

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

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Nigeria has made substantial progress in reducing under-five mortality (U5M) over the last few decades, yet the estimated rate of U5M in the World Development Indicators at 111 deaths per 1,000 live birth in 2021 remains above the average for sub-Saharan Africa at 75 deaths per 1,000 live birth. In addition, the prevalence of under-five stunting (U5S), estimated at 31.5 percent in 2020, also remains high (there is no comparable figure for sub-Saharan Africa). While high rates of 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 childbirths (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 2013 and 2018 (data from the planned 2023 DHS should be available in 2024), analysis in this brief suggests that in Nigeria, secondary education for mothers and early childbirths have, respectively, positive and negative effects on the 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). Simulations suggest that achieving universal secondary education for girls would lead to large reductions in the rates of both U5M and U5S nationally. By contrast, while an early childbirth leads to high risks for children, ending early childbearing would lead to smaller reductions in both U5M and U5S as 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).



Background: This brief was prepared for a KIX Africa 19 Hub national policy dialogue in Nigeria with a focus on data and achieving gender equality in and through 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 2013 and 2018, 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.

- Nigeria has made major progress towards reducing under-five mortality (U5M), yet the estimated rate at 111 deaths per 1,000 live birth in the World Development Indicators in 2021 remains above the average for sub-Saharan Africa. The prevalence of under-five stunting (U5S), estimated at 31.5 percent in 2020, also remains high.
- Using DHS data, regression analysis suggests that secondary education for mothers and the prevention of early childbirths could lead at the margin to large reductions in the risks for their children of dying by age five or being stunted.
- In turn, universal secondary education for mothers could lead to a reduction of U5M nationally of just under a fifth from the base value. For U5S, the reduction could be of the order of just under a tenth of the base value.
- Reductions in U5M and U5S from ending early childbearing at the national level are likely to be smaller than for universal secondary education even though the marginal impacts tend to be large as well; the reason is that only a small minority of children are born of mothers younger than 18 at the time of their birth.
- Overall, including through lower early childbearing thanks to a reduction in child marriage, universal secondary education could substantially reduce U5M nationally. The effect for U5S as a proportionate reduction from the base would be smaller, but still large.

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 2013 and 2018 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. For example, controlling for other factors affecting U5M, when a mother completes secondary education, this reduces the risk for the child to die before the age of five by -2.62 percentage points in the 2013 survey and -2.04 percentage points in the 2018 survey. This reduction in the risk of death is in comparison to a child born of a mother with no education at all. Similarly, a secondary education for the mother reduces the risk for the child to be stunted by -4.74 percentage points in the 2018 survey, although the effect is not statistically significant at the secondary level in the 2013 survey (this is denoted by NS in the Table). These are relatively large marginal effects for both U5M and U5S.

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. Results are reported only when the corresponding coefficients in the regressions are statistically significant. Universal primary education would not make a large difference, but universal secondary education could, leading to a reduction in 2018 of U5M nationally of 1.7 percentage points or 17.7 percent of the base value computed in the survey in the regression sample. The effect in 2013 is even larger. For U5S, universal secondary education could lead to a reduction of stunting in 2018 nationally of 2.8 percentage points or 8.2 percent of the base value, again computed in the survey in the regression sample (for 2013, as mentioned earlier the effect is not statistically significant). Overall, the effects, when statistically significant, are similar in both surveys, suggesting robustness in the results.

Table 1: Potential Impact of the Mother's Education on Child Health, 2013 and 2018

	2013	2018
	Risk of under-five mortality	
Marginal Impacts (% reduction)		
Primary completed	-1.06	NS
Some secondary	-1.76	-1.35
Secondary completed	-2.62	-2.04
Higher education	-2.72	NS
Universal Primary		
Absolute reduction	0.7	NS
Percentage reduction from the base	8.2	NS
Universal Secondary		
Absolute reduction	2.3	1.7
Percentage reduction from the base	26.6	17.7
	Risk of under-five stunting	
Marginal Impacts (% reduction)		
Primary completed	NS	NS
Some secondary	NS	NS
Secondary completed	NS	-4.74
Higher education	-5.59	-8.95
Universal Primary		
Absolute reduction	NS	NS
Percentage reduction from the base	NS	NS
Universal Secondary		
Absolute reduction	NS	2.9
Percentage reduction from the base	NS	8.2

