Chronic Absenteeism and its Impact on the Learning Outcomes of Primary Grade Students in India

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Abstract

This paper addresses one of the most critical yet overlooked problems of excessive absence of students in primary grades in India. Considering the intuitive link between students' attendance and achievements, this paper empirically investigates the incidence and causes of chronic absenteeism while examining the variations in the attainment of foundational skills of primary students. Using data from the India Human Development Survey, round II, the authors find a continuous decline in the attainment of foundational skills among students, as the absenteeism rate increases from 'normal' to 'chronic', clearly indicating that attendance works! Further, the logistic regression model shows that poor health conditions of a child, larger school distance, extra school working hours, teaching factors, and harsh punishments are among the major contributing factors leading to chronic absence among students. Early attention and strict policy interventions are required due to their direct implications on the cognitive growth of young minds, and quality and productivity of the overall school education.

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1. INTRODUCTION

Most developing nations around the world face severe issues of higher student absenteeism from schools. The UNICEF global database (2021a) finds that globally, nearly 90 per cent of children attended primary school in 2021, of which 82 per cent were able to complete the schooling. The region-wise primary school attendance figures vary substantially from 69 per cent in West and Central Africa to 88 per cent in South Asia to 95 per cent in Latin America, Eastern Europe, Central and East Asia, and the Pacific regions. Within the socioeconomic classifications, while 92 per cent of the children from urban areas and 94 per cent from the top wealth quintile attend primary education globally, the corresponding figures are 83 per cent in rural areas and 74 per cent in the bottom wealth quintile. Although tremendous progress has been made to reduce the number of out-of-school children of primary education age by 35 per cent from 2000 to 2020, yet since the last ten years, that is, 2007 onwards, the proportion of out-of-school children has remained stagnant. As many as 64 million primary school-age children globally were still out of school in 2020.

While, the latest UDISE+ data show that there has been an increase of 1.94 million in the total enrolment from Class I to XII in 2021-2022, going up from 25.43 million in 2012-2013, when disaggregated by levels, a decline in primary level enrolments is reported, with a relatively high rate of decline observed among the younger age group (7–10 years). The data further shows that while 19 per cent of the students who entered Class 1 in 2014-2015 could not reach Class 8 in 2021-2022, about 3.5 per cent of the children aged 6-13 years were not enrolled. The latest statistics by the Ministry of Education revealed that the dropout rate of young children attending Classes 1 to 8 has almost doubled in a year, implying that more young children left school mid-way. The latest ASER report (2021-2022) also shows that as against the enrolment rate of 98 per cent at primary and upper primary levels for children aged 6-14 years in India, the attendance patterns have remained stagnant at close to 72 per cent, varying from 50-60 per cent in States like Bihar, Madhya Pradesh, and West Bengal, to 86-90 per cent in States like Tamil Nadu, Karnataka, and Maharashtra, among others. This situation signifies that higher enrolment does not necessarily get translated into higher attendance. In this context, Ahmed and Mihiretie (2015) caution that automatic promotion helps in keeping students in schools but may have negative effects on students' attendance, learning, and commitment, as found in Ethiopia. Clearly, therefore, efforts should focus not only on attaining the status of universal school education but also towards improving the efficiency of the entire education system, where regular school attendance can play a major role. The USAID Report (2015) on the School Dropout Prevention Pilot (SDPP) programme,[1] run in Bihar during the period 2010-2015 clearly stated that chronic absenteeism is a major contributor to dropouts. The report found that 55 per cent of the

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[1] The School Dropout Prevention Pilot (SDPP) Programme, a five-year multi-country programme funded by the U.S. Agency for International Development, aims at mitigating the drop-outs of students from primary and secondary school.

students who had dropped out missed more than 15 consecutive days of school during the academic year, while 61 per cent of the dropouts missed 3 or more days per month.

The issue of student absenteeism, in fact, continues to be a challenge in many countries. Recently available survey data from eight African countries show that student absenteeism rates range from 5 per cent in Morocco to 56 per cent in Mozambique (Evans &Acosta, 2021), whereas the corresponding figure is almost 20 per cent in the Busia district of Kenya (Evans & Ngatia, 2021). In rural India, the ASER Centre (2019) identified the student absenteeism rate at 28 per cent across all States, with Bihar reporting the highest rate of absenteeism, at 43 per cent. Another research study investigating students' attendance in Delhi's government schools in 2019-2020 finds that, on average, 35 per cent of the students are absent daily, which translates into over half a million students missing school on any given day (Kundu, 2021). The existing educational policies in India have been quite successful in enhancing enrolment at the school level but have remained ineffective in addressing the concern of lower school attendance. The reason for this is that most of the policy measures fail to recognise that mere enrolment will not help improve the foundational skills of students, but regular school attendance can certainly make a difference.

Studies have shown that learning outcomes are related to the amount of time students engage in learning tasks at school (Helen, 2007). When students are absent from the classes, they miss valuable information, interactive lectures, and illustrations (Williams, 2000). Some studies support the fact that regular students have higher grades than non-regular students, particularly for children belonging to families of a lower socio-economic status (Epstein & Sheldon, 2002; Ready, 2010). Fleming and Zafirau (1982) investigated the relationship between school attendance and failure rates, and found that in over three-fourths of the cases, the failure rates were explained by lower student attendance. Another study shows that class participation, students' coordination with teachers/peers, and their grades, were severely affected by absenteeism (Khalid, 2017). The higher rate of absenteeism can not only affect the self-esteem of students and their future job prospects (Boloz and Lincoln, 1983), but can also lead to dropouts from school (DeKalb, 1999), and can even cause a negative spillover for those who attend school regularly (Rothman, 2001). While normal absenteeism from school might not pose much of a problem, chronic absenteeism can certainly lead to serious consequences, and is, therefore, a crucial area of research. Despite the seriousness of the issue, ironically, the data on students' chronic absenteeism from school is neither routinely measured nor reported anywhere. Even schools overlook this situation and track attendance only as 'average daily attendance' in their registers, thereby failing to detect the problem of chronic absence in schools (Bruner & Chang, 2011). Therefore, the first step in this direction would be to understand the underlying factors leading to excessive absence of students from schools.

The literature gives ample evidence on factors contributing to excessive student absenteeism in school. While a few studies correlate the excessive absence of students with four broad factors—family, economic, student, and school (U.S. Department of Education, 2002; Ezenne, 2010), others argue that particularly for children of primary school age, the 'student' factor among the four factors is not very significant (Baker et al., 2001). Wright (1978) observed a significant difference in school attendance associated with the school location, types of courses offered, teaching staff, and family attention to

child, society, individual circumstances, and academic surroundings and materials. One study even claims that 'school size' is be an important reason behind higher absence (Schagen et al., 2004). In addition, longer distance to school contributes to increasing absenteeism at the primary school level due to the fatigue and stress associated with the long journeys (UNESCO-UNICEF, 2014; Justinian et al., 2002; Adeboyeje et al., 2003). A Kenya-based study by UNICEF (2007) confirms that even after primary education was made free, an estimated 1.7 million children were still not attending school due to poverty, lack of school uniforms, burden of domestic work, and longer school distance. While a few investigations found that student mobility and socioeconomic status influenced student attendance (Rothman, 2001; Applegate, 2003; Davidson, 2000), others found childhood illnesses or parental educational neglect as factors responsible for excessive absenteeism at the primary level (Amor et al., 2020; Kozinetz, 1995). The reasons causing school absenteeism thus vary considerably across regions and education levels. Some studies have even noted seasonal variation in rates of absenteeism. For example, in Afghanistan, the student absence rate is usually higher in the summer in rural areas because students often miss schools to help their parents in harvesting (Ahmadi, 2021).

Excessive or frequent absence from school can weaken the overall education system, particularly at the primary stages of education, which is the foundational stage for young minds, and therefore has the potential to adversely affect students' performance at the subsequent stages. Daraganova et.al. (2014) state that high levels of absence in the early primary school years became more influential over time, implying that the absenteeism process is increasingly self-sustaining, and once commenced, is very difficult to address at the later ages. Given the intuitive link between school attendance, student achievements, and future employment potential, it becomes more essential to address the issue of excessive student absenteeism from school, particularly if it is 'chronic' in nature. Although several studies relate to students' learning outcomes and school absenteeism at different levels, just a handful of studies have identified factors behind chronic absence, particularly in the Indian context. Notwithstanding these studies, there still exist huge gaps in the literature, as there are huge differences among these studies in the way they have defined 'chronic absence', the methodologies adopted for identifying absenteeism, and coverage in terms of geographical region and the level of education. Moreover, none of these studies has looked at the chronic absence situation from later school age years of primary school, that is from classes 3-5, which are crucial in terms of their strong linkages with the middle school levels of education. Therefore, for ensuring better clarity and guiding policy measures, there is a need to track the incidence of chronic absence at the later primary level in schools, how it has changed over the years, whether there is any impact of absence on students' learning skills, and what factors lead to chronic absence situations at such a crucial stage in the education.

With this perspective, this paper aims to address the following four research questions: i) What is the incidence of chronic absenteeism in primary grades in India, and how does it vary across different socio-demographic and household profiles of students? ii) To what extent does a child's poor health suffice as a reason for the child missing school? iii) What are the factors that cause chronic absenteeism among primary grade students and how do these factors vary across rural-urban settings? and iv) Do variations in the number of school days missed cause any significant differentials with regard to the learning outcomes of students? The answers to these questions would not only make a

valuable contribution to the existing literature but would also help policymakers and other stakeholders in understanding the underlying concerns leading to the excessive absence of students in later years of primary education and ways of overcoming this.

