

Extended Abstract

Determinants of Primary level Educational Attainment in India, 1986-2008:

A Multilevel Analysis

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1. Introduction

With the international community pledging to achieve universal primary education (UPE) by 2015 as part of its commitment to the Millennium Development Goals (MDG) and the targets of Education for All (EFA), all possible efforts are being strived globally especially in sub-Saharan Africa, Middle East (Arab states), and South and West Asia to upsize their educational statistics. In 2010, 61 million children of primary school age were out of school worldwide (UNESCO, 2012). One-fifth (13 million) of them were in Southern Asia (United Nations, 2012). Although since 2004 the progress in primary school enrolment has slowed down, the region has made commendable progress in adjusted net enrolment rate (ANER) during 1999-2004, which rose up to 93% (ANER) in 2010. However, universal primary education would be a hollow achievement if the focus were simply on enrolment rather than on the completion of primary education (United Nations, 2012).

Universal enrolment of pupils in the primary grade does not necessarily imply students' cent percent attendance in schools. In India (the largest nation in the South Asia region), the net attendance ratio (NAR) was estimated to be 84% as against the net enrollment rate (NER) of 96% during 2007-08 (CSO, 2011). The survival rate at primary level education (i.e. proportion of pupils starting Grade I who reach the last grade (Grade V) of primary education) rose initially from 62% in 1999 to 81% by 2002 and declined thereafter to 73% in 2004, which further dipped to 72% in 2007-08 (DISE 2007-08). Failing to improve completion of at least primary level education would lead to further repercussion, leaving millions in poverty, with bad health and lacking opportunities;

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as the benefits from elementary education are immense (Tilak, 1996). The education, therefore, must be at the centre of any development agenda (UNESCO, 2012).

The process of primary or elementary education is intruded by a complex configuration of social determinants that needs to be understood in terms of combined role of multiple factors operating in tandem. As Dreze (2003) opines that the single focus explanations (highlighting one particular cause of educational deprivation and ignoring the others), which are common in public debates, do not survive close scrutiny. Considering these aspects, this study examines the influence of possible individual and household characteristics as well as the state level educational, institutional and developmental characteristics on the completion of primary level education within 10-15 years of age in India with temporal perspective (1986-87 to 2007-08).

2. Data and Methods

2.1. Data

Information on educational attainment and associated individual and household characteristics at three different periods were collected from three special rounds (surveys on social consumption) of National Sample Survey (NSS) on 'Participation and Expenditure in Education' (Schedule 25.2). These surveys were canvassed during the 42nd round (July 1986 - June 1987), 52nd round (July 1995 - June 1996), and the 64th round (July 2007-June 2008) of NSS in India. With nationally representative samples from rural and urban households spread over the country, these surveys adopted a stratified multi-stage sampling design. The NSS is a standard and impeccable source of information on a range of socioeconomic issues in India, which is conducted by the National Sample Survey Office (NSSO) of the National Statistical Organisation under the aegis of the Ministry of Statistics and Programme Implementation, Government of India.

State level educational statistics were culled from multiple sources referring to the periods closed to the respective surveys. Data on state level budget expenditure on education, pupil teacher ratio (PTR), proportion of Private (aided and unaided) Primary/Junior Basic Schools, and number of Primary/Junior Basic Schools per 100,000 population were compiled mainly from the statistics released by the Ministry of Human Resource Development (MHRD), Government of India (GoI), and the National Institute for Educational Planning and Administration (NIEPA). Estimates on net state domestic product (NSDP) per capita (at 1993-94 constant price) for the respective survey periods was collected from the Central Statistical Organization (CSO) website, which compiles

financial data from the Directorate of Economics and Statistics of State Governments in India. Some of these information were directly retrieved from the <http://www.indiastat.com>, while a few were estimated using raw data from the above mentioned sources and Census statistics.

