Scientific Research Publishing

Open Journal of Obstetrics and Gynecology, 2025, 15(11), 1928-1936
https://www.scirp.org/journal/ojog
ISSN Online: 2160-8806
ISSN Print: 2160-8792

Pre-Eclampsia in the Gynecology and Obstetrics Department of the Chadian and Chinese Friendship University Hospital Center: Epidemiology and Prognosis

Gabkika Bray Madoué[1,2*], Mahamat Alhadi Chene[1,2], Aché Haroune[1], Mihimit Abdoulaye[3], Hissein Adanao Mahamat[1,2], Mbodou Mahamat[3], Hawaye Chérif[1,4], Zeinab Daoud[2], Foumsou Lhagadang[1,4]

[1]Department of Gynaecology and Obstetrics, Faculty of Human Health Sciences, University of N'Djamena, N'Djamena, Chad
[2]Chadian and Chinese Friendship University Hospital Center, N'Djamena, Chad
[3]Faculty of Human Health Sciences, Adam Barka University, Abéché, Chad
[4]Mother and Child University Hospital Center, N'Djamena, Chad
Email: *kickbray@yahoo.fr

How to cite this paper: Madoué, G.B., Chene, M.A., Haroune, A., Abdoulaye, M., Mahamat, H.A., Mahamat, M., Chérif, H., Daoud, Z. and Lhagadang, F. (2025) Pre-Eclampsia in the Gynecology and Obstetrics Department of the Chadian and Chinese Friendship University Hospital Center: Epidemiology and Prognosis. *Open Journal of Obstetrics and Gynecology*, **15**, 1928-1936.
https://doi.org/10.4236/ojog.2025.1511161

Received: October 9, 2025
Accepted: November 18, 2025
Published: November 21, 2025

Abstract

Introduction: Pre-eclampsia is a systemic condition characterized by hypertensive disorders that can interfere with the normal course of pregnancy. **Objective:** We analyze factors associated with severe pre-eclampsia. **Patients and Method:** This was a descriptive and analytical cross-sectional study covering a period of 12 months from 1st April 2024 to 31st March 2025 perform in the Gynecology and Obstetrics Department of the Chadian and Chinese Friendship University Hospital Center (CCFUHC). All patients admitted for pre-eclampsia during the study period were included in this study. With gestational term ≥20th weeks, studied variables were sociodemographic, clinical, paraclinical, therapeutic, and prognostic. Statistical analysis was performed using then value (significant when ≤5%). **Results:** We recorded 160 cases of pre-eclampsia among 6218 deliveries, giving a frequency of 2.6%. The age group of 16 - 20 years accounted for 41.9. Most of the patients were married (97.5%) and the majority came from urban areas (69.4%). Primigravida represented 49.4% and a history of pre-eclampsia was reported in 6.9%. In 25%, patients had not attended prenatal cares. In 75.6%, patients had had gestational age was between 37 and 40 weeks. The Pre-eclampsia was severe in 55%. Magnesium sulphate was given in 96.9%. Lung maturation was achieved in 19.4%. Antihypertensive drugs were prescribed in 48.1%. In 70.6% patients have delivered by caesarean section. The Apgar score was between 8 and 10 for 78.8%

of newborns. In 22% fetal complications were recorded. We reported 15.6% cases of maternal complication. A history of pre-eclampsia, the delivery route and the occurrence of maternal complications were significantly associated with severe pre-eclampsia. **Conclusion:** Pre-eclampsia remains a public health problem, exposing pregnant women and fetuses to risks of morbidity and mortality. Thus, careful monitoring during pregnancy is necessary in order to prevent complications.

Keywords

Preeclampsia, Complication, CCFUHC

1. Introduction

Pre-eclampsia is a systemic condition characterized by hypertensive disorders that can interfere with the normal course of pregnancy. It usually appears in the third trimester of pregnancy. It combines high blood pressure and pathological proteinuria with oedema of the lower member, which is an inconsistent feature [1].