The rest of the paper is organised as follows— following the introduction, the concept of chronic absence is discussed in the second section. This is followed by the discussion on the data and methods in third section and, the results in fourth section. The last two sections present the findings and discussion of the empirical model followed by conclusions and policy implications.

2. DEFINING THE CONCEPT OF 'CHRONIC ABSENCE'

Student absenteeism from school can vary from normal school-days missed to excessive absenteeism which is termed 'chronic absenteeism'. While student absenteeism simply means failure to go to school, chronic absenteeism means failure to go to school that can be habitual or intentional (the Merriam-Webster dictionary). Since chronic absenteeism has no precise official definition worldwide, it is generally defined as 10 per cent or more lost school days out of those who were enrolled to attend, for any reason, including excused, unexcused,[2] or suspensions. The concept of chronic absence is different from 'truancy', which measures only unexcused absence. The U.S. Department of Education (2016) identifies 'chronic absenteeism' as missing 15 days of school in a year. In contrast, few local States in the US consider missing 20 per cent or more of school days per year as chronic absenteeism. UNESCO-UIS (2016) defines chronic absenteeism as the absence of a week or more over an academic calendar month (that is, 24 school days), which is equivalent to an absence of almost 25 per cent or more in a month. This kind of situation has been identified as an 'Early Warning Sign (EWS)'[3], which is considered as a risk marker for a child's failure and early dropout.

In this paper, the concept of chronic absenteeism is based on UNESCO's definition, according to it is the absence of a child from primary grade for six days or more in a calendar school month (continuous/non-continuous). This definition is quite in line with the official rules and regulations[4] laid down by the Central Board of Secondary Education (CBSE) in India, which specifies a minimum of 75 per cent attendance for a student to be eligible to appear for the Class X and Class XII board examinations. Further, the Right of Children to Free and Compulsory Education Act (RTE 2009) also mandates at least 80 per cent attendance for children in the age group of 6-14 years.

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[2] While 'excused' absence means absence where written documentation has been submitted to school authorities after the child returns to school, if no such documentation is provided for absence, it falls under the category of unexcused absence (Balfanz & Byrnes, 2012).

[3] According to a study by UNESCO-UIS, if in a particular month, a child was absent for 25 per cent or more of all school days, as estimated by the headcount and school register data, then the child was considered to be at risk of dropping out. This early warning system has been formulated based on RTE guidelines for a dropped-out child.

[4] Rule 13 of the Examination Bye-Laws of the Board.

3. DATA AND METHODS

3.1 Data Sources

The study uses data from the second round of the nationally representative India Human Development Survey (IHDS), 2011-2012, which covered 42,152 households and 2,04,565 individuals from 1,420 villages and 1,042 urban blocks across India. One of the key innovative features of the IHDS-II survey is the separate coverage of school-related qualitative information pertaining to children aged 8-11 years in the surveyed households, who were currently enrolled for regular school education. The purpose of using this data set is that it provides qualitative information on the students' socio-demographic characteristics, household characteristics, school-level information, academic performance, health performance, and perceptions about teachers' attitudes, which was required for fulfilling the objectives of this study. In addition, data on short reading, writing, and arithmetic knowledge was also collected. This paper also entails use of data from IHDS, round I, to indicate the changes in the pattern of absenteeism among primary school-going children over the years. IHDS-I was conducted in 2004-2005, covering 41,554 households at the all-India level (including 26,734 rural and 14,820 urban households) spread across 1,503 villages and 971 urban blocks. In this paper, using the IHDS-I dataset, we have analysed data for a sample of 15,669 students in the age group of 8-11 years, who were currently enrolled in school.

Since the information is available for children aged 8-11 years, it reasonably justifies the behaviour of primary school-going students from the third to the fifth grades. The analysis based on the student age group of 8-11 years is quite in line with the New Education Policy (NEP) 2020 of India, which has recently reconfigured the pedagogical structure of school education to make it more responsive to the developmental needs and interests of learners at different stages of their development. Under the new 5+3+3+4 design, the age range of 8-11 years has been considered as the 'Preparatory Stage', comprising three years of education (grades III-V). Based on these criteria, in this paper, the analytical sample is restricted to 10,105 students, constituting 49 per cent females and 51 per cent males from 20 major States in India. The derived results represent weighted estimates.

3.2 Data Variables

This paper identifies the factors determining excessive school absence and its impacts on the learning outcomes of the students. The term 'absence' here implies the number of days missed from school in a calendar month and not the number of hours that a child does not attend the classes in a day. In order to understand whether the number of schools days missed causes any differences in the learning outcomes of students, the absence rate of the students has been further classified into the following categories: 'no absence'; 'absence of up to 2 days in a month' which is termed in this paper as 'normal absence', 'absence of 3-5 days in a month', and 'absence of 6 days and above in a month'. The last category of 'absence of 6 days and above' in a month is termed as students' 'chronic absence' in this paper. This indicator has also been used as the key test variable for the logistic regression model. For analysis purposes, chronic absence is re-coded as a binary variable, where '1' implies students' absence from school for six days or more in

an academic month and '0' otherwise. The proportion of students falling in the second category of '0' is defined here as 'non-chronic absence' for comparison purposes.

The key test variable has been tested against various explanatory variables, broadly classified into four categories: socio-demographic characteristics, household characteristics, school characteristics, and child-intrinsic characteristics. All the variables were re-coded in binary or categorical form for the analysis.

The socio-demographic characteristics of children include gender (female=1, 0 otherwise), place of residence (rural=1, 0 otherwise), and social class (categorical; scheduled caste=1, scheduled tribe=2, other backward class=3, general=4).

Under household characteristics, the highest education of the adult female members in the family has been analysed (categorical variable) along with the mother's education level. The reason for this is that the highest educational attainment by any other adult female member in the family, apart from the mother, might also influence the child's school-going behaviour, which is an important factor for analysis. For comparison, the highest education of an adult male member in the household has also been considered. The educational attainments have been categorised as 'illiterate', 'primary level', 'middle level', 'secondary and senior secondary level', and 'graduation and above'. The second indicator is that of household income quintiles ranging from the lowest, Q1, to the richest, Q5.
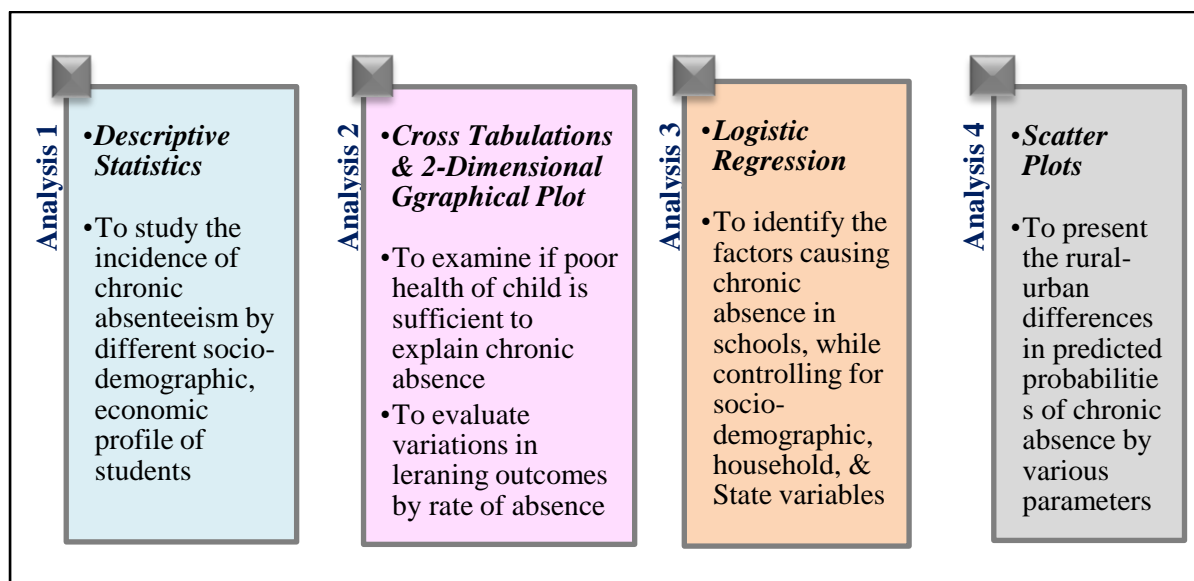
The school characteristics include indicators like school type (government=1, 0 otherwise), distance of the school from the home (up to 1 km, 2-3 km, 3-5 km, and above 5 km), and number of school hours per week (30-36 hours, that is, ideal school hours=1, otherwise=2). The ideal working hours for primary level students have been calculated based on the approximately 6 hours per day for five days in a week as specified by the RTE Act 2009. In addition, the parents' participation in Parent-Teacher Association (PTA) meetings (regularly attending =1, 0 otherwise), and teachers' characteristics such as teacher's gender (female=1, 0 otherwise), teacher's attendance (absence=1, 0 otherwise), and teacher's attitude (unfair and biased=1, 0 fair and unbiased) have been considered under this category.

The last category of child-intrinsic characteristics that can play an important role in understanding absenteeism behaviour is related to a child's physical and mental health. Daraganova et.al. (2014), in their study, found that up to the age of 8-9 years, parents strongly impact child's absence in schools, but after this age, the influence of parents reduces and the child's own factors contribute more. In our paper, this category covers indicators like child's short-term illness (number of days that the child was ill in the last 30 days), academic performance (above average=1, 0 otherwise), whether the child enjoys school (child enjoys=1, 0 otherwise), whether the child is punished in school (punished=1, 0 otherwise), and the level of acquisition of skills (satisfactory skills=1, unsatisfactory skills=2). In this paper, the students with 'satisfactory skills' include those who can read a para or story, can do subtraction or division, and can write either without mistakes or with just one or two mistakes.

