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Becoming Newborns of Mothers with Preeclampsia in the Neonatal Unit of the Community University Hospital Center of Bangui

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Abstract

Background: Preeclampsia is one of the maternal conditions responsible for high neonatal morbidity and mortality. Newborns born to mothers with preeclampsia pose a public health problem in neonatal settings. Objective: The aim was to describe maternal characteristics, neonatal clinical profiles, and short-term outcomes. Patients and methods: This was a descriptive cross-sectional study conducted at the Bangui Community University Hospital Center (January-March 2024). The records of newborns of mothers with preeclampsia were studied. Data were entered and analyzed using Excel and Stata/IC version 16.1 software. The Chi-square test was used to compare proportions at a threshold of 0.05. The odds ratio was estimated for each variable with a 95% confidence interval. Results: The prevalence of newborns of mothers with preeclampsia was 17.8% (85/478). The symptomatic detection of preeclampsia in mothers was 88.9%. The mean birth weight was 2100 g, ranging from 1050g to 4000g. The main diagnoses were prematurity (38.9%), perinatal asphyxia (21.2%), and intrauterine growth restriction (24.7%). The outcome was marked by recovery in 85.9% (73/85), referrals in 5.9% (5/85), and death in 8.2% (7/85). Gestational age ≤34 weeks, CPN < 4, resuscitation at birth, absence or insufficiency lung maturation, low birth weight, and perinatal asphyxia are risk factors for death in our study with a $p < 0.05$, which is statistically significant. Conclusion: Mortality among newborns of mothers with preeclampsia is high and therefore remains a major public health problem in Bangui.

Keywords

Newborn, Preeclampsia, Bangui, CAR

1. Introduction

Preeclampsia, a common obstetric complication occurring from the 20th week of pregnancy onwards, is one of the leading causes of significant neonatal morbidity and mortality [1] [2]. Newborns of mothers with preeclampsia are often at increased risk due to the impact of this condition on placental circulation and fetal development, leading to complications such as intrauterine growth restriction, respiratory disorders, and neurological abnormalities [3]. It is responsible for neonatal mortality rates ranging from 12% to 14% [4]. In Africa, high rates were reported in Senegal (15.3%) and Guinea in 2014, with one study reporting a rate of 6.2% and a perinatal mortality rate of 13.1% [5] [6]. The neonatal mortality rate associated with severe preeclampsia in Mali [7] and Senegal [8] was 21.5% and 22.7%, respectively.

Neonatal care is therefore essential for these babies, who require specific care in the neonatal unit. However, some newborn deaths due to these complications may be preventable if women with these conditions receive effective care in a timely manner [9] [10]. In the Central African Republic (CAR), the neonatal mortality rate remains high at 28 deaths per 1000 live births in 2017 [11] [12].

However, no studies have been conducted on newborns of mothers with preeclampsia in CAR. The frequency of this condition and the severity of its complications in newborns led us to conduct this study, the aim of which was to describe the epidemiological, clinical, and developmental profiles of newborns born to mothers with preeclampsia in the neonatal unit of the CHUC in Bangui.

2. Patients and Methods

This was a cross-sectional, retrospective, monocentric, descriptive study covering a three-month period (January 1 to March 31, 2024). It involved newborns aged 0 to 28 days hospitalized in the neonatal unit of the Community University Hospital Center (CHUC) whose mothers had been diagnosed with preeclampsia before birth. All newborns hospitalized in neonatology whose mothers had experienced preeclampsia/eclampsia before or during delivery were included.

Excluded were all newborns whose mothers had preeclampsia/eclampsia associated with another pathology, newborns who were not hospitalized in neonatology, or in cases of incomplete records.