2.2. Defining outcome variable

Completion of primary level education in population aged 10-15 years (in terms of binary response) during different survey period was regarded as the outcome variable for the present study. More than 85% of students entered schools between 5-6 years in India as per the combined estimate of students (aged 5-24 years) attending any educational institution during three survey periods. Assuming this statistics, students entering schools during 5-6 years are eligible or exposed to complete their primary level education after 5 years or by 10 to 11 years of age. However, considering some unobserved oddities/challenges and sample characteristics, we limited our sample population aged between 10-15 years. Thus, the completion of primary level education within 10-15 years of age is referred as an effective completion of primary level education (in Indian context) in this paper. Promoting equal opportunity to all strata of population, the National Education Policy (NEP) 1986 also emphasized the need of sending children from indigent families to school regularly until they reach the age of 14 (to complete at least elementary level of education). Consequently, the “Right To Education” (RTE) Act, 2009 accounts to provide free and compulsory education to all children of age 6 to 14 years in India.

2.3. Potential predictors or covariates

The study managed to examine a few possible individual/household level factors such as sex/gender (male/female), age (10-15 years with discrete categorization), parent’s education level (not literate/below primary/primary/middle/secondary & higher), social group (scheduled tribes (ST)/scheduled castes (SC)/Others), household size ($\leq 5/6-9/\geq 10$), sibling composition, and household economic status among other potential factors of primary level educational attainment. These variables were considered based on the findings from the previous studies and availability as well as consistency in collected information across the survey periods. Siblings of the individual were segregated by sex, and classified based on their numbers in the household. The categories for sibling composition includes: only son in the household, only daughter, 1 brother and 1 sister, more than one (1+) brothers and no sister, more than one brothers and one sister, more than one brothers and sisters, and other mixed composition. The quintile of the monthly per capita household

expenditure (MPCE) was adopted as a surrogate variable representing the household economic status of the individual. In the absence of direct data on income in household sample surveys such as NSS, the household expenditure is widely used as a proxy indicator for assessing the economic status of the households (Deaton & Dreze 2002; Murthy 2001). Regional factors such as type of residence (rural/urban) and the region of residence (broad geographical regions) were assessed in the multivariate analysis in order to seize considerable rural-urban and regional differences in the outcome over the period.

In addition, the influence of a number of state level factors including the proportion (%) of private Primary/Junior Basic schools, pupil-teacher ratio (number of pupil per teacher), number of Primary/Junior Basic schools per 100,000 population, Budget expenditure on education (% of State Domestic Product), and per capita NSDP (Net State Domestic Product) were examined in the multivariate multilevel model. These variables were selected for the analysis to incarcerate the influence of educational and institutional infrastructure, and development status of the state on the completion of primary level education among population aged 10-15 years over the period, while accounting for individual/household factors in tandem. To assess the sequential progress in attainment of primary level education in the sample population across the survey periods, the time variable (survey periods) was included in the multilevel analysis as fixed and random effect variable.

2.4. Analytical approach

Bivariate analyses using chi-squared (χ^2) tests were performed to examine the nature of association between the outcome and the exposure variables as well as across the survey periods. Accounting for a number of state level factors in a panel of three cross-sectional national level surveys, the study employed a multilevel logistic regression model to examine the influence of temporal, state-level and individual/household level factors in tandem. Such considerations in the study provided a three-level structure to the pooled cross-sectional survey data — individual/household factors (level 1), state factors (level 2), and temporal factor (level 3). Standard regression techniques do not take into account of the clustered nature of variables measured at different levels. As in our case, adolescents (aged 10-15 years) may share common individual/household characteristics within the same state and there may be similar state characteristics in particular period. In other words, the clustered nature of the independent predictors means that there may be correlation between adolescents at each level so that we cannot assume that our observations are independent. One consequence of ignoring the violation of this assumption is that estimated standard errors will be too small (Merlo, 2003). This

means that the confidence intervals for the parameter estimates will be too narrow so that variables may appear to be significant when in fact they are not. The advantage of multilevel modelling is that it explicitly recognizes the existing hierarchical structure of the data and estimates accordingly (Merlo et al., 2005; Kravdal, 2004). Since the nature of outcome variable, i.e. completion of primary level education among population aged 10-15 years of age (yes vs. no), is binary, the multilevel model with logit link function can be described as follows:

