Excess Fertility and Infant Mortality in Sub-Saharan Africa

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Background

- Sub-Saharan Africa has the world's highest Infant Mortality Rate (IMR): 68/1,000 live births (WHO 2011)
  - Substantial variation within SSA in IMR
- Reduced infant mortality is the major contributor of sustained fertility decline (Eastwood and Lipton 2011)
  - Importance of understanding declines, variation, and stagnation of infant mortality in SSA
- About 1/3 of sub-Saharan African countries have stalled along the fertility transition (Shapiro and Gebreselassie 2008)

Conceptualization

- Parity is a key predictor of child health outcomes (Cunningham et al. 2010)
- Association between parity and infant mortality is conflicting (Muula et al. 2011; Gurven 2012)
- Research to date on fertility preferences and child health outcomes has focused on pregnancy intention rather than ideal family size (Shapiro-Mendoza et al. 2005; Gipson et al. 2008)
- Ideal family size has been found to be less subject to recall bias than pregnancy intention (Bongaarts 2011)
- Is it just Parity? The association between parity relative to ideal family size and child health outcomes is absent from the literature
  - This is despite 12-28% of women aged 35 and older in SSA having reported a parity exceeding their ideal (Upadhyay and Karasek 2012)

Current Study

- The association between excess fertility level and a country's fertility transition stage is inverted U-shaped (Bongaarts 2003)
  - Countries at different stages of the fertility transition will thus have different levels of excess fertility
  - In turn, they may have different levels of infant mortality
- **Hypotheses**:
  1. Excess fertility is disproportionately susceptible to infant mortality
  2. Variation across countries in stages of the fertility decline may explain variation in IMRs through varying proportions of excess fertility
  3. The association between excess fertility and infant mortality is stronger than the association between parity and infant mortality

Data and Methods: Country Selection

- One country from three stages of the transition, with data collected approximately at the same time
- **Demographic and Health Surveys**
  - Niger (2006): Pre-Transition, TFR=7.0
  - Ethiopia (2005): Mid-Transition, TFR=5.4
  - Namibia (2006/07): Late-Transition, TFR=3.6

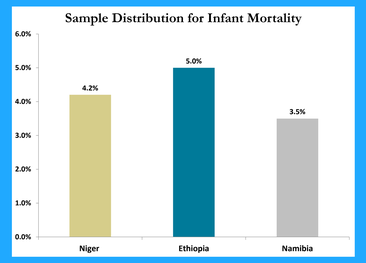
Data and Methods

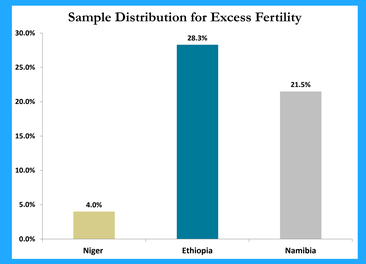
- **DHS Details**
  - Household based survey
  - All women of reproductive age and children
  - Instruments are comparable across countries
- **Analytic Sample**
  - Mothers with a most recent birth 1-5 years prior to survey (to allow sufficient exposure to infant mortality)
  - Niger (3,990), Ethiopia (4,567), Namibia (2,908)

Measures

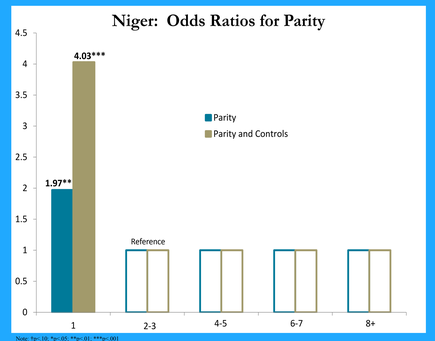
- **Dependent Variable**
  - (1) Death of infant within first year of life; (0) otherwise
- **Focal Independent Variables**
  - Parity: 1; 2-3 [reference group]; 4-5; 6-7; 8+
  - Excess Fertility: (1) Parity > Ideal Family Size; (0) otherwise
- **Controls**
  - Spacing, mother's age at birth, timing of first prenatal care visit, infant gender, multiple birth, electricity, water source, toilet, wealth index, maternal education & literacy, religion, rural residence, access to health facility, marital status, mother's work status, and previous sibling death

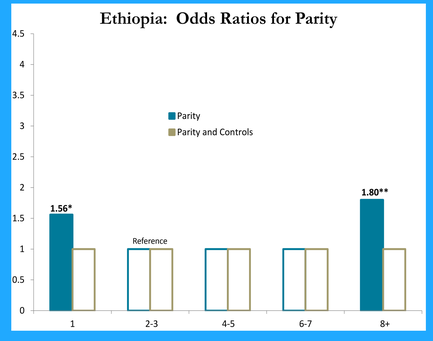
Descriptive Findings

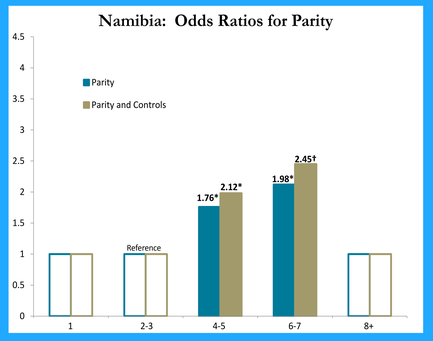




Multivariate Findings







Note: †p<.10; *p<.05; **p<.01; ***p<.001

Main Findings

Parity

- First births in Niger (high fertility context) have greater odds of infant mortality compared to second and third births
- First births and very high parity births in Ethiopia (moderate fertility context) have greater odds of infant mortality compared to second and third births
- Higher parity births in Namibia (low fertility context) have greater odds of infant mortality compared to second and third births

Excess Fertility

- The differences in excess fertility percentages among the three countries is consistent with the inverted U-shaped association between stage of fertility decline and excess fertility
- No significant association found between excess fertility and infant mortality for any of the three countries

Conclusion

1. No evidence that excess fertility is disproportionately susceptible to infant mortality
2. Varying proportions of excess fertility do exist, but no evidence that this variation contributes to variation in IMRs
3. Evidence that the association between parity and infant mortality is stronger than that between excess fertility and infant mortality

Limitations and Future Directions

- **Limitations**:
  - Only three countries at three stages are examined
  - Infant mortality is a rare event, large sample size needed
  - Only looking at most recent birth; infant mortality could occur for previous births
  - As with pregnancy intention, reported ideal family size is subject to post-rationalization bias
- **Future Directions**:
  - Excess fertility may be associated with child health outcomes other than infant mortality

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