The sampling was exhaustive, regarding all eligible newborns. A survey form was used to collect data from hospital records. The variables studied were sociodemographic (maternal age, gravidity, parity, level of education, prenatal consultation, fetal lung maturation with dexamethasone injection to the mother), clinical (diagnosis), paraclinical, therapeutic, and evolutionary. Data entry and analy-

sis were performed using Excel and Stata/IC version 16.1 software. The study was conducted in strict compliance with confidentiality requirements according to ethical recommendations.

Operational definitions

The diagnosis of preeclampsia was made in the presence of high blood pressure equal to or greater than 140/90 mmHg and proteinuria equal to or greater than 0.3 g/24h. Others signs (Headache, visual blurring, and epigastric pain).

Perinatal asphyxia is determined by an Apgar score of less than 7 at the 5th minute, which may be accompanied by other signs such as altered state of alertness, seizures, hypotonia, respiratory distress... We do not have a laboratory in our country that can perform blood gas analysis for us.

Intrauterine growth retardation is revealed by the discrepancy between birth weight and gestational age.

3. Results

3.1. General Characteristics

We registered 85 patients whose mothers had preeclampsia out of a total of 478 newborns hospitalized during the study period. The hospital admission rate for newborns of mothers with preeclampsia was 17.8% in the CHUC neonatal unit.

We note that five mothers had twin pregnancies and one had a triplet pregnancy, resulting in a total of 72 mothers. The average age of the mothers was 32.5 years, ranging from 16 to 42 years. In 86.1% of cases, the mothers were from urban areas. Primiparas accounted for 19.5%, pauciparas for 32%, and multiparas for 48.5%. Educated mothers accounted for 72.2%, of whom 37.5% had reached secondary school level, and 19.5% of mothers had a history of diabetes followed by high blood pressure (6.9%). Prenatal consultations were not performed in 5 women (7%). No woman had eight prenatal consultations. At least 45 (62.5%) mothers had more than four prenatal consultations. Blood pressure (BP) was taken in 56 mothers (77.8%), of whom 47 had high BP. A total of 88.9% of mothers were symptomatic. Hydralazine was the most commonly used antihypertensive drug in 56.9% of mothers, and 36.1% of mothers received corticosteroid therapy for lung maturation. Premature rupture of membranes was noted in 39 women (54.2%). Labor lasting ≥ 24 hours was observed in 66 mothers (77.7%).

3.2. Summary of Births

Newborns with a gestational age of less than 37 weeks accounted for 63.5%, of which 34.1% had a gestational age of ≤ 34 weeks. Vaginal delivery accounted for 55.5% (47/85) with the use of maneuvers in 34.1%. The main indications for cesarean section were fetal asphyxia (45.9%), eclampsia (16.2%), retroplacental hematoma (13.5%), intrauterine growth restriction, and premature rupture of membranes in 8.1%. The reasons for admission were perinatal asphyxia (42.5%), neonatal infections (20%), prematurity (16.5%), respiratory distress (11.7%), and nutritional support (9.3%). Females accounted for 67.1% with a sex ratio of 0.5. At

one minute, 57 newborns (67.1%) had an Apgar score < 7; 31.8% at five minutes. The average birth weight was 2200 g with extremes ranging from 850 g to 4000 g.

3.3. Clinical signs in Neonatology

Overall, 77.6% (66/85) of newborns were alert, and cyanosis was noted in 41.2% (35/85). Hypothermia was reported in 35 newborns (41.2%) and fever in 22 patients (25.9%). Regarding physical appearance, primitive reflexes were blunted in 55.3% and absent in 13.3%; hypotonia was present in 44.7%, signs of respiratory distress in 33%, and convulsions in 9.4%.

3.4. Paraclinical Findings

Blood counts showed hyperleukocytosis in 40% of cases with mixed cell counts (neutrophils/lymphocytes), hemoglobin levels below 10 g/dL in 5 patients, and elevated C-reactive protein (CRP) in 8.9%. Blood cultures were performed in 3 patients and remained negative.

