarding the risk factors, the main complications that occurred with the mother were included: (1) Chronic hypertension, pressure values equal to or greater than 140/90 mmHg; (2) Diabetes if present before and / or during gestation; (3) Pre-eclampsia in previous pregnancies and / or in the present; (4) Eclampsia in previous pregnancies and / or in the present; (5) Cardiopathy; (6) HIV acquired and / or diagnosed before or during gestation; (7) Nuliparity; (8) Hydatidiform spring; (9) Malnutrition / malnutrition; (10) End of age, mothers before 18 years or after 35 years; (11) Obesity before or during pregnancy; (12) Coagulation disorder, if found, to correlate the period; (13) Nephropathy; (14) Lupus; (15) VDRL be a reactor or not a reactor and during which period of gestation; (16) TORCHS (which includes infections with Toxoplasmosis, other (syphilis, varicella-zoster, parvovirus B19), Rubella, Cytomegalovirus and Herpes) occurring during pregnancy, specifying them. Regarding the questionnaire, it is worth emphasizing that all types of research present some type of risk, and the patient may be subject to some type of embarrassment, discomfort, stress or even fatigue when answering the questions present in the study protocol, however it is necessary to emphasize that the chances of these risks occur are small, and all stages of the research are designed so that there is maximum comfort to its participants. The data were collected through the completion of the protocol and consultation with the medical records of mothers who fit the criteria of this study. Under Consent Form Free and Clarified. In the execution of the statistical analysis we used software such as BioEstat, Microsoft Excel and Microsoft Access. The sample characterization information was compiled in a database developed in Microsoft® Office Excel® 2010 software. In the application of Descriptive Statistics, tables and graphs were constructed to present the results and the position measurements were calculated as arithmetic mean and standard deviation. The analytical statistic was used to evaluate the results of the categorical variables of the sample through the Qui-Square Adherence test. The descriptive and analytical statistics were performed in BioEstat® 5.0 software. For the decision making, the significance level $\alpha = 0.05$ or 5% was adopted, signaling with asterisk (*) the significant values.

## RESULTS

A total of 493 pregnant women who delivered at the SCMFP from March 2015 to January 2016 were included. Ten (2.0%) of these pregnant women had twin pregnancies, resulting in 503 newborns. In the maternal demographic and social evaluation, it was observed that 230 (46.6%) had ages between 16 and 25 years old with a mean of 25.8 + 7.3, 363 were single

(73.6%), 176 (35, 7%) had completed secondary education and 118 (23.9%) had incomplete primary education. The prevalent blood typing was Rh O positive in 275 (55.8%) patients. Regarding gestational data, statistically significant difference was observed in the primigravidae, with only one parity and no abortion (p <0.0001), as shown in Table 1.

**Table 1 Maternal Demographic and Gestational Data. Belém-PA, 2015-2016. (n = 493)**

| Maternal data | Frequency | % |
|---|---|---|
| **Age Group (in years)** | | |
| < = 15 | 24 | 4,9% |
| 16 a 20* | 121 | 24,5% |
| 21 a 25* | 109 | 22,1% |
| 26 a 30 | 102 | 20,7% |
| 31 a 35 | 88 | 17,8% |
| > 35 | 49 | 9,9% |
| **Mean ± Standard Deviation** | **25.8 ± 7.3** | |
| Marital status | | |
| Single* | 363 | 73,6% |
| Married | 93 | 18,9% |
| No registry | 37 | 7,5% |
| **Schooling** | | |
| Elementary School Incomplete * | 118 | 23,9% |
| Complete primary education | 49 | 9,9% |
| Incomplete high school | 78 | 15,8% |
| Complete high school* | 176 | 35,7% |
| Incomplete Higher Education | 19 | 3,9% |
| Full Higher Education | 19 | 3,9% |
| Technical Course | 6 | 1,2% |
| No registry | 28 | 5,7% |
| **Blood type** | | |
| THE - | 9 | 1,8% |
| A + | 115 | 23,3% |
| AB + | 9 | 1,8% |
| B + | 57 | 11,6% |
| O - | 18 | 3,7% |
| T the | 275 | 55,8% |
| No registry | 10 | 2,0% |
| **Gestations** | | |
| An* | 238 | 48,3% |
| Two | 121 | 24,5% |
| Three | 66 | 13,4% |
| Four or more | 68 | 13,8% |
| **Parities** | | |
| An* | 273 | 55,4% |
| Two | 120 | 24,3% |
| Three | 57 | 11,6% |
| Four or more | 43 | 8,7% |
| **Abortions** | | |
| None* | 399 | 80,9% |
| An | 76 | 15,4% |
| Two or more | 18 | 3,7% |

