

Understanding factors associated with attending secondary school in Tanzania using household survey data

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Introduction

Trends at global level show that nearly one-fifth of the global population among adolescents (lower secondary school age) and youth (upper secondary school age) are out of school (1), and that progress towards reducing numbers of adolescents and youth who are out-of-school has stagnated in LMICs (1). Sustainable Development Goal (SDG) 4 aims at ensuring inclusive and equitable quality education for all by 2030, and at leaving no one behind, through targeting equal access to any level of education and increasing participation rate of youth in education (SDG 4.3.1) (2).

Recent evidence suggests that countries in Sub-Saharan Africa are most affected (3). For example, Tanzania showed great achievements in enrolment for basic education, however the out-of-school rates are still very high, with 6.7 million among children, adolescents and youth of primary and secondary school age being out-of-school, (UIS UNESCO data for 2016)(4), particularly in remote rural areas, with girls lagging behind boys in the transition from primary to secondary education, and a girls-to-boys ratio in upper secondary and higher education of about 1:2 (5). Here, the aim was to improve understanding on the drivers of youth school attendance versus non-attendance for the secondary school age group in Tanzania (14 to 19 years old), by using a two-level (multilevel) random intercept logistic regression analysis for the probability of attending secondary school.

Data and methods

We used the Demographic and Health Surveys (DHS) data for Tanzania (2015-16 DHS, n=595 clusters) (6,7) downloaded from the MEASURE DHS website, and extracted a potential list of key individual (age and sex of the child, education attainment of the head of the household and parents) and household (household wealth index, number of children under the age of 5 in the household) level variables that impact secondary school attendance.

The adjusted net attendance rate used as outcome variable in this study was defined as the total number of students of the official secondary school age-group attending primary or secondary or higher education at a reference academic year, following indications from UIS UNESCO and the DHS methods (8,9). It therefore included children of official school age who accessed school earlier or later than the normal enrolment age and was expressed as a percentage of the corresponding population (10), giving a more

precise picture of participation to school. The designated age-range for secondary school in Tanzania ranges between 14 to 19 years old. The numerator was the de facto total population of secondary school age attending secondary school (or primary, secondary or higher in the case of the adjusted rate) while the denominator was the total number of de facto secondary school age population.

Alongside individual and household level factors, we constructed contextual level factors such as travel time to nearest secondary school (a proxy for access to school) and pupil to teacher qualified ratio (PQTR, a proxy for school service offered / quality) (11). These factors were derived by applying spatial modelling techniques to create gridded surfaces of average travel time and PQTR and their values were then extracted for each DHS cluster, using focal statistics tool available under ArcGIS Spatial Analyst (ESRI ArcGIS 10.7).

A two-level (multilevel) random intercept logistic regression analysis for the probability of attending secondary school was conducted including children, parents and household level variables using the 2015-16 Tanzania Demographic and Health Surveys (DHS) (12,13), and to account for the hierarchical structure of the data. Moreover, travel time to the nearest secondary school and PQTR were explored in the analysis, to test whether they also contribute to the probability of attending school.

Findings

Overall, our results suggested that individual and household characteristics played a major role in explaining the difference in children's attendance to secondary school, while contextual (community) characteristics such as travel time to the nearer secondary school and PQTR, only explained a small share of the variance in school attendance. A full list of individual, household and contextual factors were tested (bivariate analysis, covariate selection and multicollinearity checks) and then included in our final two-level logistic regression model, and odds ratios and 95% confidence intervals for secondary school attendance reported (Fig.1).