The main diagnoses (Figure 1)

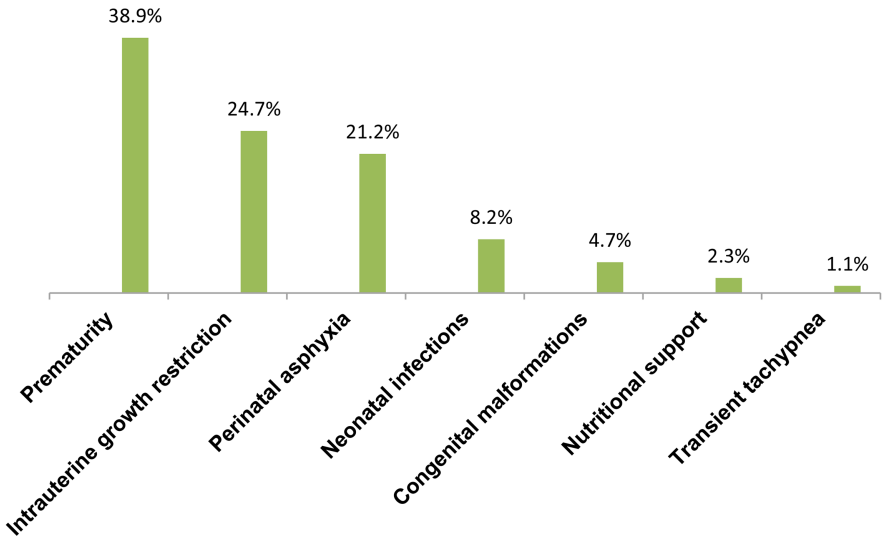

Figure 1. Distribution of newborns according to main diagnoses.

3.5. Treatment

Newborns were fed after 24 hours in 55.3% of cases. Antibiotic therapy was administered to 59 patients (69.4%) and oxygen therapy was administered in 81.1% of cases. Premature patients received caffeine citrate in 88% of cases (29/33). The Kangaroo Mother Care method was used in 98% of premature patients with low birth weight.

In terms of progression: in our series, 40 patients developed complications from their conditions. Anoxia-ischemic encephalopathy (27.5%), neonatal respiratory distress (20%), necrotizing enterocolitis (15%), neonatal infections (15%), and anemia (12.5%) were the most common complications. The mortality rate was

8.2%. The length of hospital stay was less than 7 days in 60% of cases, 7 to 14 days in 24.7% of cases, and more than 14 days in 15.3% of cases. In our series, 43% of patients died within the first 24 hours.

Evolution of newborns (Figure 2)

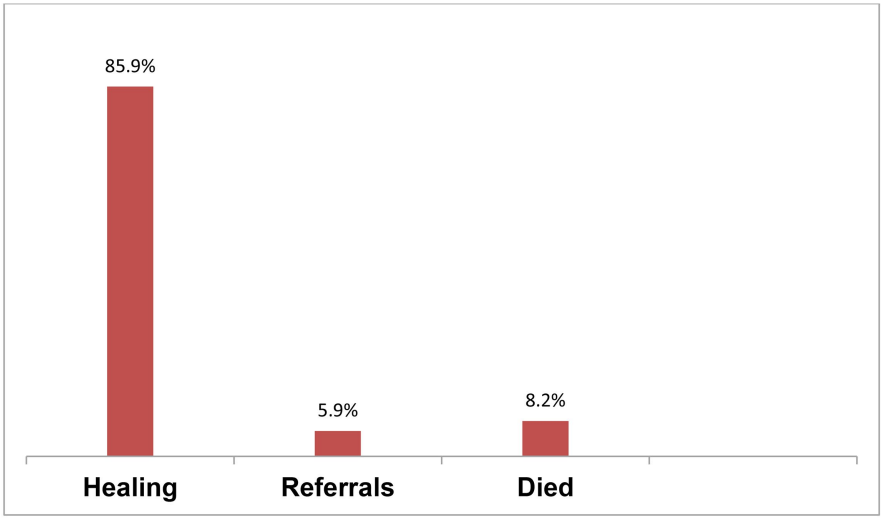

Figure 2. Distribution of newborns according to their prognosis.

