

NIGERIA STUNTING SUB-NATIONAL STUDY BRIEF

INTRODUCTION

University of Ibadan in partnership with Centre for Global Child Health at The Hospital for Sick Children (SickKids) conducted a study to identify key factors for stunting reduction in Nigeria which revealed the following findings:

- Multisectoral coordination and investments likely contributed to exemplary decreases in stunting prevalence in some Nigerian states between 2008 and 2018, presenting opportunities for other states to learn valuable lessons on what works well.
- Overall, 55% of the explained increase in child height* in positive outlier states was likely attributable to non-health sector factors, including improvements in maternal and paternal education, increases in household wealth, and better household sanitation.
- Health sector factors, including malaria prevention during pregnancy, maternal and newborn care, and maternal nutrition, also played important roles in increasing child height.

STUNTING PREVALENCE GLOBALLY AND IN NIGERIA

Stunting is identified in children who are unable to reach their full height potential based on international growth standards. Children who are stunted are more likely to die before the age of five, have delayed cognitive development, and later in life have children who are poorly nourished. At the societal level, stunting can cost a country as much as 13% of their gross domestic product in reduced economic productivity and increased health costs.¹

The global prevalence of stunting declined from 39% in 1990 to 23% in 2018.² Despite impressive progress, about 153 million children under the age of five were still stunted in 2018.² To garner attention and accelerate reductions in stunting, a 40% target reduction in the number of stunted children under age five by 2025 was established as part of the broader 2030 United Nations Agenda for Sustainable Development and the World Health Assembly global nutrition 2025 targets.²

Stunting is an important nutritional indicator that reflects well-being at both the individual and societal levels. It serves as a broader proxy for human capital development, including health, education, and economic improvement. Although Nigeria's gross domestic product has increased nearly fourfold from US\$568 per capita in 1990 to US\$2,028 per capita in 2018, reductions in the national stunting rate have been modest, from 43% of children under five to 37% during the same period.^{3,4,5}

Despite limited progress at the national level in Nigeria, some states were able to achieve faster rates of stunting reduction than others. In this study, Nigerian states were considered "Exemplars" in reducing stunting if their average annual rate of reduction in stunting prevalence was more than 0.8% between 2008 and 2018. On average, Exemplar states reduced stunting prevalence from 37% in 2008 to 24% in 2018.^{4,5} These states offer valuable lessons about the driving factors that contribute to accelerating reductions in stunting and highlight successful practices for scaling up programming. In contrast, the remaining "opportunity" states saw a slight increase in stunting prevalence from 42% in 2008 to 43% in 2018.^{4,5}

Prioritizing stunting reduction as part of broader multisectoral investments in human capital development is vital to ensure that Nigeria is on track to meet global stunting reduction targets and positioned for better health and economic success.

FIGURE 1:
Nigeria Stunting Prevalence and GDP per Capita from 1990–2018

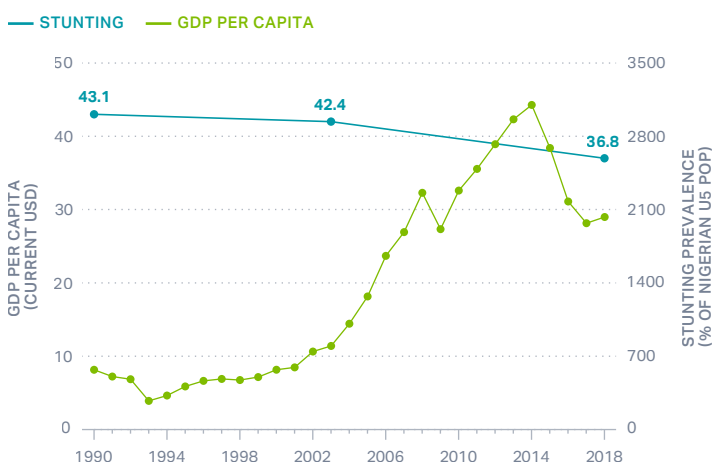
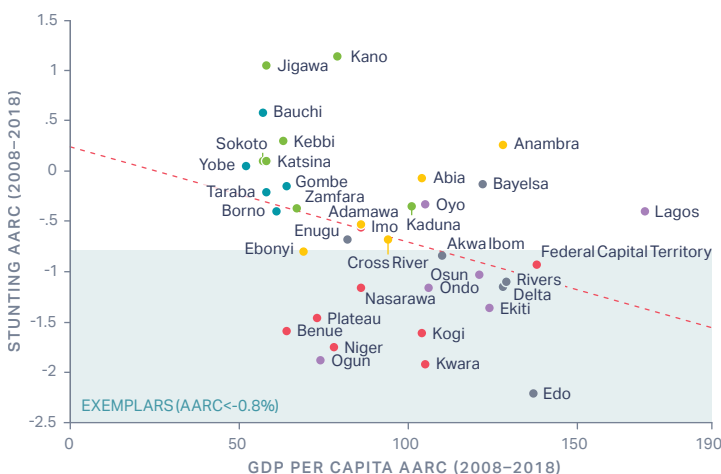


