Title
"Girl Power!" Women's Autonomy, Gender Equity, and Children's Immunization Status in Ethiopia

Author
Jane O. Ebot

Affiliation
Department of Sociology and Population Research Center, University of Texas at Austin
305 E. 23rd Street, Stop G2800, Austin, TX 78712-1699, USA
Email: janeebot@utexas.edu

Abstract
Objective: The World Health Organization recommends that children be fully immunized by age 1 to prevent early child mortality and morbidity. Immunizations are efficient and cost effective methods of reducing child mortality. Yet approximately 2.4 million children die each year from vaccine-preventable diseases. Ethiopia, Sub-Saharan Africa's second poorest country, has very low immunization coverage: only 24% of children are fully immunized. Recently researchers and health organizations, have detailed the positive relationship between women's autonomy and gender equity and children's health outcomes in developing countries.
Methods: Using multivariate logistic regressions analyses, this study investigates the link between women's autonomy and children's immunization status in Ethiopia. Data for the analyses comes from a nationally representative sample of children 12-30 months (N=2,941) from the 2011 Ethiopia Demographic and Health Survey.
Results: Only 24.1% of Ethiopian children were fully immunized. The results showed that individual measures of women's autonomy were significantly associated with children's immunization status, net of women's educational attainment, socioeconomic-status and background controls. More specifically, the results demonstrated the need for more research that focuses on the specific dimensions of women's household autonomy and they are related to children's health.
Conclusions: Overall, the implications of this study align with those of the Millennium Development Goal #3: improvements in women's household autonomy are linked to more positive child health outcomes. Future health and gender-based initiatives specifically target women's freedom to make decisions within the household as an important way to increase children's life chances.

Keywords
Autonomy, Health, Ethiopia, Immunization, Children

Introduction

Reducing child mortality and morbidity rates in Sub-Saharan Africa (SSA) has been the leading focus of the Millennium Development Goals (MDG). Immunization and vaccination coverage have been efficient, cost effective ways to reduce child mortality and eliminate life-threatening infectious diseases. Vaccinations are any preparation used to produce immunity to diseases through antibodies (1). Immunized children are at lower risk of early child death, malnutrition, and poor health in adulthood (2). The World Health Organization (WHO) recommends children be fully immunized by age 1 to prevent childhood diseases. Fully immunized children receive 1 dose of tuberculosis (BCG); 3 doses of diphtheria, pertussis, and tetanus (DPT) and polio; and 1 dose of measles (3). In 2010, an estimated 2-3 million deaths were averted by vaccinations (1). Yet approximately 19 million children were not fully vaccinated in 2010 (1), 16 million of whom resided in eight SSA countries.

Ethiopia has high infant mortality rates and low child immunization coverage. Infant and child mortality rates in 2012 were estimated to be 60.9 and 106 deaths for every 1,000 children born, respectively (4). Deaths from preventable childhood infectious diseases are the leading cause of death among Ethiopian children (5). About 80% of Ethiopian children received one of the WHO vaccination recommendations, but only 24.3% of children were fully immunized in 2011 (5). Given this low level of immunization, it is critical to research ways to increase the use of preventative measures. The aim of this study is to assess whether women's autonomy is related to improvements in children's immunization status in Ethiopia.

Health organizations and researchers have increasingly focused attention on the importance of women's decision-making in improving children's health outcomes in developing countries. During the 1994 Cairo International Conference on Population and Development, policymakers from around the world called for greater focus on improving gender equity to address health needs in developing countries (6). More recently, the 2000 MDG #3 promoted gender equality and autonomy as important means of

improving women's and children's health outcomes (7). Yet limited and uneven progress from the MDG#3 (8) has necessitated more precise research detailing the importance of women's autonomy.

