Meeting the World Health Organization Maternal Antenatal Care Guidelines Is Associated with Improved Early and Middle Childhood Cognition in Ethiopia

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Objective To assess the association between meeting the World Health Organization (WHO) maternal antenatal care attendance guidelines and early and middle childhood cognition among impoverished Ethiopian children.

Study design A total of 1914 impoverished Ethiopian children from the Young Lives longitudinal cohort study were included. Childhood cognition was assessed via the Cognitive Development Assessment (CDA) and Peabody Picture Vocabulary Test (PPVT) at ages 4-5 years; PPVT, Early Grade Reading Assessment (EGRA), and Math Test at ages 7-8 years; and PPVT, Math Test, and Reading Test at ages 11-12 years. Linear regression models were used to examine the association between maternal antenatal care attendance and childhood academic achievement test scores.

Results In the univariable analysis, children of mothers who received the WHO recommended 4+ antenatal care visits or received the WHO recommended first antenatal care visit during the first trimester scored higher on all academic achievement tests. In the multivariable analysis, children of mothers who received 4+ antenatal care visits scored significantly higher on the CDA at ages 4-5 years and Math Test at ages 7-8 years. Children of mothers who received antenatal care in the first trimester scored higher on the CDA at ages 4-5 years and Math Test scores at ages 11-12 years. Children of mothers who received both antenatal care in the first trimester and 4+ antenatal care visits scored significantly higher on the CDA at ages 4-5 years and Math Test at both ages 7-8 and 11-12 years.

Conclusions Children of mothers who received the WHO recommended number and timing of antenatal care visits had significantly higher academic achievement scores across multiple domains during early and middle childhood. Promotion of antenatal care visit attendance may improve cognition through middle childhood. *(J Pediatr 2019;209:33-8)*.

The human brain undergoes critical development stages in utero with continuation throughout the early years of life.[1] Early brain development is modified by the environment, and prior research has shown that both undernutrition and environment toxins can affect brain structure and leave lasting cognitive effects.[2-4] More than 200 million children under age 5 years reside in low- and middle-income countries (LMICs) and do not reach their cognitive, motor, and social-emotional developmental potential because of inadequate nutrition, poor health, and poverty.[5] Multiple risk factors for suboptimal child cognitive development have been identified, including suboptimal breastfeeding, failure to thrive, malnutrition, morbidity, and deficiencies in vitamin A, zinc, iodine, and iron.[6-8] Mitigating such nutritional and environmental risks will promote positive childhood cognition outcomes in LMICs.

According to the World Health Organization (WHO) and operationalized in this study, antenatal care is defined as "the care provided by skilled healthcare professionals to pregnant women in order to ensure the best health conditions for both mother and baby during pregnancy." Antenatal care can have many positive health impacts on the mother delivered through preventive services, including tetanus vaccination; malaria prevention; iron supplementation; screening examinations including hemoglobin, HIV, and bacteriuria; treatment including antiretrovirals (if HIV positive) and external cephalic version (if breech); and health education including safe sex practices and tobacco cessation.[9] Antenatal care can also have positive health impacts on the child, including reduced neonatal mortality, infant mortality, and chance of low birth weight.[10] In 2001

CDA	Cognitive Development Assessment
LMIC	Low- and middle-income country
PPVT	Peabody Picture Vocabulary Test
SMD	Standardized mean difference
WHO	World Health Organization

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the WHO recommended that women attend 4 antenatal care visits with the first visit to take place during the first trimester of pregnancy and the delivery to be performed by a health professional (ie, medical doctor, nurse, or midwife).[11] In most sub-Saharan African countries, the percentage of women who receive the recommended 4+ antenatal care visits is less than 70%.[12] Interventions included in the antenatal care package, such as iron-folic acid supplementation, maternal nutrition, and breastfeeding counseling, and treatment of maternal morbidities, may influence child development outcomes. In 2013, 1 study found antenatal care to be positively associated with improved cognitive development test scores[13]; however, this study examined only a single test (Cognitive Development Assessment) at a single time point when the children were 4-5 years old. There are limited to no data available describing the relationship of antenatal care visit attendance with child cognitive development in middle childhood.

In this context, we assessed the association of antenatal care attendance with cognitive development at ages 4-5, 7-8, and 11-12 years among children in Ethiopia. Our a priori hypothesis is earlier antenatal care booking in pregnancy and greater frequency of antenatal care visits is associated with higher cognitive test scores in middle childhood.