3.3 Methods and Techniques

The analysis has been carried out in four stages, as depicted in Figure 1.

Figure 1 Data Analysis Techniques

Analysis 1	Analysis 2	Analysis 3	Analysis 4
•*Descriptive Statistics* •To study the incidence of chronic absenteeism by different socio-demographic, economic profile of students	•*Cross Tabulations & 2-Dimensional Ggraphical Plot* •To examine if poor health of child is sufficient to explain chronic absence •To evaluate variations in leraning outcomes by rate of absence	•*Logistic Regression* •To identify the factors causing chronic absence in schools, while controlling for socio-demographic, household, & State variables	•*Scatter Plots* •To present the rural-urban differences in predicted probabilities of chronic absence by various parameters

Source: Authors' conceptualisation.

The relationship between a child's poor health and the number of school days lost has been understood from the following two perspectives: i) frequency of short-term illness (that is, the number of times a child has suffered in a month), and ii) the pattern of short-term diseases (single or multiple). This will provide a deeper understanding of the extent to which the poor health conditions of the child are responsible for missing school, ranging from normal absence to chronic absence. In addition to this, there could be other factors responsible for causing chronic absence in schools at the primary level of education. To identify these factors, the binary logistic regression model has been applied. The model has been controlled for the socioeconomic and demographic characteristics of students and the State effects. The accuracy of this model has been verified through the Receivers Operating Curves (ROC) technique.

3.4 Data Limitations

The following data limitations restrict the results: i) restriction of the sample coverage in the age group of 8-11 years, and ii) non-coverage of certain factors such as climatic changes, sudden tragedies/events in the family, and the child's involvement in labour activities, among other things, which may influence chronic absence behaviour among primary students.

4. RESULTS

This section first presents the descriptive statistics and the incidence of chronic absenteeism in India. This is followed by identification of the variations in the learning outcomes of students at different stages of the number of school days missed. Further, an attempt has been made to understand the extent to which poor health conditions are associated with the child's absence rate at school.

4.1 Descriptive Statistics

The overall descriptive statistics of students in the age group of 8-11 years studying in the primary grades in 2011-2012 in India are summarised in Table 1. The table shows that on average, a primary grade student in India missed school for about four days in a calendar month, higher than the average number of missed days of three per month, as reported in 2004-2005 (see Table 1). The average number of days that a child fell ill in a month reduced substantially in 2011-2012 to 1.3 days as compared to 6 days in 2004-2005, probably due to the better provision of and access to health facilities. The average school distance that a child travels daily from home has remained slightly higher at 2 km in 2011-2012. 'School proximity' was, in fact, reported as one of the important indicators by parents (32 per cent) in the selection of a school for their wards, followed by 'better education' (28 per cent), in 2011-2012. The parents in rural areas indicate higher preference for school proximity (35 per cent), followed by better education, whereas it is vice versa in urban areas, probably due to the availability of better transport services and a larger number of schools in the latter. Similarly, income quintile-wise, it was found that with an increase in household income status, the preference of households in school selection for their children shifts from 'school proximity' to 'better education quality'.

Table 1 Descriptive Statistics

Indicators	Mean		Std. Dev.	Variance	Skewness	
	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error
No. of days per month child is absent from school	3.98	.001	4.955	24.551	2.581	.000
School distance from home (in km)	1.79	.000	2.518	6.341	6.105	.000
No. of days child fell ill (last 30 days)	1.30	.000	3.153	9.941	3.842	.000
School working hours per week	32.49	.001	8.603	74.006	-1.087	.000

Source: IHDS-II data, 2011-2012 (Authors' computation).

The findings on student absence show that despite the fact that a lesser number of children were enrolled in primary grade in 2004-2005 (131 million, as per the statistics of school education) as compared to 2011-2012 (140 million), the class attendance was much higher in 2004-05, at 49.5 per cent as compared to 28 per cent in 2011-2012, implying that a larger number of students in the age group of 8-11 years were absent (72 per cent) in the later part of the year, that is, had missed school for at least one or more days in a month (see Figure 2). Within the absence categories, except for those who missed school for more than 10 days in a month, in all the other categories, the proportion of absent students was higher in 2011-2012 than 2004-2005. This proportion is the highest for the school absence of 3-5 days in a month, at 30 per cent.

**Figure 2 Percentage of Students Absent from School by the Number of Days**
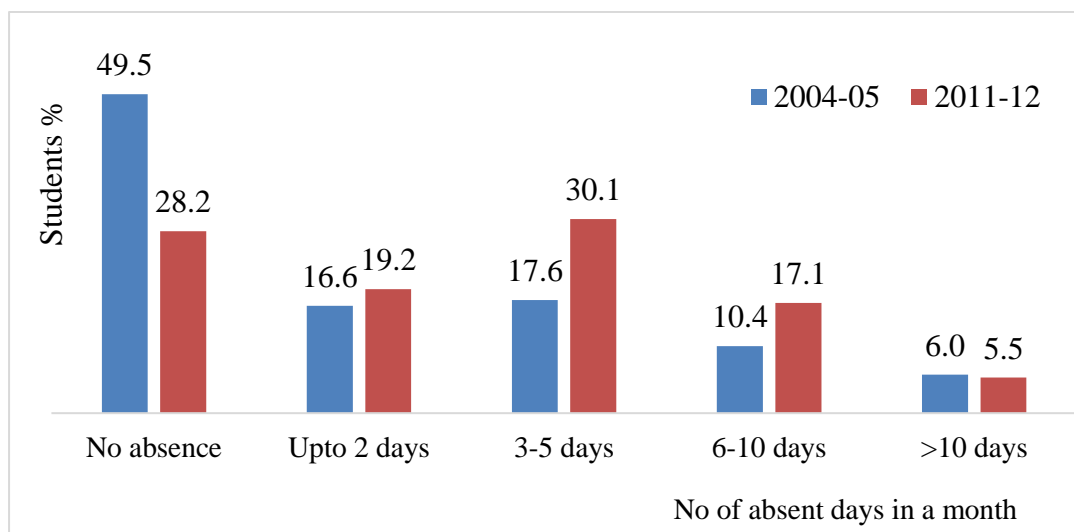
Source: IHDS-I and II data, 2004-2005 and 2011-2012 (Authors' calculations).

Note: Here, "0" indicates no absence from school during the last 30 days from the date of the survey.

4.2 Incidence of Chronic Absence in India

Figure 3 indicates that out of the total number of students enrolled in the age group of 8-11 years at the primary level in India, about 22.6 per cent were chronically absent from schools on the survey date, which was higher than the chronic absence rate of 16.4 per cent recorded in 2004-2005. This increase in absence from school has been mainly due to a rise in the proportion of students who were absent for 6-10 days in the last 30 days (Figure 2). The incidence of chronic absence was higher in rural areas (25.2 per cent) than in urban areas (16.1 per cent). Gender-wise, not much discrepancy was recorded in the incidence of chronic absence between males and females. Students belonging to the Other Backward Classes (OBCs) recorded the highest incidence of chronic absenteeism among all. The yearly comparison shows that between 2004-2005 and 2011-2012, the incidence of chronic absenteeism increased substantially in rural areas, and among females and those belonging to the OBC category.

Figure 3 Incidence of Chronic Absenteeism of Students by Socio-demographic Characteristics
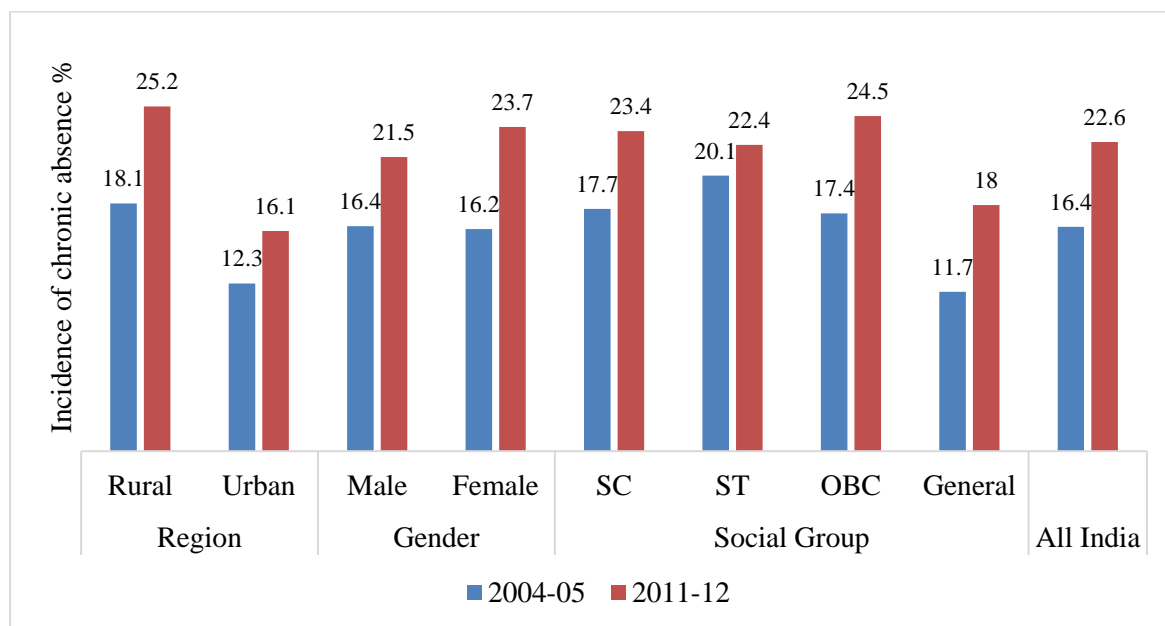
Source: IHDS-I and II data, 2004-2005 and 2011-2012 (Authors' calculations).
Note: SC- Scheduled Caste, ST- Scheduled Tribe, and OBC- Other Backward Classes.

