A Mixed Method Approach to Understanding Marital Relationship Quality and Contraceptive Use in Kumasi, Ghana

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International Conference on Family Planning
November 30, 2011
Couple Relationship Quality

• Spanier & Lewis’ definition of marital quality: “the subjective evaluation of a married couple’s relationship on a number of dimensions and evaluations”\(^1\)

• The majority of individuals spend much of their adult lives in a committed relationship.

• Relationship quality is associated with individual well-being, physical and mental health and family health and development

• Dearth of research on relationship quality in sub-Saharan Africa

Relationship Quality and Contraceptive Use

- Research in high-income countries:
  - Measured various aspects of relationship quality
  - Mixed research results
  - Majority of findings suggest a positive association

- Research sub-Saharan Africa:
  - Recent focus on couple characteristics as potential determinants of contraceptive use
  - Limited research on relationship quality
Marriage and Contraceptive Use in Ghana

- **Median age of marriage:**
  - Females: 20 years
  - Males: 26 years

- **Contraceptive Prevalence:**
  - 24% - all methods
  - 17% - modern methods
  - 7% - traditional methods

- **Unmet Need for Contraception:** 35%
Study Site: Kumasi, Ghana
Study Aims

- **Aim**: Assess the relationship between couple relationship quality and contraceptive decision-making.
  - **Sub-Aim a**: Assess the degree to which couple relationship quality is associated with women’s report of current contraceptive use.
  - **Sub-Aim b**: Using focus group discussions, explore how couple relationship quality influences women’s decision to use contraception.
Quantitative Methods

• Data came from the Family Health and Wealth Study

• Bivariate and Multivariate Multinomial Logistic Regression Analysis

• Key Independent Variables: Measures of Relationship Quality as reported by both members of a couple
  ▫ Commitment, Trust, Satisfaction, Constructive Communication, and Destructive Communication

• Dependent Variable: Current Contraceptive Use
  ▫ No Use
  ▫ Non-Awareness Method Use
  ▫ Awareness Method Use
Qualitative Methods

- Twelve focus group discussions with married/cohabitating men and women
- Same peri-urban communities as quantitative
- Vignette on contraceptive decision-making:

*Kofi and Yaa have been married for 3 years. They have two children, a boy and a girl. Arko, the little boy, is two years old and Munira, is just 6 months old. Yaa would like to have more children but wants to wait a few years until her two children are older. She would like to use a family planning method to help her delay having another child right away, however, she has not yet started using a method because she does not know how her husband feels about family planning.*
## Contraceptive use among women in study sample

<table>
<thead>
<tr>
<th>Contraceptive Method</th>
<th>% of Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Method Use</td>
<td></td>
</tr>
<tr>
<td>No Method</td>
<td>77.7</td>
</tr>
<tr>
<td>Non-Awareness Method Use</td>
<td></td>
</tr>
<tr>
<td>Pills</td>
<td>6.4</td>
</tr>
<tr>
<td>Injectables</td>
<td>3.2</td>
</tr>
<tr>
<td>IUD</td>
<td>0.4</td>
</tr>
<tr>
<td>Other</td>
<td>1.0</td>
</tr>
<tr>
<td>Awareness Method Use</td>
<td></td>
</tr>
<tr>
<td>Periodic Abstinence</td>
<td>7.8</td>
</tr>
<tr>
<td>Condoms</td>
<td>2.2</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>0.7</td>
</tr>
<tr>
<td>Sterilization</td>
<td>0.3</td>
</tr>
<tr>
<td>Spermicide</td>
<td>0.2</td>
</tr>
</tbody>
</table>
Multinomial Logistic Regression Results

Table: Multinomial logistic regression models of contraceptive method use by relationship quality score, adjusted relative risk ratios

