Effect of Household and School characteristic on Absenteeism among Primary school children in EAG states of India

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Abstract: School absenteeism in India is a cause of concern, and studies show that children who are frequently absent eventually drop out of school. The long duration of absenteeism is a hidden educational crisis in India, especially in EAG states. It becomes necessary to curtail absenteeism in these states since these states already have poor school enrolment rates among children. This study employs a holistic approach to understand how personal, household and school factors determine absenteeism among school-going children aged 8-11years residing in EAG states using IHDS-II data. We have used cross-tabulation and binary logistic regression for analysis, and the results show that children who were ill and got beaten by the teacher in school were absent or chronically absent. Absenteeism reduced with father's education and parent's involvement in school. Children who were spending time doing homework and performed better in maths had a lower chance of being absent. Simple interventions like parent's involvement in children's schooling and a conducive school learning environment can help keep the child in school and can be a long term, cost-effective method of improving the educational attainment among children in EAG states.

Keywords: Absenteeism, Chronic Absenteeism, Parents Involvement, Schooling, EAG States

Introduction

Education is the best solutions to tackle long term deprivation and is the best way to prevent children from inheriting the poverty of their parents. "Education promotes child's right to dignity and optimum development; however, Achieving this goal is extremely complex" (UNICEF, 2007). According to UNICEF, nearly six million children in the age group of 6-13 years remain out of school. According to the UNICEF report of 2019, 29 per cent of girls and boys drop out before completing elementary education. (*Every Child in School | UNICEF India*, 2020). School absenteeism starts early in life (Allison & Attisha, 2019), particularly in countries that are developing or underdeveloped and where environmental threats (Mbbs et al., 2018) to health are more in comparison to wealthy countries

The NFHS 2015 report shows that in India during 2014-2015, the net attendance ratio falls from 78 per cent in primary school to 68 per cent in the middle, secondary, and higher secondary school. (International Institute for Population Sciences (IIPS) and ICF, 2017). Studies also show that higher frequency and duration of absenteeism among children are associated with poor academic performance (García & Weiss, 2018). In the Indian context, along with low attendance, the problem of school drop-out also exists. Studies show that quality education during the early years promotes readiness for school and is also the best guarantee of sustained economic and social development(UNICEF, 2007). Children from

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chronically disadvantaged families are usually the ones who have the most difficulty in accessing education and have issues with performance in school due to limited resources. Childs' performance in schools depends on various factors

Socio-economic factors such as status of the family, mothers education (Farah & Upadhyay, 2017), child's caste, tribe, religion (Choudhury, 2006; Joshi, 2010) and gender (Guha, 2002) can also have an independent bearing on the attendance of the child. In addition, the study by (Dreibelbis et al., 2013) suggests that household-level factors and neighbourhood factors(Galloway et al., 1985) can influence absenteeism.

The government of India, through various initiatives, has been gradually able to uplift people from various sections and strata; the progress has not been satisfactory, and (Das, 2007) the goal of universalisation of education not achieved (Jayachandran, 2007), particularly in Empowered Action Group (EAG) states where the situation of education is deplorable. EAG states comprise Uttarakhand, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Orissa, Chhattisgarh and Madhya Pradesh. There are the worst-performing in social and economic indicators and have some of the highest school absenteeism rates. Most of them also have a high percentage of the population in the lowest wealth strata like Bihar 51.2 per cent, Jharkhand 46.1 per cent and Orissa 37 per cent. Bihar also 43 per cent population who never went to school followed by Rajasthan at 42.6 per cent. Mean years of schooling in these states are lower than the national average of 4.4 years. The percentage of children attending school during 2015-2016 is between 80-90 per cent (International Institute for Population Sciences (IIPS) and ICF, 2017).

