GRADIENTS OF HOUSEHOLD AND PARENTAL CONTEXTUAL FACTORS ON EDUCATION AND HEALTH OF CHILDREN IN NORTHEAST INDIA

Introduction

Education is the formative process of acquiring knowledge, skills and set of values in the life course. Education is the key to a person's success in all walks of life, not only good education raise standard of living of an individual but also contributes in social and economic development. Education empowers people and improves their ability to communicate, argue, and choose in informed ways (Sen, 1999). Economist valued education for its role in human resource development which increases labour productivity leading to a higher equilibrium level of output (Lucas 1988, Self and Grabowski 2008, Mallick et al. 2016). On the other hand social scientist considered education is important for the catalytic role it plays in diffusion of knowledge, transformation of society and enhancement in awareness of rights of individuals (Agarwal and Sashi 2014, Bhat 2015, Vaid 2016). It is therefore imperative on both counts to assess the significance of household and parental factors moulding educational attainment of children more particularly in the context of northeast (NE) India one of the most underdeveloped regions of the country and also characterized by poor infrastructure and inadequate educational institutions.

Review of Literature

Considerable literature (Evangelista de CarvalhoFilho, 2008; Mingat, 2007; Shavit and Blossfeld, 1993; Jencks, 1972; Coleman et al., 1966) highlighted the importance of household characteristics, in particular parental income, wealth, education and occupation, in determining educational enrolment and achievement in both developing and developed countries. Berhman (1997) and Korupp et al. (2002) supports transmission of parental

traits to children. Evidence of children of parents from high socio-economic status having better academic performance than those from poor socio-economic status is found in Suleman et al. (2012). On the other hand Saifi and Mehmood (2011) highlighted the conductive influence of parental education and occupation on academic performance of children. Becker et al. (1990) hypothesized that maternal education can improve efficiency of human capital production leading to increasing returns, across generations, in parental human capital. Coleman (1988) detailed the ways that the economic, cultural, and social capital of the family plays a crucial role in shaping the arc of children's educational attainment in the United States.

Duraisamy (2002) concluded analysing the National Council of Applied Economic Research (NCAER) data, that parental education, family 6 income, and availability of middle schools within the village have a significant positive effect on child school enrolment decisions in India. From a study of 70000 children in India from National Family Health Survey-2 (IIPS,1998-99) Huisman et al. (2010) found that 70 percent of variation in school enrolment is explain by factors at the household level. Using data from NSSO, 55th and 61st round (1999–2000 and 2004–05) for urban children, Mukherjee and Das (2008) have found that parents' higher level of education retard school drop out of children during 1999-2005. Kumar and Vellymalay (2011) based on a study of Indians in Malaysia reported that educated parents have higher educational aspiration for their children. Borkotoky et al. (2015) investigated intergenerational transmission of education using District Level Household & Facility Survey-3 (IIPS, 2007-08) unearth that maternal educational attainment is indirectly instrumental in promotion of child schooling particularly of girl child by way of having fewer children and avoiding discrimination in

allocation of household resources by sex of children. Ngangbam and Ladusingh (2013) also corroborated the finding in the case of NE India. Azam and Bhatt (2012) matched father and son's education using India Human Development Survey I (NCEAR, 2004-05) and have found significant improvements in educational mobility across generations in India, at the aggregate level, across social groups. Large family size also a barrier educational attainment of children as study by Kugler and Kumar (2015) have found from the empirical analysis of DLHS-3 (IIPS, 2007-08). Lawrence and Vimala (2012) based on a primary study in South India found significant relationship between better school environment and academic achievement of children. Singh (2013) reported based on a study in Andhra Pradesh that students from privately manage schools perform better in test score than those in government schools. In 1995-96, the average expenditure per student pursuing primary education in rural India in a government school was Rs. 219, for students going to local body schools, private aided schools and private unaided schools were respectively Rs. 223, Rs. 622 and Rs. 911 respectively (National Sample Survey Organization, 1998). Tilak (2002) complemented that households across socio-economic class spend considerably for primary education which is expected to be provided by the State free to all. Singha (2013) brings out status of education in conflict setting and found that the conflict does not affect educational growth.

Rationale of the study

The foregoing review emphasises the significance of household wealth, number of children in the household, parental education, sex of the child and school environment on children's educational attainment. However it is noted that studies are sporadic, the aforesaid highlights of factors determining school attainment of children emerges from different

studies and not a single study mentioned above has collectively considered them in a pragmatic manner. The available literate lacks regional coverage and has not completely answer many questions, such as, whether school attainment of children in all regions of India is uniform? Whether household, parental and school factors have uniform significance across regions? In the absence of authentic answers to these questions it is unrealistic to draw regional specific intervention strategies for enhancement of school attainment of children it is important to undertake regional studies. In this context the present paper makes an attempt to assess determinants of educational attainment of children in northeast (NE) India and provide key policy inputs pertinent for this region.

The papers is organize as follows: begins with a brief display and description of socio-demographic and institutional indicators of northeast India, followed by a section on data and methods, then the results section and ends with a section on summary and conclusion.

Profile of Northeast India

The northeast India is the abode of many indigenous people and is best known for its heartwarming topography and rich cultural heritage. The region however has poor infrastructure, limited health and educational facilities and has no industrial and corporate establishments. The region is also deprived of the share of pie of economic growth of the country and still remains economically underdeveloped. However under the 'Look East' policy endorsed by the mass and politicians alike can provide a takeoff from the present status as far as education is concerned.

The socio-economic, demographic and institutional indicators of states in northeast (NE) India are shown in table 1. Among the eight states as on 2011, Arunachal Pradesh has the largest area but is sparsely populated with population density of just 17 per square

kilometer and Assam is the most populous and most densely populated state with a population of 31.21 million and density of 398 persons per square kilometer. The eight states in NE India accounts for 3.8 percent of the population of the country as per Census of India 2011. Literacy rate in NE is among the highest in the country ranging from 91.3 percent in Mizoram and 65.4 percent in Arunachal Pradesh the state where the gross enrolment ratio is 95.2 percent almost at par with that of Mizoram. When it comes to gross enrolment ratio at primary level (for 6-13 years) it is reasonably high in the states of Sikkim, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, and Tripura all above 94 percent and the lowest is 75.7 percent in Assam.

