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# Determinants Of Educational Attainment Among Children From Below Poverty Line Households In Rural Assam: Evidence From Dhubri District Using Survival Analysis

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***Abstract:***
*Persistent socioeconomic and educational constraint is one of the major challenge in rural Assam which is reflected in the educational attainment of kids belonging to Below Poverty Line (BPL) households. This study examines the factors influencing educational status among children of BPL families in rural Dhubri district from the collected primary data of 128 families having 332 children. The event of interest was defined as school dropout, and Kaplan-Meier survival analysis and Cox proportional hazard regression model were used. The results show that the age, work pressure, distance to school, scholarship support and student academic performance are important determinants of educational attainment. Work pressure was the most salient barrier and was associated with a heightened risk of dropping out of school, while scholarship support and improved academic performance overall were significant factors that improved children's continued education. It is found that the overall educational attainment in BPL children is largely influenced by educational factors that are specific to the children and the study suggests that educational outcomes will improve in the rural Assam if educational help to the children in the form of scholarship support can be increased, the burden of children's work can be reduced, academic assistance to the children can be strengthened and their access to secondary education can be improved.*

***Keywords:*** *Educational attainment; BPL households; Cox proportional hazards model; School dropout; Rural Assam.*

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## I. Introduction:

In India, poverty continues to be one of the most stubborn development challenges with a large fraction of rural population being officially classified as Below the Poverty Line (BPL). Rural poverty incidence which are located in the periphery show particularly high estimates for Assam; Rangarajan method estimates put rural BPL incidence in this state much above the corresponding all India figure (Konwar 2019). Successive BPL and poverty assessments also show that most rural households in Assam are characterised by low, unstable incomes, few productive assets, as well as poor access to essential services (Government of Assam 2018). Here, the BPL status is not merely viewed as an administrative label but as a substitute for broader multidimensional deprivations related to food security, health, housing, education and vulnerability to shocks (Kumar et al., 2014). Assam rural BPL households relied in large part on small, scattered landholdings with negligible income returns from casual agricultural labour and poorly paid informal employment, leading to a condition of constant insecurity of income with barely any savings (Das 2023). Empirical research on various districts of Assam indicates that a significant proportion of the poorest households fails to meet their non-food consumption needs and rely heavily on subsidised food grains and other welfare measures like Public Distribution System (Rahman 2017). But such supports do not typically sustainably lift them out of multidimensional poverty, as their deprivations across income, nutrition, housing, education and health indicators remain entrenched. In low-income BPL households, limited resources are compounded by debt and vulnerability to economic and climatic shocks, which closely links consumption today with investment in labour productivity or human capital formation tomorrow.

Education is one of the major investments in human capital which enhances individual productivity and increases labour supply creating job opportunities, therefore it plays a significant role in achieving long run economic growth and poverty reduction (Roger et al., 2022). The human capital view that schooling raises people earnings and reduces the probability of falling permanently below the poverty line is well-tested from both international and Indian evidence where years of education correlate positively with wages (Psacharopoulos & Patrinos, 2018). At the same time, advancements in research on poverty and education suggests that under-

investment in human capital for children from low income and BPL households often leads to deficits that are very difficult to reverse later in life contributing towards inter-generational poverty transmission (Attanasio et al., 2021). Studies on access to primary education and educational inequality in remote areas (including Assam) highlight that poor households continue to face greater drop-out rates and weaker learning outcomes even after formal expansion of schooling and targeted schemes (Dholakia & Iyengar, 2008). Data and programme reports at the district level within Assam also confirm this, demonstrating that numerous children hailing from BPL families, notably those in educationally backward districts, drop out too early or do not attend school regularly due to economic reasons and locational constraints (Sentinel Digital Desk 2018).

In this broader context, the present study examines children from rural BPL households in an area of northern India where poverty is particularly prevalent (Assam) and education provides a critical window of opportunity to interrupt intergenerational patterns of deprivation: The Dhubri district of Assam. Field data and qualitative research for this study suggest that even within a single BPL family there is substantial variation in school continuation behaviour: children may drop out at an earlier class while their siblings continue to higher grade. Thus the study has a prime objective of finding out what determines education levels of children belonging to poor BPL households of rural Dhubri, and education is considered as a choice influenced by child specific factors, resource allocation and institutional variables.

## II. Objective

To identify the determinants of educational attainment among children from Below Poverty Line (BPL) households in rural Dhubri district using the Cox proportional hazards regression model.

## III. Literature Review:

In Children's Educational Attainment, Deding & Hussain( 2002) employed the years of education and binary high education outcome and used OLS and "double probit" framework to analyse the intergenerational transmission of schooling. It concludes that parent's education, particularly mothers' education, has significant positive effect on children's schooling, but the effect of living conditions is significantly reduced after controlling for parent's education. The authors conclude that the main mechanism driving the transmission of education across generations was the direct link between education and attainment, whereas the direct link between level of living and attainment had a smaller effect.

