RISK FACTORS OF PRETERM BIRTHS: A CROSS-SECTIONAL ANALYSIS OF HOSPITAL RECORDS OF THE BAMENDA REGIONAL HOSPITAL

Presented by:

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PLAN

• Introduction
• Context and justification
• Research questions
• Hypotheses
• Objectives
• Methodology
• Results and discussion
• Conclusion and recommendations
Introduction

• Preterm births are births which occur before the 37\textsuperscript{th} week of gestation whether spontaneous or provoked.

• As a primary cause of neonatal death, preterm birth presents a major public health problem, with an estimated 15 million preterm births (11\% of all births worldwide) (Liu, et al, 2012).

• In developing countries, the rate of prematurity is high, but few studies on the risk factors and circumstances of prematurity have been conducted.
• Approximately 90% of preterm births are concentrated in developing countries, with 11 million (85%) in Africa and Asia.

• In Cameroon, preterm births still present a major public health problem with a prevalence of 26.5% (Chiabi, 2013).

• Very few studies have been carried out on its possible risk factors.

• This study sought to determine the prevalence and risk factors of preterm births.
Context and justification  1/3

• Worldwide an estimated 11.1% of all live births in 2010 were born preterm

• Direct preterm birth complications account for one million deaths each year and preterm birth is a risk factor for over 50% of neonatal deaths.

• Babies born too soon are between 6 and 26 times more likely to die during the first four weeks of their lives than babies born at term (Katz, et al. 2013).

• Data on preterm birth rates are not routinely collected in many countries knowledge gap on risk factors
• Although prematurity is a global burden, there are significant disparities between regions and countries.

• The risk of dying from preterm birth complications is 10 times greater for babies born too soon in low-income countries than for those born in high income countries (Blencow, et al. 2013).

• While spontaneous preterm births are more frequent in low income countries, provider initiated preterm births are more frequent in high income country. (Gyami –Bannerman, et al, 2011).
In Cameroon, preterm births still present a major public health problem.

The Bamenda regional hospital is not exempted where the number of preterm births has been on the increase as could be seen by the high number of preterm babies in the neonatal unit of the hospital.
Problem statement (1/2)

• Until recently, higher-level health policy-makers in many low- and middle-income countries have not prioritized preterm birth as a public health problem despite mortality data being available since 2005.

• It was not until 2009 that the first global and regional rates of preterm birth were published by the WHO.

• The global action report also indicates that very little is known about the causes and mechanisms of preterm birth, and without this knowledge, preterm birth will continue.
Problem statement  (2/2)

• The number of preterm births observed in the Bamenda regional hospital is significant but systematic collection and reporting of these preterm births is lacking.

• This study was interested in the prevalence and risk factors of preterm births in the Bamenda regional hospital.
Research questions

General research question

• What are the risk factors of preterm births among women who put to birth in the Bamenda regional hospital?

Specific research questions

• What is the prevalence of preterm births in the BRH?
• What are the Obstetrical factors that expose women to preterm births?
• What are the gynaecologic factors that expose women to preterm births?
Hypothesis

General hypothesis

• Obstetrical and gynaecologic factors are associated with preterm births in the Bamenda regional hospital.

Specific hypotheses

• The prevalence of preterm births in the BRH is above the global average.
• Obstetric factors predispose women to preterm births.
• Gynaecologic factors predispose women to preterm births.
Objectives

General objective

• This study sought to determine the risk factors of preterm births in the BRH

Specific objectives

• To determine the prevalence of preterm births in the Bamenda regional hospital during the period of study (11 months).

• To identify the obstetrical factors that predispose women to preterm births.

• To determine the gynaecologic factors that predispose women to preterm births.
METHODOLOGY  (1/5)

Study design:
• Cross-sectional analytic

Study population:
• All births that occurred in the BRH within the study period

Sample size
• 400 (204 term births and 196 preterm births)

Sampling method:
• Systematic sampling was used for the preterm births
• Simple random sampling was used to select the term births
METHODOLOGY (2/5)

Inclusion criteria

• All births that were registered in the BRH during the period of study

Exclusion criteria

• Birth files with insufficient information on mother.