Table 1: Socio-demographic and institutional indicators of states in northeast India

	Arunachal Pradesh	**Assam**	**Manipur**	**Meghalaya**	**Mizoram**	**Nagaland**	**Sikkim**	**Tripura**
Land Area (sq.km.)[1]	83743	78438	22327	22429	21081	16579	7096	10486
Total population in million [1]	1.38	31.21	2.57	2.97	1.1	1.98	0.61	3.67
Population size - % of national population [1]	0.1	2.6	0.2	0.2	0.1	0.2	0.1	0.3
Population density (per sq. km.)[1]	17	398	115	132	52	119	86	350
Literacy rate(%)[1]	65.4	72.2	79.2	74.4	91.3	79.6	81.4	87.2
Gross enrolment ratio (%) (GER)[2]	115.3	75.7	114.9	114.0	110.9	79.7	118.6	110.5
Dropout rate(%)[2]	50.0	50.2	53.7	68.0	39.6	47.7	48.8	42.4
Pupil teacher ratio (PTR) (primary school)[2]	25	28	25	32	14	20	7	15
Accessibility to school(%)[3]	41.0	20.0	36.4	40.4	77.4	60.2	53.3	33.1
Unemployment rate per1000(15+Population)[4]	102	43	22	35	22	62	122	84

Sources: 1 - Census of India, 2011, 2- Statistics of School Education 2011-12, Ministry of Human Resource Development, 3- Indian Stat (2009), 4- Third annual employment & unemployment survey 2012-13, Labour Bureau, Chandigarh, Ministry of Labour& Employment

The concerned is that dropout rate at primary level in NE region is among with the highest rate of 68 percent in Meghalaya and the lowest being 39.6 percent in Mizoram. There is

also considerable variation in adequacy of teachers as can be noted that in Meghalaya pupil-teacherratio is as high as 32 pupils per teacher and the lowest is 7 pupils per teacher in Sikkim.Accessibility to educational institution and when assessing availability of government primary school within habitations it is found that 20 percent of habitations in Assam have primary school the most pathetic condition among all states in NE region while in Mizoram primary schools are available within 77.4 percent of habitations. In NE India, Meghalaya, Tripura and Manipur are the states which have less number of schools within a habitation. One of the factors of underdevelopment of the region is high unemployment rate and it is 122 per 1000 in Sikkim the highestof all the eight states in NE Indiafollowed by 102 in Arunachal Pradesh, 84 in Tripura and the lowest being 22 per 1000 both in Manipur and Mizoram. In summary there is considerable in socio-demographic and institutional indicators between states in NE India which have direct or indirect implications on educational attainment of children in the region.

Data and Methods

Data

The unit level data from two rounds of India Human Development Survey-I (2004-05) and India Human Development Survey-II (2011-12) are being used for this study. The University of Maryland and the National Council of Applied Economic Research (NCAER, India) carried out both rounds of the surveys and data collected are representative at states, union territories and national. Similar survey design and instruments were used in the two rounds of IHDS were similar and comparable in most cases. The unit of analysis for this study ischildren in5-17 years and is based on tracing 1340 children in 2004-04 (IHDS-I)yielding 1035 children in 2011-12(IHDS-II). The

information collected includes basic amenities, assets, income with source, and demographic particulars of members at household level and age, sex, educational and marital status and relationship with the head of household at individual.

There are three distinct advantages of using the IHDS data, first it contains additional questions which are not asked in the NSS or NFHS, second, the IHDS contain data on actual years of schooling rather than levelsof schooling completed which is generally reported in NSS data and third, it provides provision to follow the educational progress of children.

Methods

The objective of this study is to measure the association between household's economic wellbeing, parental education, caste (social groups) and child education outcome, how this association has evolved over time, and whether it improves over time with parental education, whether it is stronger amongst certain groups identified by castes or geographic location.As the emphasis is on assessment of the effect of time varying factors on child schooling outcome which is years of schooling of children in 5-17 years fixed effect panel regression is used for statistical analysis. The model specification is

$$Y_{it} = \beta X_{it} + \gamma z_i + \alpha_i + \mu_{it}$$

where,

- Y_{it} is the years of schooling of children, i = entity and t = time.
- $X_{it}$is vector of time varying independent variables and β is vector of coefficients
- z_i is vector of time invariant independent variables and γ is vector of coefficients
- $\alpha_i \; and \; \mu_{it}$ are the error terms

Description of independent and dependent variables

In order to assess potential determinants of schooling outcome of children 5-17 years in northeast Indi, years of schooling is consider as schooling outcome of children and on the basis of foregoing literature review childrenbackground consider as independent variables are place of residence,age,sex,household monthly per capita expenditure (MPCE) quintiles, caste of head of household, father'seducation, mother'seducation, schooltype, school fees and number of children in the household.Age of child categorized as 5-10, 11-15, 14-15 and 16-17 years. Father's education is classified as none, primary school, lower secondary and higher secondary. Mother education is classified as illiterate and literate. Sex classified as male and female. Place of residence classified as urban and rural. Caste is a sort of social status and those who are from lower castes socio-economically weaker and they have limited access to institutional facilities despite provisions. Scheduled castes (SC) and scheduled tribes (SC) are considered to belong to lower social groups. Other backward castes (OBC) similarly are another group of lower castes. Individuals inherit social status from father and for generations it is not change unlike economic conditions. Caste of household head is categorized as OBC, SC/ST and Others. Monthly per capital expenditure (MPCE) of household is classified as first quintile, second quintile, third quintile, fourth quintile and fifth quintile. Traditionally family system in India is joint family where children live with their parents and other relatives including grandparents and even uncles and aunts. Family type is categorized as joint family and nuclear family. On the basis of functional body schools are recognized as public schools run by the government and private manage by individuals and private organizations. School type is classified as public school and private schools.