Lloyd et al., (2001) studied "Determinants of Educational Attainment Among Adolescents in Egypt: Does School Quality Make a Difference?" uses multivariate regression models to relate grade attained to a rich set of school quality indicators, controlling for child and household characteristics. They demonstrate that time spent in learning, material resources (such as textbooks, teachers' qualification) and classroom atmosphere (teachers' attitude and treatment) are greatly related with high achievement in grades of both boys and girls. The main result is that school quality can mitigate some of the disadvantages stemming from poor family environments, especially for girls.

On their paper "Socioeconomic Determinants of Primary School Dropout", Okumu et al., (2008) use binary logistic regression to model the probability of primary school drop-out given household and child covariates. It reveals that parental education, household size, and the proportion of economically active household members are important determinants of drop-out rates, whereas distance to school and gender are not and are not important in an era of expanded Universal Primary Education (UPE) that has boosted access. The authors conclude that in this context socioeconomic factors within the household are more significant determinants of dropout than physical access to schools.

In the study, 'Determinants of Child Labor and School Attendance: The Role of Household Unobservable', Deb & Rosati (2002) uses a semi parametric latent class random effects multinomial logit model to identify the following three modes: work, school and idle. The model allows for unobserved household types and uncovers that poverty and distance to school are important factors affecting school attendance and the probability of work or idleness. The authors emphasize that many children transition from "idle" to "school" when incentives are better: that is, policies need to tackle poverty and household heterogeneity to improve education levels.

Shahidul et al., (2019) in their article "Child Labour and Schooling of Children in rural Bangladesh: A Multinomial Logit Model on determinants" estimates the multinomial logit with four outcomes, namely schooling only, work only, schooling plus work and none schooling and none work. It discovers certain child and household factors are highly associated with combining school and work or working only, and that the magnitude of the associations varies by gender. The only determinant that has been identified which increases the probability of "work only" more for girls than for boys, however, suggests that gender differences are more pronounced in mixed school and work states than in pure work states.

A study by Argaw et al., (2019) on "Determinants of Child Labour and Schooling in Rural Households of Ethiopia" also employs the multinomial logit model depicting the same four activity states - school, work, both

and neither - for children aged 7-17. Results indicate that the probability of schooling is significantly higher with biological children of the household head, higher education of the household head and for households with no recurrent health shocks and significantly lower with older age, presence of a female child and livestock loss. The key role of household shocks and resources is complemented by the fact that age and household size increase the likelihood of child labour, while male children, larger land holdings, and participation in welfare programmes work to reduce the likelihood of child labour.

An Indian study carried out by Pramanik (2015), on "The Effect of Family Characteristics on Higher Education Participation" uses multivariate logistic regression on NSS 68th round microdata to model the probability that youth attend higher education. It reveals that higher education participation is positively influenced by the education level of parents and income of the households, and that the participation of youth from Scheduled Castes and Scheduled Tribes is much lower than that of the general category youth, irrespective of the economic status. The paper also reveals that the intersection of gender, caste and rural disadvantages places rural females amongst the least likely to access higher education, particularly rural Hindu females.

In their paper, Khan et al. (2024) "Determinants of Access to Higher Education: Evidence from Jharkhand, India" has explored participation inequalities by socio religious groups through cross tabulation, logistic regression and non-linear Fairlie decomposition. It has noticed that tribals, Muslims and SCs do worst in higher education participation and that the tribals are more concentrated in the rural areas where higher education participation is less. The decomposition analysis results show that while household size, head's education and income account for some of the difference between privileged and under privileged groups, there are other structural and social factors that are likely to be important in limiting educational attainment and which are not observed.

In Chaudhri and Jha's working paper, titled Child Poverty and Compulsory Elementary Education in India: Policy Insights from Household Data Analysis, the authors use the household level data of NSS 50th (1993-94) and 61st (2004-05) rounds, and using probit and multinomial logit models, they analyse factors affecting non-attendance (labour force or 'nowhere') among children aged 5 to 14 years. They demonstrate that children who are raised in poor and/or nutrition poor families experience multiple and layered deprivations: loss of access to healthcare, limited access to quality schooling, and high opportunity costs of schooling, which all severely limit the ability of poor/BPL children to participate in, and benefit from, elementary school access, with poverty status, parental education, and local service provision emerging as important factors in educational exclusion among poor/BPL children.

In "Preference for Boys, Family Size, and Educational Attainment in India" (Kugler & Kumar, 2015), the authors employ nationally representative survey data and an instrumental variables strategy to deal with endogeneity of the quantity-quality trade off. Based on their IV estimates, they find that the negative effects of an extra sibling are much larger for rural, poor, low caste households and for families with an illiterate mother, and that children in larger families have lower educational attainment and are less likely to ever have attended or be enrolled in school. They argue that, because of son preference and high fertility, BPL type households have less per child investment and education, thus family size and parental education play a pivotal role for poor children.