There are many risk factors, which may be genetic, immunological, physiological or environmental in nature, or related to associated maternal conditions (obesity, chronic kidney disease, high blood pressure) or gestational conditions (multiple pregnancies, gestational diabetes) [2]. Its severity is marked by a range of maternal complications (eclampsia, retroplacental hematoma, HELLP syndrome, acute pulmonary oedema, acute renal failure, intravascular coagulation disorder, hemorrhagic liver rupture, retinal detachment) and fetal complications (intrauterine growth restriction, intrauterine fetal death). It is the leading cause of morbidity and mortality in both mothers and fetuses [3].

Its pathophysiology is now better understood, as far as the maternal aspect is concerned, involving in particular the secretion by the placenta of excessive amounts of soluble anti-angiogenic factors, which cause systemic maternal endothelial dysfunction [4].

Globally, the overall prevalence of pre-eclampsia is estimated at between 3% to 5% of pregnancies, with a significantly higher incidence in developing countries.

In the United States, its prevalence is estimated to be between 0.7% to 1.5%, depending on the authors [5].

In France, the prevalence is estimated around 1% in the general population, with average of 1.5% for primiparous women and 0.8% for multiparous women [6].

In Africa, the prevalence of pre-eclampsia is significantly higher, accounting for 4% in the general population and reaching 18% in certain ethnic groups [7]. In Chad, according to a hospital source, its frequency is 2.9% [8].

Pre-eclampsia is therefore a major public health problem and a source of social crisis in developing countries, particularly in its severe form, due to the occurrence of the complications. For this reason, we considered it necessary to perform this study aiming to analyze factors associated with severe pre-eclampsia.

2. Patients and Method

This was a descriptive and analytical cross-sectional study with prospective data collection, covering a period of 12 months from 1st April 2024 to 31st March 2025 perform in the Gynecology and Obstetrics Department of the Chadian and Chinese Friendship University Hospital Center. Were included in this study all patients admitted for pre-eclampsia during the study period. With gestational term ≥20th weeks That accepted to participate at this study. We recruited all patients that met our inclusion criteria in the emergency department and delivery room, and they were monitored during their hospital stay and upon discharge through telephone contact. Studied variables were sociodemographic, clinical, paraclinical, therapeutic, and prognostic. The data were entered using Word and Excel 2016 software and analyzed using SPSS version 18.0 software. Statistical analysis was performed using then value (significant when ≤5%).

3. Results

3.1. Frequency

During this study, we recorded 160 cases of pre-eclampsia among 6218 deliveries, giving a frequency of 2.6%.

3.2. Age

Table 1. Distribution of patients according to age group.

Age group (year)	n	%
16 - 20	**67**	**41.9**
21 - 24	31	19.4
25 - 29	16	10
30 - 35	35	21.9
≥36	11	6.9
Total	160	100

The age group of 16 - 20 years accounted for 41.9%. The median age was 24.6 ± 6.6 years, with extremes of 17 and 40 years (Table 1).

3.3. Epidemiological Profile

Most of the patients were married (97.5%) and the majority came from urban areas (69.4%). We found that 95% had come on their own needs and 67.5% were schooled. According to obstetrical history, we noted that primigravida represented for 49.4% and a history of pre-eclampsia was reported in 6.9%. In 43.1% then have attended 1 to 3 prenatal consultations and 40 patients (25%) who had not attended any prenatal cares.

3.4. Clinical Profiles

Clinically, we noted that the labor was the reason for admission in 46.9%. Func-

tional signs such as headaches and dizziness were reported in 40.5%. Patients whose gestational age was between 37 and 40 weeks accounted for 75.6%, while in 19.4% (n = 31) had a gestational age ≤ 34 weeks.

The systolic blood pressure was between 140 - 159 mm Hg in 46.3%, and 53.8% had had diastolic blood pressure between 90 - 109 mm Hg. In 71.9% the urinary proteinuria was positive ++ (2 cross) and in 27.5% positive with +++ (3 cross). The Pre-eclampsia was confirmed severe in 55%.