<table>
<thead>
<tr>
<th></th>
<th>Non-Awareness Method Use vs. Non-Use</th>
<th>Awareness Method Use vs. Non-Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Women</td>
<td>Partner</td>
</tr>
<tr>
<td>Commitment</td>
<td>1.01</td>
<td>1.08†</td>
</tr>
<tr>
<td>Trust</td>
<td>1.00</td>
<td>1.03</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>1.05</td>
<td>1.29†</td>
</tr>
<tr>
<td>Constructive Communication</td>
<td>1.00</td>
<td>1.07*</td>
</tr>
<tr>
<td>Destructive Communication</td>
<td>1.04†</td>
<td>0.99</td>
</tr>
</tbody>
</table>

† p<0.10, *p<0.05, **p<0.01

All models controlled for partner’s relationship quality score, demographic characteristics and couple characteristics
Qualitative Results

Dimensions of relationship quality important in contraceptive decision-making:

- Communication
  - Necessary step
  - Facilitation of discussion
  - Communication style important for acceptance

- Empathy
  - Emphatic concern for the well-being of one’s partner and the family important
Moderator: *What if they are not on good terms?*

Participant 5: *Why would you bother to tell him at all? You will just have to go around him and do your own thing.*

Participant 3: *Some couples don’t chat with each other at all. The man just eats his food and will not talk with you... even if the woman tries to raise the issue it may just bring about quarrels.*
Conclusion

• Certain dimensions of relationship quality are important in contraceptive decision-making.
  ▫ Every measured dimension except trust had some degree of association with contraceptive use in (quantitative).
  ▫ Relationship quality influences communication contraception (qualitative).
  ▫ Empathy is important in partner acceptance (qualitative)

• Different dimensions of relationship quality may be negatively or positively associated with contraceptive decision-making
Limitations and Strengths

• Limitations:
  ▫ Cross-sectional data
  ▫ Challenges in measuring relationship quality
  ▫ Potential for bias

• Strengths
  ▫ Investigation of a highly understudied topic in sub-Saharan Africa
  ▫ Mixed-method study design
  ▫ Sample included both men and women, including couples in the quantitative component
Questions?
The impact of timing of start of family planning use on birth interval length, and infant and child mortality

OMAIMA EL-GIBALY
NADIA DIAMOND-SMITH
DAVID BISHAI
Past literature suggests that longer birth intervals reduce infant and child mortality.

Therefore, it would seem that increasing access to family planning will lengthen the birth interval and thereby reduce adverse child outcomes.

However, few studies have focused on or been able to show a relationship between family planning use, birth interval length, and child outcome.
Aims

- Examine the impact of the birth interval length on the likelihood of having an infant or child death.
- Explore if couples that begin using family planning after their first birth differ in terms of length of the first birth interval compared to couples that begin using family planning after a later birth.
Relationships of interest

First Child Death

Birth Interval

Family Planning Use

Second Child Death
Methods

• Data from the Family Health and Wealth Study
• Location: Semi-urban area of Assiut city, Egypt
• Eligibility criteria included being currently married, 16-50 years of age, and having a living mother-in-law
• Five hundred and forty eight women of reproductive age were randomly selected using population-based sampling from a preliminary enumeration
• Data collection took place between April-June 2010
## Background Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Total N=548</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Mean, range)</td>
<td>31.5 (17-50)</td>
</tr>
<tr>
<td>Child deaths under age 5 (N)</td>
<td>41</td>
</tr>
<tr>
<td>Child deaths under age 1 (N)</td>
<td>34</td>
</tr>
<tr>
<td>Ever used family planning (N, %)</td>
<td>309 (55.4%)</td>
</tr>
<tr>
<td>TFR (Mean, range)</td>
<td>2.6 (0-12)</td>
</tr>
</tbody>
</table>
Aim A: Family Planning and Birth Intervals

- Birth interval length is longer for women who used family planning after their first birth compared to those who do not
  - Increase birth interval length of 5.8 months ($p=0.005$)
  - Controlling for death of the first child.
Aim B: Birth intervals and Child Death