$$\ln \left[\frac{p_{ist}}{1 - p_{ist}} \right] = \alpha + x_{ist}\beta + w_{st}\gamma + z_t\eta + u_{st} + v_t$$

where $\ln[p_{ist}/(1-p_{ist})]$ is the logit in which p_{ist} is the probability of adolescent/individual ‘ i ’ in state ‘ s ’ at survey period ‘ t ’ completing primary level education within 10-15 years of age; x_{ist} and w_{st} are vectors of individual/household level and state level characteristics with z_t , the period effect; α is a constant, while β , γ , and η are vectors of estimated parameter coefficients; and u_{st} and v_t are unexplained residual terms at the state level and for survey periods, respectively. Thus, a multilevel model with three levels was fitted to assess the influences of measured individual/household and state level factors with the time (survey period) dummy as fixed effects, and state (u_{st}) and survey period (v_t) as random effects on the completion of primary level education within 10-15 years of age.

The degree of resemblance between micro-units belonging to the same macro-unit can be expressed by the intra-class correlation coefficient. The correlations between the probability of completing primary level education in the same state and in the same survey period are represented by variance partition coefficient (VPC), which are expressed as VPC_s and VPC_t respectively (Kiros & White, 2004; Snijders and Bosker, 1999):

$$VPC_s = \frac{\sigma_t^2 + \sigma_s^2}{\sigma_t^2 + \sigma_s^2 + 3.29} \quad \text{and} \quad VPC_t = \frac{\sigma_t^2}{\sigma_t^2 + \sigma_s^2 + 3.29}$$

where, σ_s^2 and σ_t^2 represent state level variance and the temporal variance respectively. The multilevel model with logit link function was fitted using the *runmlwin* command (Leckie & Charlton, 2011; Rasbash et al., 2009) in Stata 11 (Statacorp, 2009). We used penalised quasi-likelihood (PQL) approximate estimation procedure, which has been found to be the least biased (Goldstein and Rasbash, 1996) in the case of binary response data. Since, the study considered a range of covariates in the multivariate model, we examined for multicollinearity with variance

inflation factors (VIF), all of which were much lower than 5.0, suggesting that the possibility of high multicollinearity was ostensible.

3. Result

3.1. Trends and Differentials in completion of Primary level education

Table 1 shows the variations in the completion of primary level education within 10-15 years of age by socio-demographic and economic characteristics across the survey periods. The completion of primary level education was significantly different across individual/household factors including sex, age (in discrete order of 10-15 years), father's and mother's education level, social group (caste), household size, sibling composition, and MPCE quintile; and regional factors (type and region of residence). The variations in proportions were also significant across the survey periods, as revealed by the p -value (which refers the χ^2 test) shown in the table. The overall proportion of population within 10-15 years of age completing primary level education in India improved from 37% during 1986-87 to 58% during 2007-08.

The statistics show that the difference in male-female proportion (from 11 percentage points during 1986-87 to nearly 1 percentage points during 2007-08) tremendously narrowed down over the last 20 years in terms of effective completion of primary level education in India. Higher proportion was recorded in 13 and 14 years of age. The proportion of effective completion of primary level education was observed increasing with the increase in the proportion of father's and mother's education level. However, the trend shows that even the proportion of adolescents whose fathers and mothers were not literate increased significantly over the period. The proportional difference among different social group has caught up increasingly since the level of 1986-87. Small family size (≤ 5 members) recorded the higher proportion of adolescents completing primary level education. Similarly, with the substantial increase in the proportion of female adolescents completing primary level education over the period, the differences between adolescents with different sibling compositions in the family corresponds with the increasing family size. However, in general, the proportion seems to decrease with the increase in the number of female sibling (sister). The increase in the proportion corresponds with the higher economic status of the household; however, the statistics does not indicate the economic status of the family as a prime obstacle for completing at least primary level of education in the recent period. During 2007-08, the highest proportion of

adolescents (56%), who managed to complete the primary level education within 10-15 years of age, belonged to the lowest MPCE quintile.