Studies in India are related to school drop-out, absenteeism among female children (Chanana, 1990), girls schooling experience in urban India (Yunus, 2021) and absenteeism due to menstruation (Vashisht et al., 2018). In addition, other studies are at the regional and rural level to recognise the regional social and economic dynamics of education and chronic absenteeism (Ben Amor et al., 2020; Prakash et al., 2016, 2017). However, existing studies in the Indian context are on child's educational status and school drop-out, but the causes of absenteeism and chronic absenteeism due to household and school-related factors are inadequate. Further, there is a need to give special attention to the EAG states of India, which have the lowest school enrolment rates, and in these states reducing absenteeism will indirectly help cut down the school drop-out rate. Therefore, in this study, we attempt to understand the interplay of various household and school-related factors that lead to absenteeism and chronic absenteeism among school-going children in the EAG states of India.

Methods and Material

Indian Human Development Survey's (Desai & Vanneman, 2018) extensive data provides the relevant information to look at the various dimensions of child's school absenteeism. We use the second round of IHDS data collected in 2011-12 for the EAG states in this paper. The sample of 3964 children currently enrolled in school between the age of 8-12 years.

Dependent variable
Absenteeism is the dependent variable in this study. The survey data provides information on the number of days the child attended school a month before the survey or the month before the vacation (If the survey collected data during vacation). We use this information to compute absenteeism status and created dummy variables of Absenteeism and

Chronic Absenteeism. We have coded absenteeism as 0- when a child is absent for 0 days in a month and 1-when the child is absent for one or more days. We have coded Chronic Absenteeism as 0- when a child is absent for 0 to 3 days and 1-when the child is absent for four or more days in a month. There are studies on chronic absenteeism with varying definitions (Ehrlich et al., 2013; Balfanz & Byrnes, 2012), but the definition for Chronic Absenteeism used here is from a similar study by García & Weiss (2018). Their study categorised children as chronically absent on missing school for four or more days in the month preceding the survey.

Independent Variables

The independent variables considered for this paper are from studies on absenteeism. We have only included the variables showing significant chi-square association with absenteeism. The variables have positive and negative impacts on absenteeism. Categorisation of the variables are in three groups; child factors, school factors and household factors. Child factors include Child's Age (in single years), sex and illness or morbidity status. Morbidity days are calculated based on the number of days the child experiences illness in the month preceding the survey.

The school factors included are Childs; Maths Level, homework status, grade repetition, getting a beating and scolding in school. Maths level is assessed based on a test carried out at the time of the survey in English, Hindi and regional languages. Maths performance is scored between 1-4 score and is categorised as level 1 to level 4; Level 1 is when the child could not recognise the number, Level 2 is when the child can recognise the number, level 3 is when the child can subtract and level 4 when the child can carry out the division. Homework status is the amount of time the child spends on homework in a week; Coded yes- if the child spends any time doing homework else No. We have coded grade repetition as yes if the child has ever repeated a grade (failed in a grade) else coded No. The child getting beaten in school coded yes- if the child has ever got a beating, else No. The child scolded in school coded yes- if the child has ever got a scolding, else No.

Other school-related factors considered in the study are; School distance, school type, parent's involvement in the school committee and the season in which the data collection took place. We have classified school distance into three categories, within 1 km, within 5 km and more than 5 km. The school type - Government or Private school. The variable season is created based on the month of data collection—categorisations as Summer-April to July, Monsoon-August to November and Winter-December to March.

The third group of variables are household related variables. The variables used in this study are Households primary source of income, Religion, Caste, Household size, Mothers Education, Father's education and place of residence. –We have taken the head of the household's primary occupation as the Household primary source of income and categorised it into Agriculture, labour and others. Religion- Hindu and non-Hindu, non-Hindu primarily included Muslim, Sikh and Christian. Caste-General, OBC and SC/ST. Household size- less than equal to five and more than five. We have classified mother's education into three categories-0 years of education, 1-5 years of education and more than five years of education. Fathers' education -0 years of education, 1-5 years of education and more than five years of education, and we have classified residence into Rural and Urban areas.