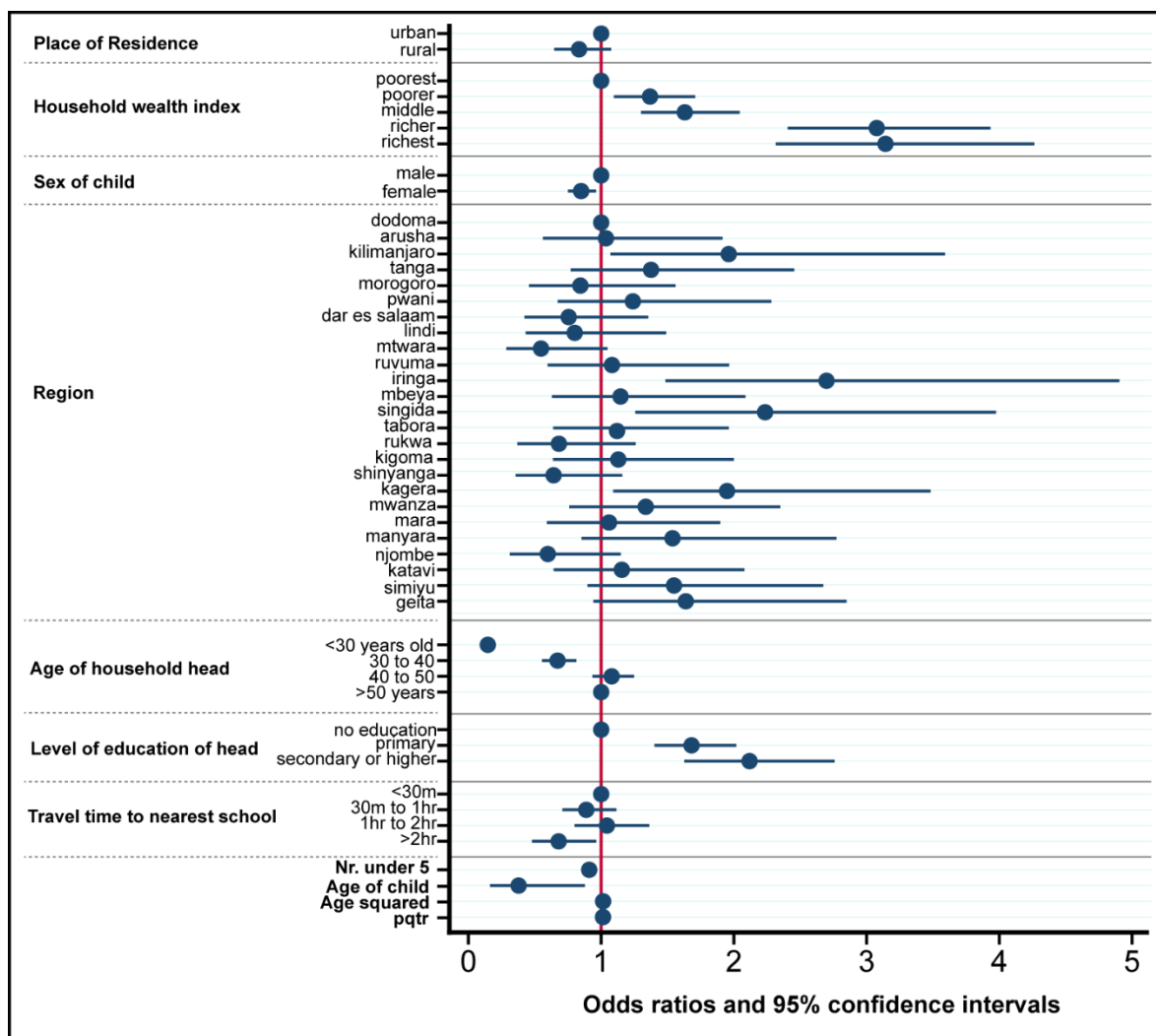


Figure 1: Plotted coefficients for fixed effect covariates from a multilevel-multivariate analysis of drivers of school attendance for Tanzania. Odds ratios and 95% confidence intervals from the two-level logistic regression model of school attendance among children of adolescents or youth-level using DHS data in Tanzania (2015-16 DHS, N=6,197). Fixed effects only were plotted.

Adjusted mean predictions for the fixed portion of the model were calculated after running the multilevel logistic model, to compute the probability of accessing secondary school for selected characteristics in the model, holding all the other independent variables in the model at their mean values. The mean probability of a secondary school aged child to attend school was 18% among those residing in a poorest household and at more than 2 hours far away from the nearest secondary school, and 28% among those in poorest households residing within 30 minutes from the nearest school, holding all the other independent variables in the model at their mean values (Fig.2).

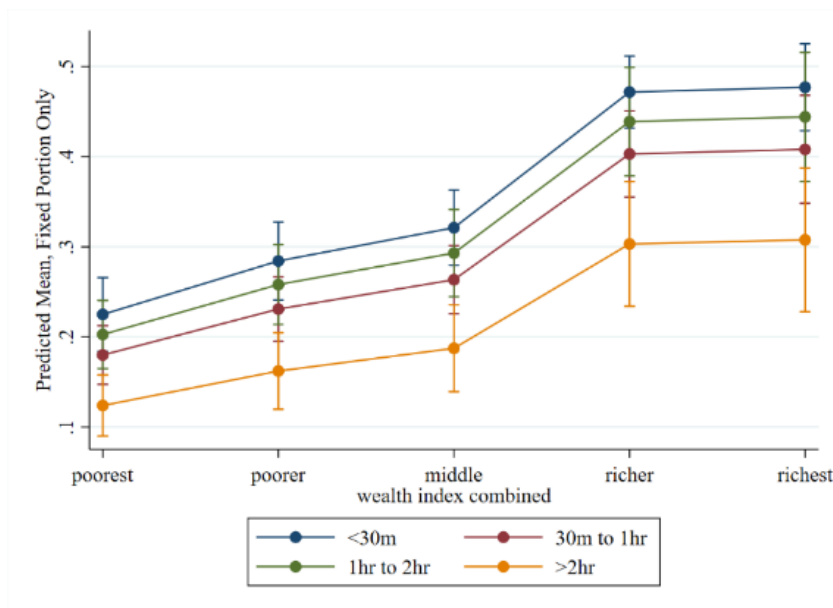


Fig.2. Mean probability to access secondary school for each category of household's wealth quintile, by travel time to the nearest secondary school.

Conclusion

Individual and household level factors are likely to impact secondary school attendance rate more compared to contextual factors suggesting an increase focus of interventions at these levels. Future studies should explore impact of such intervention targeting these levels.

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