FIGURE 2:
Sub-national Stunting Reduction Exemplars from 2008–2018



● Nigeria Opportunities
● Nigeria Exemplars

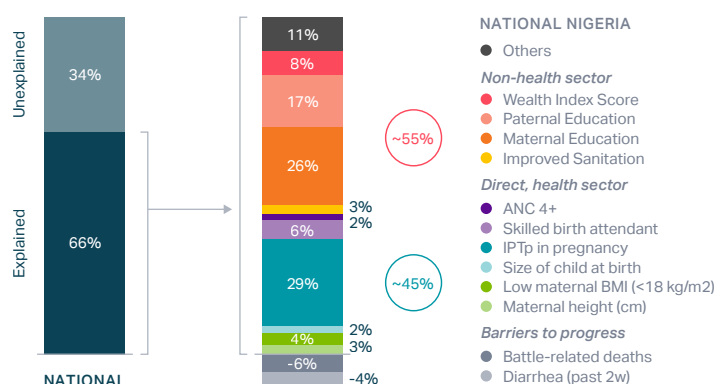


*Mean HAZ was used to estimate average linear growth over time; stunting prevalence is the proportion of children < -2 HAZ.

DRIVERS OF STUNTING REDUCTION IN NIGERIAN EXEMPLAR STATES

We conducted a quantitative analysis based on data from Demographic and Health Surveys, which explained 66% of the observed increase in child height in Nigerian Exemplar states from 2008 to 2018.^{4,5} Data limitations related to collection and quality of dietary and feeding data likely account for some of the 34% of the improvement in child height that remained unexplained. Our findings show that improvements in non-health sector factors accounted for 55% of the explained improvement in child height. The key driving factors of increased child height in Nigerian Exemplar states are described in detail below. We further investigated these factors through key informant interviews in three Exemplar states (Niger, Akwa Ibom, and Ogun) and three remaining “opportunity” states (Abia, Kano, and Yobe).

FIGURE 3:
Drivers of Improved Child Height: Nigerian Exemplar State Decomposition



NON-HEALTH SECTOR FACTORS

Maternal education (26%)

Education gains for women in Nigeria's Exemplar States were substantial, increasing from an average duration of 6.8 years in 2008 to 8.2 years in 2018. Completion of secondary or higher education increased by 15 percentage points, from 45% in 2008 to 60% in 2018, while completion of primary education increased by 3 percentage points, from 77% in 2008 to 80% in 2018.

Paternal education (17%)

Average years of education for men increased by 1.4 years from 8.3 in 2008 to 9.7 years in 2018, likely through targeted investment in compulsory universal education. Men's completion of secondary education or higher increased by 13 percentage points, from 56% in 2008 to 69% in 2018, and completion of primary education increased by 3 percentage points, from 82% in 2008 to 85% in 2018.

Household wealth (8%)

Differences in stunting burden across wealth quintiles remained despite collective progress in reducing stunting. The odds of stunting decrease with increases in wealth, measured by the ownership of assets. This was especially apparent in northern Nigeria opportunity states where wealth inequity increased and stunting prevalence increased by 9% in the lowest quintile. Key informants at the national level attributed the high burden of malnutrition and stunting to high poverty rates and inflation, thereby decreasing overall purchasing power for nutritious food.

Water, sanitation, and hygiene (3%)

Improved sanitation shows a strong association with stunting reduction, but only modest improvements in coverage were observed over the 10-year study period. Over the 10-year study period, access to improved sanitation facility increased by 4 percentage points, from 20% in 2008 to 24% in 2018, and access to improved water source increased by 10 percentage points, from 59% in 2008 to 69% in 2018. Although budget allocations for water, sanitation, and hygiene interventions have increased over the study period, key informants highlighted access to improved sanitation as a challenge in rural areas where open defecation is still widely practiced.