Analytical Approach

The study uses binary logistic models to map out the interaction between the binary outcome variable and its predictors. The logit form of regression is as follows.

$$In\ \frac{p}{1-p} = \beta_0 + \beta_1 x_1 + \cdots + \beta_q x_q$$

Where p=Pr (dependent variable=1) and x_1, x_2……,x_q are the explanatory variables. Absenteeism is the dependent variables coded 1 for absent and 0 for not absent. The coefficient of the regression model is expressed in terms of the Odds Ratio (OR). The odds ratio interpretation is that, for a one-unit (or going from 0 to 1) increase in an independent or predictor component, the odds of being in any outcome group increases by the factor of estimated coefficient, holding all other variables in the model constant.

Results

We present the result in two sections. The first part consists of cross-tabulation results of absenteeism with the background characteristics of the children. In the second part of the result section, we discuss binary logistic regression outcomes showing the predictors of absenteeism and chronic absenteeism.

Absenteeism situation in EAG states
The percentage of children absent according to the number of days in a month is depicted in **Figure 1**. About 28.0 per cent of children in EAG states are absent for 0 days, and 72.0 are absent for at least one day of which,4.7 per cent children were absent for 1 day, 16.6 per cent children are absent for 2 days, and 9.9 per cent children are absent for 3 days and the rest are absent for more than 3 days indicating that nearly 40 per cent children are chronically absent. The graph also shows that a considerable percentage of children are absent up to 10 days a month. Even after 10 days, some children continue to be absent, but the percentage is meagre. Even when absenteeism is considered chronic after 3 days of absenteeism in a month, the graph shows that usually, children would be absent for up to 8 days in a month

Figure 1: Percentage absenteeism among children according to the number of days in a month (8-11 years)
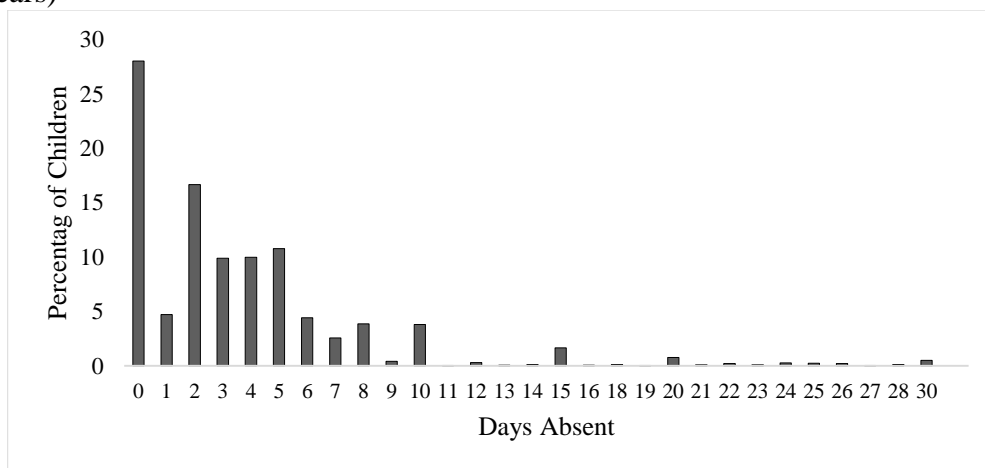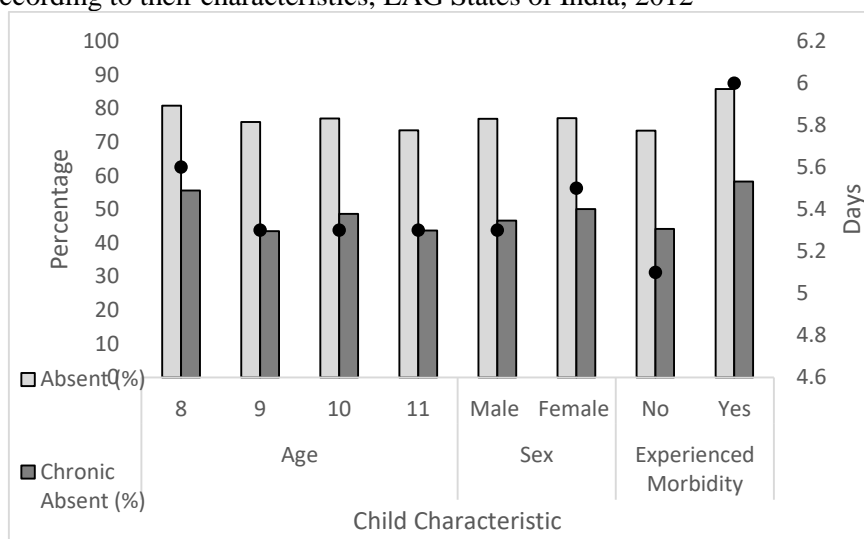

