



Profile of Arterial Hypertension in Pregnant Women in a Conakry University Hospital

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How to cite this paper: Barry, K.M.B., Diallo, A.Y., Bangoura, S., Baldé, M.S., Diallo, M.M., Camara, M.L.T., Traoré, A., Diallo, M.M., Traoré, M., Diakité, F., Kaba, M.L. and Bah, A.O. (2025) Profile of Arterial Hypertension in Pregnant Women in a Conakry University Hospital. *Open Access Library Journal*, 12: e13689. <https://doi.org/10.4236/oalib.1113689>

Received: May 29, 2025

Accepted: July 20, 2025

Published: July 23, 2025

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Abstract

Introduction: The aim was to determine the prevalence of types of hypertension during pregnancy and to describe the sociodemographic and clinical characteristics of patients with hypertension during pregnancy in Conakry. **Methodology:** This was a prospective cross-sectional descriptive study lasting 6 months, from July 1 to December 31, 2022, carried out in the obstetrics and gynecology department of the Ignace Deen University Hospital. We included all women with systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg taken in the sitting or left lateral decubitus position on two (2) occasions, using a validated measuring device regardless of the term of pregnancy or in the immediate postpartum period. Hypertension and types of hypertension in pregnancy have been defined according to the expert consensus of the Société Française d'Hypertension Artérielle (SFHTA) 2015. **Results:** During the study period, out of 4,653 pregnant patients seen in consultation, we recorded 310 cases of hypertension during pregnancy, representing a hospital prevalence of 7% with a 95% confidence interval ranging from 6.27% to 7.73%. We noted 93% (288) married women, 38% (118 women) not in school, 23% housewives with an average age of 26. By type of hypertension, pre-eclampsia (209 cases) came first, followed by chronic hypertension (45 cases), superadded pre-eclampsia (32 cases) and gestational hypertension (24 cases), with mean arterial pressures of 168 mmHg systolic and 110 mmHg diastolic. Urine dipstick proteinuria was three crosses in 180 patients. Treatment of hypertension was based mainly on nifedipine (78%). At the end of our survey, 96% of women gave birth, 81% gave birth by Caesarean section, and 15% gave birth by natural route. **Conclusion:** This study highlights the importance of early detection and prompt, appropriate management of gestational hypertension, as well as the crucial role of high-quality prenatal follow-up in improving

maternal and fetal prognosis.

Subject Areas

Nephrology

Keywords

Hypertension, Pregnancy, Conakry

1. Introduction

High blood pressure (HBP) during pregnancy is defined as an increase in systolic blood pressure (SBP) ≥ 140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg on two occasions, in a sitting position or lying on the left side, using a validated measuring device regardless of the stage of pregnancy [1] [2].

According to the World Health Organization (WHO) and several studies, 10 to 15% of pregnant women have high blood pressure. Hypertension (HBP) is the second leading cause of transfer of pregnant women to intensive care and the leading cause of maternal and fetal morbidity and mortality worldwide [3].

Hypertensive disorders of pregnancy cover a wide range of conditions including preeclampsia, eclampsia, gestational hypertension, and chronic hypertension. Pregnancies with elevated blood pressure are the second most common cause of maternal and fetal morbidity and mortality worldwide, affecting 6%-8% of pregnancies [4].

In France in 2016, the prevalence of hypertension during pregnancy was 5 to 10% [5].

In sub-Saharan Africa, even though epidemiological data needs to be updated, hypertension during pregnancy is a major public health issue due to its high prevalence and frequent fetal and maternal complications. This hypertension and its complications add to the list of causes of maternal and neonatal mortality in Africa [3].

In Togo in 2014, the prevalence of hypertension during pregnancy was 12.3%, with 3% maternal mortality and 4.5% fetal mortality [3].

In Benin, from April 1 to September 30, 2019, the prevalence of hypertension during pregnancy was 17.6% [6].

The objective was to determine the prevalence of different types of hypertension during pregnancy and to describe the sociodemographic and clinical characteristics of these patients.

2. Methodology

2.1. Study Setting

The obstetrics and gynecology department at Ignace Deen University Hospital served as the setting for this study.

2.2. Type and Duration of Study

We conducted a prospective, cross-sectional, descriptive study lasting six months, from July 1 to December 31, 2022.

2.3. Target Population

All pregnant women were seen at the Gynecology and Obstetrics Department of Ignace Deen University Hospital during the study period.

2.4. Study Population

Women with systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg taken in a sitting position or on their left side on two (2) occasions, using a validated measuring device, regardless of the stage of pregnancy or in the immediate postpartum period.

2.5. Sampling

We conducted an exhaustive recruitment of all women who met our selection criteria.

2.6. Variables Studied

The variables studied were epidemiological (prevalence), sociodemographic (age, occupation, marital status), and clinical.