Definition, coding and descriptive statistics of background of children in 2004-05 (IHDS-I)and 2011-12 (IHDS-II) are shown in table 2. It is noted that 28 percent of children have rural background and 43 percent of them are males. The average age of children in the sample is 11-13 years in 2004-05 and 11-15 years in 2011-12.

Table 2: Definition, coding and descriptive statistics of background of children in 2004-05 and 2011-12

		Mean		SD		N	
Variable	**Definition**	**2004-05**	**2011-12**	**2004-05**	**2011-12**	**2004-05**	**2011-12**
Residence	Rural =0 ,Urban = 1	0.28	0.29	0.45	0.45	1340	1035
Sex	Male = 1, Female = 2	1.43	1.48	0.50	0.50	1340	1035
Age of Child	5-10 = 1,11-13=2 14-15=3,16-17=4	1.90	2.21	1.04	1.06	1340	1035
MPCE Quartiles	First =1,Second = 2,Third = 3 Fourth= 4,Fifth=5	2.74	2.68	1.41	1.44	1340	1035
Caste	OBC= 1,SC/ST =2,Others = 3	1.57	1.57	0.77	0.77	1340	1035
Family Type	Joint family = 0, Nuclear family = 1	0.91	0.90	0.28	0.30	1340	1035
School Type	Public = 0,Private=1	0.26	0.32	0.44	0.47	1101	950
Father's Education	Non-literate=0,Primary school= 1 Lower secondary=2,Higher secondary=3	1.73	1.73	1.18	1.20	1065	763
Mother's Education	Non-literate=0,Literate=1	0.65	0.65	0.48	0.48	1063	766
School Fees	Indian Rupees	642.19	2272.74	1200.58	5831.39	987	869
Number of children	Average of child per household	2.0	2.0	0.09	0.10	1340	1035

Note: MPCE- Monthly per capita expenditure, OBC- Other backward castes, SC-Scheduled castes, ST-Scheduled tribes

Household monthly per capita expenditure (MPCE) has been taken as proxy measure of economic wellbeing and children belongs to households moderately economically well off households and has not change significantly during 2004-2012. Children in 5-17 years in the present study largely belong to ST/SC and OBC. About91 percent of children live in the joint family. It can be noted that only 26 percent of children attend private schools in 2004-05 which increases to 32 percent in 2011-12. Considering husband and wife education gap in India, educational level of father has been classified no education, primary, lower secondary and upper secondary levels. On the other hand educational status of mother is categorized as non-literate and literate. Educational level of father are mostly completed primary school and 65 percent are of mother are literate. Annual educational fee spent by the household for schooling increases more than threefold during 2004-2012 from Rs. 624 to Rs. 2272. The number of schooling going children in 5-17 years per household is found to be 2 during 2004-2012.

Results

Enrolment rate and distribution of enrolled children by levels of education for selected background of children in northeast India for 2004-05 and 2011-12 are shown in table 3. School enrolment rate among boys and girls in 2004-05 were 80.4 and 84.2 percent respectively while the corresponding figures in 2011-12 are 90.2 and 93.6 percent respectively. An increase of nearly 10 percent in enrolment rate regardless of boys or girls is observed during 2004-2012. Further assessment of enrolled children by level of education it is found that more than four-fifth of the children are enrolled for primary level and about one-fourth for upper primary level. Among the boys proportion enrolled in secondary and higher secondary levels escalates from 13 to 17 percent and for girls from

Table 3: Enrolment rate and percentage distribution of enrolled children by educational level for selected background of children in northeast India for 2004-05 and 2011-12

	Year	Percent (N)	Pre-school	Primary school	Upper primary school	Secondary school	Higher secondary school	N
Sex								
Male	2004-05	80.4 (765)	10.2	52.2	24.7	12.0	0.8	615
	2011-12	90.2(539)	5.6	49.4	27.8	14.8	2.5	486
Female	2004-05	84.5 (575)	13.0	52.1	22.6	9.9	2.5	486
	2011-12	93.6 (496)	5.4	47.2	29.3	15.1	3.0	464
Child Age								
5 -10	2004-05	84.3(651)	21.9	76.7	1.1	0.4	0.0	549
	2011-12	97.9(325)	15.7	84.0	0.3	0.0	0.0	318
11 - 13	2004-05	90.2(327)	1.0	42.7	53.2	2.7	0.3	295
	2011-12	95.2(334)	0.6	55.4	42.5	1.6	0.0	318
14 - 15	2004-05	78.9(208)	0.6	12.2	48.8	37.8	0.6	164
	2011-12	87.9 (207)	0.0	6.6	59.3	33.5	0.6	182
16 - 17	2004-05	60.4(154)	2.2	7.5	20.4	53.8	16.1	93
	2011-12	78.1(169)	0.0	3.0	20.5	57.6	18.9	132
Residence								
Rural	2004-05	79.2(961)	13.1	55.1	21.4	9.9	0.5	761
	2011-12	90.5(734)	6.6	51.7	26.8	13.1	1.8	664
Urban	2004-05	89.7(379)	7.7	45.6	29.1	13.8	3.8	340
	2011-12	95.0(301)	2.8	40.6	32.5	19.2	4.9	286
School Type								
Government	2004-05	74.1(1340)	9.9	53.2	25.4	10.7	0.9	816
	2011-12	67.7(1035)	5.1	48.4	29.6	14.9	2.0	643
Private	2004-05	25.9(1340)	15.8	49.1	19.3	12.3	3.5	285
	2011-12	32.3(1035)	6.2	48.2	26.4	15.0	4.2	307
MPCE quintile								
First	2004-05	73.6(363)	13.9	67.4	12.4	6.0	0.4	267
	2011-12	82.9(304)	6.8	60.3	23.8	8.7	0.4	252
Second	2004-05	81.5(259)	10.9	50.2	28.0	9.5	1.4	211
	2011-12	92.1(214)	7.1	49.8	27.9	14.2	1.0	197
Third	2004-05	84.7(288)	11.1	47.5	30.7	10.7	0.0	244
	2011-12	95.7(185)	2.8	48.0	30.5	14.7	4.0	177
Fourth	2004-05	84.7(228)	10.9	44.0	29.5	13.0	2.6	193
	2011-12	97.0(169)	4.9	39.6	31.7	20.1	3.7	164
Fifth	2004-05	92.1(202)	9.7	46.8	20.4	18.8	4.3	186
	2011-12	98.2(163)	5.0	36.9	31.3	20.6	6.3	160
Father Education								
None	2004-05	71.8(227)	18.4	62.0	12.3	6.1	1.2	163
	2011-12	81.4(177)	7.6	51.4	29.9	10.4	0.7	144
Primary school	2004-05	81.5 (368)	8.8	50.3	29.5	10.9	0.5	300
	2011-12	88.6(255)	4.5	54.5	27.6	9.0	4.5	134
Lower secondary	2004-05	83.2(184)	8.5	54.9	24.2	10.5	2.0	153
	2011-12	94.7(131)	7.3	43.6	29.8	16.9	2.4	124
Higher secondary	2004-05	90.2(412)	10.0	46.9	27.0	14.0	2.2	371
	2011-12	99.3(300)	5.0	45.3	28.2	17.8	3.7	298
Mother Education								
Non-Literate	2004-05	74.7(372)	12.2	61.5	17.6	7.6	1.1	278
	2011-12	84.4(270)	10.5	46.5	30.3	11.0	1.8	228
Literate	2004-05	87.6(691)	10.6	47.4	27.3	12.9	1.8	605
	2011-12	96.0 (496)	3.6	48.7	27.9	16.0	3.8	476

