The Impact of Audits of Maternal Deaths and Near Miss at University Hospital of Mother and Child Lagoon (Benin)

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Abstract

Introduction: The maternal deaths audit is one of the three major strategies recommended by WHO for the reduction of maternal and neonatal mortality.

Objective: To measure the impact of maternal death and near miss review on maternal mortality and morbidity after 7 years of practice at the University Hospital of Mother and Child “Lagoon” of Cotonou.

Methodology: It was a transversal, descriptive, and analytical study with retrospective data from 1st January 2007 to 31st December 2013. The studied population consisted of maternal deaths cases and of near miss occurred in the hospital during the study period.

Results: During the study period, the hospital registered a total of 321 maternal deaths, 3825 perinatal deaths and 3827 near miss. The frequency of maternal death review was 18.7%, the perinatal death of 0.2% and the near miss 0.4%. The most frequent disorders were inadequate reference (69.7%), inadequate treatment (53%), poor supervision (62.1%) and poor files documentation (49.9%). Globally, the period of conducting clinical review was significantly associated with decreased postpartum hemorrhage (p<0.001), pre-eclampsia and eclampsia episodes (p<0.001) and the occurrence of uterine rupture (p=0.02). The occurrence of HRP decreased from 2007 to 2013, but this decrease was not statistically significant (p=0.09). However, there was a significant decrease between 2006 and 2007 (reference period), between 2008 and 2006 and between 2010 and 2006. There is a tendency to lower placenta praevia episodes from 2008-2013 but this decrease does not statistically significant (p=0.18). Moreover, a significant increase in cases of placenta praevia is observed between 2006 and 2007 (p=0.02).

Conclusion: The introduction of maternal death audits is a good approach to reducing maternal mortality and morbidity. However the decrease in indicators of our study can’t be solely attributed to the effect of audits.

Introduction

Maternal mortality is a major public health issue in the Third World countries, especially in sub-Saharan Africa. Truly, in 2008 Maternal Mortality Ratio (MMR) averaged between 470 and 930 maternal deaths per 100,000 live births (NV) in poor countries, versus 13-16 maternal deaths per 100,000 live births in the country developed [1]. In Benin, in 2006, it was estimated at 397 maternal deaths per 100 000 NV [2,3]. To reduce maternal and neonatal mortality, especially those related to third delay, the World Health Organization (WHO) recommends three major strategies which are the implementation of recommendations for Care in Obstetric and Neonatal Emergency Care (EmONC), skilled attendance at delivery and review / audit of maternal deaths and near misses. Studies in sub-Saharan Africa have shown that the implementation of the practice of the review / audit of death reduced significantly maternal mortality. In Benin, this strategy started at University hospital of mother and child Lagoon (CHU-MEL) in 2007. In our study, we proposed to evaluate their effectiveness after 7 years of practice. Objectives: Assessing the impact of audit of maternal death and nears miss on mortality and maternal morbidity after 7 years of practice at CHU-MEL in Cotonou.

Framework and Methodology

It was a transversal, descriptive, and analytical study with retrospective data that took place at the CHU-MEL from 1st January 2007 to 31st December 2013. The study population was constituted by the maternal deaths and near miss which occurred in CHU-MEL and have been reviewed. Have been included in or study, all pregnant women in labor or who have given birth or died, or victims of maternal morbidity. All cases of death and serious maternal morbidity which record and/or audit summary were not found, were excluded from the study. Our sample was exhaustive. Our dependent variables were maternal mortality (variable used in a binary form: coded as “1” for death and “0” if the woman did not die, and quantitatively: number of deaths per year) and severe maternal morbidity (used variable binary form: coded 0 if the woman has severe complication and 1 if the woman did not die).
maternal deaths (date of completion, time between death and auditing, availability of report, positive and/or negative audit, possibility of death eviction), variables related to nears miss audits (realization date, time between the complication and auditing, availability of audit report, positive and/or negative audit). Morbidity was assessed on the five known pathologies of near miss: the postpartum haemorrhage, pre eclampsia/eclampsia, uterine rupture, placenta praevia and placental retro hematoma (PRH). The processing and data analysis were made by Epidata and Stata software. The logistic regression model was used to investigate the impact of the conduct of audits on mortality and maternal morbidity at a significance level of 5%.