(Source: Computed from IHDS-II (2012)

Absenteeism among school-going children aged 8-11 according to child and school factors
Error! Reference source not found. **2** shows the percentage distribution of children by absenteeism status and mean days absent according to their characteristics. Morbidity appears to have a considerable effect on absenteeism; nearly 85.8 per cent of children were absent, 58.2 per cent of children were chronically absent, and children were absent for a mean of 6 days due to it. A slightly higher percentage of female children as compared to male children are absent

or chronically absent. According to the age, a high percentage of eight-year-old children are absent (80.8 per cent) and chronically absent (55.6 per cent) and for a mean duration of 5.6 days.

Figure 2: Percentage distribution of school-going children (8-11 years) by absenteeism status and mean days absent according to their characteristics, EAG States of India, 2012

(Source: Computed from IHDS-II (2012)

Table 1: Percentage distribution of school-going children (8-11 years) by absenteeism status and mean days absent according to school-related factors, EAG States of India, 2012

School Factors	Absenteeism (%)	Chronic absenteeism (%)	Mean days Absent
Math level			
Level 1	87.5	65.5	6.3
Level 2	79.2	48.5	5.3
Level 3	72.3	41.1	5
Level 4	66.7	37.2	4.8
Spend time doing homework			
No	81.8	61.6	7.5
Yes	76.7	47.2	5.2
Ever got a beating in the school			
No	72.4	43.8	5.3
Yes	83.1	54.1	5.4
Ever got scolding in the school			
No	71.0	42.4	5.2
Yes	81.5	52.6	5.5
Ever Repeated Grade			
No	76.2	48.0	5.3
Yes	86.2	51.6	5.6
Distance of School			
Within 1 Km	78.0	49.6	5.4
Within 5 Km	73.3	43.8	5
More than 5 km	68.9	33.4	5.9
School Type			
Government	77.6	52.1	5.7
Private	76.2	42.9	4.9
Season			
Summer	65.9	32.1	5.1
Monsoon	79.3	51.0	5.8
Winter	80.3	53.4	5.3
Parents in the School Committee			
No	79.4	53.0	5.6
Yes	73.6	41.4	5.0

Source: Computed from IHDS-II (2012)

Table 1 shows the Percentage distribution of school-going children (8-11 years) by absenteeism status and average days absent according to school-related factors. The Maths level shows an inverse relation with the absenteeism status. The poor the maths performance, the higher the chances for the child to be absent. The result shows that children in level 1 who cannot recognise the number; 87.5 per cent of them and children in level 4 who can carry out division, 66.7 per cent are absent. Similarly, the result shows that 65.5 per cent of children in level 1 and 37.2 per cent of children in level 4 are chronically absent. Thus, nearly 20 per cent of absenteeism is there among children in level 1 compared to level 4.

Children who spend some time doing homework had lower absenteeism (76.7 per cent) and chronic absenteeism (47.2 per cent). A lower percentage of children who have higher maths level and who spent time doing homework are absent. Parent's involvement also has a positive effect on the child's attendance. A lower percentage of children were absent (73.6 per cent) or chronically absent (41.4 per cent) when their parents were involved in the school committee. A higher percentage of children who got a beating in school or have ever repeated a grade were absent and chronically absent. Among children who got a beating in school, as high as 83.1 per cent were absent, 54.1 per cent are chronically absent, and among children who repeated a grade, 86.2 per cent are absent, and 51.6 per cent are chronically absent. More children were absent in winter (80.3 per cent) than in the summer (65.9 per cent) season.