In this study by Deb & Rosati (2002), child labour and schooling in Ghana and India were studied by using a semi parametric latent class random effects multinomial logit model, which accounts for both observed and unobserved household characteristics as determinants of school attendance, work and idleness. It also discovers a significant share of poor families who, despite being poor, are always sending children to school, and a wide gap between the likelihood of children attending school in rich families and poor families, despite the low level of income of the poorest. The study shows that land and livestock ownership have a negative impact on school attendance in India and that the poor/BPL households' hard poverty constraints play an important role in determining the allocation of children's time to labour versus schooling, as do specific preferences or norms of the household.

In "Child labour and school attendance: evidence from Bangladesh" (MPRA 6990), Khanam (2006) uses multinomial logit and other related models to examine the determinants of children's combination of school attendance and work. It concludes that the low income of households, parents' illiteracy and the size of the household are all factors that raise the risk that children from low-income families become part of the labour force or attend school part-time. The study emphasizes that wages, local labour market conditions and parental education play a key role in BPL type households: In such households, the opportunity cost of schooling is high, and parents have less education, which makes schooling less attractive to children, even if schools are available.

## IV. Methodology

**Study Area:**

The study has been carried out in Dhubri district of Assam, India. Dhubri is one of the socio-economically backward districts of the State with a large proportion of Below Poverty Line (BPL) households,

low literacy and poor level of education infrastructure and a large number of riverine (char) areas. All of these attributes make it a suitable district to explore factors affecting education of children in economically disadvantaged families.

The development block of Dhubri, Birsing Jarua Development Block was purposively selected as it is regarded as one of the backward development block in the district and has a large proportion of char areas where poverty and educational deprivation are high.

**Sampling Design And Data Collection:**

The study has employed only primary data which were gathered from households survey during the last quarter of 2025. Multi-stage sampling technique was used for choosing the study households.

In the first stage, Birsing Jarua Development Block was purposively selected from Dhubri district. In the second stage, two Gram Panchayats (GPs) namely Birsing Gram Panchayat and Boyjer Alga Gram Panchayat were selected randomly from the block. Two villages were randomly selected from each Gram Panchayat in the third stage. From the Birsing Gram Panchayat, Aminerchar and Birsing Part-II villages were selected, and Boyjer Alga Part-II and Boyjer Alga Part-V villages were selected from Boyjer Alga Gram Panchayat. The study area consisted therefore of 4 rural villages. At the last stage 32 BPL households were drawn up randomly from each of the villages and a total of 128 BPL households (4 x 32 households) were thus obtained. Structured household interviews were conducted with information gathered on all children within these households. A total of 332 children were identified from the survey and all were used in the empirical analysis.

Information on the children's educational history, enrolment status, age at school entry, grade at school, work pressure, academic performance, scholarship status, distance to school, household characteristics, parental education and household income were collected as primary information. The survival analysis and the econometric estimation were based on these data.

**Analytical Framework:**

Both descriptive and econometric methods were used in the study to find out the determinants of educational attainment of the children from BPL households. Socio-economic and educational characteristics of the sampled households and children were summarised using descriptive statistics. Next, Kaplan-Meier survival analysis was used to estimate the probability of children staying in school over time and the differences in survival experiences across the categories of each explanatory variable. Log rank test was used to compare the differences in survival curves.

The Cox Proportional Hazards Regression Model was used to determine the independent factors affecting the level of education. For the survival analysis, the event of interest was defined as school dropout (Event = 1) and children still in school at the time of the survey were defined as right censored. Dropout is the failure event, and hazard ratios less than one reflect a reduced risk of dropout and thus higher risk of educational continuation and attainment. Cox proportional hazards model is written as:

$h(t|X)=h_0(t)\exp(\beta_1X_1+\beta_2X_2+\cdots+\beta_kX_k)$

where:

- $h(t \mid X)$= hazard function (risk of dropping out at time $t$, given the covariates)
- $h_0(t)$= baseline hazard function
- $X_1, X_2, \dots, X_k$= explanatory variables
- $\beta_1, \beta_2, \dots, \beta_k$= regression coefficients to be estimated

The explanatory variables were: gender, age, work pressure, household size, father's education, mother's education, income per month of the household, distance to school, scholarship conditions, and students' performance. Data was analysed using SPSS Version 26 and Stata Version 17. Descriptive statistics, correlation analysis and multicollinearity diagnostics were conducted using SPSS and Kaplan-Meier estimation, log-rank tests and Cox proportional hazards regression analysis were conducted using Stata.

