Emergency Obstetric Care for the Maternity of the Saint Regional Hospital Center from 2011 to 2015: Overview and Prospect

Thiam O¹, Cissé ML², Gassama O³, Niang M M³, Aziz A D³, Gueye M³ and Moreau JC³

¹Department of Gynecology, Unite Health Gaston Berger, University of Saint Louis, Saint Louis Chr, Senegal
²Department of Gynecology, UFR Health Thies University, Senegal
³Corresponding author: Ousmane Thiam, Department of Gynecology, Unite Health Gaston Berger, University of Saint Louis, Saint Louis Chr, Senegal, Tel: 00221775085071; E-mail: cassoumane@yahoo.fr

Abstract

Objectives: The main objective of this work was to evaluate emergency obstetric care at the reference maternity hospital Saint-Louis. The specific objectives were to analyze evolving trends and propose solutions to improve the quality of obstetric care.

Methodology: This was a descriptive cross-sectional study of all obstetric attendants in the period from January 2011 to December 2015.

Results: We recorded 25,363 inmates in the delivery room with an annual average of 5017. The deliveries accounted for 22,975 entrants, or 90.58%. Caesareans were 4083 cases, or 17.7% of deliveries. Obstetric evacuation accounted for 3845 cases, or 16.3% of obstetric admissions. Stillbirth was 6.5 per 100 live births. We recorded a maternal mortality rate of 547.08 per 100,000 live births. The causes were direct in 70% of cases and indirect in 30%.

Conclusion: The results of this work confirm a fact: the regional hospital center of Saint Louis because of its geographical position is a center of reference in the system in northern Senegal. The availability of SONUC has improved maternal and neonatal health indicators in the area. Then, it is necessary to insist on the necessity of the decentralization of the obstetric and surgical activities on the periphery.

Keywords: Emergency Obstetric; Neonatal Care; Maternal; Fetal Mortality; Saint Louis

Introduction

The World Health Organization (WHO) estimated that nearly one million women die in childbirth each year worldwide, 99% of them in developing countries and nearly half in Africa [1,2]

Many studies (MOMA, INSERM) had highlighted the predictive value of certain risk factors. Indeed, the identification of these would make it possible to provide appropriate care in time, as well as to make it available and accessible without delay, in the face of any obstetric complication [3,4]. Thus emerged the concept of emergency obstetric and neonatal care (SONU). Thus, apart from family planning and vocational attendance at birth, the availability of SONU was one of the strong pillars of the current strategy for the reduction of maternal mortality [2,4].

Despite all these efforts, the morbidity and maternal mortality rate remained high. Still with the aim of accelerating the decline, one of the targets of Sustainable Development Goal 3 set as of 2015 is to reduce the global maternal mortality rate to below 70 per 100,000 live births; no country should have a maternal mortality rate greater than twice the world average [1].

In Senegal, several studies have been conducted on SONU needs across the country in order to obtain reliable indicators, to identify appropriate interventions and to highlight the progress made in this program over several years. The results are as follows:

- The maternal mortality rate in SONU structures was 222.9 per 100,000 NV,
- The very early neonatal mortality rate was 20%
- The reference was a major risk factor in the event of maternal death most often related to hemorrhages,
- A little effort was needed to complete the missing functions in some health structures.

In addition, the national rate of caesarean section was close to the minimum required by WHO and the national deficit in major obstetric intervention (IOM) for absolute maternal intervention (IMA) was 47.7% [5].

At the Regional Hospital Center of Saint-Louis in Senegal, no study on the indicators of SONU was available. Thus, the main objective of this work was to evaluate emergency obstetric care at the reference maternity hospital Saint-Louis. Specific objectives were to analyze evolving trends and propose solutions to improve the quality of obstetric care.
Methodology

This was a descriptive cross-sectional study on obstetric records recorded at the maternity ward of the Saint-Louis Regional Hospital Center from January 1, 2011 to December 31, 2015, a period of 5 years.

The study took into account all the files correctly filled with all the information.

We did not include in the study the incomplete files of the patients.