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 Nigeria, with the regression results suggesting that being born of a mother younger than 18 increases the risk of dying by age five at the margin by 3.94 percentage points in 2018. The effect is even larger in 2013. Similarly, being born of a mother younger than 18 increases the risk of being stunted by 4.25 percentage points in 2013, although the effect is not statistically significant in 2018. The fact that results are similar in

both years suggests again robustness in the estimations. Overall, there is convincing evidence of negative marginal effects of an early childbirth on the child's health.

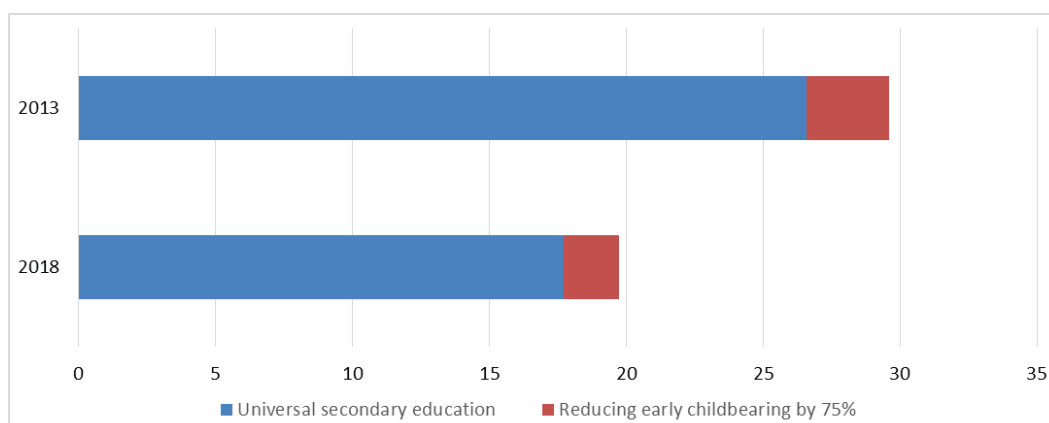
As was done for educational attainment, simulations can be conducted to assess the potential impact on U5M and U5S nationally of ending early childbearing for mothers, and therefore early childbirths for children. The reductions in absolute terms and as a proportion of base values are smaller than for universal secondary education even though the marginal impacts from an early childbirth tend to be large. 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 (the number of children that would benefit from universal secondary education for mothers is much larger).

Table 2: Potential Impact of Ending Early Childbearing on Child Health, 2013 and 2018

	2013	2018
	Risk of under-five mortality	
Marginal Impact (% reduction)		
Early childbirth	4.82	3.94
Ending early childbearing		
Absolute reduction	0.34	0.26
Percentage reduction from the base	4.0	2.7
	Risk of under-five stunting	
Marginal Impact (% reduction)		
Early childbirth	4.25	NS
Ending early childbearing		
Absolute reduction	0.44	NS
Percentage reduction from the base	1.2	NS

Source: Authors' estimation.

Figure 1: Reduction in U5M from the base with universal secondary education (%)



Source: Authors' estimations.

The combined effect could be a substantial 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. Assuming a reduction of early childbearing of three fourths under universal secondary education, as shown in Figure 1 for U5M, universal secondary education could lead to a reduction in U5M of about a fifth in 2018 (the effect is larger in 2013). The comparable reduction for U5S would be smaller, but nevertheless still significant.

Takeaways

Nigeria has succeeded in reducing its rate of U5M dramatically over the last few decades, yet the rate remains above the average for sub-Saharan Africa. The prevalence of U5S is also high, affecting close to one in three 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 2013 and 2018 DHS suggests that this is also the case in Nigeria. Universal secondary education for mothers could lead to a reduction of U5M nationally of just under a fifth from the base value. For U5S, the reduction would be smaller, but still large. In addition, universal secondary education could 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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