3.5. Management

Table 2. Distribution according to medical treatment.

Medical treatment	n	%
Nicardipine	16	10
Alpha méthyl dopa	61	38.1
Magnesium sulphate	**155**	**96.9**
Corticoïds	31	19.4%

Magnesium sulphate was given in 96.9%. Lung maturation was achieved in 19.4%. Antihypertensive drugs (alpha methyl dopa or nicardipine) were prescribed in 48.1% (Table 2).

3.6. Obstetric Treatment and Prognosis

In 70.6% patients have delivered by caesarean section and 29.4% by vaginal route.

The Apgar score was between 8 and 10 for 78.8% of newborns, in 85.6% of cases, the weight was ≥2500 g (with average of 2080 with extreme of 1100 g and 3700 g). In 22% fetal complications were recorded and main fetal complications were: the prematurity (7.5%, n = 12), the perinatal asphyxia (6.9% n = 11), low birth weight (3.4%, n = 5), and intrauterine death (2.5%, n = 4).

We reported 15.6% cases of maternal complications, and the main complications were: abruptio placenta (8.1% n = 13), eclampsia (2.5%, n = 4), and maternal death (3.1%, n = 5).

Table 3. Correlation between pre-eclampsia and maternal clinical characteristics.

Variable	pre-eclampsia		
	Low	Severe	
	n	**n**	**p**
Antécédent of préeclampsia			**0.0001**
yes	11	14	
No	0	135	
Parity			0.5597
Primipara	9	69	
Paucipara	7	26	
Multipara	4	17	
Granda multipara	5	23	

Continued

Gravida			0.383
Primigravida	9	70	
Paucigravida	7	23	
Multigravida	3	19	
Grande multigeste	6	23	
Prenatal cares			0.9433
attended	52	64	
No attended	20	24	
Delivery mode			**0.0004**
Cesarean section	11	61	
Vagina route	36	52	
Maternal complications			**0.0062**
No	67	68	
yes	5	20	

We noted that a history of pre-eclampsia, the delivery route and the occurrence of maternal complications were significantly associated with severe pre-eclampsia ($p = 0.0001$, $p = 0.0004$, $p = 0.0062$) (Table 3).

4. Discussion

During the study period, we reported a frequency of 2.6%. This frequency is comparable to those reported by Randriamahavonjy *et al.* [9] in Madagascar in 2018, Lisonkova S *et al.* [10] in Canada in 2021 and Foumsou *et al.* [8] in Chad in 2022, who noted respectively 1.68%, 2.5% and 2.9%. However, it is lower than what reported by Tshabu *et al.* [11] in Benin in 2017, Randrianambinina *et al.* [12] in Madagascar in 2023, Ahmed *et al.* [5] in Morocco in 2020, Bamba *et al.* [13] in 2022 and Diallo *et al.* [14] in 2024 in Guinea, who found respectively the rates of 4.8%, 6.30%, 7%, 10.6% and 13.60%. These differences could be explained by the fact that the occurrence of pre-eclampsia remains dependent on known and identified factors that vary from one geographical area to another.

With regard to age, the group age of 16 - 20 accounting for 41.9% , with a medium age of 24.6 ± 6.66 years and extremes of 17 and 40 years. This result is similar to those of Diallo *et al.* [14], who report that the 15 - 20 age group accounted for 40.86% of cases. Coulibaly *et al.* [15] in Côte d'Ivoire in 2018 found that 30.5% were aged between 15 and 25. Some authors, such as Elombila *et al.* [3] in Congo in 2022 and Ronald *et al.* [16] in Congo in 2024, Bamba Diallo *et al.* [13] in Guinea in 2022, and Annick *et al.* [17] in Cameroon in 2024, noted a higher proportion in the group age from 20 - 35, respectively of 66.5%, 70%, 68%, and 48.2%. This difference seems to be linked to marriage and pregnancy among adolescents, which are still common practices in our country. This can lead to motherhood or

pregnancies enameled by with complications.

