

## Morbidity and Mortality of Patients Admitted to Intensive Care in Peripartum: A Retrospective Study Over 8 Years at The University Hospital of Owendo (Gabon)

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### ABSTRACT

**Introduction:** Pregnancy is a physiological state so the evolution is unpredictable in our context.

**Objectives:** To assess the morbidity and peripartum mortality of patients admitted to intensive care.

**Patients and Method:** This is a descriptive and analytical survey with retrospective collection, over a period of 6 years from January 1, 2018 to December 31, 2023 at the maternity ward of the Owendo University Hospital. It concerned all patients admitted for serious obstetric pathology in peripartum requiring admission to intensive care. Epidemiological, clinical and prognostic variables were studied.

**Results:** During the study period, 1889 patients were admitted to intensive care. We have retained 179 (9.5%). The average age was  $28.3 \pm 7.3$  years with, 133 (74.3%) were unemployed, among them, 59 (44.36%) were learners. When the pregnancy had benefited from prenatal care (70.4%), the midwife was the provider for 68% of cases. At the time of admission to intensive care, 139 patients (77.6%) were from the operating room. Eclampsia was the reason for admission for 65 cases (36.3%), severe preeclampsia 50 cases (27.9%) and postpartum haemorrhage 27 cases (15.1%). The average length of hospitalization was  $3.2 \pm 1.5$  days and 10 deaths (5.6%) were recorded.

**Conclusion:** Maternal morbidity and mortality remain high, and intensive care stays must be systematic for high-risk pregnancies (HRP).

### Keywords

HRP, Intensive Care, Maternal Death, Owendo (Gabon).

### Introduction

Pregnancy is a physiological state so the evolution is unpredictable in our context [1,2]. In a recent series devoted to pathological pregnancy in the maternity department of the Owendo University Hospital, out of 4455 deliveries, 308 (6.9%) were high-risk pregnancies (HRP) and likely to stay in intensive care [3,4]. In

our low-income countries, serious obstetric situations responsible for maternal and perinatal morbidity and mortality are frequent [5]. Thus, for several years, despite the Millennium Development Goals (MDG) and now the Sustainable Development Goals (SDG), the rate of maternal deaths has not decreased [6,7]. In Gabon, according to the DHS III (Development and Health Survey), it is 316/100,000 births and similar figures have been found in the countries of the sub-region [8-10]. Thus, the woman dies while giving birth and 830 die every day due to complications

related to pregnancy or childbirth [1,2]. Sub-Saharan Africa is paying the heaviest price. Hypertensive pathologies and obstetric haemorrhages are the main reasons for admission of pregnant women to intensive care [11,12]. It is accepted that for every 100,000 pregnancies, about 100 patients will have to be admitted to intensive care for any reason [13]. In developed countries, admissions to intensive care for serious pathologies related to pregnancy or childbirth represent less than 1% and in France very few studies in this case have been published [14]. In Africa, the prevalence of ICU admissions for serious obstetric complications varies according to the authors. Indeed, Igaruma S et al. in 2016 in Nigeria had recovered 12%, Ebog Ndigu in 2019 in Mali 33.15% and in Libreville in 2019, Essola E et al. 18.9% [12,15,16]. All this data comes from intensive care. The Owendo University Hospital (CHUO) is a "Trauma Center" hospital and an obstetric unit has been grafted into it. Faced with the lack of data and the growth in the number of women who have given birth, our objective was to assess the morbidity and mortality in peripartum of patients admitted to intensive care in the maternity ward.