Study duration & Period

• Duration: April 2014 – January 2015

METHODOLOGY  (3/5)

VARIABLES

• **Dependent**: Preterm birth (1, 0)

• **Independent**
  - Maternal age
  - Number of ANC
  - Multiple gestations
  - Parity
  - Pathologies
METHODOLOGY (4/5)

Data Analysis

• Univariate analysis (Frequencies and means)

• Bivariate analysis (Chi Square & Fisher exact)

• Multivariate

Presentation of Results and discussion

• Tables and charts are used

• Direct discussion method was used
METHODOLOGY (5/5)

Study area: Bamenda regional hospital

Ethical considerations:

• Approved by the ethics committee of ESS

• Autorisation of the BRH

• Files consulted in the hospital to ensure confidentiality

• Information gotten was used strictly for the purpose of this study.
Prevalence of preterm births in BRH

• Of the 2479 births with files and where gestational age could be determined, 567 were preterm births giving a prevalence of **22.87%** (= Tietche, et al, (1998) in Yaounde and Rashad, et al, (2014) in Bangladesh

• **84.38%** of the preterm births were spontaneous as against 15.63% initiated.
Results & Discussion (2/11)

• Sociodemographic characteristics

Maternal Age

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Term</th>
<th>Preterm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 20</td>
<td>4.90%</td>
<td>17.35%</td>
</tr>
<tr>
<td>20 - 25</td>
<td>43.63%</td>
<td>40.31%</td>
</tr>
<tr>
<td>26 - 30</td>
<td>31.37%</td>
<td>24.49%</td>
</tr>
<tr>
<td>Above 30</td>
<td>20.10%</td>
<td>17.86%</td>
</tr>
</tbody>
</table>

Term vs. Preterm
Results & Discussion  (3/11)

• Mother’s occupation

- Housewife: 40%
- Self employed: 22%
- Student: 20%
- Private employee: 7%
- Civil servant: 9%
- Unemployed: 2%
Results & Discussion (4/11)

Obstetric and Gynecologic factors

• Number of ANC

Results & Discussion  (5/11)

Prevalence of HIV/AIDS

- The prevalence of HIV/AIDS was 7.41% amongst the women whose records were used for the study. Similar to Nat. prevalence

Sero-prevalence of HIV among the two groups

<table>
<thead>
<tr>
<th></th>
<th>Term</th>
<th>Preterm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>91.18%</td>
<td>83.67%</td>
</tr>
<tr>
<td>Positive</td>
<td>9.18%</td>
<td>4.90%</td>
</tr>
<tr>
<td>Unknown</td>
<td>7.14%</td>
<td>3.92%</td>
</tr>
</tbody>
</table>
Results & Discussion (6/11)

Multiple gestations

Majority of the women with multiple gestations had preterm births.
Results & Discussion (7/11)

• Malaria in pregnancy

Most of the women who had malaria had preterm births (94 against 40) = Noble et al. (2005) Zimbabwe
Presentation of results (8/11)

Classification of birth ages

- Extreme preterm: 2.25%
- Moderate preterm: 21.25%
- Late preterm: 25.50%
- Term: 51.00%
# Presentation of results (9/11)

## Bivariate Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Preterm Birth</th>
<th>OR(95% CI)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Malaria (N=379)</td>
<td>Yes</td>
<td>94</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>95</td>
<td>150</td>
</tr>
<tr>
<td>Pre-eclampsia/eclampsia (N=395)</td>
<td>Yes</td>
<td>21</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>171</td>
<td>199</td>
</tr>
<tr>
<td>Multiple gestation (N=400)</td>
<td>Yes</td>
<td>26</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>170</td>
<td>195</td>
</tr>
<tr>
<td>Delivery method (N=396)</td>
<td>Normal Vaginal</td>
<td>162</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>Provider Initiated</td>
<td>30</td>
<td>36</td>
</tr>
<tr>
<td>Parity (N=400)</td>
<td>High Parity</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Low Parity</td>
<td>189</td>
<td>186</td>
</tr>
<tr>
<td>HIV/AIDS Status (N=378)</td>
<td>Positive</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>164</td>
<td>186</td>
</tr>
</tbody>
</table>
## Presentation of results (10/11)