Results

During the study period, CHU-MEL registered a total of 321 maternal deaths, 3825 perinatal deaths and 3827 near miss. 86 audits reports, positive and/or negative audit). Morbidity was assessed on the occurrence of complications and the conduction of audits was 81.9% of recommendations was variable depending on the year: Disorders and Recommendations Implementation

The most frequent disorders were inadequate reference (69.7%), inadequate treatment (53%), poor supervision (62.1%) and poor documentation (49.9%). During the reviews, about 244 recommendations were issued to the peripheral health facilities place of CHU-MEL and the Ministry of Health. The level of implementation of recommendations was variable depending on the year: The rates of executed recommendations ranged from 22.2% to 72.7% between 2012 and 2013. The rate of unexecuted recommendations ranged from 26.5% in 2008 and 44.4% in 2012. Unconfirmed recommendations rate ranged from 7% in 2010 and 33.3% in 2012.

Impact of Reviews on Mortality and Morbidity Indicators

Table 1 shows the relationship between the achievement of maternal deaths and near miss reviews at CHU-MEL and other maternal deaths occurred during the study period. We note that there is a statistically significant relationship between the two (See Table 1).

Table 1: Relationship between the occurrence of maternal deaths and clinical audits at CHU-MEL from 2006 to 2013.

<table>
<thead>
<tr>
<th>Year</th>
<th>Coefficient of regression</th>
<th>IC 95%</th>
<th>p-value</th>
<th>Global P-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>-2.2</td>
<td>[-3.9; -0.3]</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>-3.3</td>
<td>[-5.2; -1.5]</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Coefficient of regression</th>
<th>IC 95%</th>
<th>p-value</th>
<th>Global P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>-12.3</td>
<td>[-17.8; -6.9]</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>-18.9</td>
<td>[-24.2; -13.6]</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>-22.6</td>
<td>[-27.9; -17.3]</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>-26.1</td>
<td>[-31.4; -20.7]</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>-26.3</td>
<td>[-31.6; -20.9]</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>-21.6</td>
<td>[-26.9; -16.3]</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>-25.9</td>
<td>[-31.2; -20.6]</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>

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We observed a significant reduction of 24.8% of the maternal mortality ratio (MMR) as in other studies [6,8,9]. Higher results were reported by Galadanci and al., Ezugwu and al. in Nigeria who found respectively 43.5% and 47.5% reduction in MMR [9,10]. Similarly, Gumanga and al and Ganyaglo and al in Ghana, have found superior results in our which were respectively 41.4% and 31.6% [7,11]. This reduction in MMR could be explained by the practice of reviews on the one hand, and secondly by improving the reference system and then against the implementation of emergency obstetric care. Certainly, registered deaths are often the result of referrals as noted by Wellfens and al at the University Hospital of Cocody [12], Roopa and al. in India (86.9%) in 2012 [13] and Tuncalp and al (64.4%) in a literature review in 2011 [14]. Our study reported significant decreases in postpartum haemorrhage and eclampsia respectively 16.3% and 9.4%. For postpartum hemorrhage, results in line for a reduction were reported by van den Akker and al [10] and lower results were reported by Ezugwu and al. [6] To eclampsia, higher results were found by Ezugwu and al. [10] The practice of reviews, the improving the peripheral caring and improving the referral and counter-referral system could explain the decrease of these different maternal morbidities.

### Conclusion

Even though maternal mortality remains high in Benin and especially in CHU-MEL, the introduction of maternal death review was a good approach for both their reductions as those of maternal morbidities. However the decrease of the indicators used in this study cannot be only attributed to the effect of the reviews. Hence, there’s the need of an experimental study to better assess their actual impact on improving maternal and newborn health.

### References


