The Association of Armed Conflict with Malaria Chemoprevention for Pregnant Women in Sub-Saharan Africa

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Background

- Life-threatening disease
- 228 million cases
- 405k deaths
- Highest disease burden in sub-Saharan Africa
- Vulnerable population(s)
Malaria Chemoprevention

- Sulfadoxine-pyrimethamine (SP)
- Moderate to high transmission areas
- Monthly dosing starting in the 2\textsuperscript{nd} trimester
- Suboptimal chemoprevention rates
Armed Conflict

- Varying degrees of armed conflict
- Heightens infectious disease risk
- Disrupter
  - Institutional
  - Supply chain
  - Individual access
Significance of the Problem

- Armed conflict weakens malaria control programs
- Armed conflict disrupts health services and restricts access to antenatal care
- More than 50% of pregnant women at risk for malaria live in high transmission areas
- Chemoprevention rates remain low
Aim

To estimate the strength of the relationship between a comprehensive indicator of armed conflict and WHO-defined malaria chemoprevention uptake among pregnant women in sub-Saharan Africa.
Methods

- Demographic Health Surveys (DHS)
  - 42 datasets, 20 countries

- Armed Conflict Location Event Dataset (ACLED)

- Gave birth within the last year

- Received antenatal care

- N=85,398
Analysis

- Multilevel logistic regression
  - Individual (level 1)
  - Year (level 2)
  - Country (level 3)

- $p < 0.05$, 95% Confidence Intervals

- Outcome variable: receipt of malaria chemoprevention
RESULTS
<table>
<thead>
<tr>
<th>Individual-Level Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td><strong>Residence</strong></td>
</tr>
<tr>
<td>Rural</td>
</tr>
<tr>
<td>Urban</td>
</tr>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td>None or primary education</td>
</tr>
<tr>
<td>Secondary education or higher</td>
</tr>
<tr>
<td>Missing</td>
</tr>
<tr>
<td><strong>Wealth</strong></td>
</tr>
<tr>
<td>Low</td>
</tr>
<tr>
<td>Middle</td>
</tr>
<tr>
<td>High</td>
</tr>
</tbody>
</table>
## Individual-Level Variables

### Live Births

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>One child</td>
<td>21.8%</td>
</tr>
<tr>
<td>Two children</td>
<td>19.0%</td>
</tr>
<tr>
<td>Three or more children</td>
<td>59.1%</td>
</tr>
</tbody>
</table>

### Timing of first antenatal check

<table>
<thead>
<tr>
<th>Trimester</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st trimester</td>
<td>30.0%</td>
</tr>
<tr>
<td>2nd trimester</td>
<td>57.5%</td>
</tr>
<tr>
<td>3rd trimester</td>
<td>11.6%</td>
</tr>
<tr>
<td>Missing</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

### Antenatal clinic visits

Mean: 4.35
Results
Odds of receiving chemoprevention

Urban living
1.2x the odds

Secondary education+
1.2x the odds

High income group
1.2x the odds
Results
Odds of receiving chemoprevention

- At least three children: 1.2x the odds
- Seeking care in the 1st or 2nd trimester: 1.4x the odds
- Higher GDP per capita: 11x the odds
Conclusion

- Armed conflict did not have a significant relationship to malaria chemoprevention
  - Year-level: OR 1.4, 95% CI 0.604-3.486, p=0.31
  - Country-level: OR 0.911, 95% CI 0.547-1.517, p=0.73

- Individual-level predictors have a significant relationship to the outcome

- Annual GDP per capita (country level variable) had the largest effect on malaria chemoprevention rates
Thank You
It takes a village...

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It takes a village...

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