## V. Result And Discussion:

**Descriptive Statistics:**

The descriptive statistics for the variables used in the Cox proportional hazards model are shown in Table 1. The study is based on 332 children from Below Poverty Line (BPL) households from rural areas of Dhubri district, Assam. The mean age of the respondents is 15.11 (SD = 4.62) years and 26–6 years. The mean number of years in education for the respondents is 6.57 years (SD = 2.97) indicating that most children have reached the upper primary level of education. The sample is relatively well-balanced for gender, see table 2. 52.41% of the sample is female children (coded as 1) and 47.59% of the sample is male children (coded as 0). The average household size is about six people (Mean = 6.07, SD = 1.32), typical of rural BPL households, where the size of the home is relatively large.

| Table 1. Socio-economic and Educational Characteristics of the Respondents | | | | |
|---|---|---|---|---|
| Variable | Mean | SD | Min | Max |
| Age (years) | 15.11 | 4.62 | 6 | 26 |
| Years of Schooling | 6.57 | 2.97 | 0 | 15 |
| Household Size | 6.07 | 1.32 | 1 | 9 |
| Work Pressure (1–5) | 2.89 | 1.72 | 1 | 5 |
| Father's Education (0–5) | 0.93 | 0.94 | 0 | 5 |
| Mother's Education (0–5) | 0.75 | 0.76 | 0 | 4 |
| Monthly Household Income (0–4) | 1.21 | 0.83 | 0 | 3 |
| Distance to School (km) | 3.13 | 2.76 | 0 | 12 |
| Student Academic Result (1–5) | 3.26 | 1.61 | 1 | 5 |
| *Source: Author's estimation using Stata* | | | | |

| Table 2. Distribution of Binary Variables | | | |
|---|---|---|---|
| Variable | Category | Frequency | Percentage |
| Gender | Male | 158 | 47.59 |
| | Female | 174 | 52.41 |
| Scholarship | No | 233 | 70.18 |
| | Yes | 99 | 29.82 |
| Enrolment Status | Still studying | 190 | 57.23 |
| | Dropout | 142 | 42.77 |
| *Source: Author's estimation using Stata* | | | |

The mean score for children's work pressure was 2.89 (SD = 1.72) on a five-point scale, which is considered a moderate level of work related responsibilities with their schooling. The mean score of the academic performance is 3.26 (SD = 1.61) which means that academic achievement of the respondents is moderate. The educational attainment of parents is generally low, most of the parents have not completed their education or they have completed primary education. The mean income category is 1.21 (SD = 0.83) suggesting that majority of households have a monthly income of INR between 5,001 and 10,000, confirming the economically disadvantaged nature of the study population.

The average distance from the child's home to the nearest school is 3.13 kilometres (SD = 2.76), ranging from 0 to 12 kilometres. There is a significant variation that indicates that some children attend schools very near to their homes, whilst others travel quite distance in order to attend school. As far as financial support is concerned, 29.82% of the children receive a scholarship while 70.18% do not benefit from any scholarship programme. Regarding the educational status 42.77% of the children had dropped out of school and 57.23% were in school during the observation period. These descriptive statistics reveal significant diversity in the demographic, socioeconomic and educational characteristics of children of BPL families, and thus offer a reliable platform for an analysis of the factors influencing the school dropout through the Cox proportional hazards model.

**Kaplan–Meier Survival Analysis:**

The Kaplan-Meier (KM) survival estimator was used to explore the probability of children staying in school over time as well as to compare survival experiences across selected demographic, socioeconomic, and educational characteristics, before estimating the multivariable Cox proportional hazards model. Because the event of interest was school dropout, the survival function would be the probability that a child does not drop out of school.