Methods

Study Sample

The Young Lives study is a prospective, observational cohort study of impoverished children in 4 LMICs, including Ethiopia, Vietnam, Peru, and India. We analyzed data from children enrolled in the Young Lives–Ethiopia study. Data analyzed in this study were de-identified and publicly available through the United Kingdom Data service (www.ukdataservice.ac.uk) and, therefore, met the National Institutes of Health's criteria for human subjects research.[14,15] The sampling strategy of the Young Lives project included a sentinel site surveillance system designed to select households and be nationally representative and include both rural and urban households.[16] A multistage, purposive, and random sampling method was performed to select 2 cohorts of children, including a young cohort born in 2001-2002 and an older cohort of children born in 1994-1995.[17] The 5 regions within Ethiopia sampled in the Young Lives study included Addis Ababa, Amhara, Oromia, Tigray, and Southern Nations, Nationalities, and Peoples' Region, accounting for 96% of the population in Ethiopia. Within these regions, 20 sentinel sites were chosen. Then, in the young child cohort, 100 children within each site were randomly sampled.

We restricted our analysis to the younger child cohort, born in 2001-2002, because prenatal data were available only for the younger child cohort. This young child cohort included a sample of 1999 children born in 2001-2002 who represented the estimated 2 million children born into poverty in Ethiopia each year. In round 1, this young child cohort had data on prenatal and pregnancy related factors collected in 2002 when children were approximately 1 year of age. We used child development and academic performance data collected during round 2 (child age 4-5 years in 2006-2007), round 3 (child age 7-8 years in 2009-2010), and round 4 (child age 11-12 years in 2013-2014). Among the 1999 children assessed in round 1, a total of 1914 children (4.3% attrition) were assessed in round 2 at ages 4-5 years, 1885 children (5.7% attrition) were assessed in round 3 at ages 7-8 years, and 1873 children (6.3% attrition) were assessed in round 4 at ages 11-12 years.

Antenatal Care Attendance

Antenatal care was assessed by a trained field worker who completed a standardized interview of the child's mother or child's primary caregiver. A caregiver is someone who provides care for the child and can be someone other than the child's parent, such as the grandparent, relative, friend, or neighbor. Based on the WHO recommendations for antenatal care, our 3 binary exposures of interest were (1) attendance of the minimum of 4 antenatal care visits[11]; (2) attendance of the first antenatal care visit during the first trimester[11]; and (3) having both the first antenatal care visit during the first trimester and a minimum of 4 antenatal care visits.[11]

Child Academic Performance Assessment

During round 2 at 4-5 years of age, children in the cohort were administered the Cognitive Development Assessment (CDA) and the Peabody Picture Vocabulary Test (PPVT). The CDA test is designed to assess the cognitive development of a child at pre-school age. In the CDA test, the interviewer describes a concept (eg, equality) to the child and the child selects the picture (out of 4 pictures) that best matches the concept. The Peabody Picture Vocabulary Test (PPVT) is a widely used receptive vocabulary test wherein the difficulty level varies with the child's age. In the PPVT, the interviewer says a word (eg, table) to the child, and the child selects the picture (out of 4 pictures) that best matches the word.

During round 3 at 7-8 years of age, children were given the Math Test, the Early Grade Reading Assessment, and the PPVT. The Math Test is a basic quantitative assessment (eg, "please, put your finger on the number twenty one," "please, count how many balls there are on here," etc). The Early Grade Reading Assessment includes a reading comprehension and listening comprehension test performed for the 3 main languages in Ethiopia (Amarigna, Oromifa, and Tigrigna). The reading comprehension test includes a child reading a short paragraph and answering 8 questions about the paragraph posed orally. The listening comprehension test includes a child listening to a short paragraph and answering 6 questions about the paragraph posed orally. The PPVT is similar to previous rounds but at a higher difficulty level.

During round 4 at 11-12 years of age, children were given a math test, a reading test, and PPVT. All tests are similar to previous rounds, but at a higher level of difficulty.