Factors associated with death (Tables 1-3)

Table 1. Distribution of patients according to family history and death.

Family history	Death				Total	P	OR (IC)
	Yes		No				
	Number	%	Number	%			
Gestational age (N = 85)							
≤34 SA	05	17.2	24	82.8	29	**0.02**	5.6 [1.01 - 31.06]
>34 SA	02	3.6	54	96.4	56		
Prenatal consultation (N = 72)							
<4	04	25	12	75	16	**0.01**	5.8 [1.1 - 29.8]
≥4	03	5.3	53	94.7	56		
Delivery method (N = 85)							
Basse Low	04	8.5	43	91.5	47	0.90	1.08 [0.22 - 5.17]
Haute High	03	7.9	35	92.1	38		
Weight (N = 85)							
<2500 g	6	11.1	48	88.9	54	0.20	3.7 [0.43 - 32.70]
≥2500 g	1	3.2	30	96.8	31		

Continued

Resuscitation at birth							
Yes	6	21.5	22	78.5	28	**0.001**	15.2 [1.73 - 134.26]
No	1	1.7	56	98.3	57		
Pulmonary maturation (N = 33)							
No	5	71.4	2	28.6	7	**0.002**	30 [3.37 - 266.4]
Yes	2	7.1	24	92.3	26		

Table 2. Distribution of patients according to sociodemographic factors and death.

Sociodemographic factors	Death				Total	P	OR (IC)
	Yes		No				
	Number	%	Number	%			
Sex							
Male	3	42.9%	25	32.2%	28	0.870	1.59 [0.33 - 7.64]
Female	4	57.1%	53	67.9%	57		
Origin							
Rural	06	85.7%	04	(5.1%)	10	**0.001**	111 [10.65 - 156.89]
Urban	01	14.3%	74	94.9%	75		

Table 3. Diagnosis and death.

Diagnosis	Death				Total	P	OR (IC)
	Yes		No				
	Number	%	Number	%			
Low birth weight							
Yes	05	17.9	23	82.1	28	**0.02**	5.9 [1.08 - 33.07]
No	02	3.5	55	96.5	57		
Perinatal asphyxia							
Yes	04	22.2	14	77.8	18	**0.01**	6.0 [1.22 - 30.33]
No	03	4.5	64	95.5	67		
Neonatal infections							
Yes	01	14.2	6	85.8	07	0.54	2.0 [0.20 - 19.45]
No	06	7.7	72	92.3	78		

4. Discussions

4.1. General Characteristics

The hospital prevalence of newborns born to mothers with preeclampsia remains high in our setting at 17.8%. This result is higher than those of Matoulou *et al*. and Boiro *et al*., who found a prevalence of 0.4% and 15.3%, respectively [5] [13]. This high prevalence can be explained by the fact that care is free for pregnant women in this single level 3 referral center. As a result, this center receives all pregnant women from the city and the provinces of the CAR. The low rate in the study by Matoulou *et al*. may be due to the fact that this study was conducted before the period of free healthcare, and with this free healthcare, there is a very high number of patients.

4.2. Maternal Data

The average age of mothers in our study was 32.5 years. This result is higher than that of Ngbale *et al*. [14], who found an average age of 27 years, but the extremes are similar, at 16 to 42 years and 16 to 41 years, respectively. In this series, 86.1% of mothers were from urban areas. 41.6% had had multiple pregnancies, which corroborates the data in the literature [14] [15]. A study conducted by Akinmoladun *et al*. in Nigeria revealed that women who have had multiple pregnancies have a higher risk of preeclampsia, especially if they have exceeded the threshold of four pregnancies [15] [16]. It is therefore essential to emphasize that preeclampsia in women who have had multiple pregnancies may be linked to a number of factors, including the accumulation of risks of vascular and hormonal complications. In 27.8% of cases, the mothers had no schooling. Women's education is a key factor in the prevention and management of obstetric complications, including preeclampsia. A study conducted by Bhutta *et al*. in 2013 showed that women with higher levels of education are better informed about prenatal care and recognizing the signs of complications during pregnancy, which improves their chances of receiving adequate care at an early stage [17]. Education can influence mothers' ability to seek early care and follow medical recommendations, thereby reducing the risk of complications, including preeclampsia.