- Odds of having a second child die decreases with increasing birth intervals
  - OR=0.95 (CI: 0.91-0.98, p=0.013)
  - Controlling for death of the first child.
  - Problem: only 19 second child deaths.
Limitations

- Association, not causation
- Limited controls for socio-economic status
- Small sample size of child deaths (only 19 second children died)
- No controls for unobserved heterogeneity that would lead to more vulnerable women having delayed family planning initiation
- Have not controlled for exact timing of child death
Conclusions

- These findings suggest that couples that begin using family planning at later parity have longer first birth intervals than those who begin family planning after their first birth.
- Longer birth intervals reduce the risk of having the next child die.
- These two findings provide support for the importance of family planning use on birth interval length and child outcome.
FAMILY SIZE AND CHILD EDUCATION ATTAINMENT IN MALAWI

Frank Taulo\textsuperscript{1}, Alain Koffi\textsuperscript{2}, Saifuddin Ahmed\textsuperscript{2}

\textsuperscript{1}University of Malawi and \textsuperscript{2}Johns Hopkins Bloomberg School of Public Health
INTRODUCTION

“Numerous offspring dilute parental resources and therefore complicates or aggravates the social situation in the next generation”.

Negative effect of family size on the future social status of children, due to resource dilution = quality-quantity trade-off.

Children with fewer brothers and sisters obtain more schooling than those with more siblings, and this negative association holds even after family socioeconomic characteristics are controlled.

However, there is a limited causal evidence that speaks to that theory.

Understanding the factors that determine child outcomes is especially relevant to developing countries today, as policy makers in these countries attempt to curb population growth as a way of increasing average human capital investment.
Empirical findings on the effect of family size on child education are conflicted.

**Negative effect of family size on education**
- In India: Rosenzweig and Wolpin (1980)
- In US: Berhman et. al. (1989) and Stafford (1987)
- In France: Goux and Maurin (2004)

**No effect of family size on education**
- In Korea: Lee (2003)
- In US: Kessler (1991) and Guo and VanWey (1991)

**Positive effect of family size on education**
- In Kenya: Gomes (1984)
- In Botswana: Chernichovsky (1985)

No axiomatic relationship between family size and children’s schooling. Rather, this relationship varies by context and by levels of modernization and development.
Conceptual framework for contextual, household and child characteristics effects on the child’s education attainment

Environmental factors:
- Schools
- Transportation
- Communication
- Agriculture
- Cultural norms

Households characteristics:
- Family size
- Parents’ education
- Parents’ profession

Child characteristics:
- Number of siblings
- Age
- Gender

Dilution of Parental resources per child

Drop out of school
To test whether the inverse relationship between the mother’s parity and the educational performance of their children is reproduced in the study setting.
DATA

- Data from the Family Health and Wealth Study (FHWS) which aims to examine individual- and family-level health and economic consequences of family size.
- Follow up cohort study of at least 500 families in eight different sites in SSA (Ghana, Malawi, Nigeria-Ibadan, Nigeria-Ife, Uganda, Ethiopia), India and China.
STUDY AREA

LUNZU

Blantyre city
STUDY SAMPLE

- Children of both the head of the household (HH) and the 1st spouse only
- Our family size measure is completed family size.
  - Families in which all children are co-residential with their mother and are alive
ANALYTICAL APPROACH

- Study outcome: Drop out of school by age 16
- Covariates:
  - For mothers, fathers, and children, educational attainment by years of completed schooling.
  - Parents and children age are expressed in years
  - Low parity family= Women parity<=3
  - High parity family= women’s parity >3
  - Landownership
Kaplan-Meier method to estimate the probability of dropping out of school by age 16.

The Cox proportional Hazard model to examine the effect of mother’s parity on the dropout status by introducing a family-level frailty effect.

