

Uganda: Girls' Education, Early Childbearing, and Child Health (Under-five Mortality and Stunting)

Adenike Onagoruwa and Quentin Wodon

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Uganda has made substantial progress in reducing under-five mortality (U5M) over the last few decades, with an estimated rate of U5M in the World Development Indicators at 42 deaths per 1,000 live births in 2021, which is below the average for sub-Saharan Africa at 73 deaths per 1,000 live births. The prevalence of under-five stunting (U5S), estimated at 25.4 percent in 2020, however remains high (there is no comparable figure for sub-Saharan Africa). While U5M and U5S may be due to a wide range of factors, lack of educational attainment for mothers contributes to the issues, as do risks associated with early childbearing (a child being born of a mother younger than 18 at the time of birth).

Using data from the last two Demographic and Health Surveys (DHS) for 2011 and 2016 (no new DHS surveys have been implemented since), analysis in this brief suggests that in Uganda, secondary education for mothers does not have a statistically significant effect on U5M and U5S, which is a bit surprising given that in many other African countries, such effects are observed. As to early childbearing, it is associated with a higher likelihood for a child to die before the age of five or be stunted (stunting, or low height for age, is associated with risks for brain development in early childhood and substantially lower earnings in adulthood). Based on those results, simulations suggest that achieving universal secondary education for girls might not lead to large reductions in the rates of U5M and U5S nationally.



Background: This brief was prepared for a KIX Africa 19 Hub national policy dialogue in Uganda with a focus on inclusive education. KIX (Knowledge and Innovation Exchange) Africa 19 contributes to education systems strengthening in African anglophone countries by bridging the gap between research and policy making. With support from the Global Partnership for Education and Canada's International Development Research Center, KIX Africa 19 is managed by UNESCO IICBA.

Key findings: Using data from the Demographic and Health Surveys for 2011 and 2016, this brief provides an analysis of the effect of a mother's education and age at delivery on the risks of under-five mortality and under-five stunting for her children.

- Uganda has made major progress towards reducing under-five mortality (U5M), with an estimated rate at 42 deaths per 1,000 live births in the World Development Indicators in 2021, which is below the average for sub-Saharan Africa at 73 deaths per 1,000 live births. The prevalence of under-five stunting (U5S), estimated at 25.4 percent in 2020, however remains high.
- Using DHS data, regression analysis in many African countries suggests that secondary education for mothers could lead at the margin to large reductions in the risks for their children of dying by age five or being stunted. In Uganda however, the effects are not statistically significant (effects become statistically significant and are large only when the mother has higher education).
- As in other countries, preventing early childbearing could reduce U5M and U5S. Still, nationally, reductions in U5M and U5S from ending early childbearing are not likely to be large even though the marginal impacts tend to be large; the reason is that only a small minority of children are born of mothers younger than 18 at the time of their birth.
- Overall, even if some effects are not statistically significant, by reducing early childbearing and child marriage, universal secondary education could have substantial benefits for child health.

By contrast, preventing early childbirth could lead to lower rates of U5M and U5S, although effects at the national level may not be large because only a small minority of children are born of mothers younger than 18 at the time of their birth, as discussed among others in Wodon et al. (2017, 2018).

Higher educational attainment for mothers would reduce health risks for young children

To assess the potential impact of educational attainment for mothers on the risks for their children to die before the age of five or to be stunted, regression analysis is conducted using the 2011 and 2016 DHS. The regression analysis relies on a wide range of controls to try to identify the specific potential impact of the mother's educational attainment on her child's health, using the risk of death and that of stunting as proxies for child health. We use the term "potential impact" as the analysis is correlational, and not necessarily causal.

Table 1 provides the key results. The first part of the Table provides marginal effects. Surprisingly in comparison to results obtained with the same approach in other African countries, most of the effects of the mother's educational level are not statistically significant (this is denoted by NS in the Table). Effects are statistically significant only when the mother has higher education, which is associated with a reduction in U5M of -1.81 percentage point with the 2016 DHS. The effect of the mother having higher education is also statistically significant and large for U5S in both surveys (reduction in U5S of -15.40 percentage points in 2011 and -14.97 percentage points in 2016).

In the next parts of the Table, simulations are conducted to assess the potential impact on U5M and U5S nationally of achieving universal primary or secondary education. This means that women who have not achieved those levels of education are assumed to achieve them. As results are reported only when the corresponding coefficients in the regressions are statistically significant, the Table suggests no (statistically significant) effects from universal primary or secondary education.