4.3. Pregnancy Progression

Prenatal consultations were not carried out for 5 women, or 7%. No pregnant women were able to attend eight prenatal consultations (PNCs) as recommended by the WHO. This corroborates the data in the literature [14] [18] [19]. In fact, most pregnant women had fewer PNCs, which can be attributed to several factors such as socioeconomic constraints, distance to health facilities, or even the perception of the importance of these consultations. This observation highlights the crucial importance of early and continuous care during pregnancy, particularly for women at risk of serious complications such as preeclampsia. However, Mboudou *et al*. found that the number of ANC visits did not influence the progression of preeclampsia [20]. This may cast doubt on the quality of prenatal consultations,

but it also serves as a reminder of the unpredictable nature of preeclampsia.

During these pregnancy follow-ups, blood pressure was taken in 56 mothers, or 77.8% (N = 72), of whom 47 had high BP. This failure to take blood pressure could be explained, on the one hand, by the lack of prenatal monitoring by these mothers and, on the other hand, by the lack of blood pressure monitoring equipment in some health centers, or simply by the ignorance of health personnel about the importance of taking blood pressure during pregnancy monitoring.

The management of pregnant women who have had preeclampsia also requires uterine evacuation. Cesarean section was performed in 44.7% of cases, unlike Bengono *et al*. in Cameroon, who found that cesarean section was the main mode of delivery (76%) [21].

In terms of treatment, antihypertensive medication was administered to mothers in 100% of cases, with hydralazine (56.9%) and methyldopa (40.7%) being the most commonly used drugs.

This result is similar to that of Oluwaseyi *et al*. in Nigeria in 2020 [22], who showed that hydralazine was widely prescribed in cases of severe preeclampsia to control maternal hypertension. Magnesium sulfate was the most commonly used anticonvulsant (77.8%). This corroborates the data in the literature [21] [22].

Corticosteroid therapy was received by 26 mothers, or 36.1%. It was administered to mothers with threatened preterm labor in order to promote fetal lung maturation. We noted twin births in 13 mothers (18.05%).

4.4. Newborn Data

The Apgar score was below 7 at one minute in 67.1% of cases and at five minutes in 31.8% of cases, requiring resuscitation at birth. The Apgar score is used to assess the newborn's vital functions and adaptation to extrauterine life. The uteroplacental hypoperfusion observed following hypo-ischemia appears to be responsible for this low Apgar score at 5 minutes. This result is lower than that of Djidour *et al*. [23], who noted that 84% of newborns had an Apgar score below 7 at 5 minutes of life. This decrease in our series could be explained by the early management of pregnant women and newborns, thanks to the availability of drugs and resuscitation equipment.

This contrasts with Bamba Diallo F *et al*. [24], who found in their study that 70.2% of patients had an Apgar score ≥ 7 at one minute. This difference could be explained either by the fact that the mothers arrived late or by a delay in treatment due to the choice of delivery method.

Females accounted for the majority of cases in our study (67.1%). Boiro *et al*. [5] found a female predominance (58.2%).

In terms of weight, fifty-four patients had a birth weight of less than 2500g (63.1%) and only one patient had a weight greater than or equal to 4000g. The average birth weight was 2200 g, ranging from 850 g to 4000 g. THIAM. M *et al*. [18] found an average birth weight of 2200 g, ranging from 1050g to 4000 g.