3.2. Determinants of completion of Primary level education: a multilevel analysis

Table 2 presents the result of univariate and multivariate (multilevel) models in terms of unadjusted and adjusted odds ratios (with 95% CI) for the completion of primary level education within 10-15 years of age by selected socio-demographic, economic and regional factors. The adjusted odds ratios are also presented for the state level factors in the table, with random variance and VPC for state and survey period. The state level variance in the null model (with random intercept only) shows considerable variation in the educational outcome across states. However, even though the variance was nominal across survey periods, its inclusion as random intercept in the model was examined significantly better than the model with only state-level random intercept, and the consequent model also increased the state level variance. Based on the variance partition coefficient (VPC) value, about 11% of the total variance in the completion of primary level education was attributable to the differences across states. However, the VPC was estimated about 5% for the state random effect after controlling for individual and household factors, which indicates that there still remains some unobservable/unexplained state effects.

As contrast to the univariate model, the multivariate model reveals that there was a very little change in the likelihood of completing primary level education within 10-15 years of age in India over more than two decades (during 1986-87 to 2007-08). In comparison to the period 1986-87, the likelihood in effective completion of primary level education increased by 26% during 1995-96, however, there was no significant change during 2007-08. During the period, females were about 44% less likely to complete primary level education than their male counterparts were. The probability of graduating primary level education was found higher at age 13 and 14 (while considering the population between 10 and 15 years). The probability to achieve primary level grade appeared to increase with the increasing level of father's and mother's education. The result shows that the adolescents (aged 10-15), whose father's and mother's had secondary and higher level of education, were about thrice and twice more likely to complete their primary grade within 10-15 years of age respectively compared to those whose fathers and mothers were not literate. Affiliation from families belonging to different social group (caste) also shows pertinent influence in achieving primary level grade. Adolescents belonging to Scheduled Tribes (ST) showed more disappointing outcome, as they were about 19% and 26% less likely to complete the primary level grade within 10-

15 years of age compared to the adolescents belonging to Scheduled Castes (SC) and other social group respectively. Increasing number of members in the family shows negative influence on the educational outcome. The individual appears to be advantaged in completing primary grade if being only-son in the family compared to being the lone-daughter. However, the probability further decreases with increasing number of brothers or sisters. The better economic status does have positive influence on educational outcomes as it reveals from the positive linear association between the monthly per capita expenditure (MPCE) and the effective completion of primary level education. The adolescents belonging to the richest MPCE quintile (Q5) had more than double probability to complete their primary grade within 10-15 years of age compared to the adolescents belonging to the poorest MPCE quintile (Q1).

The rural-urban difference in probability for effective completion of primary level grade was found to be marginal. The rural adolescents were only 3% less likely to complete primary level grade within 10-15 years of age compared to their urban counterparts. However, the western and the southern regions of the country appeared to provide more amiable environment to their adolescent population (aged 10-15 years) to achieve primary level grade compared to northern and other regions.

Among the state level characteristics, the pupil teacher ratio, which shows that with the increase in number of students per teacher, the probability of completing primary level grade within 10-15 years of age decreases; and the budget expenditure on education was found significant. However, the latter showed surprisingly an inverse relationship with the completion of primary level education. None of the other institutional and developmental factors at state level transpired as strong correlates of primary level completion in the presence of individual/household factors.

4.1. Limitations

In absence of information on religious affiliation of household in earlier rounds of the survey, we could not control for religious effect in the final multilevel model, as various studies found considerably low educational achievement and outcome among Muslims compared to other religious groups in India (Bhaumik and Chakrabarty, 2010; Jha and Jhingran, 2002). In addition, due to limited information about the household members, and especially no information about the order of birth, we could not compute a rather effective sibling composition revealing the influence between the elder and younger female children, as there are indications that eldest girls are most severely affected by

curtailing their educational chances and confining themselves to domestic responsibilities (Jha and Jhingran, 2002; Ramachandran et al., 2003; Jejeebhoy, 1993). However, at the expense of these limitations, this study rather presents a comprehensive analysis of an unexplored dimension of primary level education in India with temporal perspective.

