Reduction of maternal and fetal mortality in Nigerian hospitals by Quality Management in Obstetrics – a pilot project

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## Maternal mortality (MMR) and fetal mortality (FMR) (WHO 2011)

<table>
<thead>
<tr>
<th>Maternal Mortality</th>
<th>per100,000 live births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>620</td>
</tr>
<tr>
<td>Nigeria</td>
<td>840</td>
</tr>
<tr>
<td>Europe</td>
<td>21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Under-five mortality rate</th>
<th>per 1,000 live births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>127</td>
</tr>
<tr>
<td>Nigeria</td>
<td>138</td>
</tr>
<tr>
<td>Europe</td>
<td>13</td>
</tr>
</tbody>
</table>

Reasons for maternal and fetal mortality in developing countries: „Three delays“

- **First delay:**
  socio-economic factor:
  - insufficient knowledge of the dangerous signs before and during labor,
  - delayed decisions to bring the patients to a hospital and the
  - insufficient power of decision making

- **Second delay:**
  problems of transportation of patients to the health facilities

- **Third delay:**
  insufficient system of hospital care:
  - delay in receiving adequate and appropriate treatment
  - shortage of supplies, equipment, drugs and blood products,
  - insufficiently trained personnel
Hospital Audit and data collection

- Main focus was the reduction of „third delay“ and improvement of obstetric care in hospitals in Nigeria
- 10 hospitals, five in Kano State, and five in Kaduna State take part in data collection since 2008. Since 2011 another five hospitals in Federal Capital State Abuja take part in data collection:
Methods (1)

• From January 2008 on a questionnaire based data collection from the maternal record book was conducted. Simple indicators of maternal and child health care were used: MMR and FMR.

• Data were collected in the ten hospitals in northern Nigeria, since 2011 additional 5 hospitals in Federal Capital State Abuja participate in data collection

• Results of the data collection and evaluation were discussed in half-yearly „review-meetings“: doctors and nurses of participating hospitals took part in the meetings.
Methods (2)

• The structure of participating hospitals were evaluated: Condition of equipment and hygiene in delivery room, operating theatre, neonatal unit, delivery ward/antenatal clinic and the general conditions.

• Hospitals were supported with equipment: instruments and machines in cases of deficiencies (e.g. fetal Doppler, ultrasound machines, mosquito nets, baby scales, instruments for conducting CS, instruments for delivery).

• Equipment and hygienic rating in the hospitals were correlated to maternal mortality by using a score for hygienic and equipment conditions.
Hospital 24

Delivery ward

Delivery room

Operation theatre
Maternal Mortality in relation to equipment and hygienic rating in the hospitals
## Obstetrical data in Kano State, Kaduna State and Federal Capital Abuja

<table>
<thead>
<tr>
<th>Year</th>
<th>Deliveries N</th>
<th>Sectio Caesarea n (%)</th>
<th>Maternal Mortality n (per 100000 deliveries)</th>
<th>Fetal Mortality n (%)</th>
<th>Eclampsia n (%)</th>
<th>Postpartum haemorrhage n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>14247</td>
<td>945 (6.63)</td>
<td>243 (1710)</td>
<td>1237 (8.68)</td>
<td>974 (6.84)</td>
<td>634 (4.45)</td>
</tr>
<tr>
<td>2009</td>
<td>15586</td>
<td>826 (5.3)</td>
<td>180 (1150)</td>
<td>1409 (9.04)</td>
<td>1555 (9.98)</td>
<td>649 (4.16)</td>
</tr>
<tr>
<td>2010</td>
<td>16376</td>
<td>1065 (6.5)</td>
<td>122 (740)</td>
<td>1265 (7.72)</td>
<td>1850 (11.3)</td>
<td>674 (4.12)</td>
</tr>
<tr>
<td>2011</td>
<td>24791</td>
<td>2194 (8.85)</td>
<td>126 (510)</td>
<td>1506 (6.07)</td>
<td>1887 (7.61)</td>
<td>790 (3.19)</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>71000</strong></td>
<td><strong>5030 (7.08)</strong></td>
<td><strong>671 (945)</strong></td>
<td><strong>5417 (7.62)</strong></td>
<td><strong>6266 (8.83)</strong></td>
<td><strong>2747 (3.86)</strong></td>
</tr>
</tbody>
</table>
Deliveries (n) 2008-2011

Deliveries 2008 - 2011

deliveries (n)

hospital code

Deliveries 2011
Deliveries 2010
Deliveries 2009
Deliveries 2008
Maternal Mortality

Maternal Mortality 2008 - 2011

MMR Kano State
MMR Kaduna State
MMR FCT Abuja
Maternal Mortality in relation to number of deliveries

MMR/100,000 deliveries in 2008 - 2011

Deliveries

MMR/100,000 deliveries

- MMR 2011
- MMR 2010
- MMR 2009
- MMR 2008
Fetal Mortality

Fetal Mortality (% 2008 - 2011

Deliveries

FMR (%) 2011
FMR (%) 2010
FMR (%) 2009
FMR (%) 2008
Caesarean Section

Caesarean Section (%) 2008 - 2011

CS (%)

hospital code

CS (%) 2011
CS (%) 2010
CS (%) 2009
CS (%) 2008
Caesarean Section in relation to FMR

Fetal Mortality in relation to Caesarean Section 2008 - 2011

- FMR/CS 2011
- FMR/CS 2010
- FMR/CS 2009
- FMR/CS 2008
Summary and Conclusion

- Maternal mortality and morbidity could be reduced within 4 years from 1710 MD per 100,000 deliveries in 2008 to 510 MD per 100,000 deliveries in 2011. This is a decrease of maternal mortality of 70%.

- A sustainable reduction of MMR can be achieved by conducting quality assurance in obstetrics.

- The study can be used as a model to reduce maternal mortality also in other States in Nigeria.