In terms of marital status, 97.5% of patients were married. This rate is similar to the findings of M'baye *et al.* [18] in Niger in 2024 and Diallo *et al.* [14], who noted 98.26% and 100% of married patients. These results could be explained by the social stigma in our context linked to conception out of marriage.

According to the living area, 69.37% of patients came from urban areas, which is comparable to the findings of M'baye *et al.* [18], Diallo *et al.* [14] and Konaté [19] in Mali in 2023, who reported respectively 65% and 81% of patients coming from urban areas. This result could be explained by the statute of the Chadian and Chinese University Hospital Center that preferred to consult this center that is the nearest for emergency and complication linked to the pregnancy.

Despite the urban setting, we found that some patients did not receive adequate prenatal care. Thus, 43.12% of patients had attended 1 - 3 antenatal care. This result is lower than that reported by authors such as Diallo *et al.* [14] and Bamba *et al.* [13], who observed 59.14% and 61.1% of patients, respectively, had attended between 1 to 4 prenatal cares. This could be explained on one hand by the fact that antenatal care is not free in public facilities and on the other, by the fact that the majority of patients are not in schooled, that constitute the limits to know the benefits of antenatal care.

We reported that primigravida, accounting for 49.4%. This result is similar to those of Kichou *et al.* [4] in Algeria in 2015 and Diallo *et al.* [14], who noted respectively 56% and 34.41% of primigravida This finding corroborates the assertions that revealed primigravida as the risk factor for pre-eclampsia.

Clinically, functional signs such as headaches and dizziness were observed in 40.5%. This is close to the 32.1% and 64.7% reported by Randrianambinina *et al.* [12] and Kichou *et al.* [4]. This result could be explained by the fact that headaches and dizziness are warning signs of severe pre-eclampsia.

According to gestational age, we noted that the gestational term from 36 to 40 weeks was the most common, with 75.6%. Our findings are similar to those of Diallo *et al.* [14], who reported that 48.16% had a gestational age > 37 weeks. Different obstetric contexts could explain these findings.

On clinical examination, we observed that systolic blood pressure (BP) was ≥160 mm Hg in 45%. This is lower than the 76.7% and 96.8% reported by Tshabu *et al.* [11] and Randrianambinina *et al.* [12], with systolic BP ≥ 160 mm Hg, respectively.

Considering diastolic blood pressure, we constated that it ranged between 90 - 109 mm Hg in 53.8%. This rate is lower than the findings of Diallo *et al.* [20], who noted 63.3% of patients with diastolic BP between 90 - 109 mm de Hg. These different systolic BP and diastolic BP rates observed in this study are justified by the fact that most of our patients had received methyldopa as antihypertensive treatment prior to admission.

According to the presence of proteinuria in the urine, we found that it was 3 crosses (+++) in 27.5%. M'baye *et al.* [18] and Randrianambinina *et al.* [12], ob-

served respectively 39.95% and 64.01% of positive proteinuria w ith 3+ (+++) in their study. This difference could be explained by the fact that most of our patients did not undergo prenatal cares.

In terms of obstetric treatment, caesarean section was the main mode of delivery with 70.60%. This confirms the attitude of Tshabu *et al.* [11], Elombila *et al.* [3], and Randrianambinina *et al.* [12], who reported respectively 77.3%, 80.3% and 83.76% of patients delivered by cesarean section. This high rate of caesarean section can be attributed to the rate of severe pre-eclampsia in this series. According to current recommendations [21], when of severe pre-eclampsia is diagnosed, uterine evacuation must be performed within 24 following hours when the gestational term is ≥37 gestational weeks. Similarly, the use of anticonvulsants and antihypertensive drugs is strongly recommended. This study corroborates these assertions, with 96.9% and 48.1% of patients benefiting from magnesium sulphate and an antihypertensive drug.