Report robust of standard errors that correct for clustering of multiple children born to the same woman.
## Distribution of cluster (family) Size

<table>
<thead>
<tr>
<th>Parity</th>
<th>Families</th>
<th>Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>2</td>
<td>85</td>
<td>116</td>
</tr>
<tr>
<td>3</td>
<td>103</td>
<td>193</td>
</tr>
<tr>
<td>4</td>
<td>71</td>
<td>179</td>
</tr>
<tr>
<td>5</td>
<td>41</td>
<td>152</td>
</tr>
<tr>
<td>6</td>
<td>19</td>
<td>87</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

**Total**  
350       816
Relationship between Child age and Education, by gender and family size: 2010 Malawi FHWS

![Bar chart showing the mean of years of school completed for boys and girls in low parity and high parity families. The chart indicates that there is a difference in the number of years of education completed by boys and girls in both low and high parity families.]
Percent Dropout by parity and gender

- Low parity family:
  - Boy: 51
  - Girl: 47

- High parity family:
  - Boy: 71
  - Girl: 67

Chi^2(3) = 33.53
P < 0.0001
Kaplan-Meier survival estimates

Analysis Time - Years of schooling

Number at risk
- Low parity family: 331 (0), 331 (113), 218 (32), 67
- High parity family: 485 (0), 485 (239), 246 (73), 83

Kaplan-Meier survival estimates

- Low parity family
- High parity family

Chi-squared test
- Boy: $\chi^2(1) = 22.38$, $P < 0.0001$
- Girl: $\chi^2(1) = 2.35$, $P = 0.125$
Cox proportional hazards regression on children dropout status in Lunzu setting

<table>
<thead>
<tr>
<th></th>
<th>HR</th>
<th>Robust Std. Err.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>High fertility families (vs. Low)</td>
<td>1.51</td>
<td>0.168</td>
<td>0.000</td>
</tr>
<tr>
<td>Child age (in years)</td>
<td>1.08</td>
<td>0.012</td>
<td>0.000</td>
</tr>
<tr>
<td>Girl (vs. Boy)</td>
<td>0.85</td>
<td>0.085</td>
<td>0.111</td>
</tr>
<tr>
<td>Landownership</td>
<td>1.04</td>
<td>0.102</td>
<td>0.711</td>
</tr>
<tr>
<td>Mother age (in years)</td>
<td>0.97</td>
<td>0.014</td>
<td>0.017</td>
</tr>
<tr>
<td>Mother education (in years)</td>
<td>0.93</td>
<td>0.015</td>
<td>0.000</td>
</tr>
<tr>
<td>Father age (in years)</td>
<td>0.99</td>
<td>0.009</td>
<td>0.169</td>
</tr>
<tr>
<td>Father education (in years)</td>
<td>1.00</td>
<td>0.015</td>
<td>0.805</td>
</tr>
</tbody>
</table>

Note: Total sample of 804 children from 348 families
Greater family size negatively affect child education attainment through the resource dilution theory.

In the sociological literature, this finding is often explained using an argument of finite resources: parents have limited time, money, and patience to devote to the education of their children, and those with fewer children can invest more per child.

Limiting the number of offspring
An increase in mother’s age has a positive effect on the child educational attainment. The average age in a household is a proxy for the average maturity level. Then, in Lunzu setting, the higher maturity level positively affect child education.

Delaying child bearing
Parental human capital: The mother is the educational production of the household in Lunzu.

- The education of the mother serves as a proxy for the cost of the children because it is mainly the mother’s time that is used giving birth to and rearing the children and increasing her education could lead to a higher opportunity cost of time.