Table 2: Percentage distribution of school-going children (8-11 years) by absenteeism status and mean days absent according to household characteristics, EAG States of India, 2012

Household Characteristics	Absent (%)	Chronic Absent (%)	Mean days Absent
Source of Income			
Agriculture	77.2	50.4	5.2
Labour	82.0	54.9	5.8
Others	72.4	40.4	5.2
Religion			
Hindu	77.2	48.7	5.3
Others	75.8	45.5	5.7
Caste			
General	72.1	42.8	5.3
OBC	78.1	50.2	5.3
SC/ST	78.9	49.1	5.4
Household Size			
≤5	76.8	48.3	5.6
>5	77.2	48.2	5.3
Mothers years of education			
0	80.3	53.4	5.6
1-5	71.3	43.6	5.0
>5	73.9	40.7	5.0
Fathers years of education			
0	81.3	56.5	5.9
1-5	80.4	54.5	5.0
>5	72.9	40.4	5.1
Residence			
Rural	79.1	52.2	5.4
Urban	69.6	34.3	5.1

Source: Computed from IHDS-II (2012)

Absenteeism among school-going children aged 8-11 according to Household factors.

The percentage distribution of school-going children (8-11 years) by absenteeism status and mean days absent according to household characteristics is shown in Table 2. The result shows that a higher percentage of children whose family's primary income is from labour (82.0 per cent) are absent and chronically absent (54.9 per cent). Absenteeism is high among children whose father (81.30 per cent) and mother (80.30 per cent) have 0 years of schooling. Among these children, chronic absenteeism is between 53-56 per cent. Children whose father has 0 years of education are absent for a mean of 5.9 days in a month. Among children residing in rural areas, both absenteeism (79.1 per cent) and chronic absenteeism (52.2 per cent) are high compared to their counterparts in urban areas. The highest absenteeism percentage is among children; who were ill, who scored low in maths level, who have ever repeated a grade, whose family income source is from labour and whose father has zero years of education. Other factors like religion, caste and household size do not show much variation.

Table 3a: Determinants of school absenteeism and chronic Absenteeism among school-going children (8-11 years), EAG States of India, 2012

Predictors		Absenteeism		Chronic Absenteeism	
		Odds Ratio	95% CI	Odds Ratio	95% CI
Child Factors					
Age (Continuous)		0.953	[0.881-1.031]	0.979	[0.912-1.052]
Gender	Male *(Ref)*				
	Female	0.956	[0.811-1.126]	0.983	[0.846-1.141]
Experienced Morbidity	No *(Ref)*				
	Yes	1.963[+]	[1.609-2.394]	1.609[+]	[1.365-1.896]
School Factors					
Math level	Level 1 *(Ref)*				
	Level 2	0.706[+]	[0.545-0.914]	0.784[#]	[0.636-0.966]
	Level 3	0.660[+]	[0.497-0.876]	0.750[#]	[0.590-0.952]
	Level 4	0.457[+]	[0.336-0.623]	0.543[+]	[0.412-0.717]
Spend time doing homework	No *(Ref)*				
	Yes	0.712	[0.501-1.010]	0.499[+]	[0.377-0.660]
Ever got a beating in the school	No *(Ref)*				
	Yes	1.326[#]	[1.044-1.684]	1.350[+]	[1.084-1.680]
Ever got scolding in the school	No *(Ref)*				
	Yes	1.072	[0.854-1.347]	0.993	[0.800-1.234]
Ever Repeated Grade	No *(Ref)*				
	At least once	1.523[#]	[1.101-2.105]	1.134	[0.873-1.472]
School Distance	Within 1 KM *(Ref)*				
	Within 5 KM	0.852	[0.680-1.067]	0.880	[0.707,1.096]
	More than 5 km	1.033	[0.673-1.585]	0.921	[0.596-1.422]
Type of School	Government *(Ref)*				
	Private	1.229[#]	[1.017-1.486]	0.889	[0.748-1.057]
Season	Summer *(Ref)*				
	Monsoon	1.490[+]	[1.194-1.860]	1.499[+]	[1.218-1.844]
	Winter	1.384[+]	[1.135-1.686]	1.665[+]	[1.375-2.016]
Parents in the School Committee	No *(Ref)*				
	Yes	0.739[+]	[0.622-0.879]	0.822[#]	[0.702-0.964]

