G-Peristat
Neonatal Perinatal Outcomes in The Arabian Gulf
A PEARL Study Analysis

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Women’s Hospital
Hamad Medical Corporation
Doha
State of Qatar
The Gulf Cooperation Council (GCC) Countries

Saudi Arabia, Kuwait, Bahrain, Qatar, UAE, Oman
GDP per Capita 2011 (US $)
GCC countries versus High income countries

Source: (i) http://www.indexmundi.com/ (ii) CIA World Factbook

GDP per Capita 2011 (US $) for GCC countries versus High income countries.
The Changing Landscape and lifestyle in the Arabian Gulf
The Changing Landscape in GCC
The New Landscape and Life style in the Arabian Gulf
Perinatal Neonatal Outcomes Research Study in the Arabian Gulf

PEARL Study
PEARL Study
A Prospective National Epidemiologic Study

A Joint Collaborative Research Project of

Hamad Medical Corporation
UNIVERSITY OF GLOUCESTERSHIRE
at Cheltenham and Gloucester
Funding
3rd Cycle 2011-2013

Grant # QNRF-NPRP-09-390-3-097
PEARL Study

A Joint Collaborative Research Project of Hamad Medical Corporation Qatar & University of Gloucestershire UK

Team of Researchers

- Dr. Sajjad ur Rahman
- Prof: Walid El Ansari
- Prof: Abdubari Bener
- Dr. Hilal Amin Al Rifai
- Dr. Halima Al Tamimi

Funded by QNRF
PEARL STUDY PI's
# PEARL Study
## Data Collection Team

<table>
<thead>
<tr>
<th>Dr. Nuha Al Nimeri</th>
<th>Research Fellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Sarah El Tinai</td>
<td>Research Associate</td>
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<tr>
<td>Dr. Ameera Tamano</td>
<td>Research Assistant</td>
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<tr>
<td>Dr. Faiza Rani</td>
<td>Research Assistant</td>
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<tr>
<td>Ms. Rabia Aman</td>
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<td>Dr. Arjumand Afzal</td>
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<td>Dr. Sayma Khan</td>
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<tr>
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<td>Dr. Naseera Abu Bakr</td>
<td>Research Assistant</td>
</tr>
<tr>
<td>Dr. Lamman Naji</td>
<td>Research Assistant</td>
</tr>
</tbody>
</table>
PEARL Study

Aim

PEARL study will assess a wide range of Perinatal and Neonatal events, their risk factors, care processes and outcomes at the national level in Qatar with an aim to produce strategic guidelines to improve reproductive outcomes in Qatar, GCC and other regional countries.
PEARL Study

Objective # 1

To Establish Qatar’s National Perinatal Registry

(Q-Peri-Reg)
PEARL Study

Objective # 2

Neonatal Mortality & its Correlates
Neonatal Morbidity & its Correlates
PEARL Study

Objective # 3

Perinatal Mortality & its Correlates
Perinatal Morbidity & its Correlates
PEARL Study

Objective # 4

Maternal Mortality & its Correlates
Maternal Morbidity & its Correlates
PEARL Study

Objective # 5

To generate strategic guidelines for improving reproductive outcomes using The State of Qatar as a model
Today’s Presentation

- Maternal Mortality in GCC
- Neonatal Mortality in GCC
- Perinatal Mortality in GCC
Global decline in Maternal Mortality 1980-2008

Maternal Mortality Rate
Global, Eastern Mediterranean Region (EMR) and GCC during 2009
Source: World Health Statistics 2011 by WHO
Global decline in < 5 Mortality between 1970-2010

Lancet May 24, 2010;1-21
Neonatal, Post Neonatal and Childhood Mortality
Global Trends 1970-2010
Lancet May 24, 2010;1-21
Country wise < 5 Mortality 2010
Lancet May 24, 2010;1-21
Middle East & North Africa (MENA) 
< 5 Mortality in 2010
Lancet May 24, 2010;1-21
Under Five Mortality MENA 1970-2010
Lancet May 24, 2010;1-21
NMR in GCC Countries
Source: World Health Statistics 2011 (WHO)
Neonatal Mortality Rates
GCC Vs High Income Countries 2011

Source: World Health Statistics 2011 (WHO)
ORIGINAL ARTICLE

An analytic study of the trends in perinatal and neonatal mortality rates in the State of Qatar over a 30-year period (1977 to 2007): a comparative study with regional and developed countries

K Salameh¹,², S Rahman¹,², H Al-Rifai¹,², A Masoud¹, S Lutfi¹,², G Abdouh¹, F Omar¹, S ul Islam Khan¹ and A Bener³,⁴,⁵
ORIGI NAL AR TI CLE

An analytic study of the trends in perinatal and neonatal mortality rates in the State of Qatar over a 30-year period (1977 to 2007): a comparative study with regional and developed countries