- Investing in female education, especially in rural areas

- Developing policy and curricula for keeping children, particularly girls in school
CONCLUSIONS

- Departing from most of the literature, this study examines the effects of the parity on the child educational attainment, using the Malawi 2010 FHWS.
- The results show that greater family size negatively affects child educational outcomes in a rural setting of Malawi.
- Limiting the number of children and investing in female education, especially in rural areas, would increase the chances that sons and daughters improve their education attainment.
THANK YOU
Family Size and Child Nutritional Status: Evidence from the Ethiopian Family Wealth and Health Study

Assefa Seme¹, Alain Koffi² and Stan Becker²

¹Addis Ababa University and ²Johns Hopkins Bloomberg School of Public Health
The nutritional status of young children is an important indicator of health and development.

Weight and height do not indicate malnutrition directly. Besides age and sex, they are affected by many intervening factors other than nutrient intake, in particular genetic variation.
Use physical measurements to assess the adequacy of diet and growth. This is done by comparing indicators with the distribution of the same indicator for a “healthy” reference group and identifying “extreme” or “abnormal” departures from this distribution.

Anthropometric indicators:
- Weight-for-age (WAZ)
- Height-for-age (HAZ)
- Weight-for-height (WHZ)
Most studies of anthropometric data examine levels and, sometimes, their correlates.

This study aims at shedding light on the relationship between number of living children or birth order and child nutritional status.

The findings have policy implications both for family planning programs and for human resource interventions.
Data from the 2010 Ethiopian Family Health and Wealth Study (FHWS) which aims to examine individual- and family-level health and economic consequences of family size.

Follow up cohort study of at least 500 families in eight different sites in SSA (Ghana, Malawi, Nigeria-Ibadan, Nigeria-Ife, Uganda, Ethiopia), India and China.
STUDY AREA

Sebeta town, located in Sebeta Hawas district, Oromia region, 24 km southwest of the capital city, Addis Ababa.

Population: 115,000 people and females constitute 49% of the population.

Approximately 23,000 households and, on average, 5 people per household.

The town has one health center and several clinics, schools (primary-, secondary- and college-level), and 24-hour electricity, water and telephone services.

Contraceptive prevalence rate in this town is 30%.
Individual in HH from Roster + Physical assessment files N=4388

Children of head of HH and 1st spouse only N=1835

Single children or randomly selected among multiple children- age<61 months, co-residential with weight and height measured -N=640

Derived Anthropometric measurements (WHO standards)

HAZ N=500

WAZ N=546

WHZ N=488

STUDY SAMPLE- N=455 children

Ever born Children from Birth History File N=2122

Alive children N=1968
ANALYTICAL APPROACH (1)

- World Health organization (WHO) standards
- Z-score less than -2 is most common criterion
- That is, 2 standard deviations below the median in reference population
  - WHZ z-score < -2 = “wasting”
  - HAZ z-score < -2 = “stunting”
  - WAZ z-score < -2 = “underweight”
Hypothesis 1: Nutritional status of a child varies inversely with number of living children, i.e. children who are co-residential and alive (of a given mother).

Sample: All families with surviving and co-residential children under 5-years with all three anthropometric outcomes in-range

Tabulation: mean z-scores and their binary equivalents by number of living children

Multivariate analyses (use of SVY command)
Hypothesis 2: Within families with 2 or more surviving children born in the last five years, the last born will have lower nutritional status than the preceding one(s).

Sample: All families with 2+ surviving own children under 5-years

Tabulation: mean z-score by order of birth in the 5 last years (first, 2nd or higher)

Multivariate analyses (use of SVY command)
RESULTS (1)

DESCRIPTIVE
Distribution of z-Scores in Sebeta, Ethiopia

<table>
<thead>
<tr>
<th></th>
<th>HAZ</th>
<th>WAZ</th>
<th>WHZ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>-1.35</td>
<td>-0.70</td>
<td>0.10</td>
</tr>
<tr>
<td><strong>Standard deviation</strong></td>
<td>2.13</td>
<td>1.54</td>
<td>1.81</td>
</tr>
<tr>
<td><strong>% below -2S.D</strong></td>
<td>38.2</td>
<td>18.9</td>
<td>11.4</td>
</tr>
<tr>
<td><strong>% below -3S.D</strong></td>
<td>21.3</td>
<td>6.8</td>
<td>5.5</td>
</tr>
</tbody>
</table>
### Stunting, Underweight, Wasting by Age and Gender in Sebeta, Ethiopia