Table I. Household and child characteristics of 1914 children at baseline visit conducted in 2001-2002

Characteristics	n (%)
Maternal age, y, mean ± SD	27.4 y ± 6.4
Maternal literacy	436 (23.4)
Maternal education	
None	1108 (57.9)
Primary	405 (21.2)
Secondary	401 (21.0)
Paternal literacy	721 (38.6)
Paternal education	
None	727 (38.0)
Primary	425 (22.2)
Secondary or higher	762 (39.8)
Rural residence	1223 (65.5)
Child age, mo, mean ± SD	12.2 mo ± 3.6
Male child	985 (52.8)
Starting antenatal care in first trimester	268 (14.0)
Received 4+ antenatal care visits	512 (26.8)
Started antenatal care in first trimester and received 4+ antenatal care visits	198 (10.3)

Statistical Analyses

We first examined all the child academic achievement scores at each age to determine if they were normally distributed visually via histogram plots and found that each test was approximately normally distributed. Therefore, individual test scores were converted into *z* scores, and we present standardized mean differences (SMDs) as the measure of association to afford direct comparison to other studies using different cognitive development tests.[18]

We present unadjusted and adjusted linear regression models to assess the association of antenatal care visit frequency and timing of the first visit with child academic achievement test z scores at 4-5, 7-8, and 11-12 years of age. Covariates in multivariable models capture factors shown in prior studies to be associated with both antenatal care attendance and child cognitive development including: parent and child's caregiver's education[19-24]; parent and child's caregiver's literacy[25]; mother's age[26]; wealth index[27,28]; rural residence[29,30]; child's sex; and child's age. Given that errors may be correlated between children living in the same community, we also perform an adjustment for clustered SEs in our analysis to provide more robustly inference for this type of sample. Because of few missing data of the covariates, we conducted a complete case analysis. All statistical tests were performed with Stata v 14.1 (StataCorp, College Station, Texas). Each age was a separate hypothesis, and we assumed a *P* value of less than .05 to denote statistical significance.

Results

There were 1914 children included in our analysis. Household, maternal, and child characteristics at enrollment in round 1 are shown in Table I. The mean maternal age was 27.4 years. The majority of women (57.9%) received no formal education. Maternal literacy rates were 23.4%. The majority of men (62.0%) received at least some primary or secondary education. Paternal literacy rates were slightly higher at 38.6%.

Overall, only 512 (26.8%) mothers attended the recommended 4+ antenatal care visits and 268 (14.0%) had their first antenatal care visit during the first trimester of pregnancy. Only 198 (10.3%) of women met both WHO guidelines of attending 4+ antenatal care visits and having their first visit during their first trimester.

Table II presents the unadjusted and adjusted association of antenatal care visit frequency and timing of first antenatal care visit with child cognitive development outcomes at 4-5, 7-8, and 11-12 years of age. In unadjusted analysis, mothers who received the 4+ antenatal care visits or had their first antenatal care visit in the first trimester or met both of these WHO guidelines had significantly higher scores on all 8 tests assessed at 4-5, 7-8, and 11-12 years of age (Table II). The unadjusted SMDs were relatively large from 0.4 to 0.7 z scores for attendance of 4+ antenatal care visits, first trimester attendance, and meeting both of these WHO guidelines.

In the multivariable analysis, children of mothers who received the 4+ antenatal care visits had significantly higher CDA at ages 4-5 years (SMD 0.24; 95% CI 0.08, 0.41) and higher Math Test scores at ages 7-8 years (SMD 0.19; 95% CI 0.00, 0.38) compared with children whose mothers did not meet this WHO guideline. Children of mothers who received their first antenatal care visit in the first trimester had significantly higher CDA at ages 4-5 years (SMD 0.18; 95% CI 0.01, 0.35) and math test scores at ages 11-12 years (SMD 0.15; 95% CI 0.03, 0.26) compared with children whose mothers did not meet this WHO guideline. We also observed that children whose mothers attended their first antenatal care visit during the first trimester and received 4+ antenatal care visits had significantly higher CDA at ages 4-5 years (SMD 0.22; 95% CI 0.02, 0.42), higher Math Test scores at ages 7-8 years (SMD 0.23; 95% CI 0.03, 0.42), and higher Math Test scores at ages 11-12 years (SMD 0.21; 95% CI 0.04, 0.37), compared with children whose mothers did not meet these WHO guidelines. We also observed that Reading Test scores at ages 11-12 years of children whose mothers attended their first antenatal care visit during the first trimester, attended 4+ antenatal care visits, or met both of these WHO guidelines showed a trend toward having higher scores compared with children whose mothers did not meet these WHO guidelines; however, these differences did not meet statistical significance.