* p <0.0001 Chi-square test Adherence
SOURCE: Research Data

Table 2 shows prenatal data. It was observed that 473 (95.9%) of the patients started prenatal care, but 203 (41.2%) performed less than 6 consultations during gestation. About 294 (62.2%) patients started prenatal care in the first trimester of pregnancy, with a significant incidence of 1 to 3 consultations, both medical and nursing, performed during this period. Regarding the presence of risk factors, 396 patients presented some risk factor during pregnancy (80.3%), with the most incidents being Nuliparity 238 (60.1%) and Pre-previous eclampsia 154 (38.9%). Approximately 336 (68.2%) patients received some medication in the prenatal period until hospital admission, according to Table 3. Regarding the medications used, antihypertensive drugs are the most commonly used drugs 237 (68.7%), , with the most outstanding drugs of this class being Methyldopa 154 (45.8%) and Hydralazine 101 (30.1%). Measurement of parturient blood pressure at admission reached levels above 160 x 110 mmHg in 287 (58.2%) patients, consistent with severe pre-eclampsia.

**Table 2. Prenatal data. Belém-PA, 2015-2016. (n = 493)**

| Prenatal | Frequency | % |
|---|---|---|
| **Started** | | |
| Yes* | 473 | 95,9% |
| Not | 20 | 4,1% |
| Place where you performed | | N = 473 |
| In the state | 312 | 66,0% |
| In capital | 134 | 28,3% |
| Held at the Santa Casa de Misericórdia Foundation of Pará | 26 | 5,5% |
| Another state | 1 | 0,2% |
| **Start Quarter** | | **N = 473** |
| I quarter * | 294 | 62,2% |
| II quarter | 136 | 28,8% |
| III quarter | 11 | 2,3% |
| No registry | 32 | 6,8% |
| No. of queries | | N = 493 |
| 0 to 2 | 47 | 9,5% |
| 3 to 5 | 156 | 31,6% |
| 6 or more * | 261 | 52,9% |
| No registry | 29 | 5,9% |
| **No. of medical appointments** | | **N = 493** |
| None | 39 | 7,9% |
| 01 to 03 * | 243 | 49,3% |
| 04 to 06 | 137 | 27,8% |
| 07 or more | 44 | 8,9% |
| No registry | 30 | 6,1% |
| **Number of Nursing consultations** | | **N = 493** |
| None | 75 | 15,2% |
| 01 to 03 * | 251 | 50,9% |
| 04 to 06 | 118 | 23,9% |
| 07 or more | 19 | 3,9% |
| No registry | 30 | 6,1% |

* p <0.0001 Chi-square test Adherence
SOURCE: Research Data

**Table 3. Data on the Period of Hospital Admission and Childbirth. Belém-PA, 2015-2016. (n = 493)**

| Date of birth | Frequency | % |
|---|---|---|
| **Blood pressure at admission** | | |
| Normal | 29 | 5,9% |
| Light preeclampsia | 177 | 35,9% |
| Severe preeclampsia * | 287 | 58,2% |
| **Type** | | |
| Normal | 36 | 7,3% |
| Caesarean* | 457 | 92,7% |
| Rotated Bag Time | | |
| <12 h * | 429 | 87,0% |
| > 12 h | 17 | 3,4% |
| No registry | 47 | 9,5% |
| **Medications** | | |
| Yes* | 336 | 68,2% |
| Methyldopa | 154 | 45,8% |
| Hydralazine | 101 | 30,1% |
| Not | 157 | 31,8% |
| **Presence of edema** | | |
| Yes* | 422 | 85,6% |
| Not | 64 | 13,0% |
| No registry | 7 | 1,4% |
| **Complications** | | |
| Yes | 143 | 29,0% |
| Not | 350 | 71,0% |
| **Gestational Age (Sem)** | | |
| <30 weeks | 27 | 5,5% |
| 31 to 34 6/7 weeks | 67 | 13,6% |
| 35-36 6/7 weeks | 94 | 19,1% |
| 37 to 41 6/7 weeks * | 279 | 56,6% |
| > 42 weeks | 6 | 1,2% |
| No registry | 20 | 4,1% |