The comparative assessment of the incidence of chronic absence versus non-chronic absence in primary grades within and across the social groups of students is given in Table 2.

Table 2 Percentage Distribution of Students by Type of Absence across and within Social Groups

Social Groups	Classification	Across Social Groups		Within Social Group	
		Non-chronic Absence	Chronic Absence	Non-chronic Absence	Chronic Absence
Gender	Male	52.0	48.9	78.5	21.5
	Female	48.0	51.1	76.3	23.7
Region	Rural	68.9	79.5	74.8	25.2
	Urban	31.1	20.5	83.9	16.1
Social Class	SC	23.3	24.5	76.6	23.4
	ST	7.2	7.1	77.6	22.4
	OBC	44.5	49.6	75.5	24.5
	General	25.0	18.8	82.0	18.0
Adult male highest educational attainment in household	Illiterate	23.8	36.1	69.4	30.6
	Primary	15.9	15.6	77.8	22.2
	Upper primary	15.6	15.5	77.6	22.4
	Secondary	32.5	23.6	82.6	17.4
	Grad & above	12.1	9.3	81.8	18.2
Adult female highest educational attainment in household	Illiterate	38.8	53.6	71.3	28.7
	Primary	16.4	14.9	79.0	21.0
	Upper primary	16.6	13.0	81.5	18.5
	Secondary	21.2	14.7	83.2	16.8
	Grad. & above	7.1	3.9	86.3	13.7
Household income quintiles	Bottom Q1	19.8	29.3	69.8	30.2
	Q2	21.9	25.2	74.9	25.1
	Q3	18.9	20.7	75.8	24.2
	Q4	20.5	14.7	82.7	17.3
	Top Q5	19.0	10.2	86.5	13.5
School type	Government	58.7	69.1	74.5	25.5
	Private	41.3	30.9	82.1	17.9
Teacher's attendance	Presence	66.7	55.2	80.6	19.4
	Absence	33.3	44.8	71.9	28.1
Teacher's gender	Female	47.0	36.4	81.6	18.4
	Male	53.0	63.6	74.1	25.9
Total		100.0	100.0	77.4	22.6

Source: IHDS-II data, 2011-2012 (Authors' computation).

4.2.1 Socio-demographic Characteristics

Nearly 80 per cent of the chronically absent students belonged to rural areas, and the male-female ratio was nearly the same, with the ratio for females being slightly on the higher side (51 per cent). Further, disaggregation by social class reveals that 49.6 per cent of the chronically absent students belonged to the OBC category, followed by the

Scheduled Castes (see Table 2). Similar trends were observed within the social groups as well.

4.2.2 Household Characteristics

Within the income quintiles, a larger proportion of the chronically absent students belonged to the bottom three quintiles as compared to the top two quintiles. The association of education of the adult female members in the family with chronically absent students is found to be higher than the corresponding association of the adult male members. Nearly 54 per cent of the chronically absent students belonged to families where the adult female member in the household was illiterate as compared to 36 per cent of the cases where the adult male in the family were illiterate. Clearly, higher educational attainment among adults in the family has positive effects on the child's school attendance. In a similar context, an Australian study found that family and parenting factors were more important for children in the early primary school years and became less important as they grew older. Hence, policies for encouraging school attendance that target parents may be far more effective in the case of primary school children than for their counterparts in secondary school (Daraganova et. al., 2014).

4.2.3 School Characteristics

A significant difference has been noted in the proportion of female teachers and teachers' presence in the classrooms between the two categories of the students exhibiting chronic versus non-chronic absence. In cases where students were chronically absent from school, the proportion of female teachers was much lower, at 36 per cent, whereas the proportion of teachers absent on the survey date was much higher, at 45 per cent, as compared to corresponding figures of 50 per cent and 33 per cent, respectively, reported in the case of the non-chronically absent students. Further, the proportion of chronically absent students was higher in government schools as compared to private schools.

4.3 Do School Days Missed Cause Learning Losses?

While several scholars have tried to correlate lower learning outcomes among students with their family backgrounds, poor school infrastructure, curriculums, class sizes, teacher quality, attitudes, and child disinterest, a few have even linked them with school absenteeism. Enomoto (1997) finds that students who missed the class on a given date showed higher chances of giving incorrect responses to questions relating to material covered on a missed day than those who were present. Studies conducted in primary schools in Kenya and Mexico also find student absenteeism leading to lower academic test scores (Mejia & Filus, 2018; Miguel &Kremer, 2004). However, hardly any studies have evaluated the variations in learning outcomes due to differences in the number of school days missed. Our paper has attempted to study the differences in learning outcomes of students as the number of school days missed per month goes up. The students' learning outcomes have been examined for three types of skills: reading, writing, and mathematics at different levels of students' absence, as discussed in the section on 'data variables'. .

The results indicate that with an increase in the number of days that the student was absent from school in a month, a decline in the students' abilities to read, write, and

recognise numbers or perform subtraction/divisions is recorded (see Table 3). The first two categories, that is, 'no absence' and 'absence of up to 2 days' do not reflect many variations in the attainment of skills by students, suggesting that a normal absence from school of up to 2 days in a month does not make much difference in the learning outcomes of students. However, the other two categories of the absence of 'up to 3-5 days' and '6 days and above' showed much higher variations in the attainment of all three types of skills, with the latter indicating much lower performances. Only 45 per cent of the chronically absent students in primary grades were able to read paragraphs or stories. The corresponding figures are comparatively higher at 55 per cent and 61 per cent, respectively, for students in the categories of 3-5 days of absence per month and normal absence or no absence. Similarly, more than 80 per cent of the students in the 'normal absence' or 'no absence' categories were able to write correctly either without any mistakes or with just one or two mistakes, as compared to just 66 per cent of chronically absent students, who showed similar results. In the case of math skills, significant differences were recorded across different absenteeism categories in performing division problems, with the lowest skills observed in the case of chronic absence. The lower math skills at lower stages of education have strong impacts on math skills at the later stages. One study finds that lower levels of numeracy are not only associated with higher school absence during the early primary school years, but are also highly correlated with later numeracy skills (Daraganova et.al., 2014).

The disaggregation of learning outcomes by classification of the students' age reveals that though with an increase in age, a larger proportion of students show better learning outcomes across both chronic and non-chronic absence situations, the gap between these two situations is found to be the highest in the age category of 9 and 10 years (that is, in classes 4 and 5), for all three types of skills (Annexure Table 1).

The lower learning outcomes at primary levels can cause poor academic performance among students at later stages of education or even dropouts. It is, therefore, important for schools to implement strict rules and regulations for students class attendance, with penalties imposed on absence, as regular attendance does make a difference. In addition, the teaching methods for young minds should also be re-designed to move from the current rote learning and exam-based structures to more innovative and interactive structures. In this context, a study conducted in rural areas across 21 Indian States found that simple adaptation of WhatsApp and two mobile-based apps (designed specifically to improve teaching techniques and educational resources) resulted in increased teacher and student attendance, as well as improvements in lessons and other planned educational activities (Nedungadi et al., 2018).

Table 3 Variations in Learning Outcomes of Students (per cent) by the Number of Days Absent from School

Skill Type and Learning Stages	Number of days absent from school				Total
	No absence	Up to 2 days	3- 5 days	6 days and above (Chronic absence)	
Reading skills					
Cannot read	5.5	7.6	11.3	17.2	9.6
Can read letters/ words	29.4	30.6	33.3	38.0	32.3
Can read paragraphs/ stories	65.1	61.8	55.4	44.9	58.1
Mathematical skills					
Cannot recognise numbers	9.1	12.0	16.7	23.1	14.4
Can recognise numbers	34.1	34.7	37.4	34.5	35.2
Can perform subtraction	32.6	32.7	29.3	28.2	30.9
Can perform division	24.1	20.7	16.6	14.2	19.5
Writing skills					
Cannot write	16.9	19.5	26.2	33.3	23.0
Can write	83.1	80.5	73.8	66.7	77.0
	100.0	**100.0**	**100.0**	**100.0**	**100.0**

Source: IHDS data, 2011-2012 (Authors' computation).

Further, an attempt has been made to understand how these differences in the learning outcomes of students are distributed across gender, location, and school type. For this, students have been classified based on their abilities to read paragraphs or stories, do subtraction or division, and write either without mistakes or with just one or two mistakes. This is termed as 'satisfactory skills' in this paper. The findings have been presented in Figure 4.