Decision-making, or autonomy, is the capacity to manipulate and have control over one's personal environment, in order to make decisions about one's own livelihood or those of family members (9). More autonomous women have increased decision-making abilities concerning marriage candidates (10), contraception (11), sexual activity (12), access to health care and resources, and movement outside the home (13). More autonomous women can also improve their children's health. As the primary caregivers for children, women typically are the first to recognize symptoms in sick children and invest more time and income to improve their children's health and nutrition compared to fathers (14). Yet in many traditional societies, health care and household financial decisions are made by a male head of household or family member (15). Women with greater autonomy would have more freedom to move outside the home to take their children for necessary health services like vaccinations. In addition, financial freedom would allow women to pay for all the vaccinations recommended by the WHO. If women are children's primary caregivers, women's limited household autonomy may have negative effects on children's health. Therefore, women's autonomy becomes the means through which women can use health services to reduce their young children's risks of mortality and morbidity (16).

Early marriages, high fertility rates, and low levels of educational attainment, coupled with deep-rooted patriarchal beliefs regarding the role and status of women, have negatively affected Ethiopian women's autonomy. By age 16, most Ethiopian women leave their families and communities for their new husband's village or home (5). Women who marry early typically have less mobility and autonomy than unmarried women or women who did not marry early (17) and are at greater risk of intimate partner violence (IPV) (18). Additionally, Ethiopian women have high adolescent birth and total fertility rates. The 2010 adolescent birth rate was 109 births per 1,000 women, the 15th highest in the world (19). The current total fertility rate is 5.39 births per woman (4). Early childbearing and number of children ever born are negatively related to children's health and care (20, 21).

Women's autonomy has been linked to increased use of modern contraceptives (22), reduction in the number of births per woman and use of safe delivery services (9), and lower child mortality (6). Several studies have highlighted the effects of women's autonomy on child health outcomes. Among the Rendille of northern Kenya, higher levels of women's household autonomy were associated with increases in children's nutritional status (23). In Amman, Jordan women's household bargaining power had a positive effect on children's well-being and nutritional status (16). Singh et al. (24) found Nigerian women's decision-making abilities and attitudes towards wife-beating increased children's odds of being fully immunized, net of mother's education, work status, and household wealth. More autonomous Ethiopian women were more likely to access health care compared to Ethiopian women with little household autonomy (13).

Although researchers have found clear relationships between women's autonomy and health outcomes, certain limitations necessitate further study. Prior to the inclusion of questions on women's household status in the Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Surveys (MICS), many scholars used women's education as a proxy measure of women's autonomy. Educational attainment is a pathway through which women can improve their livelihoods by providing women with increased capacities to make decisions concerning their day-to-day lives (25, 26, 27), more control over marital decisions (28), delayed childbearing and longer birth intervals (29), and higher paying occupations (29). Yet the use of educational attainment as an indicator of women's autonomy does not take into account other means through which women can gain autonomy, especially for women who have not received any formal education. In 2011, approximately 50% of Ethiopian women age 15-49 had not received any formal education (5). Though education is a means through which women can increase their autonomy, Ethiopian women's low levels of educational attainment means most increases in women's autonomy occur within the household. This study therefore includes both measures of women's autonomy and measures of socioeconomic status to test their confounding effects on children's immunization status.

Another limitation in related research has been the use of index variables to capture the relationships between women's autonomy and antenatal and safe delivery care (9), child survival (30), and use of contraception (22). Individual autonomy measures take into account the importance of each separate measure within the composite measure. For example, increased decision-making abilities concerning visits to family/relatives may improve children's immunization status compared to decisions regarding foods cooked daily because the former symbolizes a lack of physical mobility for women, a factor that policymakers must consider when implementing micro-level initiatives to improve women's autonomy and children's health. In addition, the inclusion of individual measures of IPV investigates how gender equity is related to children's immunization status. Knowing women's self-reported attitudes on IPV is beneficial in understanding how women's freedom from violence is also related to improvements in children's health. Finally, index variables of women's autonomy do not account for country specific details. Dimensions of women's autonomy may be affected by socioeconomic and demographic characteristics that are specific to a culture or social context. Without analyzing specific elements of women's autonomy, "catch-all" explanations for its effects on health outcomes are limited.

