

A re-examination of the effect of socioeconomic status on childhood survival in Malawi, 1987-2004

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Abstract

Studies worldwide have established a close link between higher socioeconomic status (SES) and demographic outcomes such as lower infant and child survival. This relationship has often been studied by utilizing information on ownership of household assets. Recently, we examined the effect of a proxy for SES on child survival in Malawi using the 1987 and 1998 census data. Results showed that in 1987 there was an increase in mortality for children belonging to poor households; in 1998 results were reversed: child mortality was higher among rich households and also among middle-aged women. Parallel analysis of the 1992 and 2000 Demographic and Health Surveys (DHS) data showed similar results. We replicate our earlier analyses and assess whether the results persist in the 2004 DHS. Results show that child mortality is higher in richer households but at lower levels than those observed earlier owing to modest improvement in the living standards of people.

Introduction

A number of studies both in developed and less developed countries have established a close link between membership of a higher socioeconomic status (SES) and a number of key demographic outcomes such as lower infant and child survival.^{1,2} The relationship between SES and children's survival has often been studied by utilizing information on ownership of household assets such as radio, television, housing characteristics, sources of water, and type of toilet facilities. These household characteristics are considered as asset indicators that have a direct or indirect effect on child survival.

Among the various methods that are used to assess the effect of SES (through information on household characteristics) on child survival, one of them stands out: a proxy measure for SES derived through principal components analysis (PCA). A proxy for SES is not only useful in examining the effects of wealth but also

useful as a control in estimating the effects of variables that are potentially correlated with households such as maternal education. A proxy for SES in the form of a composite index of wealth has been widely used in many countries due to the lack of reliable data on income and expenditure.

An earlier study³ examined the effect of a proxy for SES on child survival in Malawi, a poor country with an estimated population of 13 million people and an HIV prevalence rate in 2008 of 11% (<http://www.countrystat.org/mwi/cont/pages/page/indicators/en>). In this study,³ the author was motivated by the lack of research into the effect of SES on child survival using larger data sets, such as census, particularly in the context of the HIV/AIDS epidemic. While there have been a number of studies on childhood mortality in Malawi, most of them have focused on region of residence and income as explanatory variables. Furthermore, they have been carried out on subsets of the population whereas the current study is on a macro level.

A detailed review of the relationship between living standards and childhood mortality is available elsewhere (Bawah AA. Health, Well-being, and Mortality in Africa. 2002; personal communication).³⁻⁹ The basic idea behind information on household possessions is that households with piped water, flush toilets, a finished cement floor, roofing made from metal, using electricity for cooking, or those that possess a variety of consumer goods (ranging from a table or a chair to a telephone, television, or a washing machine) are more likely to achieve good health status than those without these facilities or those that rely on surface water, pit latrines, rudimentary floors, etc. (Bawah AA. Health, Well-being, and Mortality in Africa. 2002; personal communication). These household possessions are considered as indicating the level of affordability of obtaining good health services and some are markers of the capacity for personal hygiene.

We conceptualize the relationship between living standards and child mortality by building on the Mosley and Chen (M-C) (1984) framework and the economic model of the family to focus on the effects of household possessions on child mortality.⁹ The M-C framework has been widely used and its results showing the role of socioeconomic development as an important factor in the decrease in mortality both in historical countries of Europe¹⁰⁻¹¹ and other parts of the developing world^{8,12} have been well documented. For example, Haines,¹³ using data from the 1911 census of the Fertility and Marriage of England and Wales, studied patterns of the decline in mortality by socioeconomic characteristics, principally the occupation of the husband. The aggregate results showed that social class in England and Wales during the 1890s and 1900s tended to be relat-

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ed to the speed of the decline in mortality: childhood mortality declined more rapidly in affluent social class groups. Overall, social class (or occupation group), income, and urbanization were more successful in explaining mortality levels than time trends across occupations, although social class and the extent of urbanization did reasonably well in accounting for trends.

Data from our earlier study came from the Malawi censuses (1987 and 1998) and the Malawi Demographic and Health Surveys (DHS) (1992 and 2000). The census data were obtained from the archives of The African Census Analysis Project based at the University of Pennsylvania (<http://www.acap.upenn.edu/>) whereas the DHS data were obtained from Measure DHS (www.measuredhs.com). The 1987 census included information on 38 household asset indicators that are grouped into two types: characteristics of household dwelling and household ownership of consumer durables. The 1998 census included information on 26 household asset indicators with similar groupings. Data from the 1992 and 2000 DHS had similar information on household characteristics as those collected in the censuses and were largely used to compare the results from the censuses. That is, the 1992 DHS was utilized because it was close to the 1987 census whereas the 2000 DHS was close to the 1998 census. The earlier analyses were replicated using the 2004 Malawi DHS.

The information on household characteristics from the censuses and DHS were used to

compute a composite index of living standards using PCA.² We were interested in assessing whether child mortality differs in Malawi according to the level of the household's living standard. Our hypothesis was that mortality is likely to be higher in *poorer* than *richer* households. A measure of mortality (i.e. number of children dead) was obtained from women of childbearing age using information on the number of children ever born (CEB) and the number of children surviving. Negative binomial regression model was used with CEB as an offset term to model the number of children dead on the living standards index (LSI) before and after adjusting for other socio-demographic factors. The CEB, used as an offset term in the negative binomial regression, accounts for the effect of fertility and duration of exposure since the risk of mortality for children depends on the number of children who are already born. In brief, the key results in our study showed that when the LSI was applied to the 1987 census data, the results showed an increase in mortality for children belonging to poor households. Results from the 1998 census were contrary to expectation: child mortality was higher among rich households and also among middle-aged women. Since these results looked odd, we made parallel analysis of the 1992 and 2000 DHS data and observed consistency in the direction of the estimates. We argued that, based on the magnitude of the HIV prevalence in Malawi, the reversal in the effect of the LSI on child mortality may be attributed to this disease.