School Fees	2004-05	642(1340)	814	562	562	910	1767	986
	2011-12	2275(1035)	2878	1736	1738	2968	11931	868
Family Type								
Joint	2004-05	88.6 (114)	16.8	62.4	14.9	5.9	0.0	101
	2011-12	87.4(103)	11.1	48.9	25.6	13.3	1.1	90
Nuclear	2004-05	81.6(1226)	10.9	51.1	24.7	11.6	1.7	1000
	2011-12	92.3(932)	4.9	48.3	28.8	15.1	2.9	860
Caste								
OBC	2004-05	84.5 (71)	11.7	63.3	11.7	11.7	1.7	60
	2011-12	96.0 (50)	0.0	54.2	35.4	4.2	6.3	48
SC	2004-05	83.2(190)	8.9	53.8	27.2	10.1	0.0	158
	2011-12	94.4(143)	3.0	45.9	31.1	19.3	0.7	135
ST	2004-05	79.7 (177)	9.9	51.1	20.6	16.3	2.1	141
	2011-12	94.0 (169)	9.4	44.7	27.7	15.1	3.1	159
Others	2004-05	82.3 (902)	12.3	51.1	24.7	10.2	1.8	742
	2011-12	90.3 (673)	5.4	49.3	27.6	14.8	2.8	608
Number of Children								
One	2004-05	80.0 (315)	11.1	56.0	19.8	12.3	0.8	252
	2011-12	90.5 (263)	7.1	52.5	24.4	12.6	3.4	238
Two	2004-05	84.8(683)	11.7	51.8	26.1	9.2	1.2	579
	2011-12	92.3(531)	5.5	44.5	31.8	15.7	2.5	490
More than two	2004-05	79.0(342)	11.1	49.3	22.6	14.1	3.0	270
	2011-12	92.1(241)	3.6	52.3	25.7	15.8	2.7	222
Total	2004-05	82.2(1340)	11.4	52.1	23.8	11.1	1.5	1101
	2011-12	91.8(1035)	5.5	48.3	28.5	15.0	2.7	950

12 to 18 percent during 2004-2012. Enrolment rate has increase during 2004-2012 invariably of age of children, 84.3 to 97.9 percent among 5-10 years, 90.2 to 92.2 percent among 11-13 years, 78.9 to 87.9 percent among 14-15 years and 60.4 to 78.1 among 16-17 years children. Children are enrolled largely in age equivalent levels of education; nearly all of the children in 5-10 years are enrolled for pre-school and primary education, 96 percent of 11-13 years for primary and upper primary levels, more than 85 percent of 14-15 years for upper primary and secondary levels and more than 70 percent of 16-17 years for secondary and higher secondary levels.

As the analysis is based on panel data of children there is evidence emerging the advancement in educational attainment of children during 2004-2012. Enrolment of children among rural children during 2004-2012 has improve from 79.2 to 90.5 percent

while among urban children not only is the level of enrolment is higher than in rural from 89.7 to 95 percent. Another major rural-urban differential is that higher proportion of children in urban are enrolled for secondary and higher secondary levels. Enrolment in public schools has drops down from 74.1 percent in 2004-05 to 67.7 percent in 2011-12 while that in private schools has increase from 25.9 to 32.3 percents during the aforesaid period. Higher proportion of children enrolled in private schools are for secondary and higher secondary education. It is also further noted from the analysis that enrolment rate of children in 5-17 years in northeast India varies directly with household economic condition as measured by monthly per capita expenditure (MPCE) and among children from the lowest and highest MPCE quintile households varies from 73.6 to 92.1 percent in 2004-05 and from 82.9 to 98.2 percent in 2011-12. This clearly indicates that enrolment rate is higher among children from economically better off households than among children from economically poorer households. Further it is noted that more children from economically sound households are enrolled in secondary and higher secondary levels than children from economically weaker households. Parental education do matters in school enrolment of children in northeast India, as enrolment rate among children of father with no education is 71.8 and 81.4 percent in 2004-05 and 2011-12 respectively while the corresponding figures for children of father educated up to higher secondary level are 90.2 and 99.3 percent respectively. Intergenerational transmission of education from parents to offspring is also evident from the fact that higher proportion of children of father with higher education are enrolled in secondary and higher secondary levels than among children with less educated father. Similar conclusion holds well by literacy status of mother. Enrolment rate of children from nuclear family has increase from 81.6 to 92.3 percent during 2004-