Figure 4 Percentage of Students Having Satisfactory Skills by the Number of Days Absent from School, Demographic and School Characteristics
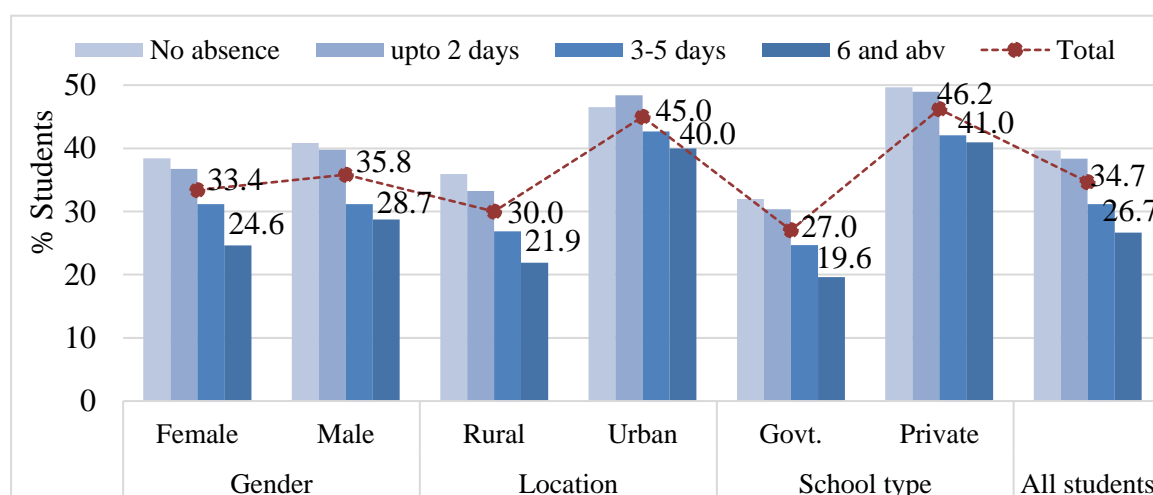
Source: IHDS-II data, 2011-2012 (Authors' calculations).
Notes: The students with satisfactory skills in this paper include those students who can read a paragraph or story, can do subtraction or division, and can write either without mistakes or with just one or two mistakes.

Figure 4 shows that with an increase in the number of school days lost in the last 30 days, the proportion of students possessing 'satisfactory skills' shows a continuous decline across all socio-demographic classifications. While not many differences are recorded at a different stage of absence in the possession of satisfactory skills by students across gender, in the other two classifications of location (that is, rural versus urban) and school type (that is, government versus private), significant differences are noted with rural areas and government schools being in the most vulnerable positions. Among all stages of absence, the proportion of students with 'satisfactory skills' was the lowest in the case of chronic absence situations, followed by those in the bracket of '3-5 days of absence' in a month. In contrast, the differences in the possession of satisfactory skills among students were minimal between the remaining two categories of 'no absence' and 'absence of up to 2 days' in a month. These results suggest that normal absence by students at the preparatory stages of education, that is, the primary levels, does not cause learning losses, whereas absence beyond two days in a month can cause a difference, thereby emphasising the importance of regular presence in the classrooms.

Further analysis of three individual tasks considered for assessing 'satisfactory skills' in this paper shows that among all the three categories of skills, the ability to do subtraction or division is the worst-performing indicator among chronically absent students across gender and school types, and in rural areas. In the case of urban areas, the ability to read paragraphs/stories is a major problem among students aged 8-11 years, who were chronically absent (Annexure Table 2).

4.4 Is a Child's Poor Health Sufficient to Explain School Absence?

Practising good hygiene not only allows children to stay healthy and prevent the spread of infectious disease, but also enables them to miss fewer days of school (UNICEF, 2021b). According to this UNICEF report, every child has the right to quality education, including access to drinking Water, Sanitation, and Hygiene (WASH) services. Despite the inclusion of WASH facilities in the Sustainable Development Goals (SDG targets 4.a, 6.1, 6.2), nearly half of all the schools do not have basic hygiene services, with one in three primary schools lacking basic sanitation and water in 2020-2021 (UNICEF, 2021b). The lack of these facilities at schools puts children at a greater risk of infection and diarrhoeal diseases, thus leading to the possibility of their missing more school days.

In this paper, an attempt has been made to find out whether: i) there exists any relationship between short-term diseases suffered by the child and the number of school days lost and ii) poor health conditions are sufficient to explain chronic absenteeism behaviour. The findings show a positive association between the number of school days lost and the child's short-term diseases in the last 30 days (see Figure 5). Therefore, with an increase in the number of short-term diseases that a child suffers in a month, the number of school days lost also increases. The proportion of chronically absent students shows a steep rise from 44 per cent to 71 per cent if a child suffered the disease more than three times a month. Furthermore, the findings show that in cases where a child is found to have suffered from multiple short-term diseases, for instance, cold with shortness of breath and fever, or with diarrhoea, among other symptoms, the chances of the child's being chronically absent from school increase, as compared to a situation wherein the child is suffering from only a single disease.

Figure 5 Percentage of Students by the Number of Diseases Suffered and Days Lost in the Last 30 Days
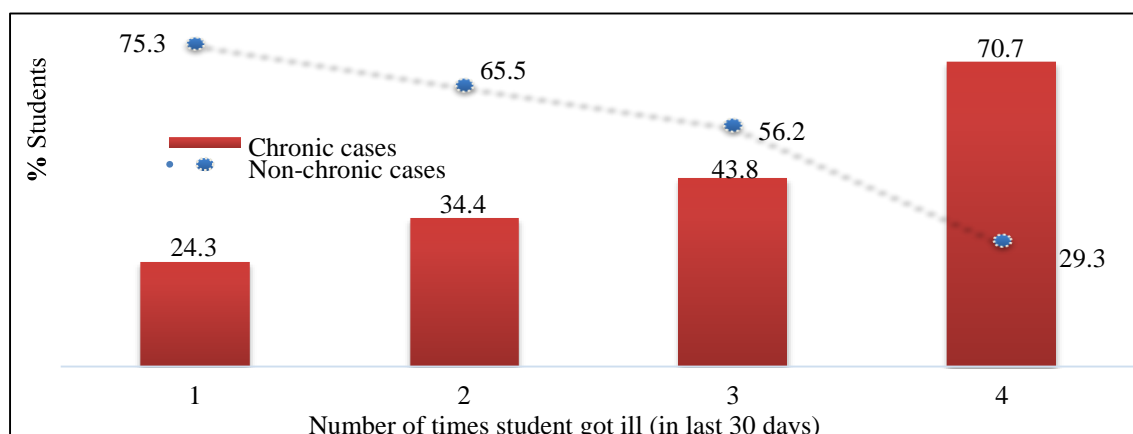
Source: IHDS-II data, 2011-12 (Authors' calculations).
Note: Chronic cases include students recording an absence of 6 days and above per month whereas non-chronic cases include students recording an absence of up to 5 days per month, including no absence cases.

To some extent, schools can surely play an important role in ensuring good health conditions of the children. The availability of WASH facilities can help in providing hygienic environments in schools and controlling the occurrence of short-term diseases like diarrhoea among students. Interestingly, though a positive association is observed between the poor health conditions of a primary grade student and absenteeism from school, this association seems to be far more vital in the case of non-chronic cases (absence of up to five days) rather than chronic cases of absenteeism. These findings indicate that in addition to a child's poor health conditions, there may be other contributory factors for chronic absence among primary students in India.

5. EMPIRICAL FINDINGS AND DISCUSSION
5.1 Factors Influencing Chronic Absence

The findings in the previous section indicate that among various levels of school absence, the chronic absence situation is most critical, as it causes higher learning losses among students. It also shows that merely the poor health conditions of the child are not sufficient to explain the causes of chronic absence, and other factors too contribute to the absenteeism. In order to investigate the factors leading to chronic absenteeism among primary grade students in India, a binary logistic regression model was applied. The test variable is 'chronic absence', a binary-coded variable with values; 1 for chronic absence and 0- otherwise, tested against the various explanatory variables (discussed in the section on 'data variables') under the following four broad categories: socio-demographic, household, school, and child-intrinsic characteristics. The empirical results have been reported in Annexure Table A1. The regression is statistically significant, as the P values associated with the chi-square test (for model appropriateness) and Wald

statistic[5] (for testing the significance of individual independent variables) were <0.05. The model correctly identified 78.8 per cent of the students with the incidence of chronic absence at the all-India level, respectively. The Receiver Operating Characteristic (ROC) curve has been estimated to evaluate the accuracy of the logistic regression model. Our estimates show that the 'p' values are < 0.01, and the area under ROC lies at 75.4 per cent between the confidence intervals of 74.2–76.6 per cent, indicating that the model is fair enough to predict the factors for chronic absence. The findings of the model are discussed in detail below.

5.1.1 Socio-demographic Characteristics

The results indicate that the students studying in rural areas were almost 7 per cent more likely to be chronically absent from schools as compared to those studying in urban areas. This could be due to numerous factors existing in rural areas, such as longer school distances, lack of transport facilities, poor road connectivity, and lack of Water, Sanitation, and Hygiene (WASH) facilities in the school. Another reason could be the involvement of students in agricultural activities, especially during the farming season (Francis et al., 1998). Gender-wise, females were 13 per cent more likely to be chronically absent from school than males. Students belonging to all the social classes show higher probabilities of chronic absence as compared to General Category students, but ST and OBC students show higher chances of chronic absence by 37.5 per cent and 15.4 per cent, respectively (see Annexure Table A2).

5.1.2 Household Characteristics

The findings show that the chances of being chronically absent from primary school is negatively associated with the highest educational attainment of adult male and female members in the family, when compared with the households where adult members were illiterate. This association is found to be stronger in the case of higher educational attainment of adult male members in the family vis-à-vis adult female members (see Annexure Table A3). Further, the family's financial status also plays a vital role in influencing students' attendance behaviour. Our results show a positive association between household income quintiles and a child's chronic absence, that is, with an increase in the income status of the household, the probability of the child being chronically absent from school increases but at a declining rate. As compared to the richest income quintile (Q5), the students belonging to Q1 and Q3 households show higher chances of chronic absence by 60.6 per cent and 40 per cent, respectively. One reason behind the higher probability of chronic absence in the lowest income quintile could be the child's involvement in labour activities. This is because impoverished households perceive lower returns to education and high returns to child labour (Chamarbagwala, 2008).