During this study, we recorded 15.6% of maternal complications, which is lower than the findings of Elombia *et al.* [3] and Randrianambinina *et al.* [12], who reported respectively the complications rate of 25.4% and 43.6%. This could be explained by the fact that the CCUHC is the third referral center in N'Djamena, which, due to its status, attracts patients from surrounding areas or those referred for the management of complications.

The maternal lethality rate was 3.12%. This result is higher than those reported by Diallo *et al.* [14] and Tshabu *et al.* [11], noted respectively the lethality rate of 2.15% and 2.45%. This result can be explained by the systematic transfer of complications such as eclampsia and HELLP syndrome to other facilities due to the lack of intensive care services.

Fetal prognosis, cis enameled by the occurrence of 22% cases of complications. This result is like those of M'baye *et al.* [18], Bamba *et al.* [13] that reported a high rate of fetal complications respectively 17.44% and 27.4%. This rate can be linked to factor like the induce prematurity and the perinatal asphyxia with is high in the context of hypertension and complications.

5. Conclusions

Pre-eclampsia is a serious condition that is becoming increasingly common at the Chadian and Chinses Friendship University Hospital Center and is responsible for both maternal and fetal complications.

This study shows that pre-eclampsia remains a public health problem, exposing pregnant women and fetuses to risks of morbidity and mortality. The socio-demographic profile is that of young, primigravida, married, uneducated women living in urban areas who often attend less to healthcare facilities.

Optimal and effective care must always be provided early and in a multidisciplinary manner in order to improve the prognosis for both mother and fetus. Thus, careful monitoring during pregnancy is necessary in order to prevent complications.

Conflicts of Interest

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

References

[1] Alla, C., Yao, B., Boussou, C., Akinloye, S., Yeo, K, and Boni, S. (2023) Severe Pre-eclampsia before 34 Weeks of Amenorrhoea at Cocody University Hospital: Epidemiological and Clinical Aspects. *Revue africaine d'Anesthésiologie et de Médecine d'Urgence*, **28**, 47-50.

[2] Jain, V. and Bujold, E. (2024) Screening for Pre-Eclampsia Risk and Prophylaxis with Acetylsalicylic Acid. *Canadian Medical Association Journal*, **196**, 174-176.

[3] Elombila, M., Niengo, O.G. and Mpoyemymonkessa, C.M. (2022) Severe Pre-Eclampsia in the Multi-Purpose Intensive Care Unit of the Brazzaville University Hospital. *Health Sciences & Disease*, **23**, 62-67.

[4] Kichou, B., Henine, N. and Kichou, L. (2015) Epidemiology of Pre-Eclampsia in the Tizi-Ouzou Region (Algeria). In: *Annales de Cardiologie et d'Angéiologi*e, Elsevier Masson.

[5] Ahmed, T.B., Youness, B.S., Mahdaoui, N. and Naima, S. (2020) Epidemiology of Pre-Eclampsia in the Greater Casablanca Region. *PAMJ Clinical Medicine*, **2**, 1-11.

[6] Genoux, A., Guerby, P. and Morin, M (2018) Targeted Screening for Pre-Eclampsia in the First Trimester of Pregnancy at Toulouse University Hospital. In: *Annales de Cardiologie et d'Angéiologie*, Elsevier Masson.

[7] Fantamadi, K. (2020) Neurological Complications of Pre-Eclampsia: Sociodemographic Profile. University of Science, Technology and Technology of Bamako.

[8] Foumsou, L., Kouamé, A., Danmadji, N.L., Gabkika, B.M., *et al.* (2022) Prééclampsie sévère au centre hospitalier universitaire de la mère et de l'enfant (CHUME) de N'Djamena: Épidémiologie et pronostic. *Revue clinique d'obstétrique et de gynécologie*, **5**, 9.