HEALTH SECTOR FACTORS

Malaria prevention during pregnancy (29%)

Uptake of intermittent preventive treatment of malaria during pregnancy (IPTp) increased by 34 percentage points, from 8% in 2008 to 42% in 2018, driven in part by ambitious national targets and extensive coordination through key programs and policies. Our findings on the importance of malaria prevention in stunting reduction are supported by similar findings in other malaria endemic populations, such as Uganda and Ghana.

Maternal care (8%)

Maternal care showed a strong association with improved child height. However, only modest increases in coverage of at least four antenatal care visits (67% in 2008 to 71% in 2018) and presence of skilled birth attendant at delivery (59% in 2008 to 65% in 2018) were observed in Nigerian Exemplar states over the study period, constraining the overall contribution of maternal care toward stunting reductions.

Maternal nutrition (7%)

Reductions in proportion of underweight women and increases in maternal height showed the strong intergenerational effects on stunting despite minor changes over time. The proportion of women with a body mass index of less than 18.5 kg/m² declined by 2 percentage points (12% in 2008 to 10% in 2018) while mean maternal height remained roughly constant at approximately 158 cm.

Size of child at birth (4%)

While strongly associated with postnatal growth, there were minor gains in percent of children at average size or above at birth (88% in 2008 to 90% in 2018) during the study period, constraining its overall contribution.

BARRIERS TO PROGRESS

Diarrhea (-4%)

Diarrhea prevalence detracted from gains in child height over time, driven by an increase in cases of diarrhea in northern Nigerian Exemplar states of 7 percentage points, from 7% in 2008 to 14% in 2018.

Battle-related deaths (-6%)

Exemplar states in northern Nigeria experienced 50% increase in battle-related deaths over the study period, detracting from gains in child height, in contrast to southern Exemplar states that remained conflict free.

ANALYSIS OF RISK FACTORS

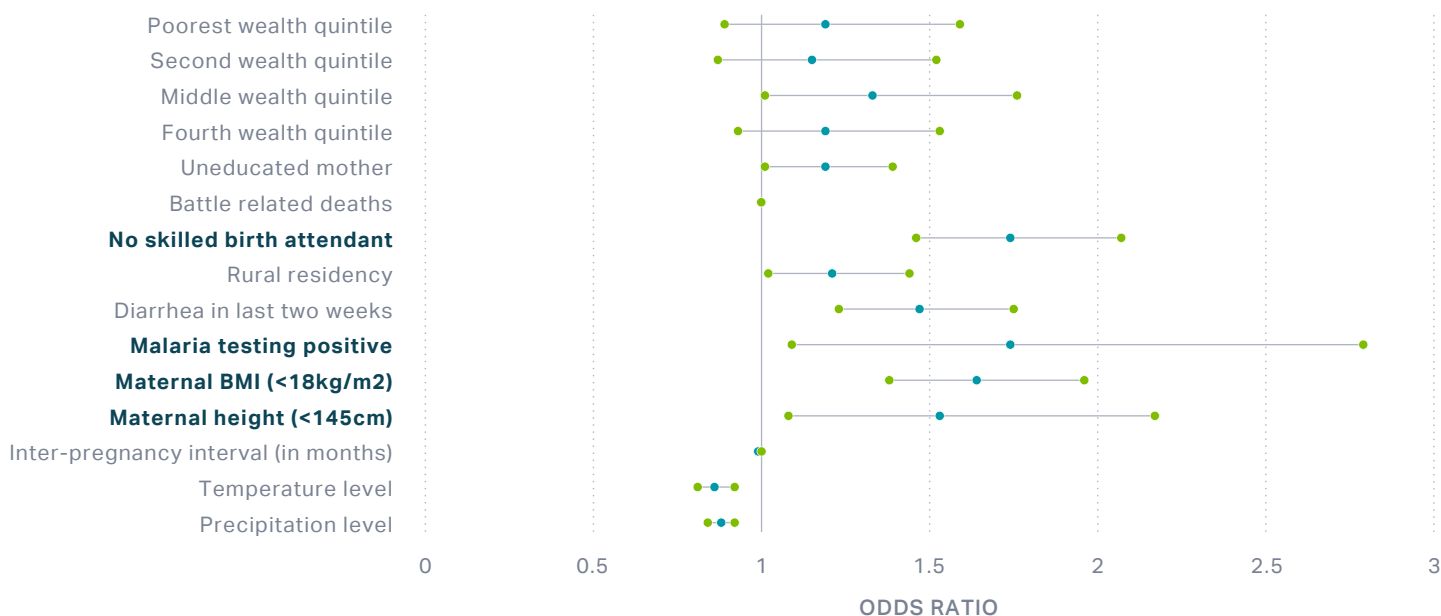
We also conducted a risk analysis across northern and southern opportunity states in Nigeria from 2008 to 2018 to understand how certain factors increase the risk of stunting in children. In 2008, the following were identified as risk factors for stunting: not having a skilled birth attendant (74% increase in likelihood of stunting), testing positive for malaria (74% increase), low maternal height (53% increase), and low maternal body mass index (64% increase). By 2018, testing positive for malaria (432% increase) and low maternal height (271% increase) emerged as clear leading risk factors for stunting across northern and southern opportunity states. Non-exposure to mass media (165% increase), being in the poorest wealth quintile (121% increase), and early age pregnancy (92% increase) were additional risk factors worth noting.