Several studies have adopted the use of individual measures of women's autonomy in their analyses. Woldemicael (31) used DHS data from Ethiopia and Eritrea to examine the effects of individual measures of women's autonomy and socioeconomic status on antenatal and delivery care services. Net of socioeconomic-status, sole decision-making about visits to family/relatives increased the use of antenatal care in both countries, but sole decision-making about household purchases increased antenatal care only in Eritrea (31). Individual measures of Nepali women's household decision-making abilities and attitudes on wife beating were used to test its effect on child stunting and wasting (6).Though individual measures of women's autonomy had mixed results, sole decision-making regarding women's health care improved the likelihood of girl children not being stunted (6).

This study makes important contributions to the literature by utilizing individual measures of Ethiopian women's autonomy to study its association with children's immunization status. I argue that individual measures of women's autonomy provide more specific results than index measures, which can

be used by gender-related initiatives to improve women's household status and increase Ethiopian children's life chances. I hypothesize that women's autonomy, measured as their ability to make individual household related decisions and their views on wife beating, will have independent effects on children's immunization status net of individual and household measures of socioeconomic-status. Understanding the relationship between women's autonomy and children's immunization status is not only important for researchers, but also for policymakers.

Data and Methods

Data

Data used in this study comes from the 2011 Ethiopia Demographic and Health Survey (EDHS). The objective of the 2011 EDHS was to provide data on fertility and family planning behavior, child mortality, children's nutritional status, maternal and child health services, and knowledge of HIV/AIDS. The 2011 EDHS has complete interviews from 16,702 households, 16,515 women aged 15-49 years, and 14,110 men aged 15-59 years. This study's sample was limited to the 2,941 married women aged 15-49 in the survey who had children between the ages of 12 to 30 months. The child age limits were based on WHO recommendations that children be fully immunized by 12 months of age. I included a 30-month upper-limit to cover the cases where children were somewhat late in getting all the vaccines.

Dependent Variable

The dependent variable was children's immunization status, an important health indicator because it is one of the earliest ways parents can prevent common childhood diseases/infections. The EDHS collected information on children's immunizations from vaccination cards and mothers' verbal responses. The vaccination cards represent routine vaccines whereas mothers' recalls encompass both routine vaccines and those done through immunization campaigns. Immunization status was coded as a dichotomous variable based on WHO standards: a value of "1" was assigned to fully immunized children, that is, they received 1 dose of tuberculosis; 3 doses of diphtheria, pertussis, tetanus; 3 doses of polio; and 1 dose of measles. A value of "0" was assigned to children who did not receive all the recommended vaccines.

Independent Variables

The primary independent variables were measures of women's autonomy. The EDHS asks women about their household decision-making abilities and attitudes towards wife beating. The questions on women's household decision-making abilities were: "Who usually makes the final decision on the purchase of major household goods; visits to family/relatives; women's earnings; and women's own health care?" Responses to each of these questions were coded into three categories: the woman made the sole decision, the woman made the decision jointly with her husband/partner, or the husband/partner made the sole decision. Questions on women's attitudes toward wife beating were: "In your opinion, is a husband justified in hitting or beating his wife in the following situations: if his wife refuses to have sex with him; if his wife argues with him, if his wife burns the food; if his wife neglects the children; and if his wife goes out without telling him?" Women who said wife beating was justified in each specific situation were coded as "1" and women who said wife beating was not justified in the specific situation were coded as "0".

This analysis also included measures of women's socioeconomic-status. Women's educational attainment was measured in three categories due to small cell counts at the higher levels of education: no education, incomplete primary school education, and complete primary school and higher. Women's occupation was coded into four categories: no occupation, manual, agriculture, and professional sector. Women's household wealth status was measured as an index constructed by the EDHS: poorest, poorer, middle, richer, richest. Control variables included women's religion, number of children under 5 years of age in the household, mother's age in years, polygynous marriage, age at first marriage, child sex, and urban/rural residential location.