Prematurity (38.9%), intrauterine growth restriction (24.7%) and perinatal as-

phyxia (21.2%), and INN (8.2%) were the main diagnoses. The severity of the disease manifested by a disturbance in maternal-fetal exchange leading to a risk of premature delivery, hypotrophy, and decreased oxygen transfer. Acute hypoxia can occur during large maternal blood pressure variations, with a risk of anoxia and cerebral ischemia in the newborn. These results are similar to those of other African authors [6] [24].

4.5. Prognosis for Newborns

In our series, 80.5% of patients were discharged cured; 5.9% were referred for treatment of other conditions and 8.1% died. We lack data on the outcome of the 5.9% of children referred for treatment of complications.

4.6. Factors Associated with Death

Patients whose mothers came from rural areas had a 111-fold increased risk of death, with a statistically significant p-value (<0.05). This finding could be explained by the fact that these mothers from rural areas may have limited access to prenatal care. This could lead to delayed diagnosis of preeclampsia, thereby exposing the fetuses to complications. Patients with a gestational age ≤34 weeks had a fivefold higher risk of death than those with a gestational age greater than 34 weeks, with a statistically significant p-value (<0.05). This gestational age range indicates the immaturity of the newborns' entire organ systems, exposing them to the risk of death. Mothers who had fewer than four prenatal visits had newborns with a fivefold higher risk of death compared to those who had attended prenatal visits more than four times, with a statistically significant p-value (<0.05). Prenatal visits are critical to the well-being of newborns. These visits enable the detection of pregnancy-related issues so they can be addressed. Irregular pregnancy monitoring, defined here as three or fewer prenatal visits. Indeed, high-quality prenatal care enables the early identification of pregnancies at risk for severe preeclampsia and the initiation of appropriate management to prevent complications that could threaten the lives of both the mother and the fetus [21]. Patients who received resuscitation at birth had a 15-fold higher risk of death than those who did not receive resuscitation at birth, with a statistically significant p-value (<0.05). Resuscitation at birth already indicates that these newborns have a health problem from birth. This would explain the high mortality rate in this patient group. The absence of lung maturity constitutes a risk factor (30 times higher) associated with death, with a statistically significant p-value <0.05. Once lung maturation has been achieved through the administration of corticosteroids to mothers with a gestational age of less than 34 weeks, the risk of respiratory distress caused by hyaline membrane disease can be reduced. Patients with low birth weight and those with perinatal asphyxia had a higher risk of death, with a statistically significant p-value <0.05. Newborns with low birth weight are at much greater risk of infections and difficulties adapting to extrauterine life, which could contribute to an increased mortality rate in this series. Many authors have reported these risk factors in their studies [25]-[28].

5. Conclusion

The health of the mother and that of the newborn are closely linked. Preeclampsia remains one of the maternal conditions that increase neonatal morbidity, along with prematurity, low birth weight, and perinatal asphyxia. The mortality rate remains high in our series. Proper prenatal care accompanied by preventive measures, as well as close maternal-fetal monitoring, will help reduce the risks of neonatal morbidity and mortality.

Conflicts of Interest

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

References

[1] Institut National de Veille Sanitaire (2010) La mortalité maternelle en France: Bilan 2001-2006. Bull Épidémiol Hebd, 102 p.

[2] World Health Organization (2017) Pre-Eclampsia and Eclampsia. World Health Organization, 47 p.

[3] Sibai, B. (2003) Diagnosis and Management of Gestational Hypertension and Preeclampsia. *Obstetrics & Gynecology*, **102**, 181-192. https://doi.org/10.1016/s0029-7844(03)00475-7

[4] Chappell, L.C., Duckworth, S. and Shennan, A.H. (2016) Hypertension in Pregnancy. In: James, D.K., Steer, P.J., Weiner, C.P. and Gonik, B., Eds., *High-Risk Pregnancy: Management Options*, 4th Edition, Elsevier, 989-1004.