High blood pressure during pregnancy was defined as a blood pressure of ≥ 140 mmHg for systolic and/or ≥ 90 mmHg for diastolic on two (2) occasions, in a sitting position or lying on the left side, using a validated measuring device, regardless of the stage of pregnancy or in the immediate postpartum period.

The immediate postpartum period is defined as the period following childbirth and lasts six (6) to eight (8) weeks.

Blood pressure was measured after five minutes of rest in the left lateral decubitus position regardless of gestational age, using an OMRON electronic blood pressure monitor. Two cuffs of different sizes (22 to 36 cm and 32 to 42 cm) were used depending on the patients' body size. Two measurements were taken two minutes apart. It was taken before the gynecological examination.

Hypertension during pregnancy includes several clinical entities defined according to the 2015 consensus of experts from the French Society of Hypertension (SFHTA). These are: gestational hypertension, preeclampsia, chronic hypertension, and superimposed preeclampsia.

- Gestational hypertension is defined as systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg appearing after twenty (20) weeks of amenorrhea (SA) without proteinuria.
- Preeclampsia is defined as systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg associated with proteinuria > 300 mg/24 hours or creatinuria > 30 mg/mmol appearing after 20 weeks of gestation.
- Chronic hypertension: defined as blood pressure ≥ 140 mmHg for systolic

and/or ≥ 90 mmHg for diastolic, pre-existing before pregnancy or discovered before 20 weeks of gestation.

- Superimposed preeclampsia: defined as blood pressure ≥ 140 mmHg systolic and/or ≥ 90 mmHg diastolic pre-existing before pregnancy or discovered before 20 weeks of gestation, associated with proteinuria > 300 mg/24 hours or 30 mg/mmol of creatinuria.

Based on blood pressure values, hypertension during pregnancy has been classified as:

- Mild to moderate hypertension: diagnosed when blood pressure readings are between 140 and 159 mmHg systolic and/or 90 and 109 mmHg diastolic.
- Severe hypertension was defined as systolic blood pressure ≥ 160 mmHg and/or diastolic blood pressure ≥ 110 mmHg.

All pregnant women with high blood pressure underwent urine dipstick testing for proteinuria. If the result was positive, proteinuria was measured in the laboratory. Given the constraints associated with collecting 24-hour urine samples, proteinuria was assessed using the proteinuria/creatinine ratio (g/mmol).

2.7. Data entry and Analysis

Data analysis was performed using the Statistical Package for Social Science (SPSS) version 20 software. Frequencies were calculated for qualitative variables, while for quantitative variables we calculated the means and standard deviations. Fisher's test was used to determine the correlation between variables. The association was considered significant when the p-value was $< 5\%$.

2.8. Ethical Considerations

The patients' verbal consent was obtained, and the information collected from them was confidential and used for scientific purposes.

2.9. Limitations and Difficulties

The main difficulties were the lack of financial resources, which prevented the WHO-recommended hypertension screening from being carried out, the failure to perform ambulatory blood pressure monitoring (ABPM), and incomplete data in some prenatal consultation records.

3. Results

During the study period, we recorded 310 patients hospitalized for hypertension during pregnancy among 4,653 consultations at the Ignace Deen maternity ward, representing a hospital prevalence of 7% with a 95% confidence interval ranging from 6.27% to 7.73%.

The average age of patients was 26 ± 6 years, with extremes of 15 and 42 years, and a predominance of the 15 - 24 age group. In terms of marital status, 93% of the women giving birth were married, compared to 7% who were single, with 38% having no schooling, 27% having a secondary education, and 27% having a uni-

versity education. The most represented socio-professional groups were professionals (38%), housewives (23%), and salaried employees (20%) (**Table 1**).

Table 1. Socio-demographic characteristics of patients.

Variables	Workforce (310)	Percentage (%)
Age (years)		
15 - 24	145	47
25 - 34	127	41
≥35	37	12
Marital status		
Married	288	93
Single	22	7
Level of education		
Not educated	118	38
Secondary	84	27
University	81	26
Primary	27	9
Profession		
Profession liberal	118	38
Housewives	71	23
Employees	62	20
Students	59	19

Average age is: 26 years with extremes of 15 and 42 years.

Evacuation (176 patients) accounted for 57% of admissions, ranking first among admission methods.

The main functional signs were headaches (74%), dizziness (63%), and blurred vision (39%).

Primiparity (43%), primigravidity (41%), familial hypertension (41%), chronic hypertension (18%), age under 18 (14%), familial diabetes (3%), and diabetes (2%) were the main risk factors for hypertension during pregnancy encountered in our series.

Preeclampsia (209 cases), chronic hypertension (45 cases), superimposed preeclampsia (32 cases), and gestational hypertension (24 cases) are the main types of hypertension (**Table 2**), with mean blood pressure readings of 168 mmHg systolic and 110 mmHg diastolic, and extremes of 250/160 mmHg.