<table>
<thead>
<tr>
<th>Previous Preterm birth (N=396)</th>
<th>Yes</th>
<th>31</th>
<th>29</th>
<th>1.17(0.67-2.01)</th>
<th>0.5923</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>161</td>
<td>175</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gravidity (N=400)</td>
<td>Low gravidity</td>
<td>165</td>
<td>156</td>
<td>1.64(0.99-2.70)</td>
<td>0.0527</td>
</tr>
<tr>
<td></td>
<td>High gravidity</td>
<td>31</td>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANC (N= 398)</td>
<td>Yes</td>
<td>170</td>
<td>197</td>
<td>0.25(0.10-0.59)</td>
<td>0.0009*</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>24</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of mother at pregnancy(N= 400)</td>
<td>Less than 21</td>
<td>49</td>
<td>21</td>
<td>2.91(1.66-5.06)</td>
<td>0.0001*</td>
</tr>
<tr>
<td></td>
<td>21 and Above</td>
<td>147</td>
<td>183</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Similar results: Noble, et al. (2005), for Malaria and Chiabi, et al. (2013) for ANC
# Presentation of results (11/11)
## Multivariate Analysis

<table>
<thead>
<tr>
<th>Term</th>
<th>Odds Ratio</th>
<th>95%</th>
<th>C.I.</th>
<th>Coefficient</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age (Less than 21/Above 20)</td>
<td>2.4477</td>
<td>1.2589</td>
<td>4.759</td>
<td>0.8951</td>
<td>0.0083*</td>
</tr>
<tr>
<td>ANC (True/False)</td>
<td>0.1446</td>
<td>0.062</td>
<td>0.337</td>
<td>-1.9341</td>
<td>0.0000*</td>
</tr>
<tr>
<td>Gravidity (Low gravidity/High gravidity)</td>
<td>1.309</td>
<td>0.6285</td>
<td>2.7264</td>
<td>0.2693</td>
<td>0.4720</td>
</tr>
<tr>
<td>HIV (True/False)</td>
<td>2.9038</td>
<td>1.1676</td>
<td>7.2216</td>
<td>1.066</td>
<td>0.0218*</td>
</tr>
<tr>
<td>Multiple Gestation (True/False)</td>
<td>2.8667</td>
<td>1.0843</td>
<td>7.5794</td>
<td>1.0532</td>
<td>0.0338*</td>
</tr>
<tr>
<td>Parity (Low parity/High parity)</td>
<td>1.9431</td>
<td>0.461</td>
<td>8.1896</td>
<td>0.6643</td>
<td>0.3654</td>
</tr>
<tr>
<td>Malaria in pregnancy (Yes/No)</td>
<td>4.2554</td>
<td>2.5424</td>
<td>7.1224</td>
<td>1.4482</td>
<td>0.0000*</td>
</tr>
<tr>
<td>Pre-eclampsia/eclampsia (Yes/No)</td>
<td>10.672</td>
<td>2.2666</td>
<td>50.2464</td>
<td>2.3676</td>
<td>0.0027*</td>
</tr>
</tbody>
</table>
LIMITS

• Limited to information gotten from the files

• Only prevalence and risk factors studied

• Impact not evaluated

• Other possible risk factors not taken into consideration due to lack of information in the files
Conclusion

Maternal age for index pregnancy less than 21 years, multiple gestations, malaria in pregnancy, HIV/AIDS infection, Pre-eclampsia/eclampsia increased the risk of having a preterm birth while attending at least three antenatal visits during the index pregnancy reduced the risk of a preterm birth.
# Recommendations

<table>
<thead>
<tr>
<th>Problem</th>
<th>Consequences</th>
<th>Suggestions</th>
<th>Actors</th>
</tr>
</thead>
</table>
| High prevalence of malaria in pregnant women | Preterm births, hospitalizations, neonatal deaths | -Reinforce the intermittent preventive treatment of malaria in pregnant women.  
- Reinforce the systematic distribution of mosquito nets to pregnant women | Ministry of public Health and partners |
| Relative High number of pregnant women who do not attend ANC | High risk of preterm births, maternal and neonatal mortality | Increase sensitization of pregnant women and their partners on the importance of ANC.  
Incentives such as mosquito nets systematically distributed during ANC | -Community leaders and civil society organizations  
- Health authorities  
- Ministry of health |
| Early pregnancies | High risk of preterm births and delivery complications | Increase sensitization and reduce sending girls to marriage | - Community Leaders  
- Health authorities |
THANKS FOR YOUR KIND ATTENTION