Methods

To determine how individual measures of women's autonomy and gender equity are related to children's immunization status, I used logistic regression models to examine the association between women's attitudes towards wife beating women's household decision-making abilities, socioeconomic-status and children's immunization status. All analyses were conducted using STATA SE 12.1(31), using

the svy command to take into account sampling weights and the cluster sampling design of the EDHS. All models controlled for number of children under 5 in the household, mother's age, polygynous marriage, age at first marriage, child's sex, and urban/rural residential location.

Results

(Table 1 right here)

Descriptive Statistics

Table 1 presents the descriptive statistics and shows that, overall, most Ethiopian children did not receive proper early preventative care and that children's mothers tended to have traditional views concerning gender equity and had limited decision-making abilities. Only 24% of Ethiopian children were fully immunized, meaning that they received all 8 doses of vaccines specified by the WHO. About 75% of Ethiopian children did not receive proper preventative care against common childhood diseases and infections within their first 30 months of life. Most children's mothers approved of wife beating. Approximately 50% of women said wife beating was justified if a woman refused sex from their husband/partner while higher percentages approved in the cases of a woman arguing with her husband/partner or neglecting the children. Measures of women's decision-making abilities showed that though women made few independent decisions, many made them with their husband. Yet it should be noted that final decision-making solely by women's husbands was also high. About 28% of women said their husband made the final decision about women's own health care. Additionally, 23% of women said their husbands made the final decision on women's visits to family/relatives. Measures of women's socioeconomic-status show that though households were evenly spread across the wealth index, about 68% of mothers did not receive a formal education and 47% of mothers were not in the labor force. About 10% of Ethiopian women were in a polygynous marriage. The mean age at first marriage for Ethiopian women is about 17 years.

(Table 2 right here)

Table 2 presents logistic regression results testing the association between women's autonomy and Ethiopian children's immunization status. Results from this table confirm the importance of women's

autonomy on child health: net of socioeconomic status and religion, individual measures of women's autonomy were significant predictors of children's odds of being fully immunized. Model 1 tested attitudes on wife beating on immunization status. Only one measure of attitudes positively influenced children's immunization status: women who said wife beating was justified if a woman argued with her husband/partner had 42% lower odds of their children being fully immunized than women who said wife beating was not justified in this situation. In Model 2, most dimensions of women's decision-making abilities improved immunization status. Women who made the final decision about visits to family/relatives were 1.6 times more likely to have their children fully immunized than women whose husbands made the final decision on visits. Women who made the final decision on their own health care or made the decision jointly with their husband/partner were 1.7 and 1.4 times more likely to have their children immunized than a woman who said their husband/partner made the final decision on their own health care, respectively. Finally, women who made the final decision on their earnings or made the decision with their husband/partner were almost twice as likely to have their child immunized compared to women who said their husband made the final decision on a woman's earnings, though the effect was marginal.

When all measures of women's autonomy were included in Model 3, all previously significant measures remained significant. In Model 4, women's socioeconomic status had significant effects on children's immunization status. Women who completed primary school and higher, were twice as likely to have their child fully immunized compared to women who did not have a formal education.

Model 5 tested the confounding effects of women's socioeconomic status. Though some measures of women's autonomy lost their predictive strength, several continued to have significant effects on children's immunization status.

Model 6 controlled for all variables, including religious affiliation. These final results showed that, net of all covariates, women who made sole or joint decisions concerning their earnings and women who made sole decisions on visits to family/relatives had higher odds of their children being immunized.

Women who said wife beating was justified if a woman argued with her husband had reduced odds of their children being immunized by 50%.

Conclusion

This study tested the relationship between individual measures of women's autonomy and Ethiopian children's full immunization status. Though several studies have showed how limiting women's autonomy is negatively related to children's health and health behaviors (13), few have looked at how individual measures of women's autonomy are associated with children's full immunization against childhood diseases. This analysis showed a strong relationship between women's increased decision-making abilities and use of preventative care against childhood diseases and illnesses. This study reaffirms the importance for health initiatives and programs to consider gender-related issues Ethiopian women experience at home and how these improvements in these areas can enhance children's health.

