

Maternal Mortality in Cameroon: Prevalence Survey and Epidemiological Aspects at the Laquintinie Hospital in Douala from 2011 to 2016

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ABSTRACT

Introduction: Maternal mortality is the death of a woman occurring during pregnancy or within 42 days after its termination, whatever its duration and location for any cause determined or aggravated by the pregnancy or the care it motivated. All countries of the world are affected by maternal mortality.

Objective: The objective of this study was to study the epidemiology of maternal mortality at the Laquintinie hospital in Douala.

Methodology: This was a cross-sectional study with a retrospective collection of data on maternal deaths at the Laquintinie Hospital in Douala from January 1, 2011, to December 31, 2016. All cases of maternal death that conform to the WHO definition were included. The data collected was entered and analyzed respectively by Cspiro 6.3 and IBM SPSS 23 software according to age, marital status, type of occupation, parity, quality of prenatal consultation, level of education, patient's place of origin, time of arrival at the hospital and causes of death.

Results: Two hundred and fifty-four (254) maternal deaths were identified during the study period for fifteen thousand four hundred and ninety-eight (15,498) live births, representing a maternal mortality rate of one thousand six hundred and thirty-eight per one hundred thousand live births (1638/100000 NV). The 25-30 age group was the most affected (33.1%) by death, with an average age of 29.26 ± 6.1 years. Housewives (51.6%), Singles (73.6%) women with primary education 54.3% were mostly affected. Hemorrhage was the leading direct cause of death (67%) followed by complications from hypertensive disease (14.1). Malaria and HIV infection were the main indirect causes. The majority (53.93%) of the women in our series died within an hour of admission.

Conclusion: The maternal mortality rate at Laquintinie Hospital in Douala is 1,638/100,000 Live Births. The 25-30 age group was the most affected. Singles, housewives, women referred from health centers, women with a primary education level constituted the mask and the majority of women died less than an hour after admission.

Keywords: Maternal mortality; Young; Single; Hemorrhage; Transfusion

INTRODUCTION

Maternal mortality is the death of a woman occurring during pregnancy or within 42 days after its termination, whatever the duration and location for any cause determined or aggravated by the pregnancy or care that it motivated, but neither accidental

nor fortuitous [1,2]. Since the end of the 1980s, the improvement of maternal health and the reduction of maternal deaths have been at the center of the concerns of several international summits and conferences, notably during the Millennium Summit held in 2000 [3,4].

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Despite the commitment of governments, development partners, non-governmental organizations and the entire international community for decades, maternal mortality remains a serious plague in developing countries. Because 99% of the deaths in the world occur there and a little more than half of these deaths occur in Sub-Saharan Africa, a region that shelters only 13.5% of the world population and where one registers 23.5% of the total births.

According to the WHO, around 830 women die every day worldwide from complications related to pregnancy or childbirth [5]. Almost 300,000 women died in 2015 during pregnancy, childbirth or in the days that followed [5]. Global statistics show that all countries are affected by maternal mortality; however, the distribution is uneven from country to country. In France, for example, the maternal mortality rate is 10.3 per 100,000 live births [6]. The latter is comparable to that of neighboring European countries with a reinforced study system [6]. In India, the annual number of deaths during childbirth is 136,000, bringing the maternal mortality rate to 540/100,000; this rate is increasing in certain rural regions [7]. Out of Asia, sub-Saharan Africa is the region of the world with high rates of maternal death [5,8]. The risk at birth, of death linked to maternity, is 1 in 16 against 1 in 2800 in rich countries [9]. According to the WHO, each year, 68 000 deaths are due to abortions performed in poor conditions of security [9]. In Mali, according to the EDSM III, the maternal mortality rate was 582 per 100,000 live births in 2001, i.e. 1/24 maternal deaths during the period of genital activity [10]. In Sierra Leone, the mortality rate reaches 1,100/100,000 live births [8] At the level of the Central African sub-region, the maternal mortality rate varied between 600 to 800 per 100,000 live births [11]. In Chad, the maternal mortality rate in 2004 was 858 per 100,000 [11]. In Cameroon, in 2018, the initially very worrying statistics according to the Demographic and Maternal Health Survey (DMHS) the maternal mortality ratio went from 782 deaths per 100,000 live births in 2011 to 467 deaths per 100,000 live births in 2018 [12]. This ratio is heterogeneous according to the health structures; in 2015 at central hospital Yaounde, this rate was estimated at 964 per 100,000 live births and 247 per 100,000 live births at the regional hospital in Bamenda [13]. Given this endemic and alarming context, it, therefore, seemed opportune to study maternal mortality in a central level hospital, Laquintinie hospital in Douala, to provide corrective approaches.