Proteinuria on urine dipstick testing was three crosses in 180 patients and greater than three crosses in 29 patients.

Maternal complications were dominated by eclampsia (22%), followed by retroplacental hematoma (21%), acute renal failure (6%), and death (3%). Fetal complications included prematurity (40%), intrauterine fetal death (25%), fetal dis-

tress (6%), fetal hypotrophy (2%), and early neonatal death (2%).

The treatment of hypertension was mainly based on nifedipine (78%), followed by alpha methyl dopa (42%), while nicardipine was used more marginally (2%).

At the end of our survey, 96% of women had given birth, 81% by caesarean section and 15% naturally.

We noted a correlation between death and preeclampsia with a P-value of 0.02 (Table 3).

Table 2. Prevalence of types of arterial hypertension during pregnancy.

Types of arterial hypertension	Workforce (310)	Percentage (%)
Pre-eclampsia	209	67
Chronic hypertension	45	15
Additional pre-eclampsia	32	10
Pregnancy induced hypertension	24	8

Table 3. Correlation between types of hypertension and maternal death.

Variables	Deaths		P-Value
	Yes (8)	No (302)	
Pre-eclampsia	6	203	0.02
Chronic hypertension	1	44	0.07
Additional pre-eclampsia	1	31	0.72
Pregnancy induced hypertension	0	24	0.92

4. Discussion

The lack of use of ambulatory blood pressure monitoring (ABPM) is one of the main limitations of our study. The diagnosis of high blood pressure was based exclusively on measurements taken during consultations, which may lead to an overestimation (particularly in cases of white coat hypertension) or an underestimation (in cases of masked hypertension) of actual blood pressure values.

However, based on our selection criteria, out of 4,653 pregnant patients who consulted the gynecology and obstetrics department at Ignace Deen University Hospital during the six months of our survey, we recorded 310 cases of hospitalization for high blood pressure during pregnancy, representing a hospital prevalence of 7% with a 95% confidence interval ranging from 6.27% to 7.73%.

The prevalence of high blood pressure during pregnancy varies from one country to another. According to the WHO, it ranges from 0.1% to 31% [2].

In developed countries, it affects around 9 to 15% of pregnancies [4], 10% in France [7], 11% in the United Kingdom, and 10 to 15% in the United States [8].

In sub-Saharan Africa, we only have hospital statistics. It is 11% in Madagascar [5].

In Guinea, the prevalence of high blood pressure (HBP) during pregnancy has

been declining over the years: it fell from 17% in 2000 [9] to 8% in 2019 [10], reaching 7% in our study.

The average age of our patients was 26, with extremes of 15 and 42. This young age in our series could be explained by early marriage or early sexual activity in our society. Married women accounted for 93% of the total. This result is consistent with the 2018 Demographic and Health Survey (DHS), which shows that 75% of women in Guinea were married, compared to 25% who were single [11]. In fact, a single woman theoretically encounters more difficulties in monitoring her pregnancy than a married woman.

The number of women with no schooling was significant, at 38%.

This result is lower than those of the 2018 Demographic and Health Survey (DHS) in Guinea, which shows that 69% of women aged 15 - 49 have no education [11]. This lack of education exposes them to a lack of or poor prenatal care, which increases the risk of complications such as high blood pressure during pregnancy.

Primiparity (43%) and primigravidity (41%) ranked first and second, respectively, among the risk factors for high blood pressure during pregnancy. However, Diallo B.S. found that 52% of women were primigravid [12].

Preeclampsia accounted for 67% of cases of high blood pressure, followed by chronic high blood pressure (15%), superimposed preeclampsia (10%), and gestational high blood pressure (7%).

The prevalence of types of hypertension during pregnancy varies from country to country.

Preeclampsia was 7% in Morocco [13] and 7.8% in Algeria [14].

Baragou found 44% pure preeclampsia and 33% gestational hypertension in Lomé [3].

In Guinea, B.S. Diallo found 48% of cases to be preeclampsia, 28% transient hypertension, 16% superimposed preeclampsia, and 8% chronic hypertension [10].

We recorded a maternal mortality rate of 3%.

This result is lower than that of developed countries because, according to a WHO study, hypertension is the leading cause of maternal mortality in high-income countries, accounting for 16% of deaths [13].

We noted a correlation between death and preeclampsia with a P-value of 0.02.

Preeclampsia is a major cause of maternal mortality (15 to 20% in developed countries) and morbidity [14].

5. Conclusions

The prevalence of hypertension in pregnant women was 7%, with a predominance among married women and those in the liberal professions.

The study highlights the importance of early screening and rapid, appropriate management of gestational hypertension, as well as the crucial role of high-quality prenatal care in improving maternal and fetal outcomes.

Authors Contributions

All authors have read and approved the manuscript.

Conflicts of Interest

There is no conflict of interest.

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