The following parameters were studied: deliveries, live births, episiotomies and perineal tears, place of birth, evacuations and references, obstetric pathologies, abortions, blood transfusion, maternal deaths, still births.

For each variable used, we calculated the relative frequency and the absolute frequency.

Excel computer software and Epi-info version 3.5 software were used for data collection and processing.

Results

Deliveries

Table 1 represented the distribution of deliveries at the maternity ward of the CHR of Saint Louis from 2011-2015. With a total of 23,404 births registered during the study period, the annual average was 3699.4.

<table>
<thead>
<tr>
<th>Childbirth Type</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural birth</td>
<td>3034</td>
<td>3654</td>
<td>3773</td>
<td>4013</td>
<td>4023</td>
<td>18497</td>
<td>79</td>
</tr>
<tr>
<td>Suction cup</td>
<td>39</td>
<td>58</td>
<td>61</td>
<td>95</td>
<td>188</td>
<td>441</td>
<td>1.88</td>
</tr>
<tr>
<td>Forceps</td>
<td>42</td>
<td>50</td>
<td>56</td>
<td>17</td>
<td>6</td>
<td>171</td>
<td>0.73</td>
</tr>
<tr>
<td>Maneuver</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>13</td>
<td>0.056</td>
</tr>
<tr>
<td>Cesarean</td>
<td>751</td>
<td>793</td>
<td>936</td>
<td>889</td>
<td>913</td>
<td>4282</td>
<td>18.3</td>
</tr>
<tr>
<td>Total</td>
<td>3866</td>
<td>4557</td>
<td>4831</td>
<td>5017</td>
<td>5133</td>
<td>23404</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spontaneous abortion</th>
<th>222</th>
<th>483</th>
<th>504</th>
<th>481</th>
<th>457</th>
<th>2147</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molar abortion</td>
<td>12</td>
<td>17</td>
<td>19</td>
<td>17</td>
<td>24</td>
<td>89</td>
</tr>
<tr>
<td>Induced abortion</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>239</td>
<td>505</td>
<td>525</td>
<td>503</td>
<td>487</td>
<td>2259</td>
</tr>
</tbody>
</table>

Table 1: Distribution of deliveries at the maternity hospital of the CHR of Saint-Louis from 2011-2015 (N = 23404).

We noticed a difference between years. The frequency of instrumental extractions had increased from 2% in 2011, to 3.78% in 2015 especially that by suction increased five times from 39 in 2011 to 188 in 2015. The use of the forceps has as for it decreased from 42 in 2011 to 6 in 2015.

Abortions: Table 2 represented the total number of abortions registered at the Saint-Louis CHR maternity ward between 2011 and 2015. A total of 2259 abortions were recorded.

<table>
<thead>
<tr>
<th>Type of abortion</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th><strong>TOTAL</strong></th>
</tr>
</thead>
<tbody>
<tr>
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<td>17</td>
<td>24</td>
<td>89</td>
</tr>
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<td>5</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
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<td>505</td>
<td>525</td>
<td>503</td>
<td>487</td>
<td>2259</td>
</tr>
</tbody>
</table>

Table 2: Distribution of abortions at the maternity ward of the CHR of Saint Louis from 2011 to 2015 (N=2259).

The number of abortions was almost constant between 2012 and 2015 and the annual average was 451.8 (N=2259).

Blood transfusion: Table 3 represented the distribution of blood transfusions performed at the maternity ward of the Saint-Louis Regional Hospital Center from 2011 to 2015. A total of 2164 blood bags were transfused to 1060 patients, i.e. 2 blood bags per patient. The annual average of transfusions was 212.

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th><strong>Total</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of transfused patients</td>
<td>212</td>
<td>178</td>
<td>260</td>
<td>208</td>
<td>202</td>
<td>1060</td>
</tr>
<tr>
<td>Number of transfused bags</td>
<td>477</td>
<td>338</td>
<td>556</td>
<td>416</td>
<td>377</td>
<td>2164</td>
</tr>
</tbody>
</table>

Table 3: Distribution of blood transfusions at the maternity ward of the Saint-Louis Regional Hospital Center from 2011 to 2015.
**Maternal death:** Maternal mortality ratio: The number of maternal deaths recorded at the maternity hospital of the CHR of Saint-Louis was 119 cases, an annual average of 23.8.

