How does household and community female education affect school participation in a post conflict state? The case of Sierra Leone.

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1. Introduction
The association between school attendance and female education in developing contexts is one which has been rarely explored. In sub-Saharan Africa especially, there is a scarcity of studies that have engaged with the idea that female education can have a profound effect on children’s school participation. Yet the impact of female education on other outcomes such as child and maternal health as well as on individual and household poverty has been widely demonstrated (Abuya et al 2011). Further, studies have shown the importance of equal gender parity in education and high educational attainment among women for national and personal development (Lutz and Samir 2011; Klasen and Lamanna 2009). Lacking in current educational research is an investigation of how female education affects children’s school attendance in West Africa. Using the case of Sierra Leone, this paper aims to critically evaluate the role of female education to primary and secondary school attendance among children. In doing so, two proxies are used: maternal education and community female education. The paper proposes that the effect of mothers’ education persist net of controls of household wealth and other variables related to wealth such as area of residence. Further, it is hypothesised that female community education affects school attendance over and above the household level. Fathers’ education is omitted from the analysis because of data limitations.

Sierra Leone is a poor and undeveloped post conflict state with low educational attainment and high female illiteracy rates. The country suffers from many social ills including high morbidity and mortality, high levels of poverty and malnutrition (WHO 2010; UNDP 2011). The implications of having an educated female population are significant for the Sierra Leonean populace because if present cohorts of girls are educated they will transmit the values and benefits that they have accomplished to their children who in turn will transmit similar advantages to their children. An intergenerational effect of education will then ensue where future cohorts will benefit from the investment and current educational attainment of present cohorts. A thorough investigation into the ways in which household and community education affects school attendance may be useful in helping to guide future investments and policy interventions which aim to stimulate demand for female education. The questions explored in this paper are:

1. Is there an association between maternal education and school attendance? If yes, what is the nature of this association?

2. Is the probability of school attendance attenuated or amplified by high community levels of female education?

3. Data
The 2008 Sierra Leone Demographic and Health Survey is used for this research. This is a nationally representative sample survey which provides detailed information on current
population and health issues; information on school attendance is also collected. The data is hierarchically structured having used a stratified two stage sample design. Individuals are nested in households which are nested in clusters. Three questionnaires were administered for the survey (women’s, men’s and household members); the household dataset is used as the principal dataset for analysis. The study population was non-maternal orphans aged 6-14 years (n=7126; 4931 aged 6-11 years and 2195 aged 12-14 years). These children lived in 3765 households and 353 clusters.

The dependent variable was attending the correct level of education. To create this variable, age was categorised into two categories: children aged 6-11 (the official primary school going age) and 12-14 years (the official junior secondary school going age). Children aged 6-11 who were attending primary school at the time of the survey were coded as 1 and the other children within this same age-group who were either not attending school or were attending a lower educational level were coded as 0. The same was done for children aged 12-14; among this age-group children attending junior secondary school were coded as 1 and those out of school or attending a lower educational level were coded as 0.

Five individual level variables were considered for the analysis: age, sex, household chores, work in last week, and work in family business or farm. At the household level, wealth, maternal education, and sex of the household head were considered in the analysis. Community variables included the proportion of educated women in a community, the proportion of women who visited a health facility in the last 12 months for family planning, the mean female age at marriage, the proportion of poor people in a community, and the proportion of agriculture and self-employed people in community. Finally, urban or rural residence and administrative region were used.

4. Analysis
A multilevel logistic model was used to estimate the probability of attending the correct level of education among children aged 6-14 years. The analysis was performed in two stages: preliminary and regression modelling using Stata version 11 and MLwiN version 2.17 respectively. Various tests were used to assess the significance of the variables including chi-squared tests in the preliminary analysis and t-tests and the Wald tests in the multilevel analysis. The regression analysis was performed on three separate samples: children aged 6-11, 12-14, and 6-14. The reason being that the net attendance ratios for primary (61.6%) and junior secondary education (21.0%) in Sierra Leone is very different suggesting that the factors which affect school attendance at these tiers of education are dissimilar. In addition, the policies which govern primary and secondary education in the country are different. Lastly, results from an initial analysis showed that age of the child was correlated with many of the covariates discussed above. Note that because of multi-collinearity and a lack of statistically significant relationship with the outcome, the following variables were omitted from the analysis: work in family business or farm, and community access to family planning health facility.