*Figure 1. Kaplan–Meier Survival Curve by Gender*

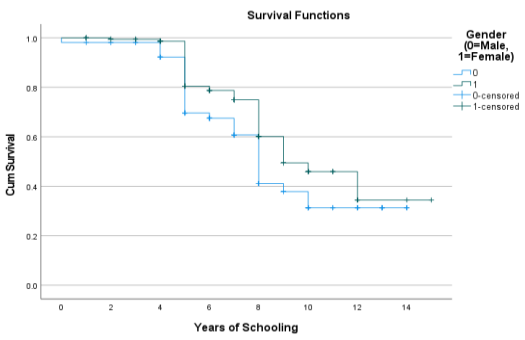



*Figure 2. Kaplan–Meier Survival Curve by Work Pressure*

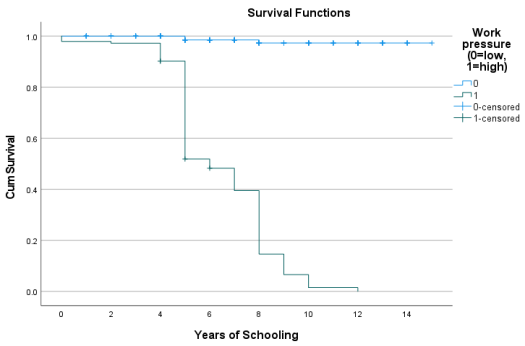


*Figure 3. Kaplan–Meier Survival Curve by Distance to School*

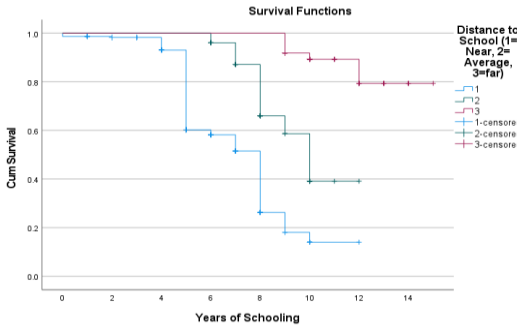



*Figure 4. Kaplan–Meier Survival Curve by Scholarship status*

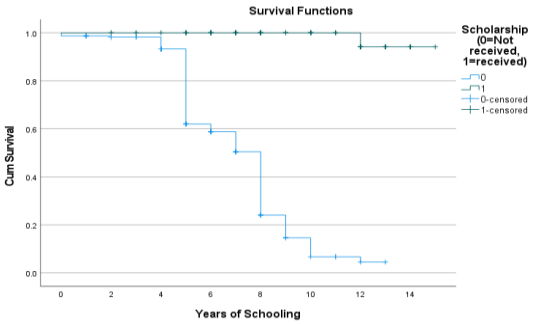
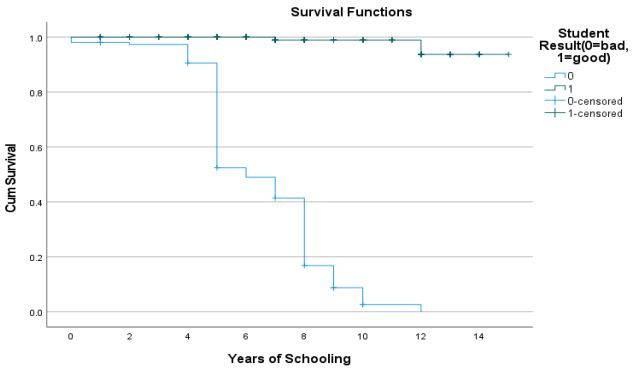



*Figure 5. Kaplan–Meier Survival Curve by Scholarship status*




The Kaplan-Meier survival curves of the selected explanatory variables are shown in figures 1-5. Survival rates are high in the early years of schooling, with the probability of surviving close to one for the first years of education, which suggest that almost all children progress to the next year of school. The chance of staying on in school, however, decreases gradually by the successive years of schooling, which means that there is an increasing risk of school drop-out with higher levels of education.

The survival curves show distinct differences between the explanatory variables that were chosen. Females had slightly higher survival rates than males, indicating higher continuation rates of education. Regardless of whether or not children are in school, those who have low work pressures have significantly higher chances of survival as compared to those with high work pressures. Similarly, students who are eligible for scholarships have significantly higher rates of educational continuity than those who are not eligible, and students with good academic performance stay in school for significantly longer than students with poor academic performance.

A pattern of interest for Distance to School is found. However, as expected, being further away does not deter children from attending school: children who live further away have better survival rates than those who live closer. This finding is related to the geographical and socioeconomic conditions of the study area. The sampled villages are in remote and backward villages of Dhubri district, where there are no secondary and higher secondary schools nearby and generally children who go for secondary schools are from families which are interested in continuing education. Furthermore, the field visits revealed that even though the distance may be an issue, financial constraints and children's work commitments are the main challenges to schooling. A student who lives far away from school may be more likely to continue their schooling because of the support he or she has from older siblings or parents, or even getting a ride to the school.

The log rank tests shown in Table 3 confirm the statistical significance of these differences. Gender exhibits a significant difference in educational continuation ($\chi2 = 6.533$, $p = 0.011$), while Work Pressure ($\chi2 = 237.212$, $p < 0.001$), Distance to School ($\chi2 = 90.194$, $p < 0.001$), Scholarship Status ($\chi2 = 149.892$, $p < 0.001$), and Student Academic Performance ($\chi2 = 218.116$, $p < 0.001$) all demonstrate highly significant differences in survival experiences. Of these variables, Work Pressure and Student Academic Performance reveal the greatest difference between survival curves, suggesting they are the greatest factors associated with the continuation of education in the univariate analysis.