### Patients and Method

This is a descriptive and analytical survey with retrospective collection, over a period of 6 years from January 1, 2018 to December 31, 2023 at the maternity ward of the Owendo University Hospital. It concerned all patients admitted for obstetric pathology in peripartum. The perinatal period used was from fertilization to the 42<sup>nd</sup> day postpartum and we included all those who were admitted to intensive care for a critical situation requiring intensive care. The criteria for non-inclusion were non-obstetric emergencies in pregnancy, pregnancies with a normal course, pathologies outside the peripartum and those transferred to another health facility, as well as deaths observed. Incomplete or unlocatable records were excluded from the study. The records of the intensive care unit and maternity, outpatient and maternity wards, as well as physical records, were used as data sources. These sources allowed us to study the epidemiological, clinical, diagnostic and prognostic variables using a sheet to collect individual data. The data analysis was carried out using the calculation functions of Microsoft<sup>®</sup>'s Excell and XLSTAT 2022 software. For quantitative variables, normality tests were performed. They allowed us to use either the standard mean or the median associated with the interquartile range. In both cases, the extremes were specified. For the comparison of the means, we used the Student or Mann-Whitney test after performing the normality tests. For the frequency, we used the exact Fisher test or Pearson's Chi<sup>2</sup> depending on the theoretical numbers. The significance level was 0.5% and the risk ratio (RR) was within the 95% confidence interval.

### Results

During the study period, 21726 deliveries were performed, 1889 patients were admitted to intensive care, including 199 for pathologies occurring during peripartum. We have retained 179, i.e. a frequency of 9.5%. Compared to the number of deliveries, this represents 0.8%. The mean age of the patients was 28.3 ± 7.3 years with extremes of 14 to 50 years. Patients aged 20 to 30

years accounted for 81 cases (45.2%). At the professional level, 133 patients (74.3%) were unemployed, among them, 59 (44.36%) learners and for care, 141 (78.8%) had health insurance. The mean gesturity was 2.3 ± 1.4 gestures with extremes of 1 to 7 gestures. The mean parity was 1.1 ± 1.4 pared with extremes of 0 to 9 pares, 13 (7.2%) were nulliparous and 24 (13.4%) were multiparous.

In terms of pathological history, 37 (20.6%) had a previous caesarean section, more than one had been found in 22 patients (59.4%) and for 13 cases (35.1%) the indication was pre-eclampsia and its complications. When the pregnancy received antenatal care (126 cases, 70 (29.6%),4%), the place of follow-up was the health centre for 88 patients (69.8%), and in 100 cases (79.4%) the midwife was the provider. Of these patients, 105 (83.3%) had received more than 3 antenatal contacts (ANC) and 53 (29.6%) had received no care at all (Table 1). At the time of admission to intensive care, 139 patients (77.6%) came from the operating room, 25 (14%) from the obstetrics and gynaecology department, 4 (2.2%) from the emergency room and 1 (0.6%) from the post-operative monitoring room, 10 (5.6%) from other structures (home). Eclampsia crisis was the reason for admission for 65 cases (36.3%), severe preeclampsia 50 cases (27.9%) and postpartum haemorrhage 27 cases (15.1%) (Table 2).

**Table 1:** Patient Profile.

Variables studied	n	%
<b>Age (Years)</b>		
20 - 30	81	45,2
> 30	76	42,4
<b>Profession</b>		
Unemployed	133	74,3
<b>Health insurance</b>		
Oui	141	78,8
<b>Parity</b>		
Nuliparous	13	7,26
Multiparous	24	13,4
<b>Previous caesarean section</b>		
Yes	37	20,6
<b>Provider</b>		
Midwife	100	79,3
<b>ANC*</b>		
Yes	126	70,4
> 3	105	83,3
<b>Origin</b>		
Bloc opératoire	139	77,7

\* Antenatal contact.

During hospitalization, 86 patients (48%) had complications. In this case, anaemia was found in 75 patients (87.2%), acute kidney failure in 27 patients (31.4%), HELLP syndrome in 23 patients (26.7%) and DIC in 8 patients (9.3%). The mean length of hospital stay was 3.2 ± 1.5 days with extremes of 1 to 8 days, 152 patients (84.9%) had stayed between 2 and 5 days and 2 (1.1%) had fewer than 2 and 10 deaths (5.6%) were recorded. The cause of these deaths was postpartum hemorrhage 4 cases (40%), 1 ruptured

ectopic pregnancy (EP) (10%), 5 serious complications of pre-eclampsia (50%). All of these deaths were from the operating room after surgical management. Patients whose age was above 30 years had a death rate of 26.6%. This age group was a factor of poor prognosis with an OR of 21 [2.0 – 224.3] and a p-value of 0.027, as were the high parity ( $p < 0.002$ ), the occurrence of serious complications and the long length of stay in intensive care ( $p < 0.001$ ). The absence of ANC does not appear to be significantly associated with intensive care hospitalization and maternal death ( $p = 0.144$ ). All of these results are shown in Table 3.