The risk factors we identified are supported by our findings from the decomposition analyses of data from Demographic and Health Surveys.^{4,5} The importance of malaria prevention, increased household wealth, and maternal nutrition in improving child height is supported by our analysis of risk factors associated with stunting.

FIGURE 4:
Factors associated with stunting in North & South Opportunity States

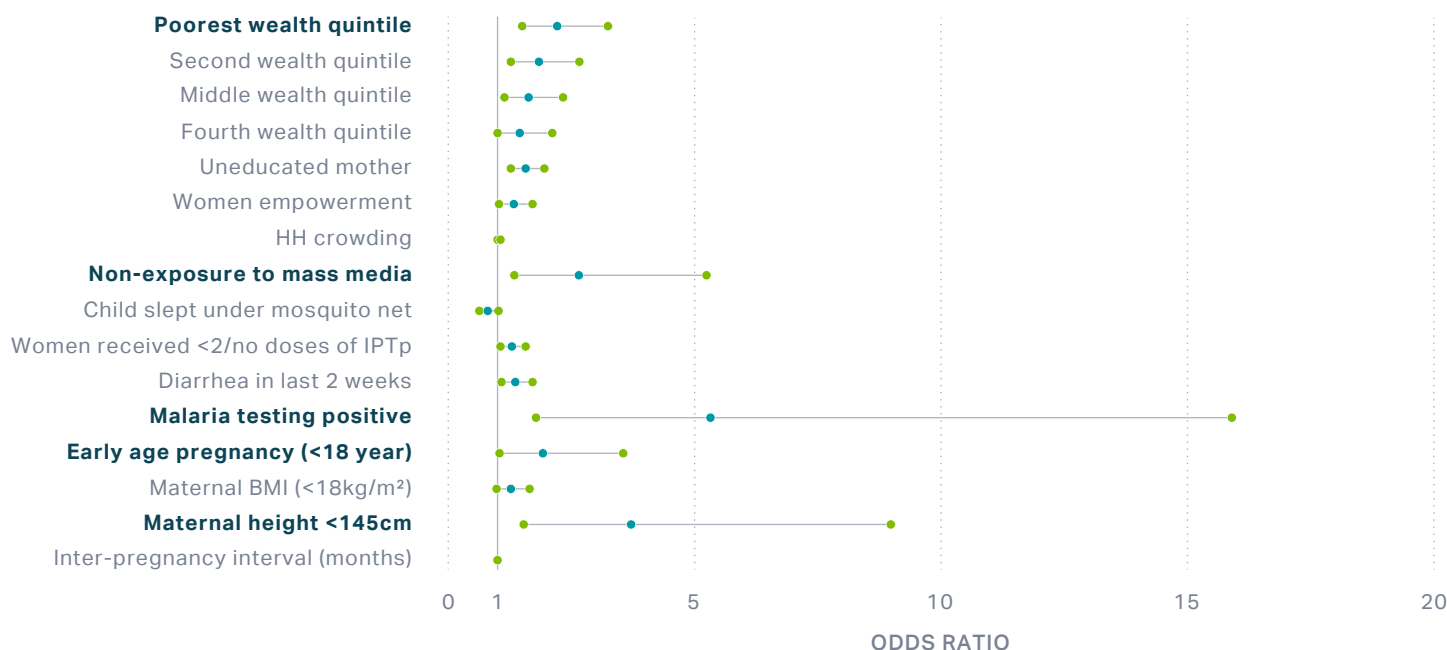
Factors associated with stunting in North & South Opportunity States in 2008