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[5] In a binary logistic regression model, while the chi-square test measures the appropriateness of the model, the Wald statistic measures the significance of individual independent variables.

5.1.3 School-related Characteristics

For students studying in government schools, there is a 35.4 per cent higher probability of chronic absence than those in private schools. The reasons could be better quality education, better infrastructure, teaching and learning environment, school transport, and better access to WASH facilities provided by private schools as compared to government schools. Kumar and Choudhury (2021) find that the gap in learning outcomes between private and government schools can be reduced by improving students' attendance rates. Teachers also play an important role in making the learning environment effective in the classroom, and their qualifications and teaching abilities thus have a substantial impact on the students' learning outcomes. The results indicate that the teachers' absence from the classroom increases the probability of chronic absenteeism by 30.7 per cent as compared to cases where teachers were present. In addition, the presence of a 'female' teacher leads to a lower probability by 26 per cent of the students' chronic absence vis-à-vis the presence of a male teacher. This is because female teachers arguably get along better with children than male teachers, especially in the case of younger students.

The UNESCO-UIS statistics (2014) show that the percentage share of female teachers in primary education in India was just 49.5 per cent, which is much lower than the corresponding figures for other nations, such as the U.K. (87 per cent), the Russian Federation (98.8 per cent), and Brazil (89.6 per cent), thereby indicating the need for recruiting more female teachers in India. We further found that an unfair and biased attitude exhibited by teachers toward students shows a positive association with chronic absence (11.3 per cent), as compared to a fair and unbiased attitude among teachers. In a similar context, one study concluded that absent, biased, and overworked teachers negatively impact the school environment, attendance, and learning outcomes (Singh and Sarkar, 2015). It was not just the teaching factors, but parents' regular interactions with teachers about the child's performance (during PTA meetings) also showed a negative association with the chronic absence of the child, thereby highlighting the importance of conducting such interactions on a monthly basis in schools.

Further, the model predicts that schools which follow ideal working hours of up to 30-36 hours per week for primary classes, reduce the chances of children being chronically absent from school by almost 24.5 per cent. In contrast, longer school hours may cause fatigue among students, thereby affecting their health conditions. Although a distance of up to 3 km between the school and the child's residence marginally increases the chances of chronic absence, a distance beyond 3 km increases the probability of chronic absence at an alarming rate (distance of 3-5 km increases the chances of absence by 49 per cent, while a distance of above 5 km increases it by as much as 84 per cent), as compared to the corresponding findings for a school distance of up to 1 km (see Annexure Table A3). The reason for this could be the ill-effects of the long journey on a child's health, which may trigger stress, fatigue, or disinterest, particularly in the case of younger children.

The graphical plotting of predictive probabilities of chronic absence by school distance and rural-urban locations shows that across different classifications of school distance, the probability of chronic absence is higher in rural than in urban areas across gender and school type (see Figures 6A and 6B). Lack of public transport facilities and poor road connectivity in rural areas could be one of the reasons for this outcome.

The gender-wise graph shows that with an increase in the school distance, the probability of girls being chronically absent is higher than that for boys in both rural and urban areas (see Figure 6A). Further, these predicted probabilities for the chronic absence of girls are comparatively higher in rural than in urban areas, implying that females in rural families are particularly vulnerable to the adversities of longer school distances.

**Figure 6A Location-wise Predictive Probabilities of Chronic Absenteeism across Region by School Distance and Gender**
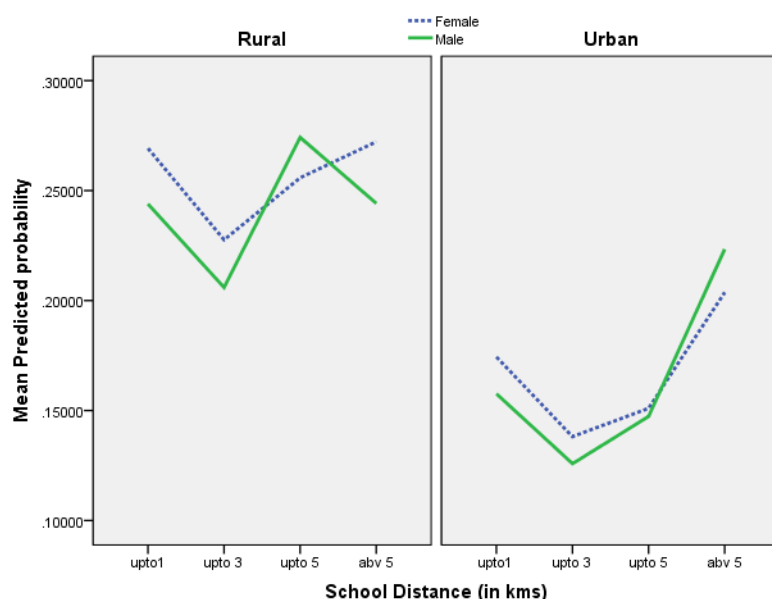
Source: IHDS-II data, 2011-12 (Authors' calculations).

When observed in connection with the school type, students studying in rural areas show higher probabilities of chronic absence than those in urban areas in both government and private schools (see Figure 6B). This figure suggests that with an increase in school distance, a) the likelihood of the child's chronic absence also increases in both types of schools across regions; b) the chances of such absence are higher in rural areas for both types of schools than in urban areas (much higher in government schools); and c) the gap in likelihood of chronic absence widens between government and private schools in rural areas, whereas in urban areas, it is more divergent initially and convergent later, as the distance increases beyond 5 kms. In the case of government schools, the lower probability of chronic absence in urban than in rural areas could be due to the impact of the government's largest run Mid-Day Meal Programme, which seems to be more effective in retaining students in classrooms in urban areas as compared to rural areas. Singh and Gupta (2015) also arrived at similar results in one of their studies. Sufficient evidence is available from the extant literature to indicate that mid-day meals have a positive association with the enrolment and attendance of students in schools (Afridi, 2011; Singh & Gupta, 2015; Dreze & Kingdon, 2001; Dreze & Goyal, 2003; Schagen et al., 2004). In case of private schools, however, the provision of better transport facilities could be one of the reasons for the positive slope in school attendance.

In contrast in rural areas, the transport facilities are not in line with those available in urban areas, as a result of which the slope is much steeper in the case of private schools located at distances of up to 5 kms, after which a reverse slope is observed. One explanation for the reverse slope could be the provision of hostel facilities in private schools in rural areas due to the long distance and travel time, difficulties in commuting, or location of schools in different districts.

Figure 6B Location-wise Predictive Probabilities of Chronic Absenteeism across Region by School Distance and School Type
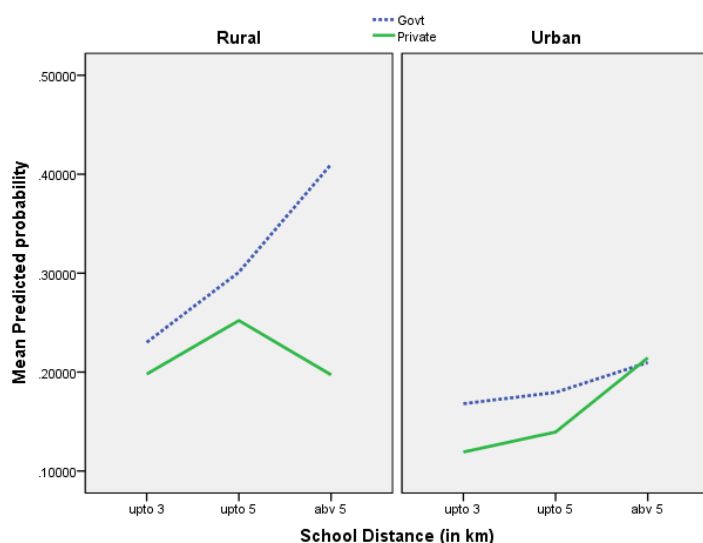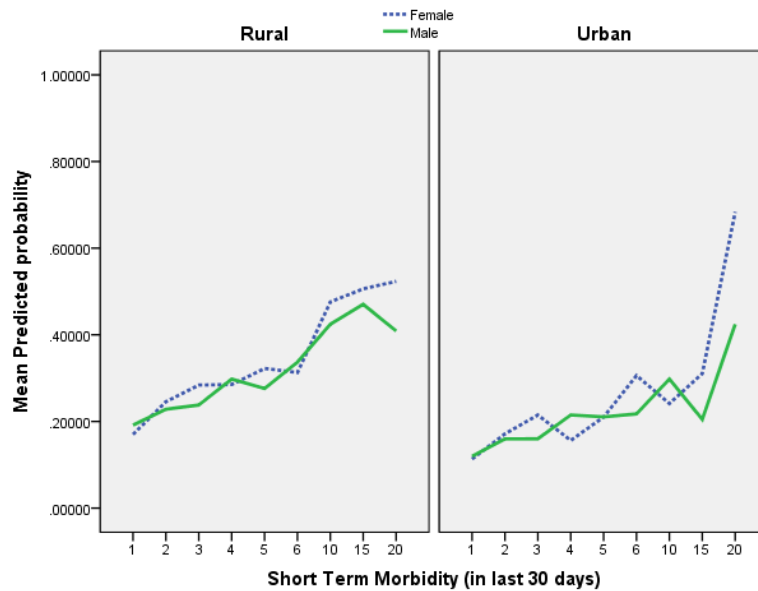

Source: IHDS-II data, 2011-12 (Authors' calculations).