**Table 2:** Reasons for admission to intensive care.

Motifs	n	%
Eclampsia	65	36,3
- Prepartum eclampsia	39	60
- Postpartum eclampsia	26	40
Retroplacental hematoma	20	11,8
Severe pre-eclampsia	50	27,9
IPPH*	27	15,1
Other	17	9,5
<b>Total</b>	<b>179</b>	<b>100</b>

\*Immediate postpartum hemorrhage

**Table 3:** Maternal deaths and selected variables studied.

Parameters	Total	Death		OR [IC95%]	p
		Yes n/%	Not n/%		
<b>Age (Years)</b>					0,027
14 - 19	22	1 (4,1)	21 (95,5)	3 [0,2 – 50,1]	
20 - 30	81	4 (4,9)	77 (95,1)	3,3 [0,4 – 30]	
> 30	76	4 (26,6)	72 (73,4)	21 [2,0 – 224,3]	
<b>Parity</b>					0,002
0	13	2 (15,4)	11 (84,6)	1,0	
> 3	24	4 (16,7)	20 (83,3)	1,1 [0,2 – 7,0]	
<b>ANC</b>					0,144
0	53	1 (1,9)	52 (98,1)	0,3 [0,0 – 2,2]	
> 3	105	7 (6,7)	98 (93,3)	1,0	
<b>Complications</b>					
Anaemia	98	5 (5,1)	97 (94,9)		0,960
HELLP syndrome	23	1 (4,3)	22 (95,7)		0,873
ARF*	18	3 (1,7)	15 (83,3)		0,049
DIVC**	4	4 (100)	0 (0)		0,050
<b>Length of stay (days)</b>					< 0,001
< 2	2	1 (50)	1 (50)	1,0	
2 - 5	166	5 (3,0)	161 (97,0)	0,0 [0,0 – 0,6]	
> 5	11	3 (27,3)	8 (72,7)	0,4 [0,0 – 8,1]	

\* Acute renal failure / \*\* Disseminated intravascular coagulation.

## Discussion

All the results described above come from the maternity, the intensive care unit and the operating room. Like any retrospective study, it presented difficulties in data collection. The medical

records are incomplete or non-existent and the archives service is poorly organized, which made this study difficult. This is the case of several studies in our context [11,15,17]. The digitization of the medical record and the creation of a department dedicated to the processing of files after hospitalization can help solve this problem. Despite the monocentric nature of our study, the results of which do not allow us to report them to the general population, we were still able to describe and identify the epidemiological, clinical and evolutionary aspects of patients referred to the intensive care unit in our environment. We found that 0.8% of pregnant women were admitted to intensive care for serious obstetric pathologies. The series found give the results in relation to the number of patients hospitalized in the intensive care unit during the period [15,17]. In this case we found 9.5%. This figure is higher than those of developed countries. Lelong et al. in 2013 found 0.95% and Bonnet et al. 0.29% [14,18]. In the sub-region, lower figures such as 6.1%, 2.75% and 2.2% are reported by Owono et al. in Cameroon, Tchaou et al. in Benin and Okafor et al. in Nigeria [17,19,20]. Other series report higher figures. Thus, Traoré et al. in Mali report 11.11% and Mabio et al. in 2023 23.54% [21,22]. Figures up and down. In these series, recruitment is done in the intensive care unit and the frequency is derived from the number of patients in the period. In reality, it must have come from the maternity ward based on the number of pathological pregnancies of the period. In addition, these series are made in university hospitals where the supply of care is high and a significant fraction of admissions represent admissions of caution and not necessity. The rate of admission to intensive care varies from one country to another. It depends on the severity of the condition, the provision of care, and the level of competence of providers, which is the case in developed countries [18,23,24]. The patients admitted to intensive care are young. The 20 to 30 year olds are in the majority (45.2%) in our series. These results are close to those of other series in the sub-region but lower than those of developed countries [11,14,17]. In the West, the tendency to late pregnancy is common [25]. In our context, youth is a reflection of the African population in large cities and the frequency of teenage pregnancies [8,26].