Figure 1 represented the maternal mortality ratio. The lowest rates were recorded in 2011 and 2015 and the highest rate in 2013. The annual average was 530.66 per 100,000 live births (N = 119).

**Obstetrical pathologies and lethality**

Table 4 represented the distribution of obstetric and lethal pathologies from 2011 to 2015 at the CHR of Saint-Louis.

We recorded several obstetrical pathologies during the study period. Among them, some had not caused maternal death, namely obstructed labor, RPM, the threat of preterm birth. Among the obstetrical pathologies responsible for maternal deaths, we had:

- 25 cases of postpartum haemorrhage, i.e. 21% of deaths,
- 17 cases of eclampsia and retro placental hematoma, i.e. 14.28% of deaths,
- 15 cases of pre-eclampsia, i.e. 12.60% of deaths,
- 10 cases of death by severe anemia or 8.40%
- 5 cases of placenta previa, i.e. 4.20%,
- 4 cases for uterine rupture, as well as for infections and abortions, i.e. 3.36% of maternal deaths for each of them,
- 3 cases of heart disease or 2.52%,
- 2 cases of death from severe malaria and decompensated diabetes, i.e. 1.68% of maternal deaths for each,
- 9 cases of death for other medical conditions (PAO, ARF, pulmonary embolism, asthma, severe vomiting) or 7.56%.
- The heart disease associated with pregnancy had the highest lethality among obstetric pathologies (50%).

**Stillbirth:** During the study period, we recorded 285 stillbirths, including 151 fresh stillbirths and 134 macerated stillbirths.

<table>
<thead>
<tr>
<th>Obstetric conditions</th>
<th>Total number</th>
<th>Number of deaths</th>
<th>of %</th>
<th>Specific lethality in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion</td>
<td>2207</td>
<td>4</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>GEU</td>
<td>96</td>
<td>2</td>
<td>2.08</td>
<td></td>
</tr>
<tr>
<td>Placenta praevia</td>
<td>283</td>
<td>5</td>
<td>1.77</td>
<td></td>
</tr>
<tr>
<td>HRP</td>
<td>616</td>
<td>17</td>
<td>2.76</td>
<td></td>
</tr>
<tr>
<td>Uterine rupture</td>
<td>51</td>
<td>4</td>
<td>7.84</td>
<td></td>
</tr>
<tr>
<td>HPP</td>
<td>295</td>
<td>25</td>
<td>8.47</td>
<td></td>
</tr>
<tr>
<td>Infections</td>
<td>46</td>
<td>4</td>
<td>8.69</td>
<td></td>
</tr>
<tr>
<td>Pre-eclampsia</td>
<td>983</td>
<td>15</td>
<td>1.52</td>
<td></td>
</tr>
<tr>
<td>Eclampsia</td>
<td>262</td>
<td>17</td>
<td>6.49</td>
<td></td>
</tr>
<tr>
<td>Anemia and pregnancy</td>
<td>158</td>
<td>10</td>
<td>6.33</td>
<td></td>
</tr>
<tr>
<td>Diabetes and pregnancy</td>
<td>76</td>
<td>2</td>
<td>2.63</td>
<td></td>
</tr>
<tr>
<td>Malaria and pregnancy</td>
<td>106</td>
<td>2</td>
<td>1.89</td>
<td></td>
</tr>
<tr>
<td>Heart disease</td>
<td>6</td>
<td>3</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Other pathologies</td>
<td>242</td>
<td>9</td>
<td>3.72</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Distribution of obstetric pathologies and lethality at the maternity ward of the CHR of Saint-Louis from 2011 to 2015.