Despite the fact that the majority of the population is rural, nearly two-thirds (65.7%) of the children whose mothers received both antenatal care in the first trimester and 4+ antenatal care visits lived in urban residence. Among the children living in rural settings, only 5.6% had mothers who received both of the WHO recommendations on antenatal care attendance (Table III; available at www.jpeds.com).

Table II. Relationship between timing and number of antenatal care visits with academic achievement test scores at 4-5, 7-8, and 11-12 years of age

		Received recommended 4+ antenatal care visits				First antenatal care visit in the first trimester				First antenatal care visit in the first trimester and received 4+ antenatal care visits			
Child's age	Cognitive Test	Yes Mean ± SD (n = 512)	No Mean ± SD (n = 1402)	Unadjusted SMD (95% CI)	Multivariate† SMD (95% CI)	Yes Mean ± SD (n = 268)	No Mean ± SD (n = 1646)	Unadjusted SMD (95% CI)	Multivariate† SMD (95% CI)	Yes Mean ± SD (n = 198)	No Mean ± SD (n = 1716)	Unadjusted SMD (95% CI)	Multivariate† SMD (95% CI)
Ages 4-5 y at round 2 (n = 1914)	PPVT (n = 836)	320.3 ± 48.8	290.3 ± 47.6	0.63* (0.48, 0.77)	0.14 (−0.01, 0.30)	317.2 ± 49.4	296.1 ± 49.4	0.43* (0.24, 0.60)	0.00 (−0.17, 0.17)	321.9 ± 51.3	296.5 ± 48.9	0.52* (0.71, 0.32)	0.10 (−0.09, 0.29)
	CDA (n = 1528)	314.2 ± 45.4	293.8 ± 50.6	0.42* (0.31, 0.53)	0.24* (0.08, 0.41)	315.1 ± 47.6	297.0 ± 49.9	0.37* (0.22, 0.50)	0.18* (0.01, 0.35)	318.5 ± 47.3	297.4 ± 49.8	0.43* (0.27, 0.58)	0.22* (0.02, 0.42)
Ages 7-8 y at round 3 (n = 1885)	PPVT (n = 774)	310.1 ± 10.0	301.5 ± 12.4	0.72* (0.58, 0.88)	−0.07 (−0.17, 0.30)	309.9 ± 11.1	303.1 ± 12.3	0.56* (0.38, 0.74)	0.09 (−0.08, 0.25)	311.2 ± 9.2	303.3 ± 12.4	0.66* (0.45, 0.86)	0.12 (−0.13, 0.37)
	Math Test (n = 1808)	307.2 ± 15.4	297.2 ± 13.9	0.69* (0.59, 0.80)	0.19* (0.00, 0.38)	307.8 ± 16.2	298.7 ± 14.4	0.62* (0.49, 0.76)	0.13 (−0.01, 0.27)	310.1 ± 15.7	298.8 ± 14.5	0.77* (0.92, 0.62)	0.23* (0.03, 0.42)
Ages 11-12 y at round 4 (n = 1873)	EGRA (n = 1437)	304.8 ± 16.1	297.8 ± 13.9	0.48* (0.37, 0.69)	0.09 (−0.10, 0.29)	305.3 ± 17.1	298.9 ± 14.3	0.43* (0.29, 0.57)	0.12 (−0.05, 0.29)	306.8 ± 17.1	299.1 ± 14.4	0.52* (0.37, 0.68)	0.13 (−0.12, 0.39)
	PPVT (n = 1640)	75.8 ± 14.0	67.5 ± 16.0	0.53* (0.42, 0.64)	0.05 (−0.11, 0.22)	75.5 ± 13.9	68.9 ± 16.0	0.41* (0.28, 0.54)	−0.02 (−0.20, 0.17)	76.6 ± 14.0	69.1 ± 15.9	0.48* (0.33, 0.63)	0.02 (−0.17, 0.21)
	Math Test (n = 1623)	45.8 ± 22.2	34.1 ± 20.2	0.53* (0.45, 0.67)	0.12 (−0.03, 0.27)	45.9 ± 22.2	35.9 ± 21.0	0.47* (0.33, 0.60)	0.15* (0.03, 0.26)	48.3 ± 21.7	36.1 ± 21.0	0.58* (0.43, 0.73)	0.21* (0.04, 0.37)
	Reading Test (n = 1564)	34.1 ± 15.0	25.4 ± 14.6	0.59* (0.47, 0.70)	0.18 (−0.02, 0.38)	33.5 ± 15.7	27.0 ± 15.0	0.43* (0.30, 0.57)	0.12 (−0.03, 0.27)	35.5 ± 15.0	27.0 ± 15.0	0.56* (0.41, 0.71)	0.19 (−0.02, 0.39)