Predictors of Absenteeism among school children

The result from binary logistic regression analysis is shown in table 3a and 3 b. The results show that the following factors increase absenteeism among children; illness (OR=1.963; CI=1.609-2.394; $p < 0.01$), getting beating in school (OR=1.326; CI=1.044-1.684; $p < 0.01$) and repeating grade (OR=1.523; CI=1.101,2.105; $p < 0.01$). Other less significant factors that increase absenteeism are belonging Non- Hindu religions (OR=1.251; CI=0.971-1.612; $p < 0.10$) and studying in private school (OR=1.229; CI=1.017-1.486; $p < 0.05$). Children are more likely to be absent during monsoon (OR=1.490; CI=1.017-1.486; $p < 0.01$) and winter (OR=1.384; CI=1.135-1.686; $p < 0.01$) seasons. The result for chronic absenteeism shows that the children who were ill (OR=1.609; CI=1.365,1.896; $p < 0.01$) and who got a beating in school (OR=1.350; CI=1.084,1.680; $p < 0.01$) are more likely to be absent for more days in a month.

Table 3b: Determinants of school absenteeism and chronic Absenteeism among school-going children (8-11 years), EAG States of India, 2012

Predictors		Absenteeism		Chronic Absenteeism	
		Odds Ratio	95% CI	Odds Ratio	95% CI
Household Factors					
Source of Income	Agriculture *(Ref)*				
	Labour	1.155	[0.924-1.445]	1.113	[0.914,1.354]
	Others	0.981	[0.789-1.220]	1.074	[0.878-1.315]
Religion	Hindu *(Ref)*				
	Others	1.251[*]	[0.971-1.612]	1.025	[0.818-1.284]
Caste	General *(Ref)*				
	OBC	1.027	[0.832-1.267]	1.005	[0.823-1.227]
	SC/ST	1.152	[0.897-1.480]	1.007	[0.797-1.272]
Household Size	0-5 *(Ref)*				
	<5	0.844[*]	[0.711-1.001]	0.896	[0.766-1.047]
Mothers years of Education	0 *(Ref)*				
	1-5	0.913	[0.727-1.147]	0.847	[0.684-1.048]
	>5	1.084	[0.869-1.351]	0.957	[0.778-1.176]
Fathers years of Education	0 *(Ref)*				
	1-5	1.095	[0.843-1.422]	0.869	[0.695,1.088]
	>5	0.795[#]	[0.648-0.975]	0.801[#]	[0.668-0.961]
Residence	Rural *(Ref)*				
	Urban	0.890	[0.720-1.102]	0.794[#]	[0.650-0.970]
		Pseudo R2=0.0604		Pseudo R2=0.0557	

Significance [*] $p < 0.10$, [#] $p < 0.05$, [+] $p < 0.01$
Source: Computed from IHDS-II (2012)

The factors that reduce absenteeism are related to the child's ability and parental involvement in their education. Children who can solve division have 55 per cent lower chances of being absent (OR=0.457; CI=0.336,0.623; $p < 0.01$) and have 46 percent lower chances of being chronically absent (OR=0.543; CI=0.412,0.717; $p < 0.01$). For children whose parents have involved in any school committee, their odds of being absent reduce by 27 per cent

(OR=0.739; CI=0.622,0.879; $p < 0.01$) and odds of being chronically absent reduces by 18 per cent (OR=0.822; CI=0.702,0.964; $p < 0.05$). Further, the chances of being absent reduce by 21 per cent if their father has more than five years of education (OR=0.795; CI=0.648,0.975; $p < 0.05$). Children who spend any time doing homework have 51 per cent lower chances of being chronically absent (OR=0.499; CI=0.377,0.660; $p < 0.01$).