2012 but not improvement for children from joint family. More children from nuclear family are enrolled in secondary and higher secondary level than children from joint family. For all the social groups enrolment rate has improved considerably over the period 2004-05 to 2011-12 but is more significant among the ST with an increase from 79.7 to 94 percent. Most of the school enrolment is in the primary level for all social groups and in 2004-05 it is 63.3 percent the highest among the OBC and 51.1 percent the least among the ST and other castes. As the 2004-05 cohort of children have either move to the next level of education or have drop out school enrolment in the same level of education in 2011-12 is lower than that in 2004-05. No enrolment can also be noted in the case of all children moving to the next level of education in 2011-12. Enrolment in secondary level are lower among children from OBC, SC and other castes children as compared to that of ST children in 2004-05. However enrolment in higher secondary level in 2011-12 is higher among OBC, SC and other castes children suggesting higher continuation rate. When assessing the enrolment rate by number of school going children in the household it is found that enrolment rate is marginally higher when there are two school going children in the household 84.8 and 92.3 percent in 2004-05 and 2011-12 respectively. It is further noted that enrolment in secondary and higher secondary education is lower among only child of school going age indicating educational disadvantage of single as against the common notion that more children in household can exert financial hindrance to children education. To comprehend the financial burden of child education on household annual school fee for different levels of school education are analyze and found that for all levels of education school fee has increase many folds during 2004-2012.

Figure 1 below shows the average years of schooling of children by their age. It is observed that average years of schooling of children 5-17 years in northeast (NE) India increases almost linearly with the age of children and educational improvement of children in the region over the period 2004-2012 is also conveyed as the average years of schooling of children in 2011-12 by age of children is at higher level than in 2004-05.

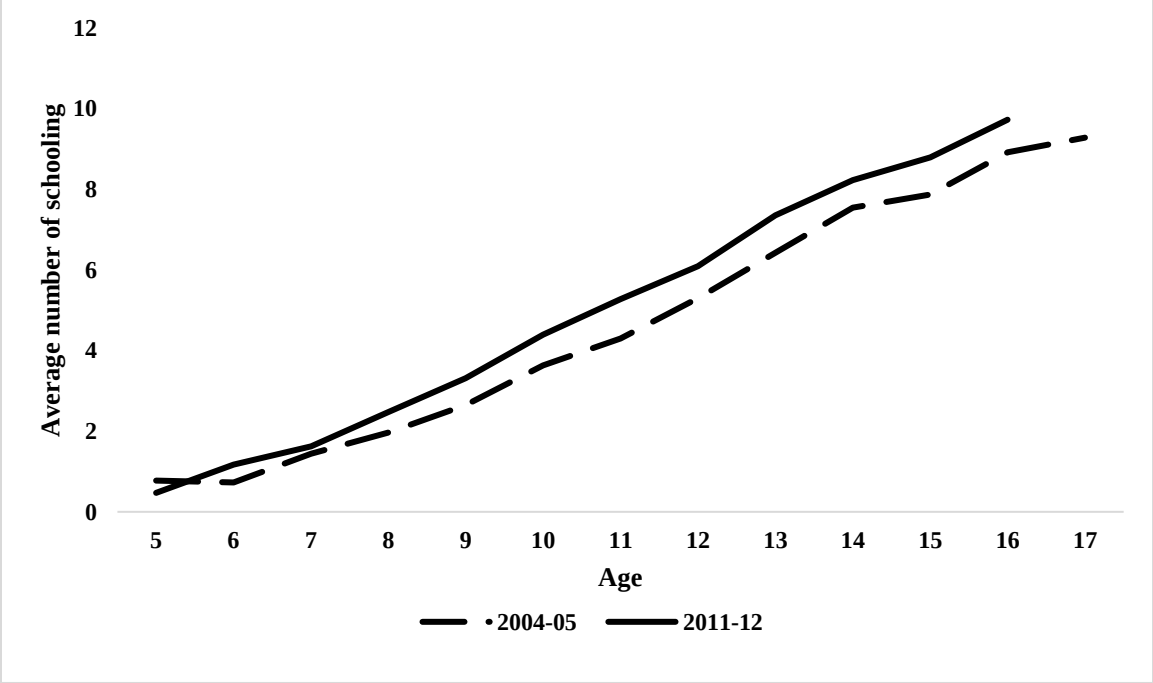

Figure 1: Average years of schooling of children by age in NE India for 2004-05 and 2011-12

To assess inter-state variation in educational outcome of children the average of schooling of children in 5-17 years by states in NE India are shown in figure 2. For the

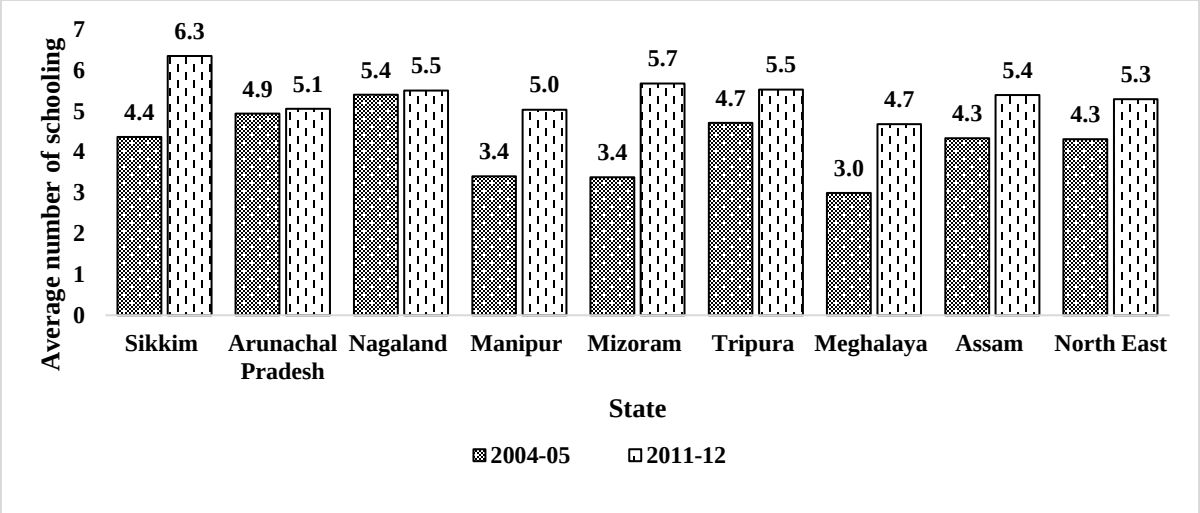

Figure 2: Average year of schooling of children in 5-17 years by states in Northeast India for 2004-05 and 2011-12