* p <0.0001 Chi-square test Adherence
SOURCE: Research Data

According to Table 3, the main route of delivery was the cesarean section with 457 deliveries (92.7%), the time of bag turnover was less than 12 hours in 429 (87.0%) patients, the presence of edema prevailed in 422 (85.6%) patients and the majority of pregnancies were at term 279 (56.6%).

**Table 4. Data of the Neonate in the Immediate Postpartum**

| Neonate data | Frequency | % |
|---|---|---|
| **Sex** | | |
| Female | 250 | 49,7% |
| Male | 247 | 49,1% |
| No registry | 6 | 1,2% |
| **Birth weight (g)** | | |
| Up to 1,499 | 38 | 7,6% |
| 1,500 to 1,999 | 56 | 11,1% |
| 2,000 to 2,499 | 91 | 18,1% |
| 2,500 to 2,999 * | 125 | 24,9% |
| > = 3,000 * | 190 | 37,8% |
| No registry | 3 | 0,6% |
| Mean ± Standard Deviation | 2.708 ± 814 | |
| **Cephalic perimeter (cm)** | | |
| <= 32 | 143 | 28,4% |
| > 32 * | 345 | 68,6% |
| No registry | 15 | 3,0% |
| Mean ± Standard Deviation | 33.2 ± 2.5 | |
| Thoraxic Perimeter (cm) | | |
| <= 32 * | 337 | 67,0% |
| > 32 | 149 | 29,6% |
| No registry | 17 | 3,4% |
| Mean ± Standard Deviation | 30.3 ± 1.2 | |
| **Abdominal perimeter (cm)** | | |
| <= 32 * | 424 | 84,3% |
| > 32 | 63 | 12,5% |
| No registry | 16 | 3,2% |
| Mean ± Standard Deviation | 28.4 ± 3.7 | |
| **Apgar 1 min** | | |
| <7 | 74 | 14,7% |
| > = 7 * | 407 | 80,9% |
| No registry | 22 | 4,4% |
| Mean ± Standard Deviation | 7.8 ± 1.9 | |
| **Apgar 5º min** | | |
| <7 | 5 | 1,0% |
| > = 7 * | 474 | 94,2% |
| No registry | 24 | 4,8% |
| Mean ± Standard Deviation | 8.8 ± 0.5 | |
| **Weight for Gestational Age** | | |
| Small for gestational age | 224 | 44,5% |
| Suitable for gestational age * | 250 | 49,7% |
| Giant for gestational age | 20 | 4,0% |
| No registry | 9 | 1,8% |
| **Classification CAPURRO** | | |
| <30 weeks | 7 | 1,4% |
| 31 to 34 6/7 weeks | 18 | 3,6% |
| 35-36 6/7 weeks | 55 | 10,9% |
| 37 to 41 6/7 weeks | 382 | 75,9% |
| > 42 weeks | 8 | 1,6% |
| No registry | 33 | 6,6% |
| **Sign of fetal distress** | | |
| Yes | 101 | 20,1% |
| Not* | 388 | 77,1% |
| No registry | 14 | 2,8% |
| **Presence of Complications** | | |
| Yes | 176 | 35,0% |
| Not* | 327 | 65,0% |
| Need for resuscitation | | |
| Yes | 141 | 28,0% |
| Positive pressure ventilation | 86 | 61,0% |
| Positive pressure ventilation + Orotracheal intubation | 30 | 21,3% |
| Positive pressure ventilation + Orotracheal intubation + Compressions | 25 | 17,7% |
| Not* | 362 | 72,0% |
| **Need for Neonatal ICU** | | |
| Yes | 31 | 6,2% |
| Not* | 472 | 93,8% |