The final model from the analysis can be expressed as follows:

$$log \left( \frac{\pi_{ijk}}{1 - \pi_{ijk}} \right) = \beta_{0jk} + \beta_{1}X_{1ijk} + \beta_{2}X_{2jk} + \beta_{3}X_{3k} + \beta_{4}X_{1ijk} * X_{3k}$$

$$\beta_{0jk} = \beta_{0} + v_{0k} + u_{0jk}$$
where \( \log \left( \frac{\pi_{ijk}}{1-\pi_{ijk}} \right) \) is the response for individual \( i \) in household \( j \) in cluster \( k \). \( X \) represents predictors and \( \beta \) represents the associated coefficient for variable \( X \). \( X_{1ijk} \) represents an individual level predictor and \( \beta_1 \) is the associated unstandardized coefficient for this predictor. \( X_{2jk} \) is a household level predictor and \( \beta_2 \) shows the corresponding logit for that predictor. \( X_{3k} \) is a community level variable and \( \beta_3 \) is the associated coefficient. \( u_{0jk} \) shows the variability of attending school between households; \( v_{0k} \) is the random intercept for the cluster level showing the degree of variation in school attendance at this level. It is assumed that \( u_{0jk} \) has a normal distribution with zero mean and variance \( \sigma^2_0 \): \( u_{0jk} \sim N(0, \sigma^2_0) \). \( v_{0k} \) also has a normal distribution with zero mean and variance \( \sigma^2_0 \): \( v_{0k} \sim N(0, \sigma^2_0) \). The final component of the equation shows a cross level interaction between \( X_{1ijk} \) and \( X_{3k} \); the coefficient for this interaction is represented by \( \beta_4 \).

5. Results

In general, children whose mothers had secondary or higher education were predicted to have significantly higher odds of attending school at the correct level. The strength of this association increases with age so that older children are expected to benefit more from having highly educated mothers than younger children. The influence of women’s education prevails beyond the household level. The proportion of educated women in a community had the largest effect on children’s school attendance in the analysis. The significance of female community education, net of individual, household and community level predictors, suggests that irrespective of the educational attainment of a child’s mother, he/she will have an increased probability of attending school than if he/she lived in a community with a low propensity of educated women. This incremental effect of community education is expected to be amplified among older children, rural children and in poorer communities.

Wealth also has a significant association with school attendance at both primary and secondary education. At the household level, the probability of school attendance is attenuated among poor children relative to non-poor children. At the community level, children who live in communities with a high proportion of poor households have a significantly reduced likelihood of attending school. Sex of the household head did not significantly impact the outcome. The proportion of agricultural and self employed people in a community had a negative impact on school attendance but only among 12-14 year olds.

The region in which a child lives does not significantly affect school attendance in the 12-14 sample. However, among 6-11 year olds, region has a significant impact. There is no difference between children in the northern region and western region in school attendance controlling for all covariates; children aged 6-11 living in the northern region are however expected to have a significantly lower likelihood of attending primary school than those in the eastern and southern regions.

Age of the child was negatively associated with school attendance. Sex had no impact. Whether a child performed household chores had a significant impact on his/her school attendance but only at the primary school level. The attendance of older children and poor children was found to suffer more if they undertook chores within the household. There was no association between school attendance and whether a child worked (within or outside of the household for paid or unpaid work).
6. Conclusion

The contribution of this research has been to explore the ways in which maternal education interacts with household and community environment; and more fundamentally, how women’s education operates at the community level. Women’s education has been found to have a strong positive association with school attendance. At the household level, mother’s education was found to increase the probability of school attendance for primary and secondary education. When mothers attain higher education, older children benefit more than younger children.

The strongest correlate of school attendance from the analysis was female community education. An increase in the propensity of educated women in a community was predicted to exert a much larger impact on children’s school participation even if a child’s mother did not attain highly in school. This finding affirms a normative and cultural impact of education, an observation reported by Caldwell in the 1980s. With reference to education in the subsaharan context, this result suggests that opinions and values on education may also be formed at a wider level. Therefore, while mother’s education appears to be an important measure to further school participation, this educational influence only directly affects household level decisions and therefore the attendance of those children who reside in a household. However, if there are many educated women within a community, irrespective of whether these women are mothers, the influence of high educational attainment becomes greater. This is so because the values, perceptions and progressive behaviour of these women will be closely observed and emulated by other women who may not necessarily have been formally educated. The impact on school participation is that irrespective of a child’s individual level characteristics, household or community environment, households will be more receptive to the idea of formal education and thus will be more willing to make the necessary investments to educate their children. The incremental effect of community female education on school attendance was found to be more pronounced in poorer communities, rural areas and among older children.

Bibliography