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Table 1. Proportion (%) of population aged 10-15 years completing primary level education by selected socio-demographic, economic, and regional characteristics, India, 1986-2008

<i>Background characteristics</i>	1986-87		1995-96		2007-08		<i>p-value</i>
	%	(95% CI)	%	(95% CI)	%	(95% CI)	
<i>Sex</i>							<0.001
Male	42.0	(41.1, 43.0)	47.0	(45.5, 48.4)	58.6	(57.7, 59.5)	
Female	31.1	(30.1, 32.1)	39.0	(37.6, 40.3)	57.4	(56.4, 58.4)	
<i>Age (years)</i>							<0.001
10	20.1	(19.2, 21.1)	17.0	(15.8, 18.3)	24.6	(23.5, 25.7)	
11	42.5	(40.9, 44.2)	49.7	(47.5, 51.9)	60.2	(58.6, 61.8)	
12	41.7	(40.4, 43.1)	51.0	(49.2, 52.8)	69.7	(68.5, 70.9)	
13	50.1	(48.0, 52.1)	61.7	(59.2, 64.1)	80.0	(78.7, 81.3)	
14	43.9	(42.0, 45.9)	55.4	(52.7, 58.28)	74.6	(73.0, 76.1)	
15	35.3	(33.6, 37.1)	46.6	(43.7, 49.4)	61.9	(59.7, 64.0)	
<i>Father's education level</i>							<0.001
Not literate	22.0	(21.1, 23.0)	25.9	(24.5, 27.4)	46.4	(45.1, 47.6)	
Below Primary	34.9	(33.1, 36.7)	44.4	(41.8, 47.1)	56.8	(54.8, 58.8)	
Primary	52.9	(51.1, 54.7)	52.8	(50.4, 55.1)	64.2	(62.5, 65.9)	
Middle	57.3	(55.0, 59.5)	56.6	(54.3, 58.9)	65.2	(63.6, 66.8)	
Secondary & Higher	70.5	(68.7, 72.2)	68.6	(66.8, 70.4)	69.8	(68.5, 71.2)	
<i>Mother's education level</i>							<0.001
Not literate	29.0	(28.3, 29.8)	33.6	(32.4, 34.8)	49.7	(48.7, 50.6)	
Below Primary	53.0	(50.4, 55.6)	56.1	(52.2, 59.9)	66.2	(64.1, 68.2)	
Primary	69.5	(67.3, 71.7)	68.5	(66.3, 70.6)	70.0	(68.4, 71.7)	
Middle	78.2	(75.9, 80.4)	72.0	(69.6, 74.3)	72.9	(71.2, 74.7)	
Secondary & Higher	80.8	(78.1, 83.3)	78.1	(75.8, 80.3)	75.7	(74.0, 77.4)	
<i>Social group</i>							<0.001
ST	22.5	(20.6, 24.4)	30.4	(27.4, 33.6)	52.4	(50.4, 54.5)	
SC	28.4	(27.0, 29.9)	35.6	(33.7, 37.6)	55.3	(53.7, 56.8)	
Others	41.0	(40.1, 41.9)	47.4	(46.0, 48.7)	59.7	(58.8, 60.6)	
<i>Household size</i>							<0.001
≤ 5	39.6	(38.4, 40.8)	49.4	(47.6, 51.2)	66.0	(65.1, 66.9)	
6 - 9	35.7	(34.7, 36.7)	39.0	(37.7, 40.4)	50.8	(49.8, 51.9)	
≥ 10	35.5	(33.5, 37.6)	39.9	(36.9, 43.0)	50.8	(48.3, 53.3)	
<i>Sibling composition</i>							<0.001
Only Son	47.4	(43.3, 51.6)	56.2	(51.0, 61.2)	67.6	(64.4, 70.6)	
Only daughter	28.3	(24.0, 33.0)	41.8	(35.5, 48.2)	67.3	(63.5, 71.0)	
1 brother, 1 sister	39.1	(36.7, 41.6)	53.9	(50.4, 57.3)	70.2	(68.6, 71.8)	
1+ brother, no sister	41.1	(39.3, 42.8)	49.4	(46.4, 52.4)	62.9	(61.2, 64.6)	
1+ brother, 1 sister	38.1	(36.8, 39.5)	44.1	(41.8, 46.5)	57.1	(55.6, 58.5)	
1+ brother, 1+ sister	33.4	(32.2, 34.6)	35.7	(34.0, 37.4)	47.3	(45.9, 48.7)	
Mixed composition	37.3	(35.7, 39.0)	44.8	(42.9, 46.7)	60.2	(58.9, 61.5)	
<i>MPCE quintile</i>							<0.001
Q1 (Poorest)	19.0	(17.8, 20.2)	24.8	(23.1, 26.5)	56.3	(54.5, 58.1)	
Q2	21.6	(20.6, 22.6)	28.2	(26.8, 29.7)	50.2	(48.7, 51.7)	
Q3	19.6	(18.6, 20.5)	33.1	(31.5, 34.7)	47.4	(45.9, 48.9)	
Q4	24.0	(23.0, 25.0)	33.1	(31.8, 34.5)	42.9	(41.5, 44.3)	
Q5 (Richest)	23.1	(22.0, 24.3)	35.3	(33.7, 36.9)	41.6	(40.0, 43.3)	
<i>Type of residence</i>							<0.001
Rural	32.7	(31.9, 33.5)	38.8	(37.6, 40.1)	55.9	(55.1, 56.8)	
Urban	53.2	(51.6, 54.8)	59.4	(58.0, 60.7)	66.0	(64.2, 67.8)	
<i>Region of residence</i>							<0.001
North	36.1	(34.5, 37.8)	45.5	(42.4, 48.6)	55.3	(53.5, 57.1)	
Central	27.5	(26.2, 28.9)	32.9	(30.9, 35.0)	46.8	(45.4, 48.2)	
East	29.1	(27.7, 30.6)	33.0	(31.0, 34.9)	51.4	(49.9, 52.9)	