* p <0.0001 Chi-square test Adherence,
Source: Research Data

When evaluating the intercurrences during the delivery period, it was observed that the Respiratory Discomfort Syndrome (67.1%) was the most frequent, followed by acute Fetal Suffering (presence of meconium) - 35, 7% - and Eclampsia (24, 5%). It can be observed in Table 4 that there was no gender difference and the mean birth weight was 2.708 + 814 grams.

Most of the births obtained Apgar> 7 in the first and fifth minutes of life. The hospital where the deliveries are performed uses only the Capurro classification to evaluate the gestational age. In this context, almost 80% of newborns were classified between 37-41 6/7 weeks, most neonates showed no signs of fetal distress and did not develop neonatal

**Table 5 Differential between Systemic Arterial Hypertension, previous pre-eclampsia and severe pre-eclampsia. Belém-PA, 2015-2016. (n = 493)**

| | Sah n=88 | | | Previous pre-eclampsia n=154 | | | Severe pre-eclampsia n=287 | |
|---|---|---|---|---|---|---|---|---|
| | Frequency | % | | Frequency | % | | Frequency | % |
| **Age Group** | | | **Age Group** | | | **Age Group** | | |
| < = 15 | 1 | 1,1% | < = 15 | 0 | 0,0% | < = 15 | 7 | 2,4% |
| 16 a 20 | 11 | 12,5% | 16 a 20 | 15 | 9,7% | 16 a 20 | 70 | 24,4% |
| 21 a 25 | 13 | 14,8% | 21 a 25 | 26 | 16,9% | 21 a 25 | 66 | 23,0% |
| 26 a 30 | 19 | 21,7% | 26 a 30 | 39 | 25,3% | 26 a 30 | 63 | 22,0% |
| 31 a 35* | 29 | 33,0% | 31 a 35 | 44 | 28,6% | 31 a 35 | 54 | 18,8% |
| > 35 | 16 | 18,2% | > 35 | 30 | 19,5% | > 35 | 27 | 9,4% |
| **Gestation number** | | | **Gestation number** | | | **Gestation number** | | |
| First-time mother | 25 | 28,4% | First-time mother | 0 | 0,0% | First-time mother | 141 | 49,1% |
| Multigravida* | 63 | 71,6% | Multigravida* | 154 | 100,0% | Multigravida | 146 | 50,9% |
| Pre-natal | | | Pre-natal | | | Pre-natal | | |
| Complete | 47 | 53,4% | Complete * | 93 | 60,4% | Complete | 146 | 50,9% |
| Uncompleted | 41 | 46,6% | Uncompleted | 61 | 39,6% | Uncompleted | 141 | 49,1% |
| **Anti-hypertensives** | | | **Anti-hypertensives** | | | **Anti-hypertensives** | | |
| Yes* | 66 | 75,0% | Yes | 85 | 55,2% | Yes | 145 | 50,5% |
| No | 22 | 25,0% | No | 69 | 44,8% | No | 142 | 49,5% |
| **Edema** | | | **Edema** | | | **Edema** | | |
| Yes* | 78 | 88,6% | Yes* | 133 | 86,4% | Yes* | 248 | 86,4% |
| No | 10 | 11,4% | No | 21 | 13,6% | No | 39 | 13,6% |
| **Gestational age** | | | **Gestational age** | | | **Gestational age** | | |
| < 30 weeks | 8 | 9,1% | < 30 weeks | 12 | 7,8% | < 30 weeks | 21 | 7,3% |
| 31-34 6/7 weeks | 10 | 11,4% | 31 a 34 6/7 weeks | 22 | 14,3% | 31 a 34 6/7 weeks | 48 | 16,7% |
| 35- 36 6/7 weeks | 17 | 19,3% | 35 a 36 6/7 weeks | 35 | 22,7% | 35 a 36 6/7 weeks | 53 | 18,5% |
| 37- 41 6/7 weeks * | 46 | 52,3% | 37 a 41 6/7 weeks * | 81 | 52,6% | 37 a 41 6/7 weeks * | 149 | 51,9% |
| > 42 weeks | 1 | 1,1% | > 42 weeks | 0 | 0,0% | > 42 weeks | 5 | 1,7% |
| Without register | 6 | 6,8% | Without register | 4 | 2,6% | Without register | 11 | 3,8% |