METHODOLOGY

Type of study, duration and period

It was a descriptive cross-sectional retrospective study lasting 05 months (January 1, 2017, to May 31, 2017) covering a period of 6 years (January 1, 2011, to December 31, 2016).

Study framework

Our study took place in the gynecology and obstetrics department of Laquintinie Hospital. It is a hospital-university setting which records 2,900 births per year, of which almost a third (950) by caesarean section for 06 gynaecologists. Its

maternity unit is made up of 05 birth rooms, each with a convertible bed, a pre-labour room with a capacity of five beds and as many for the postpartum room. A functional operating theatre (with two immediate post-interventional treatment rooms with two beds each) is attached to this entire unit and the blood bank of the Littoral region is domiciled at Laquintinie Hospital. The obstetrics and gynaecology department has a capacity of 80 beds and a filling rate of 80%. Night shifts at the maternity are presented for 24 hours (08h to 08h) for the gynaecologist assisted by a rotating team of paramedics by sequential period (the morning from 8 a.m. to 5 p.m. and the night from 5 p.m. to 8 a.m.) and consist of an anesthetist nurse, two nurses for the theatre, 03 midwives and 03 general nurses. Prenatal consultations are effective and provided by gynaecologists and midwives; a family planning unit is operational there under the coordination of a midwife.

In its configuration, the obstetrics and gynaecology department of the laquintinie hospital includes the three pillars of the fight against maternal deaths [12-24].

Patients, equipment, and method

The patients were identified from the registers for the deceased and the data extracted from their medical files and recorded on the pre-established investigation sheets.

Study population

Our study concerned all pregnant, parturient, and new-borns admitted at the Laquintinie hospital and deceased.

Inclusion criteria

Were included, all the files of women who died in the unit during pregnancy and puerperium during the period from January 1, 2011 to December 31, 2016 and whose files were available and well filled.

Exclusion criteria

All women who died in the unit and whose pregnancy was not proven or died during pregnancy and puerperium during the study period whose records were:

- Not found
- Unusable (absence of age, place of residence, profession, diagnosis, obstetric history)

Sampling

The sampling was consecutive with a minimum size of 267 cases according to the Lorentz formula.

Z: 95% confidence level (typical value 1.96); N: required sample size; P: prevalence (mortality rate at the Central hospital Yaounde); d: accuracy level at 5% (typical value 0.05)

In 2015, Koh in a descriptive study of maternal mortality at the teaching hospital of Yaounde had a mortality rate of 964/100,000 live births [13]. This allows us to obtain a sample size of 267 cases.

Variables of interest

The variables studied were:

Quantitative: Age, time of arrival, time of death, length of hospital stay, number of ANC's, parity, severity

Qualitative: Profession, marital status, place of residence, level of education, level of hospital of origin, gynaecological and obstetrical history, admission to reanimation, blood transfusion, obstetric procedures, surgical intervention, drug treatment

Statistical analysis

The data was entered using the CSpro software (Census and Survey Processing System) 6.3 then processed and analysed using IBM SPSS (Statistical Package for the Social Science) software version 23. The quantitative variables were expressed in the form of mean and standard deviation and qualitative variables in terms of numbers and percentage.

Ethical considerations

Our study was submitted beforehand to the ethics committee of the University of Douala and obtained an ethical clearance. We carried out our study in strict compliance with the fundamental principles of medical research (principle of research safety and confidentiality).

At the end of our study, we listed 265 cases. 11 files were unusable (not found and incomplete), only 254 files complied with our variables of interest.

Mortality rate

We found 254 maternal deaths and 15,498 live births, giving a maternal mortality rate of 1,638 per 100,000 live births. This rate fluctuated depending on the year with peaks in 2013 and 2016.

Age

The average age of the deceased was $29,26 \pm 6.1$ with extremes of 15 and 44 years and the range of 25-30 paid the heavy price in wanting to procreate: 84 cases or 33.1% of our population.

Marital status, occupation, level of education and place of residence

Our deceased were mainly single (73%), housewives (51%) of primary education (54.3%) and living in urban areas (89%).