NE region the average years of children in 5-17 years improves from 4.3 to 5.3 years during 2004-2012, however there is considerable inter-state variation in the pace of increase. Educational level of children in terms of years of schooling has not improved during 2004-2012 for Arunachal Pradesh and Nagaland and remains at about 5 and 5.5 years respectively. The increase in average years of schooling is highest from 3.4 to 5.7 in Mizoram; moderately increase from 3 to 4.7 years and no improvement in Nagaland.The main point emerging from this simple assessment of average years of schooling of children in 5-17 years is that educational attainment of children in NE India is low when compared with the educational standard in India, that is, primary for 6-10 years, upper primary for 11-13 years, secondary for 14-15 years and higher secondary for 16-17 years. This suggests need for further improvement in educational level of children to commensurate with their age. Parental education is of particular interest in view of intergenerational transmission of education from parents to offspring. From figure 3 it is evident that the average years of schooling of children of literate mother is about a year more than children of non-literate

mother. It is encouraging to note that over the period 2004-2012 average years of schooling of children improves by one year regardless of literacy status of mother. The average years of schooling by levels of education are shown in table 4 to assess whether age of children is in concordance with level of education. It can be noted that children enrolled in primary school had completed 2.7 years of schooling in 2004-05 and 3.3 years of schooling in 2011-12. However the average years of schooling of children enrolled in upper primary, secondary and higher secondary school were 7, 9.4 and 11.3 years in 2004-05 and have not improved in 2011-12. This suggests that the pace of improvement in education of children in terms of years of schooling is not appreciable.

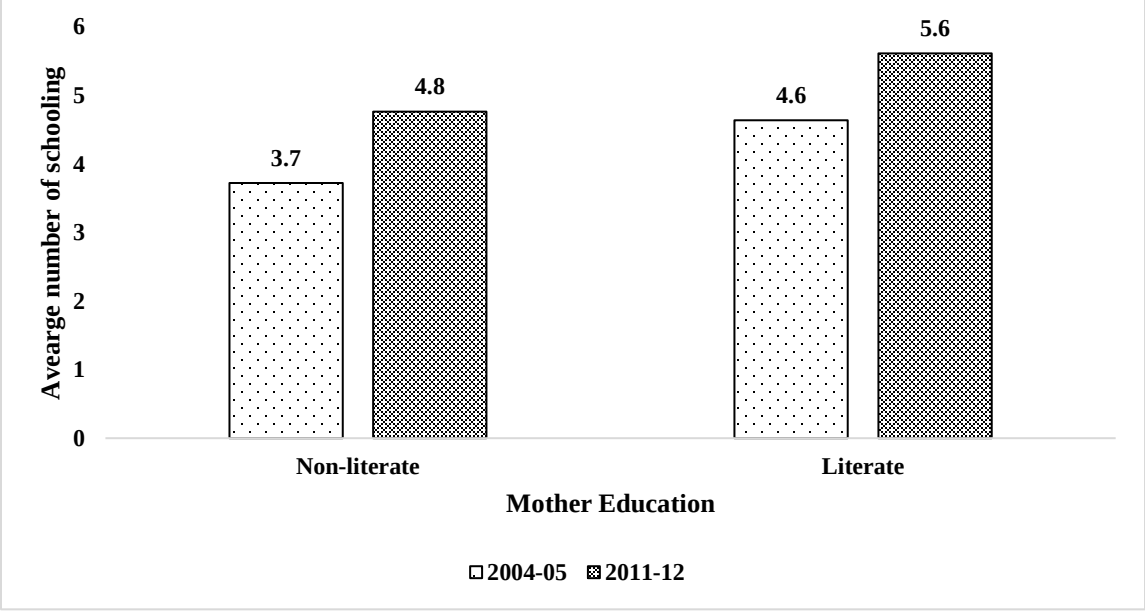

Figure 3: Average years of schooling of children by educational level of mother for northeast India in 2004-05 and 2011-12

Table 4: Average years of schooling by levels of education in 2004-05 and 2011 - 12

	Average year of schooling	
	2004-05	2011-12
Preschool (below 5 years)	0.3	0.0
Primary school (5- 10 years)	2.7	3.3
Upper primary school (11-13 years)	6.9	7.0
Secondary school (14-15 years)	9.4	9.3
Higher secondary school (16 - 17 years)	11.3	11.2
Overall	4.3	5.3

In order to comprehend the scenario more closely, the proportion of enrolled children whose age are lower and higher than the prescribed age by levels of education for 2004-05 and 2011-12 are shown in table 5. It is noted that out of 574 and 459 children in 2004-05 and 2011-12 for primary schooling 26.7 and 41.8 percent respectively were older than the prescribed eligible age 5-10 years. Likewise out of 262 and 271 children enrolled for upper primary schooling in 2004-05 and 2011-12 the proportions of children who were above the prescribed eligible age 11-13 years are 37.8 and 49.8 percent respectively. Only 2.3 and 0.4 percent of enrolled children in 2004-05 and 2011-12 were below the age of 11 years. Further out of 122 and 142 children enrolled for secondary schooling in 2004-05 and 2011-12 large proportions of children 50.8 and 43 percent are in the prescribed eligible age 14-15 years while only 8.2 and 3.5 percent respectively are below the age of 14 years and 41 and 53.5 percent respectively are older than 15 years. As regards 17 and 26 children enrolled for higher secondary in 2004-05 and 2011-12 majority of the children, 88.2 and 96.2 percent are in the prescribed eligible age 16-17 years while the fractions are below 16 years. It is evident that the low average years of schooling of children in northeast India the consequence of large proportion of enrolled children for each level of schooling are older than the prescribed eligible age for the corresponding level of education.