[5] Boiro, D., Faye, P.M., Gueye, M., Sow, A., Dieng, A., Ndongo, A.A., *et al.* (2018) La pré-éclampsie: Quelles complications chez le nouveau-né? *Journal de Pédiatrie et de Puériculture*, **31**, 282-286. https://doi.org/10.1016/j.jpp.2018.09.009

[6] Zupan-Simunek, V. (2010) Pronostic des nouveau-nés de mère prééclamptique. *Annales Françaises d'Anesthésie et de Réanimation*, **29**, e135-e139. https://doi.org/10.1016/j.annfar.2010.03.013

[7] Kamissoko, M., N'Doye, M., Maiga, S., *et al.* (2009) Prééclampsie sévère et éclampsie en milieu hospitalier au Mali: Aspects cliniques et pronostiques. *Revue Africaine d'Obstétrique et de Gynécologie*, **18**, 3-7.

[8] Ndiaye, M., Mbaye, M. and Gueye, L. (2004) Éclampsie au Sénégal: Caractéristiques épidémiologiques et pronostiques. *Médecine Africaine Noire*, **51**, 461-466.

[9] Zupan, J., Wojcik, T. and Lorenz, L. (2012) Neonatal Care of Preterm and Preeclamptic Infants. *Journal of Perinatology*, **32**, 424-430.

[10] Knight, M. (2005) Eclampsia in the United Kingdom: A National Case-Control Study. *Obstetrics & Gynecology*, **106**, 804-811.

[11] Gody, J.C., Engoba, M., Mejiozem, B.O.B., Danebera, L.V., Kakouguere, E.P., Bangue, M.C.N., *et al.* (2021) Risque Facteurs de décès néonatals précoces à l'hôpital universitaire pédiatrique de Bangui. *Open Journal of Pediatrics*, **11**, 840-853. https://doi.org/10.4236/ojped.2021.114079

[12] Kaufman, J. (2019) Neonatal Physiology and Pathophysiology. *Pediatrics*, **144**, 2018-3158.

[13] Matoulou Mbala Wa-Ngogbe, S., Koirokpi, A., Kogboma Wongo, G.R.L., Songo-Kette Gbekere, T.C., Dondo-Fongbi, J.P., *et al.* (2025) Aspects epidemiologiques et

pronostics de l'eclampsie au centre hospitalier commmunautaire a bangui: à propos de 89 séries de cas. *IOSR Journal of Nursing and Health Science*, **1**, 48-52

[14] Ngbale, N.R., Gaunetfet, C.E., Koirokpi, A., Matoulou, S., Kogboma-Gongo, G., Mbano-Dede, K., *et al*. (2019) Epidemiological Aspects and Prognosis of Severe Pre-Eclampsia in Bangui, Central African Republic. *Gynecology & Obstetrics*, **9**, 1-4. https://doi.org/10.4172/2161-0932.1000499

[15] Akinmoladun, V.O., Olowoyeye, O. and Akindele, O. (2018) Epidemiology and Clinical Outcomes of Preeclampsia in Nigeria. *Journal of Obstetrics and Gynaecology*, **38**, 368-374.

[16] Brown, M.A., Magee, L.A., Kenny, L.C., Karumanchi, S.A., McCarthy, F., Saito, S., *et al*. (2016) Hypertensive Disorders of Pregnancy: ISSHP Classification, Diagnosis, and Management Recommendations for International Practice. *Hypertension*, **67**, 693-701.

[17] Bhutta, Z.A., Das, J.K., Rizvi, A., Gaffey, M.F., Walker, N., Horton, S., *et al*. (2013) Can Available Interventions End Preventable Deaths in Mothers, Newborn Babies, and Children, and at What Cost? *The Lancet*, **382**, 452-477. https://doi.org/10.1016/s0140-6736(13)60996-4

[18] Thiam, M., Gueye, L., Sylla, C., Mambou, A.B., Mahamat, S., Diop, A.P., *et al*. (2020) Eclampsie: Aspects épidémiologiques, diagnostiques, thérapeutiques et pronostiques au centre hospitalier régional de thiès à propos de 146 cas. *Journal de la Société Africaine de Gynécologie Obstétrique*, **21**, 13-19.