Etiologies of maternal deaths

History and background: Referrals made up 92% of those who died (234 cases) the majority of women who died in our study population. Deadline for death: 53.93% of women who died were less than an hour after admission, and 12% (32 women) were at admission.

Level of the hospital of origin: 51.3% of the referrals came from health centers. Obstetric history: Parity and prenatal consultations. In our study population, the deceased were predominantly multiparous (44%), primiparous (34.6%) and

those with less than 4 antenatal consultations were the most affected (28.7%).

Etiologies of deaths: The direct causes represented 221 cases in our study population, i.e. 86.9% and mainly made up of hemorrhages of multiple etiologies (67.7%) and complications of hypertensive pathologies in pregnancy (14.1%); the indirect causes were due to infections (5.1%), malaria (5.9%) and HIV infection (2.7%).

DISCUSSION

Mortality rate

Dying of wanting to procreate is a tragedy. 254 women lost their lives during the period from 2011 to 2016 at Laquintinie Hospital, which also recorded 15,498 Live Births, representing a mortality rate of 1,638/100,000 Live Births. This rate is variously compared to the series for the same geographic area and elsewhere. Reported at 365/100 000 from Fomulu et al. [11] in 2006 at the teaching hospital of Yaounde [14], our rate is four and a half times higher. The profile of the deceased seems explanatory to us; because the death of the teaching hospital of Yaoundé was followed up in situ while that of Laquintinie hospital was referred by peripheral structures mainly from health centers. The African series reported here by Ouedraogo et al. [12] 4111/100 000 at the teaching hospital of Ouagadougou [15] and Traore et al. [13]. 2031/100 000 at the regional hospital of Segou in Mali [16] are significantly above our rate. This great disproportion is explained by the areas of origin of the deceased of these maternities but also by the impact on the health of the gross domestic product per capita in countries with low incomes and without universal.

Sociodemographic characteristics

Age: Age in the literature is a risk factor for maternal death when it is under 20 or 40 and over, but in our series, the average age was 29.26 ± 6 years with extremes of 15 and 44 years and the group of 25-30 was mainly affected in the order of 33.1% (84 cases). This section is super imposable on that of maximum fertility [17-19]. Our rate is similar to the 34% of Nayama et al. in Niger [14].

Occupation and marital status: Employment and the financial autonomy it provides for women, as well as marital status, are effective determinants in the fight against the three delays often observed in audits of maternal deaths in African series [18-20] where it is reported a poverty rate of 39.9% and almost non-existent social security [17]. Housewives and singles constituted the majority of maternal deaths in our series with 51.6% and 73.6% respectively. Our findings confirm the data in the literature and are close to 74.8% of Fomulu et al. [11] and 64.8% of Koh et al. [10] found in Yaoundé.

Place of residence: The rural environment is a determinant of maternal death in Africa because it often lacks basic health infrastructure. But our findings of around 89% in urban areas cannot be compared with relevance to the deaths in Mali, 63.8% of which were made up of women living in rural areas [16].

Level of education: Education frees prejudice, socio-cultural contingencies and high-level education fulfills women [17]. But 54.3% of our population was in primary education. Our rate is close to that of Fomulu et al. [11] (64.5%) in the same geographical area.

HISTORY TAKING AND PAST HISTORY

In African audits of maternal deaths, the reference is often the cause of the 2nd and 3rd delays [21] and the study by Tiomela in Niamey reports a risk of maternal mortality 14 times higher among women received by transfer [22]. The excess mortality observed in our study confirms these data from African studies because 92.1% of our study population consisted of referrals. Our result is close to 82.05% reported by Fomulu et al. [11] at the teaching hospital Yaounde [14].

Deadline for death and health facility of provenance

The majority (53.93%) of the women who died in our study population died within an hour of admission and 12% of our sample were deceased on admission. Our result is close to 63% of Tajik et al. in Mali who died within an hour of admission [16]. The quality deficit of the facilities of origin. 51.3% of our referrals came from health centers. The latter comes from the bottom of the health stratum of Cameroon and not always in line with an efficient practice of emergency obstetric care [14].

In the African series and the medical literature, multiparity is reported as a risk factor for maternal mortality due to a kind of obstetric marathon associating early, close, multiple pregnancies and sometimes high maternal age with as corollary uterine atony and massive hemorrhages [22-24]. Multiparas were mainly represented in our population of deceased with a rate of 44%; same observation in the study by Fomulu et al. [11] in 2006 at the teaching hospital Yaoundé where 26 women out of 39 were multiparous (i.e. 66.66% of its population) [14].