EGRA, Early Grade Reading Assessment.
**P* value < .05.
†adjusted for mother's education, father's education, caregiver's education, mother's literacy, father's literacy, caregiver's literacy, mother's age, wealth index, rural residence, child's sex, and child's age.

Discussion

In this prospective cohort study of impoverished Ethiopian children, we found that only 14% of women received their first antenatal care visit in the first trimester of pregnancy and 27% of women received the recommended 4+ antenatal care visits. Moreover, only 1 in 10 women met both of the WHO recommended antenatal care attendance guidelines (4+ antenatal care visits with the first antenatal care visit in the first trimester of pregnancy). Nonetheless, we found that children whose mothers attended the first antenatal care visit in the first trimester and had 4+ visits had significantly higher CDA scores at age 4-5 years, and Math Test scores at both age 7-8 and 11-12 years, compared with children whose mothers did not meet this WHO guideline, after adjustment for maternal, paternal, and household factors.

Our results extend those of Di Cesare and Sebates, who also analyzed data from the Young Lives study with follow-up to age 4-5 years.[13] Those investigators found that children from Ethiopia, Peru, Vietnam, and India whose mothers attended the recommended antenatal care had significantly higher CDA scores at 4-5 years of age compared with children whose mothers did not attend antenatal care as recommended. Our results extend these findings by examining child cognition during time points that span middle childhood and across critical cognitive domains, most notably in math abilities.

One hypothesis on the mechanism for this relationship is that comprehensive maternal antenatal care can lead to improved maternal health and nutritional status during pregnancy.[31] Ip et al found in a recent meta-analysis of 48 studies of children from 20 developing countries that first trimester nutrition, optimized with multiple nutrients including iron, zinc, iodine, selenium, and vitamins A, B_1, B_2, B_3, B_{12}, and C, was beneficial to childhood cognition.[32] Furthermore, there is evidence that more comprehensive antenatal care will lead to improved childhood nutrition in the post-partum time period as well.[31] In addition, women who attended the recommended antenatal care visits may have received medical intervention, nutritional advice, and other counseling that may reduce the risk of preterm and low birth weight, which have been shown to be associated with poorer cognitive outcomes.[33,34] An alternative hypothesis is that the positive health effects from antenatal care[35,36] will lead to a healthier child who would, therefore, be more likely to attend more school days, thereby leading to improved cognitive test scores. Further research is needed to determine the mechanistic pathways linking antenatal care visit attendance to child cognition.

Our study also showed that there was a stronger association for improved middle childhood cognitive test scores when mothers received both antenatal care during the first trimester and 4+ antenatal care visits than there was for mothers who receivied only their first antenatal care visit during the first trimester or received 4+ antenatal care visits. At antenatal care visits, women receive education on

nutrition and health benefits, treatment for comorbidities, and refills on prenatal vitamins including iron and folic acid.

Although the Young Lives study does not include data on quality and type of antenatal care services, it is well documented that the quality of antenatal care is suboptimal in most LMICs, including Ethiopia.[37] In the Young Lives study, antenatal care was self-reported by the mother or caregiver, and hence, the fieldworker could not directly assess the mother's antenatal care (beyond self-report) nor its quality. As a result, we are likely underestimating the magnitude of the association of high-quality antenatal care with childhood cognition. Furthermore, as in any observational study, there is a possibility of residual and unmeasured confounding. Specifically, endogenous, unobserved maternal/household characteristics may explain both antenatal care attendance and cognitive development. For example, mothers that have higher preferences for child development may be more likely to enroll into antenatal care and later to invest more in child nutrition and education. Nevertheless we adjusted for important factors related to the child's mother, father, and household. We should note that there was strong confounding by socioeconomic status and other demographic characteristics as evidenced by the large reduction in the magnitude of association after adjustment. In addition, some pregnant women in the 4+ antenatal care visits group attended a high number (up to 18 visits), which could have been related to complications in pregnancy. We lacked information on maternal morbidity in pregnancy; however, this would bias associations to the null. Despite these limitations, our findings support the need for early and frequent antenatal care visits because of the potential for positive impact on child cognition.