Table 1: Potential Impact of the Mother's Education on Child Health, 2011 and 2016

	2011	2016
	Risk of under-five mortality	
Marginal Impacts (% reduction)		
Primary completed	NS	NS
Some secondary	NS	NS
Secondary completed	NS	NS
Higher education	NS	-1.81
Universal Primary		
Absolute reduction	NS	NS
Percentage reduction from the base	NS	NS
Universal Secondary		
Absolute reduction	NS	NS
Percentage reduction from the base	NS	NS
	Risk of under-five stunting	
Marginal Impacts (% reduction)		
Primary completed	NS	NS
Some secondary	NS	NS
Secondary completed	NS	NS
Higher education	-15.40	-14.97
Universal Primary		
Absolute reduction	NS	NS
Percentage reduction from the base	NS	NS
Universal Secondary		
Absolute reduction	NS	NS
Percentage reduction from the base	NS	NS

Source: Authors' estimation.

Ending early childbearing would also reduce health risks for young children

One of the controls in the independent variables used for the regression analysis is whether the child was born of a mother younger than 18 at the time of birth (early childbirth). When women give birth at a young age, they are at higher risk of maternal mortality, and their children face higher risks of neonatal mortality, as well as higher risks of under-five mortality and stunting. This is clearly seen in Table 2 for Uganda, even if one of the effects is not statistically significant in 2016. For example, the regression results suggest that being born of a mother younger than 18 increases the risk of dying by age five at the margin by 4.66 percentage points with the 2011 survey, and 2.44 percentage points with the 2016 survey. In the 2011 survey, being born of a mother younger than 18 increases the risk of being stunted by a very large 21.97

percentage points, although the effect is not statistically significant in 2016. Broadly, despite differences between the two surveys, the results provide convincing evidence of negative marginal effects of an early childbirth on the child's health.

As was done for educational attainment, simulations can be conducted to assess the potential impact on U5M and U5S nationally of ending early childbearing for mothers, and therefore early childbirths for children. The reductions in absolute terms and as a proportion of base values are not very large, even though marginal effects are large when they are statistically significant. The reason for this apparent paradox is simple: while marginal effects associated with an early childbirth are sizeable, only a small minority of children are born of mothers younger than 18 at the time of their birth. In other words, these marginal effects affect only a small minority of children.

Table 2: Potential Impact of Ending Early Childbearing on Child Health, 2011 and 2016

	2011	2016
	Risk of under-five mortality	
Marginal Impact (% reduction)		
Early childbirth	4.66	2.44
Ending early childbearing		
Absolute reduction	0.27	0.17
Percentage reduction from the base	4.1	3.5
	Risk of under-five stunting	
Marginal Impact (% reduction)		
Early childbirth	21.97	NS
Ending early childbearing		
Absolute reduction	1.03	NS
Percentage reduction from the base	3.1	NS

The combined effect would be a reduction in U5M and U5S nationally

As argued in other briefs in this series, achieving universal secondary education for girls could virtually eliminate child marriage, which in turn could lead to a large reduction in the prevalence of early childbearing. The overall effect on U5M and U5S of universal secondary education for girls should thus include the potential effect of a reduction in the prevalence of early childbearing. In most African countries for which estimations have been conducted, because the effects of secondary education are large and statistically significant, simulations suggest

large reductions in U5M and U5S from universal secondary education, which include a component from a reduction in early childbearing. In Uganda, statistically speaking, this is not the case, but still the overall results suggest positive effects from mothers being better educated (the fact that some coefficients may not be statistically significant, especially for the mother's secondary education, could be due to a relatively small sample size of mothers with that level of education in Uganda in the DHS surveys).

Takeaways

Uganda has succeeded in reducing its rate of U5M dramatically over the last few decades, with the rate now below the average for sub-Saharan Africa. The prevalence of U5S however remains high, affecting about one in four children. It is widely acknowledged that achieving higher educational attainment for mothers and ensuring that they do not give birth too early is beneficial for the health of their children. Analysis of data from the 2011 and 2016 DHS suggests that, to a large extent, this is also the case in Uganda, even if for education the effects are statistically significant only when the mother has higher education. Importantly, universal secondary education could dramatically reduce the prevalence of child marriage, which would in turn reduce early childbirths and the associated risks for young children. Overall, improving girls' educational attainment should lead to significantly better health outcomes for their future children.

References

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