* p <0.05 Friedman's Variance Analysis Test
SOURCE: Research Data

complications, with no neonatal pathology and no neonatal ICU. However, approximately 24% of the newborns required resuscitation, and more than 60% of the infants underwent resuscitation with PPV. In Table 5 it can be observed that when comparing patients with hypertension, pre-eclampsia and severe preeclampsia, the age group of 31-35 years was predominant (29%) in hypertension, in the same way as in the pre- pre-eclampsia 44 (28.6%). Still in relation to patients with hypertension, more than half were 63 (71.6%) and 66 (75.0%) were using medications. It can be observed that in all three situations there was a significant incidence of patients with edema, term gestation and with a difference between prenatal care only in patients with previous preeclampsia. It is also noted in the results of this research that 63% of patients with previous pre-eclampsia progressed to severe preeclampsia. In neonates with severe pre-eclampsia, more than 50% of newborns were small for gestational age 131 (58.5%) and in more than 2/3 of the newborns, 23 (74.2%) had to be admitted to a neonatal intensive care unit. Of the total number of newborn who required resuscitation in the delivery room, 88 (62.4%) were in the context of mothers with severe preeclampsia, and 55 (64.0%) of them presented a need for positive pressure ventilation.

## DISCUSSION

Of the 493 pregnant women in the study, the frequency of SHDP among primiparous and multiparous women ranged from 48.3% to 51.7%, showing no significant difference. The study by Abbade *et al.* (2002), Conzendey *et al.* (2015), Brito *et al.* (2015) and Guerreiro *et al.* (2016) were also concordant with the data obtained, finding among the primiparous and multiparous the non-difference with variation from 47.3% to 52.7%, 41.8% to 58.2%, 40.6% to 59, 4% and 54.5% to 45.5%, respectively.

According to Say *et al.* (2014), hypertension is the second most common direct cause of maternal death, accounting for 14%, and only 27.1% for hemorrhagic causes. In the same study, 22.1% of maternal deaths in Latin America and the Caribbean were related to the hypertensive syndrome. In Brazil, according to DATASUS (2010), hypertension is also the largest cause of maternal mortality in the country responsible for 20% of the 77.0 maternal deaths / 100,000 live births. Contrary to national levels, hypertensive disorders correspond to 12.9% in the developed regions, being classified as the fifth cause of maternal mortality in these countries Say *et al.* (2014). In the study carried out by Guerreiro *et al.* (2014) in the city of Belém - Pará of the 122 patients analyzed 33 (27%) died due to SHDP, evidencing the magnitude of this disease as a cause of maternal mortality. In the present study, the main risk factors of the mother - child binomial between the primiparous and multiparous were nulliparity (60.1%) and previous preeclampsia (38.9%). According to Dias e Santos (2015), 114 (57.3%) mothers who presented SHDP in the maternity hospital of the city of Belém also had nulliparity as risk factor. Moura *et al.* (2010) showed in their study that 12 (63.1%) of the 19 multigesters studied presented a history of previous pre-clampsia confirming the current data found. Of the total number of patients studied, most of them had undergone prenatal care (95.9%) and started in the first trimester of gestation (62.2%). According to the Ministry of Health, the early onset of prenatal care is essential for adequate care for pregnant women and the newborn, especially for high-risk patients. In this way it is indicated to start the same until a maximum of 12 weeks of gestation. The ideal number of consultations is still a controversial issue, but a minimum of six consultations are established throughout the gestation period. These consultations should preferably be distributed monthly up to the 28th week, biweekly between 28th and 36th weeks and weekly until the end, according to the Ministry of Health (2012).