Table 5: Percent of enrolled children younger and older than the prescribed age by levels of education in 2004-05 and 2011-12

		2004-05		2011-12	
	Age	Percent	N	Percent	N
Primary school (5- 10 years)	5 - 10	73.3	574	58.2	459
	> 10	26.7		41.8	
Upper primary school (11-13 years)	< 11	2.3		0.4	
	11 - 13	59.9	262	49.8	271
	>13	37.8		49.8	
Secondary school (14-15 years)	< 14	8.2		3.5	
	14 -15	50.8	122	43.0	142
	> 15	41.0		53.5	
Higher secondary school (16 - 17 years)	< 16	11.8	17	3.9	26
	16 - 17	88.2		96.2	

The modeling strategy is to fit three versions of fixed effect model to assess changes in the magnitude, direction and significance of factors in its contribution in the change in educational level of years of schooling of children in northeast India. Model I considers only child characteristics, age, sex and type of school attended. Household's background-residence, MPCE quintile, number of school going children in the household, social group of household head, parental education and family type are assess in Model II. In Model III child characteristics, household background and parental education are integrated. Table 6 shows the estimates of effect of change in demographic and socio- economic factors on change in years of schooling of children. From the column under Model-I it is noted that among the child characteristics as expected change in years of schooling of children concomitantly increases with their age when sex and type of school attended are adjusted and it is statistically significant at $P<0.01$. Effect of type of school attended has no significant effect on years of schooling of children when age and sex of child are adjusted. Controlling for age and type of school attended, female children have advantage over their male counterpart in education outcome in terms of years of schooling and is significant at $P<0.01$.

Table 6: Estimates of effect of demographic and socio –economic factors on average year of schooling among children for 2004-05 and 2011-12

Background Characteristics	Model - I	Model - II	Model - III
Age child (in years)			
5 - 10 [R]			
11-13	0.700***		0.688***
14 - 15	1.450***		1.417***
16 - 17	2.027***		2.071***
School Type			
Public [R]			
Private	0.009		-0.050
Sex			
Male [R]			
Female	0.052**		0.046*
Residence			
Rural [R]			
Urban		0.203***	0.171***
MPCE quintile			
First [R]			
Second		0.219***	0.054
Third		0.211***	-0.008
Fourth		0.320***	0.035
Fifth		0.285***	-0.008
Number of children			
One[R]			
Two		0.086	-0.016
More than two		0.092	-0.002
Caste			
OBC [R]			
SC		-0.064	-0.092
ST		0.024	-0.038
Others		-0.033	-0.031
Family type			
Joint [R]			
Nuclear		0.415***	0.180**
Father Education			
None [R]			
Primary school		0.674	0.003
Lower secondary		0.601	0.02
Higher secondary		0.283	0.047
Mother Education			
Illiterate [R]			
Literate		0.051	0.122***
Constant	0.738***	0.725***	0.471***
Sigma_u	0.262	0.447	0.225
Sigma_e	0.556	0.880	0.542
rho	0.181	0.206	0.147
R-square			
Within	0.615	0.049	0.64
Between	0.884	0.367	0.882
Overall	0.616	0.055	0.643

Note: ***P<0.01, ** P <0.05,*P<0.10

The estimated effects of household background and parental educational status are shown in the column under Model II. Change in years of schooling of urban children are higher than that of rural children when other household background are controlled and the differential in years of schooling by sex of children is significant at $P<0.01$. Change in average years of schooling of children increases with increase in economic well-being of household from first to fifth MPCE quintile when other factors are adjusted and is significant at $P<0.01$. Number of children of school going age children in the household has no significant effect on years of schooling of children. When it comes to assessment of social group differential in educational outcome of children when other factors are controlled it is found that average years of schooling of children is invariant of social group background of children as the effect of social group on average years of schooling do not suggest existence of significant effects. Children from nuclear family comprising of parents and other siblings out perform in terms of years of schooling over children from extended joint family when other factors are adjusted and the difference is significant at $P<0.01$. After adjustment of other household background parental educational status do not show any significant effect on child educational attainment.

Child characteristics, household background and parental educational status are integrated and their effects on years of education of children are shown in the column of Model III. The effects of age and sex of children in child characteristics, urban residence, social groups and family type on years of schooling of children remains largely unchanged from Model in terms of magnitude, direction and level of significance when other factors are adjusted. However the significance of economic status of household as measured by MPCE dwindles out and the significance of mother literacy status emerges when other child

characteristics and household background are controlled. It is found that children of literate mothers have higher years of schooling than that of non-literate mothers and the differential is significant at P<0.01. The estimated intra-class correlation coefficient of years of schooling of children 5-17 years in northeast India is 14.7 percent which is modestly high. Child characteristics, household background and parental background considered in this study explained 88.2 and 64 percent of between and within years of schooling variation.

Table 7: Malnutrition among children under five years by selected background in 2004-05 and 2011-12

	Underweight(2004-05)			Underweight(2011-12)		
	Severe	**Moderate**	**Normal**	**Severe**	**Moderate**	**Normal**
Residence						
Rural	14.0	23.3	62.8	4.1	15.1	80.8
Urban	0.0	16.2	83.8	5.0	15.0	80.0
Sex						
Male	10.5	22.8	66.7	6.7	16.7	76.7
Female	9.1	19.7	71.2	1.9	13.2	84.9
Age of child (in month)						
0	0.0	0.0	100.0	0.0	0.0	100.0
12	0.0	20.0	80.0	0.0	11.8	88.2
24	21.4	7.1	71.4	8.3	8.3	83.3
36	13.9	19.4	66.7	8.3	20.8	70.8
48	5.3	34.2	60.5	4.6	18.2	77.3
60	8.7	13.0	78.3	0.0	17.4	82.6
MPCE						
First	12.5	15.6	71.9	11.8	29.4	58.8
Second	15.4	20.5	64.1	7.1	3.6	89.3
Third	5.6	38.9	55.6	0.0	13.6	86.4
Fourth	5.6	27.8	66.7	4.4	17.4	78.3
Fifth	0.0	6.3	93.8	0.0	17.4	82.6
Family Type						
Joint	8.7	26.1	65.2	3.4	13.6	83.1
Nuclear	10.0	20.0	70.0	5.6	16.7	77.8
Number of child						
Two	11.8	19.1	69.1	8.6	11.4	80.0
More than three	7.3	23.6	69.1	2.6	16.7	80.8
Caste						
OBC	9.1	9.1	81.8	0.0	10.0	90.0
SC	15.4	15.4	69.2	17.7	5.9	76.5