[9] Randriamahavonjy, R., Tsifiregna, R.L., Andrianirina, Z.Z. and Andrianampanalinarivo, H.R. (2018) Materno-Fetal Outcomes in Pre-Eclampsia in a Rural Hospital of Antananarivo Madagascar. *International Journal of Research in Medical Sciences*, **6**, 1064-1067. https://doi.org/10.18203/2320-6012.ijrms20181042

[10] Lisonkova, S., Bone, J.N. and Muraca, G.M. (2021) Incidence et facteurs de risque de prééclampsie sévère, d'hémolyse, d'élévation des enzymes hépatiques, de syndrome de faible numération plaquettaire et d'éclampsie en cas de grossesse prématurée et à terme: Une étude basée sur la population. *American Journal of Obstetrics and Gynecology*, **225**, 538.

[11] Tshabu, A.C., Ogoudjobi, O.M. and Mègnissè, S. (2017) Facteurs pronostiques de la prééclampsie sévère à la maternité universitaire de PORTO-NOVO. *Journal de la Société de Biologie Clinique du Bénin*, **27**, 59-64.

[12] Randrianambinina, T.P., Andrianiaina, R.L., Rafanomezantsoa, T.A., Ratsirahonana, F.S., Andrianirina, M. and Raveloson, N.E. (2022) Aspects cliniques et évolutifs de la pré-éclampsie sévère traitée à la maternité Befelatanana, Madagascar. *Revue d'Anesthésie-Réanimation, Médecine d'Urgence et Toxicologie*, **15**, 19-24.

[13] Bamba Diallo, F., Diallo, M.H., Bah, E.M., Balde, O., *et al.* (2022) Study of the Impact of Severe Pre-Eclampsia and Eclampsia on Morbidity and Mortality in Newborns at the Ignace Deen National Hospital Maternity Ward. *Journal of SAGO*, **23**, 17-23.

[14] Diallo, M.H., Diallo, A., Diallo, F.B., Barry, A.B., Diakité, M., Balde, I.S *et al.* (2024)

Pre-Eclampsia: Socio-Demographic and Clinical Aspects, Management and Prognosis at the Maternity Ward of the Regional Hospital of Labé, Guinea. *Journal of SAGO*, **25**, 25.

[15] Coulibaly, K.T., Abhé, C.M., Ouattara, A., Yapi, N., *et al.* (2014) Complications of Pre-Eclampsia in the Multi-Purpose Intensive Care Unit at Cocody University Hospital (Abidjan, Côte d'Ivoire). *African Journal of Anaesthesiology and Emergency Medicine*, **19**, 19-23.

[16] Vangu, R., Wembonyama, S.O., Longo, B., *et al.* (2024) Maternal Complications during Severe Pre-Eclampsia at the Monkole Mother and Child Hospital: Historical Cohort Study. *Kivu Medical Journal*, **1**, 1-6.

[17] Annick, M.N.J., Charles, B.B., Gertrude, M.S., *et al.* (2024) Clinical Profile of Severe Preeclampsia and Its Complications in Intensive Care Unit in two Hospitals of the City of Douala. *Health Sciences and Disease*, **25**, 109-114.

[18] M'baye, S.M., Halarou, T.A.A. and Nabara, Z. (2024) Preeclampsia in Zinder (Niger): Clinical, Therapeutic and Prognostic Aspects: Preeclampsia in Zinder (Niger): Clinical Presentation, Management and Prognosis. *Health Sciences and Disease*, **25**, 32-38.

[19] Konate, K.G. (2023) Epidemiological-Clinical Study of Pre-Eclampsia in the Centre of Commune V. University of Science, Technology and Technology of Bamako.

[20] UNFPA (2018) Provider Guide. https://gieraf.org/assets/images/article_41/01SONU%20AFRIQUE%203%C3%A8me%20%C3%A9dition%202018.pdf

[21] Diallo, J.W., Méda, N., Ahnoux-Zabsonré, A., *et al.* (2015) Ocular Manifestations in Severe Pre-Eclampsia or Eclampsia at the Sourô Sanou University Hospital in Bobo Dioulasso. *Pan African Medical Journal*, **21**, 1-7.