In addition, this age corresponds to the period of peak genital activity in women. They are mostly without income and single. These results are identical to those of other African series [11,17,19]. In our environment, they are mostly students (44.36%) and elsewhere housewives and those with limited incomes. These results corroborate the WHO's quote that maternal disabilities and deaths mostly affect poor women [1,26]. Hypertension and its complications, as well as previous caesarean section, are the main comorbidités found by all authors in the literature [11,14,26]. We have not been spared by this observation. Pre-eclampsia is a major reason for consultation and hospitalization in our context [16,22]. They are of lesser parity. The majority are those under 2 years of age (47.48%). Coulibaly and Bekoin found 66 and 39.3% respectively [11,27]. In this group, the prevalence of preeclampsia is 5% in the first pregnancy and 0.3% for subsequent ones. In other series, multiparous women are in the majority. Thiam and Sissoko found 48.3 and 29% respectively [28,29]. It is clear that

parity and family planning coverage are determining factors in the occurrence of maternal deaths [1,30]. According to the DHS, pregnancy is regularly monitored in Gabon and with trained health care providers and ANC coverage was 97.6% in 2012 and 96.3% in 2020 [8]. In our series, follow-up was optimal for 58.6% of pregnant women and 29.6% had no ANC. In 2006, a study carried out in Libreville by Mayi et al. on the risk factors for eclampsia, reported that 68% of pregnant women had not performed any ANC [31] and Tchaou et al. 7.8% [19]. The proliferation of local health care centres and the 100% coverage of pregnancy-related care encourage women who are pregnant to prenatal consultations. The increase in the number of ANC contributes significantly to the reduction of maternal morbidity and mortality and perinatal survival [32,33]. The majority of patients admitted to intensive care come from the operating room (77.6%). These results are identical to those in the literature [12,14,26]. The complications of pre-eclampsia and postpartum haemorrhages, so the treatment is dominated by surgical treatment, are the main culprits. Thus, as in several studies, complications of toxemia of pregnancy and postpartum hemorrhages are the major reasons for admission to intensive care [11,17,24]. The prevalence of complications of toxemia of pregnancy is high in Africa [33,34], unlike in the USA and Europe [35,36]. The median duration of hospitalization in the regional series is 3 days [8,9]. In the West, it is about 6 days [11,15]. The limited number of ICU beds may shorten the length of stay in ICU in our context. We recorded 10 maternal deaths, or 5.6%. This result is consistent with those of other series in the subregion. It is low compared to that of Owono EP, Tchaou BA and Bekoin find 9.6, 37.7 and 41% respectively [17,19,27]. The precocity of treatment, preventive measures such as the systematic pre-anesthetic consultation at 7 months of pregnancy and the weakness of our sample may be the explanation. Mortality is higher in the 40-50 age group. Compared to other series, high maternal age is a negative prognostic factor ( $p=0.027$ ). The existence of unknown underlying pathologies and physiological immunosuppression may be the explanation. The same was true for parity at the 2 extremities and the occurrence of complications. These complications have a direct impact on the length of hospitalization. This was significantly associated with maternal death beyond 5 days ( $p=0.001$ ). A longer length of stay is a source of complications.

## Conclusion

Maternal morbidity and mortality remain high in the African context in general, and Gabon is no exception to this trend. It therefore poses a public health problem and a major concern for our states. In the multi-purpose intensive care unit of the CHUO, maternal pathology represents 9.5% of hospitalizations and in the maternity ward 0.8% of women who have given birth is at risk of being hospitalized in intensive care for GARE. It affects a young, single and unemployed population. Severe forms of toxemia of pregnancy transplanted peripartum haemorrhages, which are very involved in maternal deaths, are the main indications for admission. These maternal deaths, although low compared to other countries in the sub-region, are preventable and remain above those in

northern countries. Despite progress in infrastructure, staff training and free pregnancy-related care, securing pregnancy and childbirth remains a major problem. Reducing this trend involves educating the population, optimising pregnancy monitoring, interconnecting healthcare structures, and early diagnosis and care. Added to this is the development of protocols in the gynaecology, obstetrics and intensive care departments.

