



# Epidemiology of Preterm Birth Over a 5-Year Period in Yaoundé (Cameroon)

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## Introduction

Preterm birth (PTB) defined as delivery prior 37 weeks gestational age, has emerged as a leading cause of neonatal and infant mortality and morbidity. The burden of PTB is particularly heavy in low resources settings of Sub Saharan Africa (SSA) countries where the achievement of millennium goals of development (reduce neonatal mortality to <12 per thousand) is still far.<sup>1</sup> An estimated number of 15 million PTBs were recorded in 2015 for a global incidence of 11.1% live births. This incidence varies from 5% in Northern Europe to 18% in Sub Saharan Africa. The median reported rate in African stands around 12.3%, with a prevalence rate of PTB comprised between 10% and 14% most of countries.<sup>2,3</sup> Ethnic and geographic disparities of PTB rate are not only related to strength of a health care system, other factors can be included around the syndrome of preterm including infection, inflammation, genetics, hormonal factors, mechanic factors.<sup>4,5</sup> With the improvement of follow-up of pregnancy, 2 categories of PTB are described as concern pathogenicity with or without premature rupture of membranes, and or induced medically or not.<sup>4</sup> Data of PTB are very scarced in Cameroon because due to lack of antenatal and birth registry, but also lack of accurate tools for definition. The World Health Organization (WHO) considers an ultrasound before 24 weeks as the gold standard for datation but this is not available nationwide. To fill this gap, we recorded PTBs in 3 tertiary care centers in Yaoundé, an urban area of the country where approximately 85% of delivery occurs in a health care center, with the aim at providing baseline data.

## Methodology

We conducted a multicenter cross sectional descriptive study within 3 third level maternities of Yaoundé including the maternity ward of Hôpital Central de Yaoundé (HCY), Hôpital Gyneco-Obstétrique et Pédiatrique de Yaoundé (HGOPY), and Centre Hospitalier d'Essos (CHE). All premature births having occurred from January 2013 to December 2017, over a 5-year period were included from maternities registries. Preterm birth was considered for any births occurring between 22 week and 37 weeks of gestation. Main measurements were: rate of preterm birth reported to the total number of live births during the same period, type of prematurity, birth weight and delivery mode. All data were analyzed using software Microsoft Excel 2003.

## Results

Data were recorded in 2 public (HCY and HGOPY) and 1 private facility CHE. HCY was the most populated one.

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**Table 1.** Distribution of Births, Type of Preterm Births, and Mode of Deliveries in 3 Maternities of Yaoundé from January 2013 to December 2017.

	HCY	CHE	HGOPY	Total	P-value (HCY vs CHE)	P-value (CHE vs HGOPY)	P-value (CHU vs HGOPY)	Median rate
Number of deliveries	16 303	9582	12 266	38 151				
Preterm (N)	2373	864	2403	5640				14.8%
%	14.6%	9.0%	19.6%	14.8%	<.01	<.01	<.01	
Less than 2000 g (N)	1109	205	980	2294				
%	46.7%	23.7%	40.8%	40.7%	<.01	<.01	<.01	37.1%
Weeks of gestation								
>34 weeks	1289	552	1068	2909				
%	54.3%	63.9%	44.4%	51.6%	<.01	<.01	<.01	54.2%
28-34 weeks	980	272	893	2145				
%	41.3%	31.5%	37.2%	38.0%	<.01	<.01	<.01	36.6%
<28 weeks	104	40	444	588				
%	4.4%	4.6%	18.5%	10.4%	.84	<.01	<.01	9.2%
Mode of delivery								
C-section	491	246	697	1434				
%	20.69%	28.47%	29.01%	25.43%	<.01	.8	<.01	26.1%

Abbreviations: HCY, Hopital Central de Yaounde; CHE, Centre Hospitalier d'Essos; CHU, Centre Hospitalier Unversitaire; HGOPY, Hopital Gynecoobtetrique et Pediatrique de Yaounde.

Table 1 summarizes the key findings of this descriptive study. In total 38 151 deliveries were recorded over the period including 5640 preterm births giving a rate of 14.8% (5640/38 151). It should be noted a difference of rates of PTB between the CHE (private) and the 2 others facilities (public),  $P$ -value = .001. In addition, we found that the rates of very high preterm births was significantly high at HGOPY. Overall the mean rate of preterm having a birth weight below 2000 g was (40.7%) and most of preterm births were classified as late with deliveries occurring after 34 weeks of pregnancy regardless of the health facility with a mean rate of 51.6% (2909/5640) of the total preterm births. In addition almost 1 delivery among 4 was occurring after C-section.

## Discussion

The main element reported through this study is a rate of PTB which corroborates earlier data from low resources settings of SSA, being higher than median level of prematurity in high resources settings excluding USA.<sup>4</sup> In fact, ethnicity and racial differences have been outlined elsewhere between black and white non Hispanic women that may be caused by many unknown factors including epigenetics and microbiome.<sup>5</sup> In addition we want to outline the discrepancy between the private and public hospitals in this settings. We assume that this discrepancy is to put on the socioeconomic profiles being higher in mothers attending private services.<sup>6</sup> The second point is related to the type of PTB, as described elsewhere, late PTB is quite preeminent in Yaounde; however our data in this study can have been lowered

by the 34 weeks threshold took into consideration against the 32 weeks, usually considered.<sup>7</sup> Our 51.6% rate of late PTBs could help to plan appropriate planning of services delivery, knowing that late PTB is associated with increased rates of morbidity and mortality.<sup>8</sup> Moreover, the rates of PTB below 2000 g is indicative of the requirement and the needs to settle KMC units inwards hospitals and may give guidance on the needs of screening retinopathy of prematurity.<sup>9</sup> The surprising fact is the type of delivery; overall 25% of babies were born through Cesarean-section. Regardless of the indication of C section, in this sample, this rate maximizes the feature of proportion of induced PTB in our environment. In fact, compared to the western countries, this rate shows that are the majority of PTB are spontaneous, even though the rate of C section seems increasing.<sup>10</sup>

We acknowledge the limitation of this study as our data collection appears insufficient to provide insights on the type of PTB, spontaneous labor or preterm premature rupture of membranes including indication of induced prematurity.

## Conclusion

In conclusion, the rate of prematurity in Yaoundé is 14.8%; consisting predominantly of late and spontaneous PTB. Further studies, are required for analysis of the profile of both spontaneous and induced PTB in this setting.

## Author's Contributions

AE wrote the paper with input from all authors. All authors discussed the results and contributed to the final manuscript.

### Declaration of Conflicting Interests

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### Ethics Approval

Administrative authorization was received for each facility for data collection.

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