| Table 3. Comparison of Kaplan–Meier Survival Functions | | | | |
|---|---|---|---|---|
| **Figure** | **Variable** | **Mean Survival Time (Years)** | **Log-rank $\chi^2$** | **p-value** |
| Figure 1 | Gender | Male: 8.87, Female: 10.37 | 6.533 | 0.011 |
| Figure 2 | Work Pressure | Low: 14.77, High: 6.44 | 237.212 | <0.001 |
| Figure 3 | Distance to School | Near: 7.29, Average: 9.86, Far: 14.09 | 90.194 | <0.001 |
| Figure 4 | Scholarship | No: 7.15, Yes: 14.82 | 149.892 | <0.001 |
| Figure 5 | Student Result | Poor: 6.55, Good: 14.76 | 218.116 | <0.001 |
| *Source: Author's estimation using Stata* | | | | |

In general, the Kaplan-Meier analysis indicates that gender, work pressure, distance from school, and scholarship status and student performance are all factors that vary significantly. However, with the Kaplan-Meier estimator, the separate effect of each explanatory variable is examined without considering the combined effect of other variables. In the next section, the Cox proportional hazards regression model is estimated to find the independent determinants of educational level controlling for all the explanatory variables.

**Diagnostic Tests And Model Validation:**

A number of diagnostic tests were performed to explore the relationship between the explanatory variables and to confirm whether assumptions of the survival model were met before estimating the Cox proportional hazards model. In particular, pairwise correlation analysis, multicollinearity diagnostics based on the Variance Inflation Factor (VIF) and the proportional hazards assumption was explored and found satisfactory result to run the cox regression.

**Cox Proportional Hazards Regression Results:**

After diagnostic tests given in the last section, the Cox proportional hazards regression model was estimated to determine the determinants of educational attainment of children in Below Poverty Line (BPL) households in rural Assam. School dropout (Event = 1) was the event of interest in the survival model. Thus, the estimated hazard ratios give the effect of each of the explanatory variables on hazard of leaving school. All variables with hazard ratios < 1 decrease the risk of school dropout and, therefore, improve the educational attainment of children, while hazard ratios > 1 increase the risk of school dropout and thus hinder the achievement of a high educational level.

| Table 4. Cox Proportional Hazards Regression Estimates of the Determinants of Educational Attainment among Children from BPL Households in Rural Dhubri of Assam | | | | | |
|---|---|---|---|---|---|
| Variables | Hazard Ratio | Std. Error | z-value | p-value | 95% Confidence Interval |
| Gender (Female = 1) | 0.944 | 0.172 | -0.31 | 0.753 | 0.661 – 1.349 |
| Age | 0.912 | 0.032 | -2.63 | 0.009 | 0.851 – 0.977 |
| Work Pressure | 1.831 | 0.285 | 3.88 | 0.001 | 1.349 – 2.485 |
| Household Size | 1.028 | 0.106 | 0.27 | 0.788 | 0.840 – 1.259 |
| Father's Education | 0.779 | 0.119 | -1.64 | 0.102 | 0.578 – 1.050 |
| Mother's Education | 1.033 | 0.192 | 0.17 | 0.863 | 0.717 – 1.487 |
| Monthly Household Income | 1.222 | 0.130 | 1.89 | 0.059 | 0.993 – 1.504 |
| Distance to School | 0.563 | 0.046 | -7.02 | 0.001 | 0.479 – 0.661 |
| Scholarship | 0.047 | 0.057 | -2.53 | 0.011 | 0.004 – 0.504 |
| Student Academic Performance | 0.740 | 0.096 | -2.32 | 0.021 | 0.573 – 0.955 |
| *Source: Author's estimation using Stata* | | | | | |

| Table 5.Model Statistics | |
|---|---|
| Statistics | Value |
| Number of observations | 329 |
| Number of school dropouts | 139 |
| Total child-years at risk | 2,182 |
| Log likelihood | -562.029 |
| Likelihood Ratio $\chi^2$ (10) | 307.91 |
| Probability > $\chi^2$ | <0.001 |
| *Source: Author's estimation using Stata* | |

The likelihood ratio statistic (LR $\chi 2 = 307.91$, $p < 0.001$) indicates that the set of explanatory variables as a whole can explain the variation in children's education. The estimated Cox model is statistically more significant than the null model without any explanatory variables in terms of explaining the educational continuation of children. The significant likelihood ratio statistic thus suggests that the explanatory variables as a whole affect the probability of children staying in school.

The results of the estimated hazard ratios indicate that the Age, Work Pressure, Distance to School, Scholarship and Student Academic Performance affect the level of education that children attain at the 5 per cent level of significance. Of these factors, work pressure is inversely associated with educational continuation (school

dropout hazard) and thus acts to reduce educational attainment, while age, scholarship support, students' academic performance and distance to school are associated with lower hazards of school dropout and thus increase educational continuation. However, the effects of Gender, Household Size, Father's Education, Mother's Education and Monthly Household Income, are not statistically significant once the other explanatory variables are taken into account.