The result from regression analysis shows the child factor such as child's performance in maths, child engaging with homework, the child getting a beating in school, child repeating a grade, parents' education, and parents' involvement in school turns out to statistically significant factors predicting of Absenteeism and chronic Absenteeism among school-going children in the EAG states.

Discussion and Conclusion

Among children, morbidity is the most common cause of absenteeism, chronic absenteeism, and high mean days absent in a month (Ben Amor et al., 2020; Hemson, 2007; Pehlivan, 2011). A child's health plays a crucial role in their well-being, development of their cognitive ability, and frequent episodes of ill health caused by dysentery, diarrhoea, and parasitic infections result in stunting leading to poor educational performance (Dreibelbis et al., 2013). Frequent and higher absenteeism from school may also lead to temporary or permanent discontinuation (Allison & Attisha, 2019).

The school environment can impact the child's willingness to attend school and academic performance (Sahin et al., 2016). Students' involvement in school activities like spending time doing homework reduces their chances of absenteeism. Maths' ability results from students' involvement in the learning process and positive learning school environment. Since the child's learning ability in subjects like maths requires cumulative knowledge achieved from continuous learning (Kingdon, 2007; Pehlivan, 2011).

Corporal punishment and grade repetition create unfavourable conditions for school attendance. Getting a beating in school creates a sense of fear among children and hesitancy to attend school for a long time, similar to the result in this study (Gershoff, 2017). The school for the child then becomes the place of fear. Failing grade has a similar impact on absenteeism as corporal punishment, but it impacts child's relationship with their peer group, where the stigma of failing creates an uneasy relationship leading to an unwillingness to go to school (Lewin, 2007; Portela & Pells, 2015; Tyrrell, 2005). Being left behind in a grade can lead to a loss of self-confidence. The stronger the stigma attached to failure, the longer it takes for the child to go back to school.

Parents' level of education, interest and active participation in their children's education increases children's school attendance, as seen in other studies (Farah & Upadhyay, 2017; Foley et al., 2014). Educated parents can assess their child's academic progress and intervene when the child experiences problems (Banerji, 2014). They are also able to approach school authorities when they need to. Results show better attendance of the child when the parents are involved in school committees. Religion and place of residence show mixed results. Children belonging to Muslim, Christian and the Sikh religion have a higher chance of being absent (Bowen et al., 2007), and children residing in rural areas are also more likely to be absent. Children from rural areas have more probability of facing resource constraints and are also required to involve in household work resulting in absenteeism (Matthew C. Freeman et al., 2014)

The result from the study brings together various dimensions of a child's character, background, and school environment, which impact their absenteeism status. These factors do not have an independent but collective effect on absenteeism. This study gives fresh insight into the student's school involvement and its association with absenteeism. The inclusion of factors such as teacher's behaviour, involvement and characteristics and experiences of children who dropped out of school could shed some more light on the school environment, but we have not used these variables due to data constraints.

In the past decades, India has been able to raise the children's net enrolment rate but has not been able to keep them in school. The percentage of children dropping out of school is still very high in EAG states, primarily in rural areas; therefore, it is essential to understand its reasons. Studies have shown that future drop-out can be identified based on their attendance pattern. The children whose attendance see a steady decline are eventually going to drop out. Therefore, there is a need to check the fall in attendance. The factors responsible are at the household and school levels, the most significant being the parents' education, involvement and the school environment. Various low and middle-income countries show that the government's intelligent strategies in the proper condition can improve the poverty and inequality situation among its population. This study suggests the major thrust areas which can make a difference with the existing educational policies. The Government's Union Budget, 2018-19 recommended treating school education holistically and launched *Samagra Shiksha*[4] programme, and it is early to predict its impact. However, in the meantime, the EAG states could start implementing a more holistic approach to tackle school absenteeism.

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