## References

1. OMS. Evolution de la mortalité maternelle 2000-2017: Estimations de l'OMS, de l'UNICEF, de l'UNFPA, du Groupe de la Banque mondiale et de la Division de la population des Nations Unies. 2019.
2. OMS. Mortalité Maternelle. 2016. [www.who.int/mediacentre/factsheets/fs348/fr/](http://www.who.int/mediacentre/factsheets/fs348/fr/)
3. Sima Ole B, MbaEdou SG, Assoumou P, et al. Pathologies Associated with Pregnancy and Outcomes: About 570 Cases over 12 Months at the Maternity Ward of the Owendo University Hospital (Gabon). *Mathews J Gynecol Obstet.* 2024; 8: 1-7.
4. Diouf E. Contribution des anesthésistes réanimateurs à la réduction de la mortalité maternelle *Rev. Afr Anesth Med Urg.* 2011; 16: 1-80.
5. Diassana M, Dembélé S, Macalou B, et al. Audit des décès maternels dans un hôpital régional du Mali (Kayes). Place des 3 retards et impact sur le service de Gynécologie-Obstétrique. *Health Sci Dis.* 2020; 20: 1-3.
6. Organisation Mondiale de la Santé. Objectifs du Millénaire pour le Développement-Indicateurs page principale dans Internet. 2004.
7. Déclaration commune OMS/ FNUAP/ UNICET/ Banque mondiale. Réduire la mortalité maternelle OMS Genève. 1996.
8. DSG-PNLP-MSAS. Troisième enquête démographique de santé au Gabon III 2019-2021. <http://dhsprogram.com/pubs/pdf/SR198/SR198.pdf>
9. Enquête démographique et de santé de Côte d'Ivoire (EDS-CI 2021). <http://dhsprogram.com/pubs/pdf/R140/PR140.pdf>
10. Enquête Démographique et de Santé du Congo (EDSC-II) 2011-2012 [En ligne]. <http://dhsprogram.com/pubs/pdf/PR19/PR19.pdf>
11. Coulibaly Y, Goita D, Dicko H, et al. Morbidité et mortalité maternelles en réanimation en milieu tropical. *Société de l'Anesthésie Réanimation d'Afrique Francophone.* 2011; 16: 44-50.
12. Igaruma S, Olagbuji B, Aderoba A, et al. Severe maternal morbidity in a general intensive care unit in Nigeria: clinical profiles and outcomes. *Int J Obstet Anesth.* 2016; 28: 39-44.
13. Munur U, Karnar D, Gunpun Tally. Critical obstetric patients in American and Indian Public Hospital. *Intensive Care Med.* 2005; 31: 1087-1094.
14. Lelong E, Pourrat O, Pinsard M, et al. Admission des femmes