Prenatal consultation

According to WHO recommendations, the qualitative follow-up of pregnancy includes among other things at least 4 prenatal consultations allowing education in behavioural change, the correction of nutritional deficiencies, the prevention, and treatment of infections [19]. In our study population, 28.7% (73 of 254 women) had seen less than 4 times and 14.1% (36 of 254) of those who had died had never seen a doctor. Foumane et al. [21] in Yaoundé [24] and Tajik et al. [16] in Iran report the same findings.

Causes of maternal death

The causes of death were diverse in our study, but mostly preventable. Direct causes represented 86.9% of cases. This rate is similar to that reported at the main maternity unit of the central hospital in Yaounde by Tiomela et al. [22] (80.43%).

Bleeding: The main causes of maternal mortality at the Laquintinie hospital of Douala were haemorrhage 172 out of 254 cases, 67.7% of multiple aetiologies. This result is similar to those found by Fomulu et al. [11] 56.4% in 2009 at the teaching

hospital Yaounde [14] and Traore et al. [13] 53% in 2010 in Mali. This haemorrhage is also found in the literature as the leading cause of mortality not only in developing countries but also in developed countries. Similarly, the WHO confirms the place of haemorrhage as the leading cause of maternal deaths in Africa in a review of 35,197 maternal deaths. This result is however contradictory to those of Foumane et al. [21] who found complications related to hypertensive pathologies in the first rank 22% at the gynaeco-obstetric hospital of Yaounde and haemorrhages in the third rank 10% [23]. This decrease in haemorrhages as the main cause of death could find its explanation on one hand by the fact that during their study, the active management of the third phase of labour was systematic, [23] because it was a prospective study, on the other hand, obstetric emergencies benefited during the study period from the permanent surgical and anaesthetic teams and the provision, without prior charge, of a minimum package of medication and blood bags [23].

Complications related to hypertensive pathologies (pre-eclampsia and eclampsia): In our study, complications related to hypertensive pathologies were the second direct cause of maternal death (14.2%). The data in the literature are heterogeneous in the same geographical area and elsewhere and influenced by nulliparity [11-23,24] for some, multiparity for others [24]. However, nulliparity as much as multiparity are known risk factors for pre-eclampsia.

Infections: Infection was the third direct cause in our study population (13 cases out of 254), 5.1%. This result is lower than the 17.9% reported by Fomulu et al. [11], 13% from Traore et al. [13] in Mali and 8.6% from Foumane et al. [21] at gynaeco-obstetric hospital of Yaounde. The massive and systematic use of antibiotics in health centers, the majority provenance structure of the deceased in our series could be the explanation

Malaria: Cameroon is an area of high malaria endemicity and this disease was the first indirect cause of death in our study (5.9%). This result is similar to that reported by de Fomulu et al. [11] in a study done at the teaching hospital of Yaounde (5.1%) [14].

HIV/AIDS: HIV infection was the second indirect cause of death, with a rate of 2.7% in our study. Our result is far below the 19% of Foumane et al. [21] and the 5.1% of Fomulu et al. [11] before our study and attests to the efforts made by the public authorities to stem this scourge by immediate treatment through option B+.

CONCLUSION

The maternal mortality rate at Laquintinie Hospital in Douala is 1,638/100,000 Live Births. The 25-30 age group was the most affected. Singles, housewives, women referred from health centers, women with primary education and have done less than 4 antenatal consultations were the most and the majority of them died less than an hour after their admission.

Hence the need to empower peripheral health structures to master emergency obstetric care by redistributing qualified personnel as well as the establishment of universal health coverage.

CONTRIBUTION OF THE STUDY TO SCIENCE

Our study highlights the harmful effects of under-schooling and the precariousness it generates on women's health in a disjointed health environment with modest resources.

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CONFLICT OF INTEREST

The authors declare on their honor that they have no conflict of interest.

CONTRIBUTION OF AUTHORS

Essome: designed the study, collected the data and wrote the manuscript, Halle, Egbe, Nana, Ekono, Nida, Boten, Tocki have read and corrected the manuscript, Mboudou directed the study, supervised the writing of the manuscript and validated the final version.

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