5.1.4 Child-intrinsic Characteristics

In addition to the family background or school-related issues, sometimes a child's own psychological or physical factors, the so-called 'child's intrinsic factors' can influence a child's attendance in school. While investigating this, we found that one of the most important factors within this category is a child's illness. The association between the frequency of short-term morbidity and the number of school days lost has been tested through this model empirically. The results showed that with an increase in the number of days the child suffered short-term diseases, the likelihood of being chronically absent from school increased by 7.2 per cent. It may be noted that the probabilities of being chronically absent from school do not differ much across gender because short-term diseases may affect the abilities of young children to attend school equally, irrespective of their gender (see Figure 7A). Unlike gender, the disaggregation by type of school reveals that with an increase in the number of morbidity days, the probabilities of chronic absence are higher in government schools than in private schools (see Figure 7B). Private schools provide better facilities in terms of drinking water, cleanliness, and toilets, among other things, thereby positively affecting the health outcomes for students. By region, the probability of chronic absence with respect to short-term morbidity is higher in rural

areas than in urban areas, again pointing towards better health facilities in urban than in rural areas.

Figure 7A Location-wise Predictive Probabilities of Chronic Absenteeism across Region by Number of Morbidity Days and Gender

Source: IHDS-II data, 2011-12 (Authors' calculations).

Figure 7B Location-wise Predictive Probabilities of Chronic Absenteeism across Region by Number of Morbidity Days and School Type
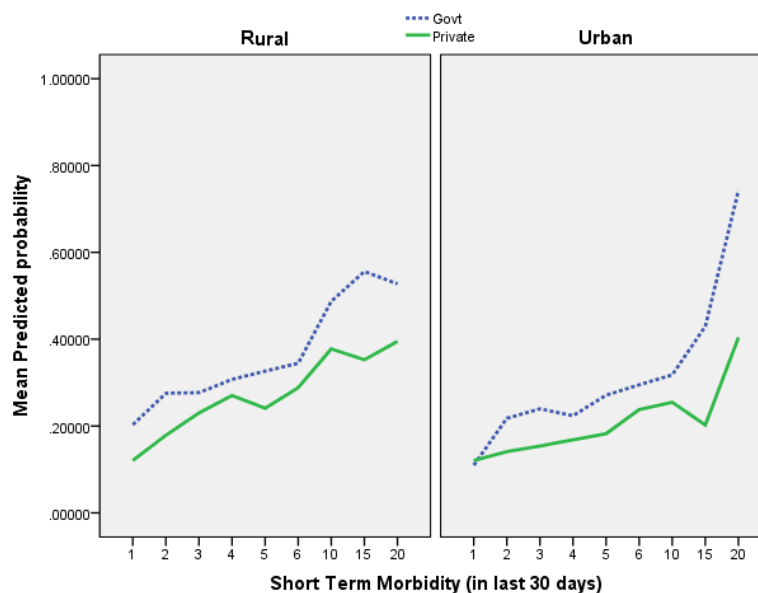
Source: IHDS-II data, 2011-2012 (Authors' calculations).

Within the child-intrinsic psychological factors, the way children are treated in school or how they feel or perform in school also influences the likelihood of their being chronically absent. The findings show that while the chance of chronic absence for a child given harsh physical punishments can increase by 9 per cent as compared to children who were not punished, the child securing academic scores above the average level, child enjoying being in school, and the acquisition of satisfactory skills in class can reduce chances of chronic absence by 23 per cent, 56 per cent, and 10 per cent, respectively. These results emphasise the need to create more happy classrooms, a healthy school atmosphere, a friendly attitude among teachers, and strict regulations against harsh punishments for enhancing a child's regular attendance in school (see Annexure Table A3).

5.1.5 State Effects

In order to control the effect of external factors that may vary across States, the regression model was controlled for State effects. For this, the dummy variables for 20 sample States were considered in this paper. Being a State with the lowest incidence of chronic absence, Himachal Pradesh (H.P.) is considered as a reference State in the regressions and therefore, the signs on the dummy variables for all States were relative to Himachal Pradesh and were interpreted accordingly. Barring Kerala, all the other sample States show a higher probability of chronic absence among primary-aged school children when compared with Himachal Pradesh (see Annexure Table A3). The probability of chronic absence among primary grade students was found to be highest in the case of Andhra Pradesh, followed by Bihar, Uttar Pradesh, Uttarakhand, and Assam, when compared with H.P.

5.1.6 Interaction Effects

The regular participation of a child's parents in PTA meetings can play a great role in controlling the situation of chronic absence in schools. In India, monthly PTA meetings are more prominently and regularly held in private schools than in government schools except in a few States such as Delhi. To capture this impact, we interacted the two dummy variables—the school type and participation of parents in PTA meetings—and re-estimated the models. We found a negative association across all the three regressions (see Table 4). This shows that as compared to private schools, the regular participation of parents in PTA meetings in government schools is likely to reduce the chances of the child being chronically absent from school by 45 per cent. Hence, more States should take the initiative to organise regular PTA meetings in government schools.

The second interaction equation presents the variations in the likelihood of chronic absence among children who were academically performing above the average level across households with different financial status (see Table 4, Equation 2). Our findings show that the lack of interest among children does not always lead to chronic absence, as even cases where a child is performing above the average level show higher probability of chronic absence in the bottom two income quintile households as compared to the richest income quintile households. The higher likelihood of chronic absence among well-performing students from the bottom two income quintiles could be due to reasons like the child's engagement in domestic chores, childcare or other

economic activities (as in Ahmadi, 2021; Amor et al., 2020). Thus, educational scholarships awarded to the economically weaker sections of society can play a significant role in bringing these students back to school or in improving their class attendance. Kumar and Singh (2022) further state that poor children where household members are participating in the poverty alleviation programme such as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) are less likely to be absent from school. Such initiatives by the government can also help in reducing absence rates among poor children.

Table 4 Interaction Equation Results

S. No.	Interaction Effects	B		Exp(B)
1.	PTA attending* School type (Govt.)	-.591	[.002]	.554***
2.	Income Quintile (Ref: Q5)* Child Performance (Ref: average & below)			
	Quintile 1*Child performance above average	.058	[.004]	1.059***
	Quintile 2*Child performance above average	.188	[.003]	1.207***
	Quintile 3*Child performance above average	-.042	[.004]	.959***
	Quintile 4*Child performance above average	-.079	[.004]	.924***
3.	Child punished in school vs. socio-demographic profile			
	Child punished in school*Child gender- Female	.077	[.001]	1.080***
	Child punished in school*Region-rural	.203	[.002]	1.225***
	Child punished in school*Caste of Child (Ref: General)			
	Child punished in school*Schedule Caste	.258	[.003]	1.295***
	Child punished in school*Schedule Tribe	.127	[.002]	1.135***
	Child punished in school*OBC	-.055	[.002]	.946***

Source: IHDS-II data, 2011-2012 (Authors' computation).

Notes: a) The table gives weighted estimates; b) Standard errors are given in parentheses; c) *** indicate statistical significance at 1 per cent.

The third interaction was run to see the variations in the likelihood of chronic absenteeism behaviour by students who have been punished in schools across different socio-demographic characteristics. We found that despite males constituting a higher proportion among those who have been punished in school (57 per cent), females, when punished in schools, show a higher likelihood of being chronically absent (8 per cent) than male students. In rural areas, the probability of chronic absence is 22.5 per cent higher than in urban areas in the case of harsh punishment incidents. Within social groups, as compared to the General category students, SC and ST students show a higher probability of being chronically absent from school on being punished. Maintaining proper discipline among students and imposing necessary strictness in schools are two important factors that can create better learning environments, but care should also be taken to ensure that no physical or harsh punishments are awarded to students that cause a sense of fear in young minds, thereby leading to their missing school days. Strict actions by school authorities may also be taken against teachers found guilty of committing such acts.

6. SUMMARY AND POLICY IMPLICATIONS

This paper investigated the factors leading to chronic absenteeism at the later primary levels of education in India using data from IHDS-II for children aged 8-11 years and its implications on their learning outcomes. Chronic absenteeism in schools is a critical yet overlooked problem in many developing countries globally, including India. It can not only result in poor cognitive development of the child but can also lead to severe consequences such as dropouts. The countries aspiring to improve students' learning outcomes in schools and improve the overall quality of education should first address the issue of higher absenteeism among school students at all levels.

India is already suffering from the problem of poor foundational skills among students (ASER reports on school education), and the failure to deal with lower attendance in class could worsen the situation. The findings of this paper show that though normal absence, that is, absence of up to 2 days per academic month, hardly makes any difference in the learning outcomes of students, missing school beyond the 'normal' level does make a difference. The extent of satisfactory skills acquired by primary students was compared across different stages of school absence and the results show that these skills were considerably lower in the case of chronic absence situations as compared to the other categories of absence.

Based on these findings, this paper highlights the urgent need to address the incidence of chronic absence at the school level itself by implementing the following measures: i) Deriving a monthly monitoring mechanism to track chronic absence rate and cases in schools through biometric-based attendance (Telangana, for instance); ii) Issuing warnings to the parents of defaulter students who were found to be chronically absent in any month; and iii) Organising counselling sessions at school for both defaulter students and their parents to understand the underlying concerns behind school absence and solving the issues.

While attempting to understand the impact of a child's poor health condition on chronic absence, we found a strong positive association between the frequency of diseases suffered by a child in a month and the number of school days lost. However, this association seems to be stronger in the case of non-chronic absence cases rather than chronic absence. However, we do find that the possibility of chronic absence was higher in cases where the child fell ill more than three times a month or suffered from multiple short-term diseases at a time.