• ADJUSTED ODDS RATIO • 95% CONFIDENCE INTERVAL FOR ODDS RATIO **BOLD TEXT | LEADING RISK FACTORS**



Factors associated with stunting in North & South Opportunity States in 2018

• ADJUSTED ODDS RATIO • 95% CONFIDENCE INTERVAL FOR ODDS RATIO **BOLD TEXT | LEADING RISK FACTORS**



ASSESSMENT OF NIGERIA'S PERFORMANCE IN STUNTING REDUCTION

In earlier research conducted by Exemplars in Global Health, we identified 10 key factors for reducing childhood stunting at scale. The following table provides a preliminary, high-level assessment of Nigeria's performance across these 10 factors. Progress was made across seven factors: demonstrating high-level political and donor support, investing in granular data for decision making, investing in education, improving living conditions, improving maternal nutrition and access to quality maternal and newborn outcomes, promoting early and exclusive breastfeeding, and improving complementary feeding. However, gaps remain across three factors: addressing food insecurity and reaching marginalized populations, addressing gender disparities and empowering girls and women, and increasing access to family planning and reducing high-burden pregnancies.

■ Progress observed over the study period (2008-2018)

■ Limited/no progress observed over the study period (2008-2018)

Category	Key factors for reducing stunting at scale	Description of assessment findings	Illustrative programs
Political will	1. Demonstrate high-level political and donor support	<ul style="list-style-type: none"> Limited progress was made in health expenditure as a percentage of GDP (2.6% to 3.6%) between 2008 and 2018. However, nutrition was recently prioritized through several state-level initiatives and investments by development partners. Official development assistance increased from US\$1.3 billion in 2008 to \$US3.3 billion in 2018. 	Partnership for Advocacy in Child and Family Health Project (2014) National Strategic Health Development Plan (2010-2015)
	2. Invest in granular data for decision-making	<ul style="list-style-type: none"> Data quality improved from 2008 to 2018. The District Health Information System (DHIS2) is now functional. State-level scorecards and indicators will help track nutritional indicators over the next decade. Persistent challenges remain with the collection and quality of dietary and nutrition-specific data. 	
Indirect, non-health sector	3. Address food insecurity and reach marginalized populations	<ul style="list-style-type: none"> Food insecurity in Nigeria remains comparable to western Africa, but more improvements are needed. Gaps in stunting burdens across wealth quintiles remain wide and increased between urban and rural residence over the ten-year period. 	National Program for Food Security (2003-2007) Second National Fadama Development Project (2004-2009) MDGs Conditional Grant Scheme (2007) Third National Fadama Project (2008-2019) Agriculture Transformation Agenda (2013-2015)
	4. Invest in education, especially for girls	<ul style="list-style-type: none"> Proportion of women with secondary or higher education increased from 10.2% in 2008 to 15.6% in 2018.^{4,5} However, women have fewer median years of schooling than men. (3.6 years for women vs. 5.4 years for men).^{4,5} 	African Girls' Education Initiative (2001-2003) Federal Universal Basic Education Act (2004) Girls' Education Project Phase 3 (GEP3) Cash Transfer Programme (CTP) (2014-2016; Niger and Sokoto)
	5. Address gender disparities and empower girls and women	<ul style="list-style-type: none"> Slight improvements were made regarding women's participation in decision-making (32.1% in 2008 vs. 33.5% in 2018).^{4,5} However, absolute participation in key domains, including health care, is low and Nigeria ranks poorly on global gender indices (e.g., Nigeria ranked 128 out of 153 countries on the 2020 Global Gender Gap and had a 2019 Gender Development Index of 0.88, ranking 123rd of 191 countries). 	SURE-P: Community Services Women and Youth Employment (2012) Government Enterprise and Empowerment Programme (2016)
	6. Improve living conditions, especially related to water, sanitation, and hygiene	<ul style="list-style-type: none"> Access to water and sanitation increased slightly during the study period, but rates of open defecation remained high in some regions.^{4,5} Prevalence of child diarrhea increased slightly from 10.7% in 2008 to 12.8% in 2018.^{4,5} Significant progress has been made surrounding the use of mosquito nets.^{4,5} 	Nigeria National WASH Water Sector Reform Project (2004-2013; Kano, Kaduna, and Ogun) Third National Urban Water Sector Reform Project (2014-2020; Rivers, Plateau, Ondo, Kano, Benue, Bauchi, Abia, Jigawa, Bayelsa, Ekiti, Gombe, and Anambra) Partnership for Expanded WASH Program (2016-2030)