West	54.8	(52.5, 57.0)	64.8	(62.3, 67.1)	75.0	(73.3, 76.7)
South	45.1	(43.3, 46.9)	52.0	(49.7, 54.3)	80.0	(78.7, 81.3)
Northeast	49.1	(45.5, 52.7)	50.4	(46.9, 53.9)	59.2	(56.0, 62.4)
Island/UTs	55.7	(40.1, 70.2)	75.0	(66.1, 82.3)	71.0	(63.8, 77.2)
Total	37.0	(36.2, 37.7)	43.3	(42.2, 44.4)	58.1	(57.3, 58.8)

p-value refers Chi-squared test for differences in proportions by survey period.

MPCE: Monthly Per Capita Expenditure

Table 2. Results of univariate and multivariate multilevel (panel) models for population aged 10-15 years completing primary level education by selected individual/household and state level factors, India, 1986-2008

Background Characteristics	Univariate Model		Multivariate Multilevel Model	
	OR	(95% CI)	OR	(95% CI)
<i>Survey Period</i>				
1986-87	1.000		1.000	
1995-96	1.302***	(1.248, 1.359)	1.263*	(0.922, 1.609)
2007-08	2.360***	(2.278, 2.445)	1.210	(0.945, 1.550)
Individual/Household Factors				
<i>Sex</i>				
Male	1.000		1.000	
Female	0.782***	(0.756, 0.808)	0.558***	(0.541, 0.576)
<i>Age (years)</i>				
10	1.000		1.000	
11	4.133***	(3.909, 4.371)	4.857***	(4.647, 5.078)
12	4.838***	(4.598, 5.091)	8.426***	(8.088, 8.779)
13	7.555***	(7.103, 8.036)	14.355***	(13.674, 15.070)
14	5.538***	(5.198, 5.901)	13.412***	(12.761, 14.096)
15	3.550***	(3.326, 3.789)	9.357***	(8.875, 9.864)
<i>Father's education level</i>				
Not literate	1.000		1.000	
Below Primary	1.869***	(1.769, 1.975)	1.475***	(1.413, 1.539)
Primary	2.888***	(2.745, 3.040)	2.062***	(1.979, 2.148)
Middle	3.384***	(3.206, 3.571)	2.248***	(2.147, 2.354)
Secondary & Higher	4.965***	(4.713, 5.231)	2.731***	(2.593, 2.878)
<i>Mother's education level</i>				
Not literate	1.000		1.000	
Below Primary	2.475***	(2.323, 2.637)	1.397***	(1.328, 1.471)
Primary	3.760***	(3.559, 3.972)	1.807***	(1.720, 1.898)
Middle	4.562***	(4.264, 4.882)	1.822***	(1.711, 1.940)
Secondary & Higher	5.546***	(5.162, 5.958)	1.887***	(1.754, 2.031)
<i>Social group</i>				
ST	1.000		1.000	
SC	1.211***	(1.137, 1.290)	1.191***	(1.127, 1.257)
Others	1.708***	(1.617, 1.804)	1.259***	(1.200, 1.320)
<i>Household size</i>				
≤ 5	1.000		1.000	
6 - 9	0.604***	(0.583, 0.626)	0.901***	(0.869, 0.934)
≥ 10	0.603***	(0.568, 0.640)	0.936***	(0.885, 0.989)