The first key finding from this study is importance of women's autonomy for children's immunization status, net of socioeconomic factors. The inclusion of women's individual level educational attainment, household wealth, and occupation did not dampen the robust and significant relationship between women's participation in decisions related to their movement, finances, and health care and their children's immunization status. Women's socioeconomic-status has been identified as a key means of improving autonomy and gender equity: more educated women are more likely to work outside the home in better paying occupations and have better access to health services and health related knowledge than less educated women (33). Yet the results of this study show that for Ethiopian women, education was not a substitute for autonomy. That is, Ethiopian women's autonomy is not solely created through access to education but through greater freedom to make decisions concerning their livelihoods. Therefore policymakers should not only continue to provide Ethiopian women with safe and accessible schools but should also implement gender-related initiatives that specifically target women within the home.

A second key finding was the significance of individual measures of women's autonomy. Though most of the gender equity variables were not statistically significant, women who said wife beating was acceptable if a woman argued with her husband/partner significantly reduced the odds of their child being

fully immunized compared to women who said it was not justifiable. Women who cannot engage in verbal disagreements with their husbands for fear of violent physical responses may also be more likely to suppress their opinions related to health, and thus may be less likely to vaccinate their children if their husband does not consent. Additionally women who had decision-making abilities related to movement outside the home and financial allotment were more likely to have their child fully immunized compared to women who had no part in these decisions. Women with freedom to move outside the home likely have more freedom to take their children to hospitals or clinics for vaccinations. In addition, women's financial decision-making abilities means that they can decide to use their resources to pay for preventative health services for their children.

A third key finding was the importance of joint decision-making abilities. Women who made joint decisions about visits to family/relatives or their earnings were statistically similar to women who made these decisions independently. This finding may mean that joint decision-making represents cohesiveness between wives and husbands and an active way that men can improve children's health outcomes that is not necessarily related to socioeconomic-status. Though many gender-initiatives are typically female-focused, this result recommends that policymakers consider how initiatives that focus on improving marital communication and equity can both improve a sense of spousal togetherness and inadvertently improve children's health outcomes.

There are some limitations to this study. First, the cross-sectional nature of the EDHS means that causal relationships between individual measures of women's autonomy and children's immunization status cannot be established. Second, immunization status is measured as a dichotomous variable, which limits possible variation across number of vaccinations received. Additionally, the EDHS does not ask questions about access or distance to healthcare services or about women's role within society as a whole, which might be exogenously related to children's immunization status. It is important for future research on women's autonomy to capture both household and social measures of women's autonomy and to use longitudinal data to understand its long-term impact on children's health across the life course.

Research on immunization coverage is not only an important indicator of health care utilization but also a measureable indicator of the progress of the MDGs towards the 2015 end date. Understanding factors that could prevent women seeking health care for their children is also important in advancing the MDG's gender-related initiatives. This study provides an important insight to the many ways empowering women shapes the lives of those around them.

Table 1: Women's reports of autonomy, socioeconomic status and their children's immunization status in Ethiopia