Figure 2 represented stillbirth at the maternity ward of the CHR of Saint-Louis. The highest rate was in 2011. This rate decreased to 58.34 per 1,000 live births in 2015. The annual average was 65.55 per 1000 live births.
Comments

Limitations of the study

We were sometimes reinforced to incomplete registers, insufficiently filled.

Deliveries

During the study period, we recorded a total of 23,404 deliveries at the maternity ward of the Saint-Louis Regional Hospital Center. The number of deliveries in the structure had gradually increased between 2011 and 2015 ranging from 3,034 in 2011 to 4,023 in 2015. The annual average was estimated at 3699.4.

The increasing number of deliveries in our study reflects an increase in deliveries assisted by qualified medical personnel and an increase in the use of medical services by the population. This improvement is the result of a national effort by the Senegalese government to provide quality infrastructure and improve people's access to health facilities for a specific goal of improving maternal and newborn health. The communication for behavior change instituted by the health authorities of the region allowed, on the one hand, an increase in the number of attendances of health services by the beneficiaries, and on the other hand an increase in the number of deliveries in the structures. health.

The frequency of instrumental extraction had increased significantly during this study period and was 2.6% of deliveries.

We noted an increase in the use of the vacuum suction cup that increased four-fold between 2011 and 2015 with a total of 441 or 1.88% of deliveries. Forceps use decreased during the study period and accounted for 0.73% of deliveries.

These results are due to the continuous training of providers, especially midwives, in the practice of vacuum extraction, accessible in all facilities providing basic emergency obstetric and neonatal care. This low rate of use of the forceps at the expense of the obstetric vacuum can be explained by the fear of its application as well as its maternal and fetal complications. In addition, the practice of the forceps is reserved to the doctors unlike the application of the sucker delegated to the midwives of state. Despite these improvements, the instrumental extraction rate in the service remains low (2.6%).

Caesarean section delivery

During our study period, the total number of caesareans performed in the ward was 4282 cases; an annual average of 856.4.

The average annual caesarean section rate was 18.3% and exceeded that recommended by WHO [1] which is 5 to 15%.

Thus our cesarean section rate is comparable to that of Thiam et al. [6] who obtained a rate of 18.38% at the Regional Hospital of Ndioum a more northern Senegal.

Kemfang Ngowa et al. [7] found a higher rate than that of our study at the Yaoundé General Hospital with a rate of 23.73% cesarean section. Like Traore [8] at the Regional Hospital of Ségou with a cesarean section frequency of 20.4%.

The results of the caesarean section rate in our series are explained by the fact that:

- The Saint-Louis Regional Hospital Center provides comprehensive emergency obstetric and neonatal care with a functional operating room and a medical team composed of obstetrician gynecologists and midwives.

- its geographical position, the Regional Hospital Center being the reference hospital in the North zone of Senegal and that most cases referred to this Center are serious cases that often require surgery.

The analysis of this high cesarean section shows that surgical activity occupies an important place in the service.

Abortions: The total number of abortions recorded in the service was 2259 cases. It was almost constant between 2012 and 2015 and the annual average was 451.8 cases.
Spontaneous abortions were much more common and accounted for 95% of abortions. Molar abortions accounted for only 3.94% and abortions accounted for 1% of abortions.

The frequency of spontaneous abortions is explained by the fact that these patients consult more at the onset of clinical signs, unlike patients with induced abortions who often consult only in case of complications. Thus many cases of induced abortions are not notified and documented in the service. Cases of uncomplicated induced abortion were hidden for ethical, cultural, social and criminal reasons [9, 10]. This may explain the low rate of induced abortions in our study.

**Blood transfusion:** Blood transfusion plays an important role in the evaluation of emergency obstetric and neonatal care. Indeed, according to a study on the evaluation of emergency obstetric and neonatal care in Senegal between 2012 and 2013, bleeding was the leading direct obstetric cause of maternal death at 44.2% [11]. During our study period, a total of 2164 blood bags were transfused to 1060 patients, ie approximately 2 whole blood bags per patient.

Our results were different from those of Gabkika et al. [12] where 48.8% of their patients received 2 blood bags and 90% of the patients received whole blood versus 10% who received fresh frozen plasma.