In this study, we looked into the association of antenatal care and childhood cognition in Ethiopia because of that country's especially low antenatal care rates. According to the WHO, most recent rates of at least 4 antenatal care visits in the 4 countries in Young Lives were: Peru 96%, Vietnam 74%, India 51%, and Ethiopia 33%.[45] Future studies should assess the association between antenatal care and childhood cognition at the other 3 countries in the Young Lives dataset.

Approximately more than 200 million children under 5 years of age do not reach their potential in cognitive, motor, and social-emotional development.[5] We found that children of mothers who received the recommended antenatal care had significantly higher cognitive test scores in critical cognitive domains in middle childhood compared with children whose mothers did not receive the recommended antenatal care. Despite many barriers to antenatal care, such as transportation, antenatal care rates in Ethiopia have improved in recent years through the Health Sector Development Program, which may lead to improved cognitive development benefits.[38-43] Recently, the WHO doubled their recommendations for routine antenatal care for pregnant women from 4 antenatal care visits to 8 antenatal care contacts.[44] Future studies should assess the potential incremental benefit of attending up to 8 antenatal care contacts.

Our findings support the expansion of high-quality antenatal care services to help children reach their cognitive developmental potential and further support attainment of global health and development goals in Ethiopia and other LMIC. ■

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Data Statement

Data sharing statement available at www.jpeds.com

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Table III. Round 1 characteristics of the study cohort stratified by timing of first antenatal care visit and number of antenatal care visits

Characteristics	Received 4+ antenatal care visits			Presented to first antenatal care visit in first trimester			Received the 4+ antenatal care visits and presented to first antenatal care visit in first trimester		
	No (n = 1337) n (%)	Yes (n = 507) n (%)	*P* value	No (n = 1579) n (%)	Yes (n = 265) n (%)	*P* value	No (n = 1649) n (%)	Yes (n = 195) n (%)	*P* value
Maternal age, y	27.6 y ± 6.6	27.0 y ± 5.9	.10	27.5 y ± 6.5	26.9 y ± 5.7	.125	27.5 y ± 6.5	26.7 y ± 5.6	.100
Maternal literacy	223 (17.0)	213 (42.7)	<.001	311 (20.1)	125 (47.9)	<.001	341 (21.1)	95 (49.2)	<.001
Maternal education	0.55 ± 0.77	0.85 ± 0.85	<.001	0.58 ± 0.79	0.92 ± 0.87	<.001	0.59 ± 0.79	0.94 ± 0.86	<.001
None	878 (62.6)	230 (44.9)		995 (60.5)	113 (42.2)		1028 (59.9)	80 (40.4)	
Primary	277 (19.8)	128 (25.0)		342 (20.8)	63 (23.5)		355 (20.7)	50 (25.3)	
Secondary	247 (17.6)	154 (30.1)		309 (18.8)	92 (34.3)		333 (19.4)	68 (34.3)	
Paternal literacy	426 (33.6)	295 (62.5)	<.001	555 (37.1)	166 (68.0)	<.001	597 (38.2)	124 (69.7)	<.001
Paternal education	0.93 ± 0.88	1.25 ± 0.84	<.001	0.97 ± 0.88	1.32 ± 0.83	<.001	0.98 ± 0.88	1.32 ± 0.81	<.001
None	596 (42.5)	131 (25.6)		665 (40.4)	62 (23.1)		684 (39.9)	43 (21.7)	
Primary	302 (21.5)	123 (24.0)		366 (22.2)	59 (22.0)		377 (22.0)	48 (24.2)	
Secondary	504 (36.0)	258 (50.4)		615 (37.4)	147 (54.9)		655 (38.2)	107 (54.0)	
Rural residence	1024 (75.6)	199 (38.9)	<.001	1123 (70.3)	100 (37.3)	<.001	1155 (69.2)	68 (34.3)	<.001
Male children	704 (51.2)	281 (54.9)	.265	825 (51.6)	160 (59.7)	.014	872 (52.3)	113 (57.1)	.202