Results from the 2004 Malawi DHS show that between 2000 and 2004, child mortality declined by 29%.¹⁴ A re-examination of the results from our earlier study was inevitable in order to assess (by replicating the analysis from the previous study) whether this decline is captured by the relationship between the LSI and child mortality using the 2004 DHS. If child mortality had declined substantially between 2000 and 2004, we expected that the reversal in the effect of the LSI on child mortality that was observed in the 1998 census and 2000 DHS should disappear. In other words, the effect of the LSI on child mortality should be lower in rich households in 2004.

The re-examination was made for three main reasons. First, recent estimates show that the adult (15-49) HIV prevalence has been declining over the last few years from approximately 16% in 2001 to approximately 12% in 2004.¹⁴ Second, regular collection of large-scale population data sets in Malawi is very rare. And lastly, a continuous assessment of poverty and mortality-related indicators is inevitable in Malawi as the country pursues to achieve, by 2015, the Millennium Development Goals (MDGs) set by the United Nations. We cannot take it at face value that child mortality in richer households has declined more than

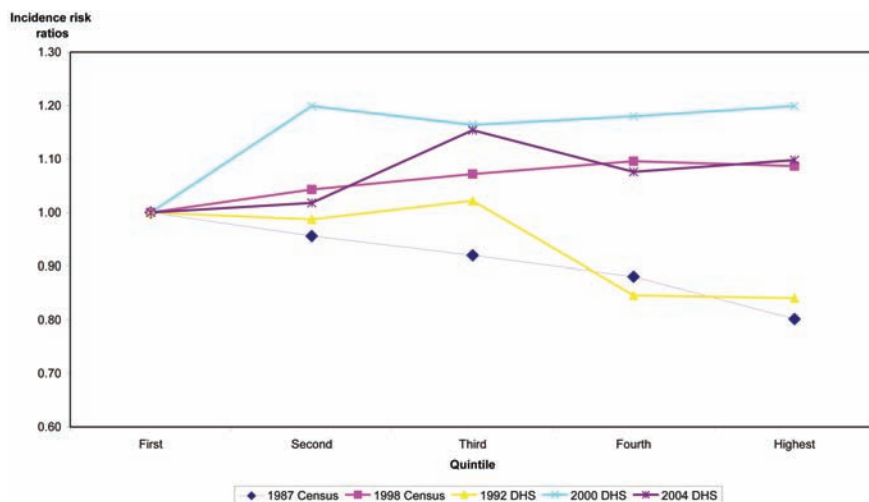


Figure 1. Relationship between living standards index and risk of child death, Malawi.

in poor households. A re-examination of the trends observed in our previous study is crucial to inform policy.

The results in Figure 1 are based on the baseline negative binomial model of the relationship between living standards and child mortality. (Full details of the model estimates for other control variables such as age group of women and place of residence are available from the author upon request.) These results show that the child mortality level in 2004 was still higher in richer households but at lower levels than those observed in the 2000 DHS, and generally at par with the estimates from the 1998 census, except for the third quintile.

The reversal in mortality trends observed here, that is from low levels among rich households in 1987/1992 to high levels in 1998/2000, and then a reduction in 2004, may be attributed to a modest improvement in people's living standards. Malawi's life expectancy at birth (54 years) is still one of the lowest in the world with 74% of people living on less than 1.25 US dollars per day. In 2006, the country ranked 165 and 85 on the Human Development and Human Poverty Indices, respectively.¹⁵ These factors, among others, are challenges for Malawi and it is not unreasonable to expect them to lead to persistent high mortality in rich households. There has been little change in the factors associated with decreases in child mortality in the three DHS (i.e. 1992, 2000, and 2004).¹⁴

Essential to the reduction in child mortality between 2000-2004 was, among others, the tight fiscal management on the part of the Government of Malawi. An assessment by the International Monetary Fund (IMF) shows that in December 2000, a 3-year Poverty Reduction and Growth Facility (PRGF) was established and approved. This was aimed at laying down

the objectives of poverty reduction and economic growth more central to the IMF lending operations in poor countries such as Malawi. However, by November 2001, Malawi was off-track with a poor economic performance that went on to improve by 2003. After the new Government of President Bingu wa Mutharika came to power in 2004, the IMF review found that the economic performance was clearly associated with improved expenditure management and the clampdown on corruption.¹⁶ For a country heavily reliant on donor support, improvement in fiscal management, if sustained, would lead to Malawi receiving additional debt relief and donor support ultimately leading to improved living standards of its people. Thus, the observed decline in child mortality may partly be attributed to improved macro-economic policies. Whether the modest improvement in child mortality will be sustained is a critical issue to be considered. As we draw closer to the deadline for the MDGs, it is imperative that researchers take stock of the available data to determine if Malawi and other countries are on course to meet them.

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