In our study, of the blood products that exist, only whole blood bags were available for patients with bleeding complications. Thus, insufficiencies in the availability of these blood bags were noted because often the amount of blood was insufficient in the blood banks. The unavailability of stocks of blood products forced practitioners to use the families of patients to donate blood. Thus potential blood donors come from families of patients. These inadequacies in the availability of blood justify the number of high maternal deaths related to hemorrhages.

**Maternal death:** Pregnancy, childbirth and postpartum mortality was the leading cause of death among women of reproductive age. The number of maternal deaths recorded during our study period in the maternity ward was 119, an annual average of 23.8 deaths.

The maternal mortality rate during these 5 years averaged 530.66 per 100,000 live births. The lowest was recorded in 2015 and was 368.47 per 100,000 live births (NV) and the highest rate in 2013 with 703.45 per 100,000 NV.

This average maternal death rate recorded in our study (530.66 per 100,000NV) is superimposable to the results of Thiam et al. [6] at the King Baudoin Health Center [13] in Dakar with 615.8 per 100,000 NV and Mbaye et al. [14]. At the Youssou Mbangane Health Center in Rufisque which reports a rate of 592 per 100,000 NV over a period of 7 months.

Moreover, the results of our series are lower than the rate reported by Thiam et al. [13] on the study carried out at the Regional Hospital Center of Ndoum in 2011 with a mortality rate of 1579 / 100,000 NV, but also lower than those of some African countries: Akpadza [15] and Diallo [16] found maternal mortality rates of 879 and 832 respectively per 100,000 live births.

In France, a study conducted from 2007 to 2009 by Saucedo et al. [17], identified 254 maternal deaths, with a maternal mortality rate of 10.3 per 100,000 live births. These figures are very much lower than ours. France is a developed country where several maternal death factors have been controlled for several decades.

However, the maternal death rate obtained (530.66 per 100000N.V) is still high compared to the national rate of 392 / 100,000 N.V [18].

In 2010, the maternal mortality rate in Africa was estimated at 480 per 100,000 live births. This rate was comparable to our results, which shows that more needs to be done at our level to improve maternal health.

The results obtained during our study period show that the maternal mortality rate gradually decreases over the years but that additional efforts should be made to accelerate this reduction. The factors underlying these causes in our context are related to the inadequacies of the health system with, in particular, the shortage of qualified personnel at birth and the inefficiency of the referral system and above all the poor social and economic conditions of the child, women [11].

**Stillbirths:** Stillbirth is a very useful factor for monitoring obstetric activity. The highest rate in the service was recorded in 2011 and was 80.81 per 1000 live births and the lowest rate in 2015 and was 58.34 per 1000 live births. The annual average was estimated at 65.55 per 1000 N.V.

The data found on stillbirth in our study are comparable to some data from African literature [8].

According to Blondel [19] the rate of stillbirth in France is 5.3 per 1000. In the Reunion department, Chalazon [20] found 8.99 per 1000 live births. These rates were significantly lower than those of our study.

This decrease in the stillbirth rate during our study period is due in part to the increase in the use of medical services by the population, hence the importance of raising awareness among the population. It also reflects an increase in the monitoring of pregnant women and deliveries assisted by qualified medical personnel. Moreover, a lot of efforts have been made in the training of staff for the realization of certain medical procedures including that of the suction cup.

**Conclusion and Recommendations**

The results of this work confirm a fact: the regional hospital center of Saint Louis because of its geographical position is a center of reference in the system in northern Senegal. The availability of SONUC has improved maternal and neonatal health indicators in the area.

To better improve this offer of care in our structure, we have found it necessary to make a number of recommendations:

- strengthen the skills of maternal health care providers,
- make available blood and derivatives as well as emergency products,
- improve the reference-versus-reference system in the northern region
- set up the obstetric UAS,
- early detection, adequate treatment and correct follow-up of women with heart disease

Then, it is necessary to insist on the necessity of the decentralization of the obstetric and surgical activities on the periphery.
References