Category	Key factors for reducing stunting at scale	Description of assessment findings	Illustrative programs
Indirect, health sector	7. Increase access to family planning and reduce high-burden pregnancies	<ul style="list-style-type: none"> Age at first birth remained largely unchanged (20), and birth intervals remained short (<32 months).^{4,5} Information on family planning provided at health facilities increased over the study period; however usage of modern contraceptive methods among women remained unchanged at 10.5%.^{4,5} 	<p>Nigerian Urban Reproductive Health Initiative (NURHI) Phase I (2009-2014; Abuja, Ibadan, Ilorin, and Kaduna, Benin City, Zaria)</p> <p>NURHI Phase 2 (2015-2020; Kaduna, Lagos and Oyo)</p>
Direct, health sector	8. Improve maternal nutrition and access to quality maternal and newborn care	<ul style="list-style-type: none"> Access to quality maternal and newborn health care improved from 2008 to 2018. Skilled birth attendance increased from 38.8% to 43.3%, delivery at a health facility increased from 35.0% to 39.4%, and antenatal care coverage (at least four visits) increased from 44.8% to 56.8%.^{4,5} Maternal underweight prevalence remained largely unchanged at 12%, but prevalence of overweight and obesity increased by approximately 6%.^{4,5} Coverage of malaria interventions increased substantially, with women receiving at least two doses of malaria treatment in pregnancy increasing from 6.5% to 40.4% and households with at least one insecticide-treated net increasing from 8.0% to 60.6%.^{4,5} 	<p>Roll Back Malaria Partnership (2001)</p> <p>Integrated Maternal, Newborn, and Child Strategy (2007-2015)</p> <p>Support to the National Malaria Programme (SuNMaP) (2008-2016; Anambra, Kano, Katsina, Lagos, Ogun, Niger)</p> <p>Saving One Million Lives Initiatives PforR Project (2015-2022)</p> <p>Midwife Service Scheme (2009)</p>
	9. Promote early and exclusive breastfeeding	<ul style="list-style-type: none"> Rates of exclusive breastfeeding increased by 15.6 percentage points. However, only about 29% of infants were exclusively breastfed for the first 6 months of life in 2018.^{4,5} The median duration of breastfeeding remained largely the same at 18 months.^{4,5} 	<p>Abuja Breastfeeding Declaration (2016)</p>
	10. Improve complementary feeding, including diet diversity and micronutrient supplementation	<ul style="list-style-type: none"> Consumption of different food groups and minimum dietary diversity improved moderately.^{4,5} Rates of vitamin A supplementation increased from 25.8% in 2008 to 45.3% in 2018.^{4,5} 	<p>Essential Childhood Medicines Scale-Up Plan (2012-2015)</p> <p>Zinc/ORS Scale-Up (2012-2017; Bauchi, Cross River, Kaduna, Kano, Katsina, Lagos, Niger, Rivers State)</p>

CONCLUSION

Reducing stunting in Nigeria requires a multisectoral approach that includes investments and improvements both within and outside of the health sector. Factors outside of the health sector, such as increased household wealth, improved education of both mothers and fathers, and increased attention to water and sanitation, are vital to reaching global nutrition targets and positioning Nigeria for improved health and economic success. Important health interventions are also necessary for driving improvements in child growth and nutrition, including malaria prevention, maternal and newborn care, and improving maternal nutrition. Our findings show that gaps and inequalities in stunting prevalence persist and have worsened in some areas, with stunting burden increasing among the poorest and least educated families even in areas where stunting has improved overall. Future efforts that focus on reducing inequalities, improving universal access to quality services, increasing access to family planning, promoting women's empowerment, and investing in better systems to collect dietary and other key data in Nigeria will drive even more change and yield greater health and nutritional gains for children.

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