[19] Yoboué, K., Tanon, A. and Kouadio, A. (2019) Prevalence and Management of Hypertension during Pregnancy in the Abidjan District, Côte d'Ivoire. *Southeast African Journal of Obstetrics and Gynaecology*, **21**, 28-33.

[20] Mboudou, E., Foumane, P., Belly, P.E., Dohbit, J., Zeminkande, J.W.M., *et al*. (2009) Hypertension au cours de la grossesse. Aspect clinique et epidemiologiqueà l'hopital de Gynecologie-Obstétrique et Pédiatrique de Yaoundé. *Clinic Mother and Child Health*, **6**, 1087-1093.

[21] Bengono, R.S., Ndinkontar, R., Iroume, C., Amengle, A.L., Jemae, B., Metogo, A.J., *et al*. (2024) Pronostics maternofoetal au cours de la prééclampsiesévère en réanimation. *Revue D'anesthésiologie*, *Réanimation*, *Médecine D'urgence et Toxicologie*, **16**, 18-22.

[22] Oluwaseyi, I.O., Adeboya, A.A., Akuntunde, A., Michael, O., John, O. and Mutiu, A.P. (2020) Eclampsia: Afive Year Retrospective Review in South-West NIgeria. *Nigeria Journal of Mecine*, **29**, 450-454. https://doi.org/10.4103/NJM.NJM_73_20

[23] Insaf, D. and Rayane, K. (2022) Pré-éclampsie et retard de croissance intra-utérin Profil épidémiologique, clinique et thérapeutique. Etude cas-témoins dans la région d'Ouargla. Mémoire de Fin D'études Pour L'obtention du Doctorat, 118 p.

[24] Bamba Diallo, F., Diallo, M.H., Bah, E.M., Balde, O., Barry, M.A., Barry, M.S., *et al*. (2022) Etude de l'impact de la pré éclampsie sévère et de l'éclampsie sur la morbidité et la mortalité des nouveau-nés à la Maternité de l'Hôpital National Ignace Deen. *Journal de la Société Africaine de Gynécologie Obstétrique*, **23**, 17-23.

[25] Bursal Duramaz, B., Bilgin, L., Salihoglu, Ö., Ertaş, K. and Hatipoğlu, S. (2017) Neonatal Outcomes of Preterm Infants Born to Preeclamptic Mothers. *Marmara Medical Journal*, **30**, 8-13. https://doi.org/10.5472/marumj.299376

[26] Asseffa, N.A. and Demissie, B.W. (2019) Perinatal Outcomes of Hypertensive Disorders in Pregnancy at a Referral Hospital, Southern Ethiopia. *PLOS ONE*, **14**, e0213240. https://doi.org/10.1371/journal.pone.0213240

[27] van Esch, J.J.A., van Heijst, A.F., de Haan, A.F.J. and van der Heijden, O.W.H. (2017) Early-Onset Preeclampsia Is Associated with Perinatal Mortality and Severe Neonatal Morbidity. *The Journal of Maternal-Fetal & Neonatal Medicine*, **30**, 2789-2794. https://doi.org/10.1080/14767058.2016.1263295

[28] Vijayan, N., Keepanasseril, A., Plakkal, N., Udupa, V. and Raghavan, S.S. (2019) Maternal and Perinatal Outcomes in Women Undergoing Expectant Management of Early-Onset Pre-Eclampsia: A Retrospective Cohort Study. *South African Journal of Obstetrics and Gynaecology*, **24**, 17-23. https://doi.org/10.7196/sajog.1378