The coefficient of monthly household income is positive, but not statistically significant at the 5 per cent significance level ($p = 0.059$). The present finding indicates that the difference in the socio-economic status of the households alone does not explain the difference in education level of children in the sampled BPL households. The relatively small range of incomes could also account for the low impact of income alone on the study, as this study is only for economically disadvantaged households.

In general, results of the regressions suggest that the educational outcomes of BPL children are largely determined by the educational situation of children and not so much by the demographic characteristics of the household. Indeed, job obligations, academic achievement, scholarships and age are more significant factors than either parents' education or family size, gender or income when it comes to whether children pursue their education. Each determinant is discussed in detail in the next section.

**Discussion Of The Determinants Of Educational Attainment:**

The Cox proportional hazards regression results indicate that the major factors affecting the educational level of the children belonging to Below Poverty Line (BPL) families in rural Assam are. As school dropout was the event of interest in the survival model, hazard ratios less than one indicate variables that decrease the risk of school dropout and therefore increase educational attainment, while hazard ratios greater than one will increase the risk of school dropout and thus decrease educational attainment. Results show that children's education is significantly affected by age, work stress, distance to school, scholarship support and academic performance of students.

**Age:**

The age is determined as a significant factor for educational attainment ($HR = 0.912$, $p = 0.009$). The estimated hazard ratio suggests that the hazard of school dropouts decreases by about 8.8 percent per year of age. This means that children that successfully stay in school at the early stages are more likely to stay on and achieve higher levels of education. The finding is consistent with the idea of educational 'stickiness' which suggests that a series of transitions from one grade to the next increases the likelihood that students stay in school.

**Work Pressure:**

In the current study, the most significant factor of educational attainment is work pressure ($HR = 1.831$; $p < 0.001$). The results indicate that a one-unit increase in work pressure increases the hazard of school dropout by approximately 83 percent. Thus, higher work pressures significantly affect the educational level of children. The field survey can be used to explain this relationship. In the household interviews as well as focus group discussions, it was found that children of economically poor households often engaged in agriculture, wage labour, livestock rearing, family business and domestic work with their parents. These responsibilities limited the amount of time he or she could spend in school, doing homework and studying for tests, reducing their chance of staying in school.

A key yet vital field survey finding was that the work responsibilities disproportionately impacted elder children. In families of four, five or six children, the eldest child was often required to work to bring in money for the family, and in many instances, give up his or her education to pay for others. Due to this trend, Birth Order was considered as a possible explanatory variable in the regression analysis. Correlation analysis and multicollinearity diagnostics however showed that Birth Order had a high correlation with Work Pressure. Therefore, Birth Order was not included in the final regression model because it is more direct measure of the mechanism by which the household responsibilities affect educational attainment (Work Pressure). Thus, the estimated coefficient of Work Pressure is also an indicator of the educational disadvantage faced by the older children in large BPL families, albeit within a limited range.

These indicate that decreasing child labour through poverty alleviation, social protection and household income support initiatives would have a significant impact on child educational achievement for children in economically disadvantaged households.

**Distance To School:**

Children's distance to school is a significant determinant of their educational status (Hazard Ratio = 0.563, $p < 0.001$). The hazard ratio suggests that a 1 km increase in the distance implies that the hazard of school dropout decreases by about 44%. This result is surprising because distance to school is generally considered a determinant of access to education: for instance, in India, a study in a rural area showed that the probability of a

child going to school decreased by roughly 20% for every additional kilometre of travel. However, in our context it seems that the opposite happens. In the remote areas of Dhubri district there are very few nearby secondary or higher schools. As a consequence, only the most determined and supported students enrol in faraway schools. Through our field interviews, we found that children who travel long distances to attend school are the ones that 'have that capacity to continue education and ... have family support'. Or, as the saying goes, these are "absorbing" cities; if a student makes the effort to commute long distances, then he or she is a child of a family that cares deeply about education. The Assam government has clearly acknowledged the problem, and has now introduced free bicycles for all Class IX students to help them overcome long commute problems. This travel assistance probably has a positive impact on the effective cost of distance of many of our sample students.

In addition, the positive relationship between distance and attainment is explained in terms of household coping strategies. If a child is studying at a faraway school, the other children or other family members may do labour to support the child's schooling, thereby shifting family resources to continue the schooling of the child. So long distance learners tend to be from families that are already invested in their education. Also, the opportunity to travel to a faraway school can also lead to increased aspirations and motivation to pursue further education in a more urban and connected environment. Lastly, if one has to commute for a long time each day, this takes up a lot of time which could otherwise be used for household or agricultural work. This means a decrease in work hours, which can also help to reduce the pressure of work on these students, and therefore help reduce their risk of dropping out.

Overall, in this particular context, distance to school is not a sole determinant of out-of-school learning, but rather a proxy for students' willingness to pursue their education, family support and governmental assistance to support schooling regardless of distance. All of these contextual factors can help explain our empirical results with the overall notion that shorter distances tend to increase attendance.