<table>
<thead>
<tr>
<th>Age (month)</th>
<th>Group</th>
<th>HAZ&lt; -2</th>
<th>WAZ&lt; -2</th>
<th>WHZ&lt; -2</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–23</td>
<td>Boys</td>
<td>36.3</td>
<td>22.5</td>
<td>20.0</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>30.8</td>
<td>11.5</td>
<td>16.7</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>33.5</td>
<td>17.1</td>
<td>18.4</td>
<td>158</td>
</tr>
<tr>
<td>24–60</td>
<td>Boys</td>
<td>41.1</td>
<td>19.6</td>
<td>8.9</td>
<td>158</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>40.3</td>
<td>20.1</td>
<td>6.5</td>
<td>139</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>40.7</td>
<td>19.9</td>
<td>7.7</td>
<td>297</td>
</tr>
</tbody>
</table>
RESULTS (2)

HYPOTHESIS 1: Nutritional status of a child varies inversely with number of living children, i.e. Children who are co-residential and alive (of a given mother).
Underweight, Stunting, Wasting by Number of living children in Sebeta, Ethiopia

- Underweight
  - Family with 1 child: 17.1%
  - Family with 2 children: 22.4%
  - Family with 3 children: 33.3%

- Stunting
  - Family with 1 child: 36.6%
  - Family with 2 children: 43.0%
  - Family with 3 children: 40.0%

- Wasting
  - Family with 1 child: 10.8%
  - Family with 2 children: 12.1%
  - Family with 3 children: 20.0%
# LINEAR AND LOGISTIC REGRESSIONS (455 children; 404 mothers)

<table>
<thead>
<tr>
<th></th>
<th>WAZ</th>
<th>HAZ</th>
<th>WHZ</th>
<th>Underweight</th>
<th>Stunting</th>
<th>Wasting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child age (in months)</strong></td>
<td>-0.01*</td>
<td>-0.02**</td>
<td>0.00</td>
<td>1.00</td>
<td>1.01</td>
<td>0.98**</td>
</tr>
<tr>
<td>maternal at child birth (in years)</td>
<td>-0.01</td>
<td>0.03</td>
<td>-0.04*</td>
<td>1.02</td>
<td>0.97</td>
<td>1.03</td>
</tr>
<tr>
<td><strong>Mother education (years)</strong></td>
<td>0.01*</td>
<td>0.01*</td>
<td>0.00</td>
<td>0.99*</td>
<td>0.98</td>
<td>0.98</td>
</tr>
<tr>
<td>Highest quintile (ref)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Higher</td>
<td>-0.46</td>
<td>-0.35</td>
<td>-0.33</td>
<td>1.55</td>
<td>1.28</td>
<td>2.88</td>
</tr>
<tr>
<td>Middle</td>
<td>-0.55*</td>
<td>-0.73*</td>
<td>-0.07</td>
<td>2.41</td>
<td>2.18*</td>
<td>2.08</td>
</tr>
<tr>
<td>Lower</td>
<td>-0.86**</td>
<td>-0.88**</td>
<td>-0.4</td>
<td>2.77*</td>
<td>2.27*</td>
<td>2.81</td>
</tr>
<tr>
<td>Lowest</td>
<td>-1.06***</td>
<td>-1.32***</td>
<td>-0.31</td>
<td>3.86**</td>
<td>3.24**</td>
<td>2.54</td>
</tr>
<tr>
<td><strong>Number of living children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (ref)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>2</td>
<td>-0.16</td>
<td>-0.15</td>
<td>-0.07</td>
<td>1.18</td>
<td>1.14</td>
<td>1.12</td>
</tr>
<tr>
<td>3</td>
<td>-0.38</td>
<td>-0.77</td>
<td>0.17</td>
<td>2.33</td>
<td>1.08</td>
<td>2.04</td>
</tr>
</tbody>
</table>
RESULTS (3)