<i>Sibling composition</i>				
Only Son	1.000		1.000	
Only daughter	0.675***	(0.576, 0.790)	0.881*	(0.753, 1.031)
1 brother, 1 sister	0.998***	(0.891, 1.119)	0.880**	(0.789, 0.980)
1+ brother, no sister	0.755***	(0.676, 0.842)	0.748***	(0.675, 0.829)
1+ brother, 1 sister	0.615***	(0.554, 0.684)	0.738***	(0.667, 0.817)
1+ brother, 1+ sister	0.443***	(0.399, 0.491)	0.716***	(0.644, 0.795)
Mixed composition	0.677***	(0.609, 0.752)	0.906***	(0.815, 1.006)
<i>MPCE quintile†</i>				
Q1 (Poorest)	1.000		1.000	
Q2	1.464***	(1.387, 1.546)	1.249***	(1.200, 1.299)
Q3	1.909***	(1.810, 2.014)	1.484***	(1.423, 1.548)
Q4	3.030***	(2.887, 3.180)	1.744***	(1.667, 1.824)
Q5 (Richest)	5.106***	(4.860, 5.365)	2.143***	(2.027, 2.266)
Regional Factors				

<i>Type of residence</i>			
Rural	1.000		1.000
Urban	1.947***	(1.880, 2.017)	1.034** (1.001, 1.068)
<i>Region of residence</i>			
North	1.000		1.000
Central	0.683***	(0.648, 0.719)	0.804** (0.700, 0.923)
East	0.730***	(0.693, 0.770)	1.070 (0.751, 1.526)
West	2.193***	(2.063, 2.331)	2.920*** (2.051, 4.156)
South	1.614***	(1.524, 1.708)	3.077*** (2.164, 4.376)
Northeast	1.315***	(1.218, 1.419)	0.804 (0.573, 1.129)
Island/UTs	2.366***	(1.951, 2.870)	1.806*** (1.296, 2.518)
Contextual (State level) Factors			
% Private School	-		1.004 (0.998, 1.012)
Pupil Teacher Ratio (PTR)	-		0.992* (0.983, 1.001)
No. of Primary/Junior Basic Schools [#]	-		1.002 (1.000, 1.005)
Budget Expenditure on Education	-		0.953* (0.907, 1.002)
Per Capita NSDP (log)	-		1.151 (0.834, 1.589)
Random Effect			
Survey Period Variance (SE)	-		0.000 -
Survey Period VPC (%)	-		
State Variance (SE)	-		0.180 (0.031)
State VPC (%)	-		5.2
Random Effect (Null Model)			
Survey Period Variance (SE)	-		0.013 (0.022)
Survey Period VPC (%)	-		0.4
State Variance (SE)	-		0.405 (0.065)
State VPC (%)	-		11.3

*** $p < 0.001$ ** $p < 0.05$ * $p < 0.01$ [#]Per 100,000 population

MPCE: Monthly Per Capita Expenditure

PTR: No. of Pupil per teacher in Primary/Junior Basic Schools

NSDP: Net State Domestic Product

† MPCE quintile was not included in the final multivariate multilevel model to avoid multi-collinearity.

SE: Standard Error

VPC: Variance Partition Coefficient