**Scholarship Support:**

Scholarship support has a significant contribution to education attainment (HR = 0.047, p = 0.011). Children who are enrolled in scholarships have significantly reduced risks of dropping out of school than children who are not provided with financial support. Scholarship support helps to lessen the financial burden of school, meeting educational costs like books, uniforms, exam fees and transportation. This financial aid helps parents to keep their children in school and helps children to pursue their education, especially for economically disadvantaged families. The results clearly show that scholarships are one of the most powerful policy tools to address the problem of education attainment of BPL children.

**Student Academic Performance:**

The education level was affected by the student academic performance (HR = 0.740, p = 0.021). Students that achieve higher performance are less likely to drop out of school and thus achieve higher levels of education. High standards of achievement boost pupils' confidence, motivation and ambitions to continue in education and enhance parents' willingness to invest further in their child's education. On the other hand, a low performance level could discourage the students and their parents, and could result in discontinuing education. This discovery highlights the need to better learning outcomes and increase the access to education.

The results in general suggest that educational status of children in the BPL households of rural Assam is dependent primarily on child educational factors and secondarily on household demographic factors. Work pressure is the biggest obstacle to education, while the provision of scholarships, increased performance and greater education progress significantly increases the chances of children staying in school. Such results underscore the need for greater financial assistance programmes, less child labour and workpressure, and better academic assistance to make better education possible for the economically weaker children.

**Non-Significant Factors:**

According to the regression results, after controlling the other explanatory variables, the variables Gender, Household Size, Father's Education, Mother's Education and Monthly Household Income are not statistically significant factors affecting the educational attainment of children independently. While some of these variables have the same sign of association as would be expected, the effects are not statistically different from each other at the 5 percent level of significance.

The lack of significance is likely due in part to the study sample. The socio-economic status of the sampled families is quite uniform and there is not much variation in the income of these families or the educational level of their parents. In other words, child specific education aspects (work pressure, scholarship support, academic performance, school accessibility) have a more significant impact on educational attainment than do household demographic characteristics. This indicates that policies targeting children's barriers to education directly may be more effective than the household-focused policies.

**Main Findings:**

Cox proportional hazards regression identified five determinants of education that significantly affected educational attainment. Age was shown to decrease the hazard of school dropout and thereby increase educational attainment, which means that a child's likelihood of progressing through the schooling system was higher with the increase in age. By contrast, Work Pressure was the most potent obstacle to education. Increased work responsibilities substantially increased the hazard of school dropout, thereby reducing children's probability of completing higher levels of education. The results of the household survey also indicate that this phenomenon is more prominent with elder children who are likely to trade-off their education for the household income and fund their younger siblings' schooling.

Scholarship support was found to be statistically significant in providing protection as it significantly lowered the risk of school dropout and enhanced children's educational continuation. Similarly, significant improvements in student academic achievement positively impacted educational attainment, which was reflected in the greater likelihood of staying in school. Geographical distance to school was also found to be statistically significant but the estimated relationship indicates that this should be interpreted taking into account the geographical features and educational infrastructure of the study area.

However, the remaining explanatory variables (Gender, Household Size, Father's Education, Mother's Education, Monthly Household Income) did not have any statistically significant independent effects after the inclusion of the other explanatory variables. These results indicate that, for households with lower economic status, the education level of children is more strongly affected by their own educational experiences and by their activities in the household than by other household demographic parameters.

## VI. Conclusion:

Therefore, in this study, the factors affecting children's education for Below Poverty Line (BPL) households in rural Assam were analysed with Kaplan-Meier survival analysis and Cox proportional hazards regression model. The survival analysis revealed significant differences in educational continuation between male and female; work pressure, distance to school, and holding a scholarship; and academic performance and educational attainment. Based on the empirical results, it is found that the educational status of BPL children is mainly determined by the educational status of children and not the demographic status of the household. Of all the factors, work pressure became the most important one to decrease in the level of educational attainment by increasing the likelihood of school dropout. Conversely, higher chances of staying in the school and achieving higher educational attainment by children were strongly associated with scholarship support, higher academic performance and older age. However, it was discovered that distance to school was also affecting education achievement. Gender, size of the household unit and level of parental education and household monthly income, however, failed to show statistically significant independent effects with the other factors.

The results indicate that if the child's education in BPL family needs to be improved, policies should directly focus on tackling the obstacles so that the continuation of child education is not demoralized. Such measures as reducing children's work burden, extending scholarship programme, reviving the academic support to low-performing children and improving access to schools are likely to improve educational continuity among economically vulnerable kids. This study provides evidence which may help the policymakers facilitate targeted interventions for better educational outcome of rural children in the BPL through a survival analysis methodology, thereby filling in the empirical gap of an education inequality study in literature.

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