	Percentage	95% CI
Fully Immunized	24.1%	(21.3, 27.1)
Views on wife beating		
Wife beating justified if woman refuses sex	49.8%	(46.3, 53.4)
Wife beating justified if woman argues	55.6%	(52.3, 58.8)
Wife beating justified if woman burns food	57.0%	(53.9, 60.0)
Wife beating justified if woman neglects children	62.6%	(59.6, 65.6)
Wife beating justified if woman goes out without telling her husband	54.1%	(50.7, 57.5)
Final decision-making		
Person who makes final decision on household purchases		
Mother	4.3%	(3.3, 5.6)
Joint	61.3%	(58.0, 64.5)
Husband/Partner (reference category)	34.4%	(31.3, 37.7)
Person who makes final decision on visits to family/friends		
Mother	14.4%	(12.5, 16.5)
Joint	62.0%	(58.8, 65.1)
Husband/Partner (reference category)	23.6%	(21.2, 26.2)
Person who makes final decisions regarding respondent's earnings		
Mother	9.2%	(7.6, 11.2)
Joint	87.4%	(85.3, 89.3)
Husband/Partner (reference category)	3.3%	(2.3, 4.7)
Person who makes final decisions on respondent's health care		
Mother	12.0%	(10.3, 13.9)
Joint	59.8%	(56.5, 63.0)
Husband/Partner (reference category)	28.2%	(25.3, 31.3)
Women's Individual level of Educational Attainment		
No education (reference category)	68.8%	(65.5, 71.9)
Incomplete primary school	24.9%	(22.1, 27.9)
Complete primary school and higher	6.3%	(5.1, 7.9)
Women's Occupation		
No occupation (reference category)	47.2%	(43.7, 50.7)
Manual	7.2%	(5.6, 9.2)
Agriculture	26.9%	(23.8, 30.3)
Professional	18.7%	(16.0, 21.8)
Household Wealth		
Poorest(reference category)	23.0%	(19.8, 26.5)
Poorer	22.1%	(19.7, 24.7)
Middle	20.9%	(18.6, 23.4)
Richer	19.3%	(16.5, 22.5)
Richest	14.7%	(12.7, 16.8)
Women's Religion		
Orthodox/ Catholic (reference category)	37.2%	(33.0, 41.6)
Protestant	24.2%	(19.8, 29.3)
Muslim	36.4%	(30.8, 42.4)
Traditional/Other	2.2%	(1.2, 3.8)
Number of children under 5 in the household (mean)	1.9	(1.8, 1.9)
Mother's age in years (mean)	28.7 years	(28.4, 29.1)
Polygamous marriage	10.3%	(8.5, 12.5)
Age at first marriage in years (mean)	16.7 years	(16.5, 16.9)
Child sex-Female	47.8%	(45.3, 50.3)
Urban	12.9%	(11.3, 14.5)
Source: 2011 Ethiopia Demographic and Health Surveys		
N=2,941		

Table 2 Logistic regression models presenting odds ratios of full immunization status of Ethiopian children 12-30 months, N=2941

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Wife beating justified if woman refuses sex from her husband	0.874 (0.64 - 1.20)		0.910 (0.67 - 1.23)		0.919 (0.67 - 1.26)	1.053 (0.76 - 1.46)
Wife beating justified if woman argues	0.579** (0.39 - 0.87)		0.587** (0.40 - 0.88)		0.570** (0.38 - 0.86)	0.512** (0.34 - 0.78)
Wife beating justified if woman burns food	1.083 (0.78 - 1.51)		1.099 (0.79 - 1.53)		1.266 (0.89 - 1.80)	1.232 (0.86 - 1.78)
Wife beating justified if woman neglects children	1.117 (0.79 - 1.60)		1.103 (0.76 - 1.59)		1.104 (0.77 - 1.59)	1.146 (0.79 - 1.66)
Wife beating justified if woman goes out without telling husband	0.969 (0.67 - 1.40)		0.965 (0.66 - 1.41)		0.958 (0.65 - 1.41)	0.975 (0.65 - 1.46)
Mother makes final decision on household purchases		0.870 (0.43 - 1.78)	0.792 (0.40 - 1.58)		0.840 (0.40 - 1.75)	0.926 (0.42 - 2.01)
Joint final decision on household purchases		0.988 (0.71 - 1.38)	0.965 (0.69 - 1.35)		0.935 (0.66 - 1.32)	1.011 (0.71 - 1.44)
Mother makes final decision on visits to family/relatives		1.556* (1.01 - 2.39)	1.553* (1.01 - 2.38)		1.557* (1.00 - 2.41)	1.517+ (0.97 - 2.37)
Joint final decision on visits to family/relatives		1.251 (0.88 - 1.77)	1.271 (0.88 - 1.83)		1.292 (0.90 - 1.86)	1.231 (0.85 - 1.79)
Mother makes final decision on earnings		2.306+ (0.99 - 5.38)	2.377* (1.01 - 5.59)		2.874* (1.20 - 6.86)	2.769* (1.16 - 6.61)
Joint final decision on earnings		2.008+ (0.94 - 4.29)	2.066+ (0.96 - 4.45)		2.496* (1.07 - 5.82)	2.399* (1.04 - 5.56)
Mother makes final decision on own health care		1.733* (1.10 - 2.74)	1.630* (1.01 - 2.62)		1.489 (0.93 - 2.40)	1.376 (0.86 - 2.21)
Joint final decision on own health care		1.438* (1.01 - 2.04)	1.355+ (0.95 - 1.93)		1.347 (0.94 - 1.94)	1.216 (0.84 - 1.76)
Incomplete primary school				1.311+ (0.96 - 1.80)	1.315+ (0.95 - 1.81)	1.378+ (0.99 - 1.92)
Complete primary school and higher				2.413*** (1.45 - 4.02)	2.241** (1.31 - 3.85)	2.054* (1.16- 3.64)
Manual				1.038 (0.56 - 1.96)	0.952 (0.49 - 1.85)	0.785 (0.40 - 1.54)
Agriculture				1.783*** (1.28 - 2.48)	1.801*** (1.28 - 2.53)	1.550* (1.09 - 2.20)
Professional				1.074 (0.72 - 1.60)	1.080 (0.70 - 1.66)	1.128 (0.74 - 1.73)
Poorer				1.387 (0.91 - 2.12)	1.351 (0.89 - 2.06)	1.351 (0.88 - 2.07)
Middle				1.076 (0.70 - 1.65)	1.026 (0.66 - 1.59)	1.014 (0.65 - 1.58)
Richer				1.604+ (0.98 - 2.63)	1.569+ (0.96 - 2.58)	1.572+ (0.97 - 2.55)
Richest				3.045*** (1.65 - 5.61)	3.108*** (1.67 - 5.79)	3.297*** (1.72 - 6.33)
Protestant						0.677+ (0.44 - 1.04)