In this context, the provision of proper WASH facilities in schools can play an important role. The respective State authorities should introduce policy measures to ensure the provision of safe and clean drinking water, proper sanitation facilities separately for boys and girls, hand washing facilities with soaps/sanitisers, and preparation of nutritious mid-day meals in schools. The availability of medical facilities in schools with well-trained medical staff or regular health camps in schools can also help students in maintaining good health. Simultaneously, the school authorities and teachers can promote safe and healthy lifestyles among students by maintaining a healthy atmosphere in school/classrooms, cleanliness in schools, and providing self-hygiene instructions to students.

Since poor health conditions were found to influence chronic absence to some extent only, an attempt was also made to investigate the other factors leading to school

absence. For this, the logistic regression model was applied, which found that larger school distance, longer school working hours, and teachers' adverse behaviour toward students manifested in harsh punishments or unfair and biased attitudes, also cause physical (fatigue/stress) and psychological health concerns (fear or disinterest), thereby leading to missing of school by students. As the school distance increases beyond 1 km for young children, the probability of chronic absenteeism among students' increases significantly. This situation is particularly prevalent in the case of rural schools and female students. At the ground level, this paper recommends making primary schools accessible to all students within a range of up to 1 km, to enable them to avoid stressful long journeys to school.

Another important finding was a significant difference in the probability of chronic absence among students in urban and rural government schools, indicating one of the possible reasons for the ineffectiveness of the mid-day meal programme. For this, regular and strict monitoring of rural-government schools and mid-day meal preparation centres should be done by the State and Central Governments, with specific warning orders issued to defaulter schools, to allow for proper implementation of the scheme and quality assurance. The effective implementation of this scheme in rural schools, along with the provision of other basic infrastructure facilities, can encourage students to attend school regularly.

Among the other factors, the teacher's gender being male, teachers' absence, and lack of parent-teacher interaction also suggested higher probabilities of chronic absence. A recent paper by Muralidharan et al. (2017) found that 23.6 per cent of the teachers were found to be absent from schools in rural India during unannounced school visits. Strict regulations should thus be implemented by both the State government and school authorities towards ensuring regular teacher attendance, provision of substitute subject teachers when required, no harsh punishments meted out to students by teachers, and recruitment of more female local teachers. In line with the private schools, government schools should also organise monthly teacher-parent interaction meetings to discuss a child's overall growth. The regression model also indicates that the chances of students being chronically absent are significantly lower in government schools that organise regular PTA meetings as compared to those that do not do so. The respective State authorities can play a significant role in bringing these meetings into action (for instance, Delhi government schools).

To conclude, the mere universalisation of education will not solve the problem of absenteeism, as it may only bring out-of-school children into the education system, but for retaining the students in school and reducing the possibilities of their missing school days, there is a need for a collaborative effort from parents, teachers, the school authorities, and policymakers to create a healthy, safe, and conducive learning-teaching environment in schools, and to generate a positive attitude among students towards class activities, studies, and teachers. Scholarship disbursement programmes for needy students belonging to poor families and the involvement of parents in poverty alleviation schemes/jobs can also play a major role in bringing students back to school or in improving their class attendance.

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ANNEXURE TABLES

Annexure Table A1 Variations in Learning Outcomes of Students (per cent) by Students Age Classification and Absence Type

Skills Type	Age = 8 years		Age = 9 Years		Age = 10 Years		Age = 11 years	
	Non-chronic absence	Chronic absence	Non-chronic absence	Chronic absence	Non-chronic absence	Chronic absence	Non-chronic absence	Chronic absence
Reading skills								
Cannot read	12.8	23.9	8.0	19.4	7.0	15.2	4.4	8.9
Can read letters/ words	41.9	44.6	34.2	41.7	28.4	35.3	20.3	29.1
Can read paragraphs/ stories	45.2	31.6	57.8	38.9	64.6	49.4	75.3	62.0
Maths skills								
Cannot recognise numbers	19.5	31.9	12.2	24.4	10.7	20.4	8.0	14.4
Can recognise numbers	44.0	38.2	38.8	39.8	33.4	31.9	25.9	27.9
Can perform subtraction	26.0	20.5	31.3	26.1	32.6	32.8	35.7	33.7
Can perform division	10.5	9.4	17.8	9.7	23.4	14.9	30.4	23.9
Writing skills								
Cannot write	30.6	43.6	21.7	33.6	18.1	32.8	13.3	20.6
Can write	69.4	56.4	78.3	66.4	81.9	67.2	86.7	79.4
Total	100	100	100	100	100	100	100	100

Source: IHDS-II data, 2011-12 (Authors' computation).

Annexure Table A2 Percentage of Students with Satisfactory Skills by Social Groups and Absence Type

Tasks	Social Groups	Absence Categories				Total
		No absence	Up to 2 days	3-5 days	6 and above (Chronic)	
Can read paragraphs/stories	Females	63.8	61.6	54.3	41.6	56.4
	Males	66.3	62.1	56.5	48.2	59.6
	Rural	61.0	57.7	49.9	38.6	52.7
	Urban	72.9	69.7	70.4	63.3	70.1
	Government School	56.8	53.0	47.1	36.2	49.1
	Private School	76.4	73.3	69.5	62.0	71.7
Can perform subtraction or division	Females	54.5	50.5	44.5	40.2	48.1
	Males	58.8	55.7	47.2	44.5	52.5
	Rural	51.1	46.9	40.7	34.6	44.0
	Urban	67.3	65.7	60.1	65.2	64.9
	Government School	46.0	44.2	38.9	33.1	41.0
	Private School	71.3	65.2	57.7	60.5	64.6
Can write with one mistake or no mistake	Females	82.4	79.9	73.4	63.6	75.8
	Males	83.8	80.9	74.2	69.8	78.1
	Rural	80.4	78.0	69.6	61.3	73.0
	Urban	88.3	85.2	85.1	82.6	85.9
	Government School	77.0	73.8	67.6	58.3	69.9
	Private School	91.4	89.0	84.2	83.3	87.7

Source: IHDS-II Data, 2011-2012 (Authors' computation).

Annexure Table A3 Binary Logistic Regression Results – All India

Indicators	B		Odds Ratios
A. Socio-Demographic Characteristics			
Gender (Ref: Male)	0.123	[.001]	1.130***
Region (Ref: Urban)		[.001]	1.069***
	0.066		
Social group (Ref: General)			
Schedule Caste (SC)	0.027	[.001]	1.027***
Schedule Tribe (ST)	0.318	[.002]	1.375***
Other Backward Class (OBC)	0.143	[.001]	1.154***
B. Household Characteristics			
Highest education of adult male in the family (Ref: Illiterate)			
Primary	-0.137	[.001]	0.872***
Middle	-0.085	[.001]	0.918***
Senior Secondary	-0.300	[.001]	0.741***
Graduate & above	-0.087	[.002]	0.916***
Highest education of adult female in the family (Ref: Illiterate)			
Primary	-0.045	[.001]	0.956***
Middle	-0.125	[.001]	0.883***
Senior Secondary	-0.023	[.001]	0.977***
Graduate & above	-0.028	[.002]	0.972***
Household Income class (Reference- Richest Q5)			
Bottom Quintile 1	0.474	[.001]	1.606***
Quintile 2	0.234	[.001]	1.263***
Quintile 3	0.337	[.001]	1.401***
Quintile 4	0.030	[.001]	1.031***
C. School Characteristics			
School type (Ref: Private Schools)	0.303	[.001]	1.354***
School distance (Ref: up to 1 km)			
2-3 km	0.052	[.001]	1.054***
3-5 km	0.399	[.002]	1.490***
Above 5 km	0.608	[.002]	1.837***
Teacher's gender (Ref: Male)	-0.295	[.001]	0.744***
Teacher's attendance (Ref: Present)	0.268	[.001]	1.307***
Teacher's attitude (Ref: Fair & unbiased)	0.107	[.001]	1.113***
School hours per week (Ref: Ideal up to 36 hrs.)	-0.281	[.001]	0.755***
PTA meetings (Ref: Not attending)	-0.069	[.001]	0.934***
D. Child-Intrinsic Characteristics			
Short-term morbidity (Days per month)	0.070	[.000]	1.072***
Child performance (Ref: Average & below)	-0.257	[.001]	0.773***
Child enjoys school (Ref: No)	-0.818	[.001]	0.441***
Child punished in school (Ref: No)	0.087	[.001]	1.091***

Indicators	B		Odds Ratios
Child's skills acquisition (Ref: Below satisfactory)	-0.099	[.001]	0.905***
E. State Effects (Ref: Himachal Pradesh)			
Punjab	0.159	[.009]	1.172***
Uttarakhand	1.667	[.008]	5.296***
Haryana	1.240	[.008]	3.454***
Delhi	1.487	[.008]	4.424***
Rajasthan	1.523	[.008]	4.584***
Uttar Pradesh	1.830	[.008]	6.232***
Bihar	2.432	[.008]	11.380***
Assam	1.652	[.008]	5.220***
West Bengal	0.759	[.008]	2.136***
Jharkhand	1.516	[.008]	4.552***
Orissa	0.720	[.008]	2.055***
Chhattisgarh	0.951	[.008]	2.589***
Madhya Pradesh	0.791	[.008]	2.206***
Gujarat	0.415	[.008]	1.514***
Maharashtra	0.612	[.008]	1.843***
Andhra Pradesh	2.596	[.008]	13.403***
Karnataka	0.201	[.008]	1.222***
Kerala	-0.001	[.009]	0.999#
Tamil Nadu	0.142	[.008]	1.152***
Constant	-2.338	[.008]	0.097***

Source: IHDS-II data, 2011-12 (Authors' computation).

Notes: a) The table gives weighted estimates; b) Standard errors are given in parentheses; c) ***, indicate statistical significance at 1 per cent, # indicates not significant.