The data collected showed that 52.9% of the patients who underwent prenatal care had six or more visits in this period. However, 41.1% of the pregnant women who underwent prenatal care performed less than six visits, reflecting a significant portion of the sample with prenatal patterns lower than expected by the Ministry of Health and the World Health Organization, the existence of precarious prenatal care in the state of Pará. According to the literature review of Neto *et al.* (2010), whose objective was to study the treatment of pre-eclampsia, demonstrating that the best choice for the treatment of arterial hypertension and pre-eclampsia in pregnancy is the subject of many controversies and the main oral medications used for the treatment of SHDP are methyldopa, beta-blockers, and calcium channel blockers. However, in hypertensive emergencies intravenous medications such as hydralazine and labetalol are used and oral nifedipine. In this study, antihypertensives were the predominant drugs (68.5%) and methyldopa (45.8%), the previous use by the pregnant woman for the control of the disease, and hydralazine (30.1%), which was probably the most frequent because of the high number of pregnant women admitted to high blood pressure levels compatible with severe preeclampsia. The blood pressure measured on admission in 58.2% of the cases was 160 x 110 mmHg and classified as severe pre-eclampsia. This data is compatible with a study by Chaim *et al.* (2008) in which the values of systolic pressure of 160mmHg and diastolic pressure of 100 mmHg were the ones that presented the highest frequency with 23.1% and 35.5%, respectively. This result was also observed by Gonçalves *et al.* (2005) in São Paulo, analyzing a sample with 22 patients, observed that 13 (59.07%) of the pregnant women were admitted with blood pressure greater than or equal to 160x90mmhg. According to the Ministry of Health, vaginal delivery is preferable to cesarean section for women with pre-eclampsia or eclampsia because it would avoid the additional stress of surgery in a situation of multiple physiological changes and preventing the increase of morbidity. However, if vaginal delivery cannot be performed within a reasonable period of time, one should then opt for a cesarean delivery.

In contradistinction to the Ministry of Health, the vast majority of deliveries during the study period were cesarean (92.7%). However, other literatures such as Dias & Santos (2015), Brito *et al.* (2015) and Chaim *et al.* (2008) were concordant, presenting 188 (94.5%), 131 (77.1%) and 40 (64.5%) respectively of choice for cesarean delivery in their studies. This disagreement with the Ministry of Health can be inferred that it is due to the demand of the studied maternity hospitals, because they are hospitals of reference in their states, receiving more serious cases without the time to handle the delivery as vaginal without prejudice to the maternal-fetal binomial. It was demonstrated in this study that of the total number of newborns born in patients with severe preeclampsia 58.5% were small for gestational age, data consistent with the study by Oliveira *et al.* (2006), Bunchbinder *et al.* (2002) and Morais *et al.* (2013) where the presence of severe gestational hypertension was a high risk factor for the birth of small infants for gestational age. It should be emphasized that small for gestational age infants have, if they are symmetrical, high morbidity and mortality besides severe neuropsychomotor impairment (Pereira *et al.,* 2014). Of the neonates who needed ICUs, 74.2% were born to mothers with severe preeclampsia. The study of Carvalho *et al.* (2008) is in agreement with the data present in the research since 86.6% of the infants who needed ICUs in their study occurred in the severe form of maternal hypertension. According to Hall *et al.* (2000). In a study carried out in South Africa with 340 women with severe preeclampsia, 40.7% also had newborns who needed to be admitted to a neonatal ICU with an average stay of 6 days. According to Hall *et al.* (2000), the main form of resuscitation in neonates admitted to an intensive care unit is PPV, which is compatible with the data obtained among hypertensive pregnant women in this study, since 86 (61.0%) of the newborns received the same form of reanimation study. Severe preeclampsia did not show a risk factor for prematurity in this study, as opposed to studies such as Carvalho *et al.* (2008), where patients with severe hypertension constitute a significant risk factor for preterm deliveries (OR = 7.5) when compared to normotensive patients, and Oliveira *et al.* (2006) in which women with gestational hypertension also presented an increased risk for prematurity compared to normotensive women (OR = 1.79).

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