K Salameh¹,², S Rahman¹,², H Al-Rifai¹,², A Masoud¹, S Lutfi¹,², G Abdouh¹, F Omar¹, S ul Islam Khan¹ and A Bener³,⁴,⁵

<table>
<thead>
<tr>
<th>Year</th>
<th>NMR</th>
<th>ENMR</th>
<th>LNMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>5.0</td>
<td>2.3</td>
<td>2.7</td>
</tr>
<tr>
<td>2009</td>
<td>4.3</td>
<td>2.1</td>
<td>2.2</td>
</tr>
</tbody>
</table>

The Maternal, Neonatal and Perinatal Mortality Rates in Qatar are comparable with developed world countries
Have Neonatal Mortality Rates in the State of Qatar become Static? A PEARL Study Analysis

Sajjad Rahman\textsuperscript{1,2}, Walid El Ansari\textsuperscript{3}, Nuha Nimeri\textsuperscript{1}, Sarrah El Tinay\textsuperscript{4}, Khalil Salameh\textsuperscript{1}, Tariq Abbas\textsuperscript{4}, Mohammad Tahir Yousafzai\textsuperscript{5}, Abdulbari Bener\textsuperscript{5}

Accepted for Publication by EMHJ September 2011
Trends in NMR, ENMR and LNMR in Qatar 2008-2011
Relative Risk (RR) of Neonatal Mortality in Qatar 2008-2011

<table>
<thead>
<tr>
<th>Mortality</th>
<th>RR</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMR</td>
<td>0.94 (0.85-1.04)</td>
<td>0.269</td>
</tr>
<tr>
<td>ENMR</td>
<td>0.95 (0.81-1.11)</td>
<td>0.537</td>
</tr>
<tr>
<td>LNMR</td>
<td>0.94 (0.83-1.06)</td>
<td>0.356</td>
</tr>
</tbody>
</table>
Gestational Age Specific Neonatal Survival in the State of Qatar (2003-2008) – A Comparative Study with International Benchmarks

Sajjad Rahman, Khalil Salameh, Hilal Al-Rifai, Ahmed Masoud, Samawal Lutfi, Husam Salama, Ghassan Abdoh, Fahmi Omar and Abdulbari Bener

Gestational Age Specific % Survival Curves

Survival %

<27 Weeks 27-29 Weeks 30-32 Weeks 33-36 Weeks 37-41 Weeks 42 Weeks & Above

Qatar 2008  VON 2007  UK 2006
Gestational Age wise Relative Risk of death among babies in Qatar 2010

Risk Ratio (95% CI)

Relative risk calculated by taking immediate next category as reference
Gestational Age wise Relative Risk of death among babies in Qatar 2010

Relative risk calculated by taking Term babies (last category) as Reference
Original Article

A PEARL Study review

Khalil M K Salameh 1, Sajjad U Rahman 1,2

Accepted for Publication by Journal of Clinical Neonatology (JCN) October 2011
Trends in Gestational age specific Relative Risk of Neonatal Mortality
Qatar 2003, Qatar 2010 and VON 2007

Reference group babies with birth weight $\geq 2500$g
<table>
<thead>
<tr>
<th>Birth Weight in Grams</th>
<th>2003 n(%)</th>
<th>2010 n(%)</th>
<th>RR* (95% CI) P-Value</th>
<th>VON 2007 n(%)</th>
<th>RR** (95% CI) P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>501-750</td>
<td>17(73.9)</td>
<td>15(44.1)</td>
<td>0.6(0.4-0.9) 0.026</td>
<td>3938(44.4)</td>
<td>1.0(0.7-1.5) 0.953</td>
</tr>
<tr>
<td>751-1000</td>
<td>16(51.6)</td>
<td>15(30)</td>
<td>0.5(0.3-0.9) 0.05</td>
<td>1668(14.2)</td>
<td>0.6(0.3-0.7) 0.001</td>
</tr>
<tr>
<td>1001-1500</td>
<td>10(8.5)</td>
<td>16(9.8)</td>
<td>1.2(0.5-2.5) 0.706</td>
<td>1366(4.9)</td>
<td>0.5(0.3-0.8) 0.003</td>
</tr>
<tr>
<td>1501-2000</td>
<td>6(3.7)</td>
<td>7(2.7)</td>
<td>0.7(0.2-2.0) 0.523</td>
<td>340(2.5)</td>
<td>0.9(0.5-1.9) 0.856</td>
</tr>
<tr>
<td>2001-2500</td>
<td>9(4.5)</td>
<td>9(3)</td>
<td>0.7(0.3-1.7) 0.385</td>
<td>356(2.2)</td>
<td>0.7(0.4-1.4) 0.305</td>
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<tr>
<td>≥2500</td>
<td>23(2.1)</td>
<td>17(1.7)</td>
<td>0.8(0.5-1.6) 0.561</td>
<td>762(1.7)</td>
<td>0.9(0.6-1.6) 0.952</td>
</tr>
<tr>
<td>Total</td>
<td>81(5.0)</td>
<td>79(4.4)</td>
<td>0.8(0.7-1.2) 0.443</td>
<td>8430(6.9)</td>
<td>1.5(1.2-1.9) &lt;0.001</td>
</tr>
</tbody>
</table>
The RR of Mortality for each birth weight category as compared with normal birth weight (≥ 2500g) category: Qatar (2010) and VON (2007) data