- au cours de la grossesse ou en post-partum: circonstance et pronostic. Une série rétrospective de 96 cas. *Rev Med Interne*. 2013; 34: 141-147
15. Ebog Ndigui STC. Bilan des activités du service de réanimation polyvalente du CHU Gabriel Touré. Thèse de doctorat en médecine, Université des sciences, des techniques et des technologies de Bamako (USTTB, Mali). 2019.
  16. Essola E, Ifoudji Makao A, Ayo Bivigou Ngomas JF, et al. Prééclampsie et ses complications en réanimation au CHU de Libreville: Aspects épidémiologiques, cliniques et thérapeutiques. 2019; 24: 18-22.
  17. Owono Etoundi P, Metogo Mbengono AJ, Tchokam L, et al. Complications obstétricales admises en réanimation: Epidémiologie, Diagnostic et Pronostic. 2017; 18: 1-5.
  18. Bonnet MP, Chantry A, Seco A, et al. Admissions obstétricales en réanimation: des leçons à tirer pour l'organisation des soins? *Anesth Réanim*. 2015; 1: A11.
  19. Tchaou BA, Tshabu-Auguemon C, Hounkponou FM, et al. Morbidité obstétricales graves en réanimation à l'hôpital universitaire de Parakou (Bénin): à propos de 69 cas. *RAMUR*. 2013; 18: 8-14.
  20. Okafor UV, Efetie ER, Amucheazi A. Risk factors for maternal deaths in un planned admissions to the intensive care unit lessons for Sub-Saharan Africa. *Afr J Reprod Health*. 2011; 15: 51-54.
  21. Traore A. Mortalité et morbidité des urgences obstétricales en réanimation de l'hôpital Nianankoro Fomba de Ségou. Thèse de Doctorat en Médecine. Université de Bamako (Mali). 2012.
  22. Mobio N, Kouamé K, Bekoin AB, et al. Facteurs pronostiques des complications obstétricales en réanimation au CHU de Brazzaville. *Health Sci Dis*. 2022; 23: 62-67.
  23. Seligman K, Ramachandran B, Hegde P, et al. Obstetric interventions and maternal morbidity among women who experience severe postpartum hemorrhage during cesarean delivery. *Int J Obstet Anesth*. 2017; 31: 27-33.
  24. Pia Seppänen, Reijo Sund, Mervi Roos, et al. Obstetric admissions to ICUs in Finland: A multicentre study. *Intensive and Critical Care Nursing*. 2016; 36: 38-44.
  25. GLOBAL DATA LAB. Mean age at first birth of women aged 20-50. [Enligne]. [Consulté le 16 déc. 2023].
  26. Keita F. Epidémiologie de la mortalité maternelle au centre de santé de référence d'Ouesselboucou de 2012 à 2016 Thèse de Médecine Bamako (Mali). 2018; 38.
  27. Bekoin, Mobio N, Coulibaly K, et al. Caractéristiques des pathologies de l'état puerpéral en réanimation au centre hospitalier universitaire de Cocody, Abidjan, Cote d'Ivoire. *Rev Anesth Réanim Med Urg*. 2022; 14: 19-22.
  28. Thiam M, Faye Dieme MF, Gueye L, et al. Mortalité maternelle au CHR de Thiès: étiologies et facteurs déterminants, à propos de 239 décès. *Journal de la SAGO*. 2017; 18: 34-39.
  29. Sissoko A. Etude épidémiologique de la mortalité maternelle dans les centres de santé de référence du district de Bamako. Mémoire DES gynécologie obstétrique. 2020.
  30. USAID. Recommandations de l'OMS concernant les soins prénatals pour que la grossesse soit une expérience positive. 2018; 1-14.
  31. Mayi Tsonga S, Akouo L, Ngou Mve Ngou JP, et al. Facteurs de risque de l'éclampsie à Libreville (Gabon): étude cas-témoin. *Santé*. 2006; 16: 197-200.
  32. Bohoussou KPE, Guie P, Oyelade M, et al. Evolution de la mortalité maternelle au Centre Hospitalier Universitaire de Treichville à Abidjan de 2005 à 2009. *SAGO*. 2012; 1: 6-11.
  33. Ekele BA, Bello SO, Adamu AN. Clusters of eclampsia in a Nigerian Teaching Hospital. *Int j Gynecol Obstet*. 2007; 96: 62-66.
  34. Mahoungou Guimbi KC, Ondele Ngatse E, Soussa RG, et al. Utilisation du sulfate de magnésium dans la prise en charge de l'éclampsie: à propos de 122 observations. *Réanim*. 2014; 23: 237-240.
  35. Sibaï BM, Dekker G, Kupfermine M, et al. Preeclampsia. *Lancet*. 2005; 365: 785-799.
  36. Knight M, Ukoss. Eclampsia in the United Kingdom 2005. *BJOG*. 2007; 114: 1027-1078.