ST	5.7	28.6	65.7	0.0	7.1	92.9
Other	11.9	26.2	61.9	3.5	22.4	74.1
Father Education						
Non	14.3	14.3	71.4	0.0	14.3	85.7
Primary	11.1	33.3	55.6	14.3	0.0	85.7
Upper	0.0	40.0	60.0	0.0	50.0	50.0
Secondary	12.5	12.5	75.0	0.0	0.0	100.0
Higher	9.6	20.2	70.2	4.8	15.7	79.5
Mother Education						
Non-Literate	12.5	20.8	66.7	16.7	0.0	83.3
Literate	9.1	21.2	69.7	2.1	17.9	80.0
Northeast India	9.8	21.1	69.1	4.4	15.0	80.5
N		123			113	

Table 8: Estimates of effects of background characteristics on child malnutrition in 2005-05 and 2011-12

	Underweight 2004-05		**Underweight 2011-12**	
	Coef.	P>|t|	Coef.	P>|t|
Residence				
Rural ®				
Urban	0.06	0.865	-0.38	0.296
Sex				
Male ®				
Female	0.67	0.028	-0.32	0.298
Age of child (in month)				
0 ®				
12	-3.25	0.009	-1.46	0.135
24	-2.91	0.017	-2.50	0.010
36	-3.28	0.005	-1.92	0.047
48	-3.43	0.003	-2.33	0.020
60	-3.85	0.001	-2.36	0.017
MPCE				
First ®				
Second	-0.37	0.348	1.30	0.014
Third	-0.18	0.715	1.02	0.056
Fourth	0.03	0.954	0.57	0.303
Fifth	1.12	0.045	0.58	0.326
Family Type				
Joint ®				
Nuclear	0.63	0.102	-0.42	0.231

Number of child				
Two ®				
More than three	-0.18	0.565	0.14	0.678
Caste				
OBC ®				
SC	0.52	0.370	-1.26	0.059
ST	-0.01	0.986	-0.28	0.650
Other	-0.22	0.605	-0.65	0.268
Father Education				
Non ®				
Primary	0.06	0.945	-0.51	0.566
Upper	0.40	0.679	-0.66	0.459
Secondary	1.80	0.040	0.32	0.706
Higher	0.41	0.530	-0.27	0.684
Mother Education				
Non-Literate ®				
Literate	-0.01	0.968	0.39	0.368
Constant	1.17	0.433	1.53	0.205

Summary and Conclusion

One of the major concerned of states in Northeast India is the human resource development of next generation of the region characterized by underdevelopment, lack of infrastructure including educational facility and hilly terrain. Comprehensive assessment of factors supporting educational enhancement of children of the region shall be vital for regional level interventions to moderate and ensure proper education of next generation. Keeping this in view using panel data from two recent rounds 2004-05 and 2011-12 of India Human Development Survey for children in 5-17 years from northeast India in this study an attempt is made to assess child characteristics, household background and parental education on years of schooling of children.

On the whole school enrolment rate in northeast India is impressive and comparable to other developed states in the country. Three-fourth of children is enrolled in public schools but over time patronization of private schools is increasing. There is also considerable

improvement in enrolment rate during 2004-2012. What is more socially appealing of the region is that enrolment rate among the girls is higher than that among the boys and enrolment of children is invariant of number of school going children in the household. However there exit differential in enrolment by place of residence, household economic status, parental education, family type, and social groups. Rural children, children from economically weaker households, none-literate parents, joint family and other backward castes have lower enrolment rate as compared to their other counterparts. The other significant differential is that more children from socio-economically and residence advantageous groups are enrolled for secondary and higher secondary education than among the disadvantage groups.

Assessment of years of schooling of children unearths that children from northeast India have low average years of schooling which is contrary to high enrolment rate in the region suggesting the need for assessment beyond enrolment rate for mitigation of educational enhancement of children. One of areas of concerned in enhancement of years of schooling of children despite high enrollment rate for each level of education is the fact that large number of children are over age in comparison to the prescribed eligible age for each level of education. This study reaffirms the significance of literacy of mother, accessibility to educational facilities proxy by urban residence and nuclear family structure in enhancement of educational attainment of children in the case of northeast India. Notwithstanding the findings elsewhere the economic well-being of household is found not to be significant factor of educational outcome of children in the region once the mother literacy is adjusted. One of the most encouraging findings of the study is that unlike in other parts of the country girls have significantly higher years of schooling than the boys.

Despite the fact that northeast India is the abode of many indigenous tribes and castes in terms of educational attainment of their children is behind those of other backward castes. The study suggests that northeast India has still a long way to go to ensured 'Right of Children to Free and Compulsory Education (RTE) Act, 2009' which entitles every child of the age of six to fourteen years with the right to free and compulsory education in a neighbourhood school till completion of elementary education. A lot more also need to be done in the context of northeast India to translate into reality the provisions to promote, with special care, the education and economic interests of the weaker sections of the people, and, in particular of the Scheduled Castes (ST) and Scheduled Tribes (SC), and shall protect them from social injustice and all forms of social exploitation by the states under Article 46 of the Indian Constitution. An important conclusion which can be drawn from this study is that for enhancement of educational attainment of children in region such as the northeast India supply side needs to be further supported by sensitization of community and household the need for education of children. Adult education program at community level can also be promoted to educate women as it pays dividend in enhancing children education.

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