<table>
<thead>
<tr>
<th>Birth Weight in Grams</th>
<th>2010 N(%)</th>
<th>RR(95% CI) * P-Value</th>
<th>VON 2007 N(%)</th>
<th>RR(95% CI)** P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>501-750</td>
<td>15(44.1)</td>
<td>24.7(13.5-45.4) &lt;0.001</td>
<td>3938(44.4)</td>
<td>25.1(23.6-27.4) &lt;0.001</td>
</tr>
<tr>
<td>751-1000</td>
<td>15(30)</td>
<td>16.8(8.9-31.7) &lt;0.001</td>
<td>1668(14.2)</td>
<td>7.9(7.4-8.8) &lt;0.001</td>
</tr>
<tr>
<td>1001-1500</td>
<td>16(9.8)</td>
<td>5.5(2.8-10.7) &lt;0.001</td>
<td>1366(4.9)</td>
<td>2.7(2.6-3.1) &lt;0.001</td>
</tr>
<tr>
<td>1501-2000</td>
<td>7(2.7)</td>
<td>1.5(0.6-3.6) 0.357</td>
<td>340(2.5)</td>
<td>1.4(1.3-1.6) &lt;0.001</td>
</tr>
<tr>
<td>2001-2500</td>
<td>9(3)</td>
<td>1.7(1.1-5.5) 0.053</td>
<td>356(2.2)</td>
<td>1.2(1.1-1.4) 0.001</td>
</tr>
<tr>
<td>≥2500</td>
<td>17(1.7)</td>
<td>1</td>
<td>762(1.7)</td>
<td>1</td>
</tr>
</tbody>
</table>
The short term morbidities of moderately preterm babies in Qatar are comparable to Vermont Oxford Network database
Morbidity Outcome (28-32 Weeks)
Qatar Vs Vermont Oxford Network (VON)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Qatar 2006</th>
<th>VON 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLD</td>
<td>2.68</td>
<td>13</td>
</tr>
<tr>
<td>PDA</td>
<td>3.35</td>
<td>13</td>
</tr>
<tr>
<td>NEC</td>
<td>2.51</td>
<td>3</td>
</tr>
<tr>
<td>IVH G-3</td>
<td>0.84</td>
<td>1</td>
</tr>
<tr>
<td>IVH G-4</td>
<td>0.5</td>
<td>1</td>
</tr>
<tr>
<td>PVL</td>
<td>0.5</td>
<td>1</td>
</tr>
<tr>
<td>ROP &gt; S-3</td>
<td>5.69</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.001</td>
</tr>
<tr>
<td>&gt;0.05</td>
</tr>
<tr>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Conclusion

Neonatal mortality rate at Al Qassimi Hospital, which is the largest referral center among UAE Ministry of Health hospitals, is 3.8 per 1000 live births. Survival of extremely preterm infant’s ≤ 25 WG was ≥50% over the last 3 years. These results are comparable to the published data from different developed countries.
Conclusions
The Rates of CLD, IVH and ROP were ≤25th percentile of the VON and mortality, NEC and PVL were in the 50th percentile.
Perinatal Mortality Rates
GCC versus USA and Europe

Perinatal Mortality Rate
GCC Versus Developed World 2007
J Perinatology 2009; 1-6
Global Incidence of Birth defects
March of Dimes Global Birth defects Report 2006
Incidence of Birth Defects
MENA Region
March of Dimes Global Birth defects Report 2006
The incidence of Consanguinity in GCC

Pediatr Perinatal Epidemiology 2006;20:372-78
Conclusions

- Maternal and Neonatal Mortality &
- Short term Neonatal Morbidity outcomes
  in GCC are comparable with most high income countries

- High incidence of congenital anomalies
- High incidence of still birth and hence, high PMR &
  High rate of Low Birth Weight

Remain a Major Research and Management Challenge
G-Peristat Project

- Joint Collaborative Epidemiologic Research Project
  - Institutions in six GCC countries &
  - Europeristat Project (INERM – France)

- Funding QNRF (5th Cycle)
- Duration 3 years (2012-2015)

- Outcome Measures: Maternal, Neonatal & Perinatal Mortality and Morbidity Outcomes & their Correlates
Future is NOT a Gift
It’s an Achievement
The greatest pleasure in life is doing what people say you can’t.
Qatar 2010
Doha Corniche at Night
Thank You