Muslim						0.403*** (0.28 - 0.59)
Traditional/Other						0.364 (0.11 - 1.22)
Number of children under 5 in the household	0.722*** (0.60 -0.88)	0.713*** (0.59 - 0.86)	0.726*** (0.60 - 0.88)	0.779* (0.64 - 0.95)	0.793* (0.65 - 0.97)	0.845+ (0.69 - 1.03)
Mother's age in years	1.000 (1.00 -1.00)	1.000 (1.00 - 1.00)	1.000 (1.00 - 1.00)	1.000+ (1.00 - 1.00)	1.000+ (1.00 - 1.00)	1.000 (1.00 - 1.00)
Respondent is in a polygynious marriage	0.540* (0.32 -0.91)	0.533* (0.31 - 0.91)	0.541* (0.32 - 0.92)	0.640+ (0.38 - 1.08)	0.653 (0.38 - 1.11)	0.815 (0.48 - 1.40)
Age at first marriage in years	1.003 (0.97 -1.04)	1.003 (0.97 - 1.04)	1.001 (0.96 - 1.04)	0.987 (0.95 - 1.03)	0.984 (0.95 - 1.02)	0.996 (0.96 - 1.03)
Child sex-Female	1.111 (0.88 -1.41)	1.111 (0.89 - 1.40)	1.105 (0.88 - 1.40)	1.098 (0.87 - 1.39)	1.094 (0.87 - 1.38)	1.069 (0.84 - 1.36)
Urban	2.754*** (1.87 -4.06)	2.845*** (1.94 - 4.17)	2.596*** (1.76 - 3.84)	1.378 (0.81 - 2.40)	1.194 (0.70 - 2.02)	1.054 (0.59 - 1.89)
Constant	0.474+ (0.22 -1.01)	0.119*** (0.04 - 0.34)	0.155*** (0.05 - 0.45)	0.213*** (0.10 - 0.47)	0.074*** (0.02 - 0.24)	0.095*** (0.03 - 0.30)
Observations	2,941	2,941	2,941	2,941	2,941	2,941

Source: 2011 Ethiopia Demographic and Health Surveys
N=2,941
***** p<0.001, ** p<0.01, * p<0.05, + p<0.10**

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