TOPOGRAPHICAL DIFFERENCES OF INFANT MORTALITY IN NEPAL: DEMOGRAPHIC AND HEALTH SURVEY 2011

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Research Festival
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Three Ecological Zones
Five Developmental Regions
Specific Objectives

- To examine the association between ecological zones and infant mortality in Nepal.

- To assess the effect of perceived distance to a health facility on the association between ecological zones and infant mortality in Nepal.
Infant mortality rate (IMR) is defined as the number of deaths among infants under one year of age per 1,000 live births.

- IMR in Nepal: 46 deaths per 1,000 live births
- One in every 22 Nepalese children dies before reaching age 1
Geographical variation is an issue in health care delivery in Nepal.

- Mountain zone >> greatest disadvantage
- Mountain zone << limited attention
Research Question

Variation in IMR:
Ecological zones and perceived distance to a health care facility?
Methods

- **Study Design**: Cross-sectional

- **Data Set**: Nepal Demographic Health Survey (NDHS), 2011
  - A nationally representative sample survey
  - Collects demographic & health information
Population/Sample size

- **Study Population**: Live birth within the five years preceding the survey, 2011

- **Sample size**: 5,306 total live births and 237 total infant deaths
Variables

- Dependent variable: IMR

- Independent variable: Ecological zones

- Other variables (household, maternal & child characteristics)
Statistical Analysis

- Descriptive statistics
- Pearson chi-square test
- Fisher exact test
- Logistic regression
Results & Discussion
Births, number of infant deaths and infant mortality rate in each ecological zone in the five years preceding the survey, Nepal DHS 2006-2011

<table>
<thead>
<tr>
<th></th>
<th>No. of live births (%)</th>
<th>No. of infant deaths</th>
<th>IMR/1000 (95% CI)</th>
<th>Risk Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountain</td>
<td>1020 (19.2)</td>
<td>56</td>
<td>54 (40-68)</td>
<td>1.42*</td>
</tr>
<tr>
<td>Hill</td>
<td>2135 (40.2)</td>
<td>97</td>
<td>45 (36-54)</td>
<td>1.17</td>
</tr>
<tr>
<td>Terai</td>
<td>2151 (40.5)</td>
<td>84</td>
<td>39 (30-47)</td>
<td>Ref</td>
</tr>
</tbody>
</table>

* P-value of chi-square test statistically significant at 0.05
Key Findings

- Perceived distance to a health facility: “Big problem” and “Not a big problem”

- Distance as a big problem by zone:
  - Mountain zone: 70.8%
  - Hill zone: 60.0%
  - Terai zone: 45.6%
# Key Findings

<table>
<thead>
<tr>
<th>Distance to a health facility</th>
<th>OR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not a big problem</td>
<td>Ref</td>
<td></td>
</tr>
<tr>
<td>Big problem</td>
<td>1.40 (1.10-1.90)</td>
<td>0.004*</td>
</tr>
</tbody>
</table>

* P-value statistically significant at 0.05
## Infant mortality rate in ecological zone based on distance to health facility, Nepal DHS 2006-2011 (Unweighted)

<table>
<thead>
<tr>
<th>Distance to health facility</th>
<th>Big problem</th>
<th>Not a big problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (%)</td>
<td>Mountain</td>
<td>Hill</td>
</tr>
<tr>
<td>723 (70.8)</td>
<td>1283 (60)</td>
<td>981 (45.6)</td>
</tr>
<tr>
<td>No. of Infant Death</td>
<td>46</td>
<td>68</td>
</tr>
<tr>
<td>IMR (95% CI)</td>
<td>63 (45-81)</td>
<td>53 (40-65)</td>
</tr>
<tr>
<td>Risk Ratio</td>
<td>1.9*</td>
<td>1.6*</td>
</tr>
</tbody>
</table>

* P-value of chi-square test statistically significant at 0.05
Infant mortality rate in different ecological zones based on perceived distance to health facility
Unadjusted and Adjusted Associations

- Perceived distance as a big problem: Mountain zone was a significant risk factor
  
  Unadjusted - 1.55 (1.01-2.40), p-value: 0.04*
  
  Adjusted - 1.57 (1.01-2.40), p-value: 0.04*

- Did not perceive distance as a big problem:
  Mountain zone was not a significant risk factor
Limitations

- Design of the study
- Recall bias
- No generalizability
Conclusions

- The excess risk of infant mortality in the Mountain zone is determined by many complex factors.

- This study identified importance of geographical access to a health facility.

- There is need of an interventions that would address the problem.
Acknowledgments

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Thank You!