HYPOTHESIS 2: Within families with 2 or more surviving children born in the last five years, the last born will have lower nutritional status than the preceding one(s).
Underweight, Stunting, Wasting by Order of birth in families with 2 or more surviving children in Sebeta, Ethiopia
<table>
<thead>
<tr>
<th></th>
<th>WAZ</th>
<th>HAZ</th>
<th>WHZ</th>
<th>Underweight</th>
<th>Stunting</th>
<th>Wasting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child age (in months)</td>
<td>-0.01</td>
<td>-0.04**</td>
<td>0.02</td>
<td>1.00</td>
<td>1.03</td>
<td>0.97</td>
</tr>
<tr>
<td>maternal at child birth (in years)</td>
<td>0.03</td>
<td>0.04</td>
<td>0.01</td>
<td>0.95</td>
<td>0.95</td>
<td>1.01</td>
</tr>
<tr>
<td>Mother education (years)</td>
<td>0.00</td>
<td>0.01*</td>
<td>-0.01</td>
<td>0.99</td>
<td>0.97</td>
<td>0.97</td>
</tr>
<tr>
<td>Highest and higher quintiles (ref)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Middle quintile</td>
<td>-0.42</td>
<td>-0.83</td>
<td>0.38</td>
<td>2.78</td>
<td>2.46</td>
<td>2.45</td>
</tr>
<tr>
<td>Lower quintile</td>
<td>-1.07**</td>
<td>-0.77</td>
<td>-0.79</td>
<td>6.65</td>
<td>2.97</td>
<td>5.27</td>
</tr>
<tr>
<td>Lowest quintile</td>
<td>-1.44***</td>
<td>-1.17**</td>
<td>-0.90*</td>
<td>7.68*</td>
<td>3.56**</td>
<td>7.37</td>
</tr>
<tr>
<td>Birth order</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First (ref)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Second or third</td>
<td>-0.72</td>
<td>-1.77***</td>
<td>0.30</td>
<td>2.78</td>
<td>4.31*</td>
<td>0.68</td>
</tr>
</tbody>
</table>
This study shows that mothers' education plays a role in determining child nutrition.

This is a timely finding as there is an increasing realization within the field of nutrition that changing mothers’ behavior through targeted health education is difficult without simultaneously tackling underlying societal issues and intra-household power relations, which are known to influence mothers’ decision-making and actions.

This finding supports existing efforts to universalize basic education and adult literacy programs, as education is positively associated with child nutrition.
Family size negatively affect child nutrition through the resource dilution theory= the argument of finite resources: parents have limited time, money, and patience to devote to the nutrition of their children, and those with fewer children can invest more per child.

Hence, limiting the number of offspring could significantly improve the nutritional status of the children.
DISCUSSION (3)

- The children who belong to households from the poorest SES quintiles have higher prevalence of worse nutritional status. While, on the contrary the children hailing from richest asset quintile households are associated with better nutritional status.

- Hence the gradient of household socioeconomic status remains as a crucial determinant of level of nutritional achievement among children.

- Betterment of such condition thus is expected to improve growth of children likely through better nutritional intake and reduced morbidity.
CONCLUSION

Mothers’ education has a positive effect on child nutrition in Sebeta town, then a call to widen the focus of nutrition policy and programs from the mother–child pair.

Programs that assist mothers with the healthy timing of births and meeting their fertility intentions can avert some of the nutritional deficits observed.
ACKNOWLEDGEMENTS

- Li, Qingfeng
- Professor Amy Tsui
- The Ethiopian FHWS team
- Study setting leaders, household members and respondents