

Bridging the Gap: Overcoming Educational Challenges in Uganda

Ismael Valladolid-Acebes, *PhD*¹ and Ainganiza Waddell Steven²

¹Organizational Development Director at PLATFORM for the NEEDY (PLANE)

²Founder and Executive Director at PLATFORM for the NEEDY (PLANE)

Abstract

Uganda has made notable strides in expanding educational access through policies like Universal Primary Education (UPE) and Universal Secondary Education (USE). However, significant challenges persist, particularly in addressing the quality of education and the impact of child undernutrition. This report examines the complex interplay between educational outcomes and nutritional status in Uganda, revealing that child undernutrition significantly hampers academic performance and long-term educational attainment. Stunted children exhibit higher repetition rates and lower average years of schooling, contributing to an estimated economic burden of UGX 20 billion annually in education-related costs. Additionally, the broader economic impact of undernutrition, including productivity losses and mortality-related working hours, amounts to UGX 657 billion annually. The analysis underscores the urgent need for integrated strategies that address both educational and nutritional challenges. Achieving aggressive stunting reduction targets by 2025 could yield significant economic savings, emphasizing the critical importance of targeted interventions to enhance educational quality and child nutrition in Uganda.

Summary for general public

This report examines the significant educational and nutritional challenges facing Uganda, despite the country's progress in expanding access to education. While policies like Universal Primary Education (UPE) and Universal Secondary Education (USE) have increased school enrollment, they have also led to overcrowded classrooms and strained resources, especially in poorer and rural areas. Additionally, child undernutrition has a profound impact on education, with stunted children more likely to repeat grades and achieve lower levels of schooling. The economic cost of this undernutrition is immense, affecting not only educational outcomes but also the overall productivity of the workforce, leading to billions of Ugandan shillings in lost income. The report emphasizes the need for integrated strategies that improve both nutrition and education, highlighting that aggressive efforts to reduce stunting could save Uganda substantial amounts of money while improving the lives of its children. To ensure sustainable progress, continued investment in educational infrastructure, better nutritional interventions, and modernized curricula are essential.

Introduction

Education is globally acknowledged as a crucial public service, fostering personal development and advancing social, economic, and political progress within nations. This recognition underlies the substantial investments made by various economies to enhance educational quality. As a fundamental human right (UNESCO, 2017), education is essential for maintaining economic competitiveness in a world marked by rapid technological and production changes. Education is also a cornerstone of the Millennium Development Goals, providing a foundation for youth to secure good employment, health, and socioeconomic status (United Nations, 2015).

Uganda, as highlighted by the World Bank (2018), has implemented policies aimed at promoting quality education at multiple levels, recognizing basic education for both children and adults as a right enshrined in its constitution (Republic of Uganda, 1995). Since the decentralization of the civil service in 1998, the management of basic education has largely been delegated to local governments (Republic of Uganda, 1997), while the Ministry of Education and Sports oversees policy formulation and educational standards through teacher training, examinations, and curriculum development.

Despite efforts to improve access to education, challenges persist, particularly following the introduction of the Universal Primary Education (UPE) policy in 1997, which significantly increased enrollment rates across Africa (United Nations, 2015). This surge led to shortages in teachers, schools, and educational materials. In Uganda, the teacher-student ratio increased from 1:40 to 1:57 in 1997 (World Bank, 2014), highlighting the ongoing need for more teachers, schools, infrastructure, and scholastic materials. The situation is exacerbated by additional fees imposed by schools, which disproportionately affect children from poorer households and rural areas, contributing to lower educational attainment among these populations (Nabugoomu et al., 2019).

High dropout rates remain a critical issue, driven by factors such as early employment, long distances to schools, early pregnancy, and poor academic performance, particularly in rural areas. Addressing these challenges requires targeted interventions such as providing accessible sexual and reproductive health services and free sanitary towels to reduce early pregnancy rates among girls (Nabugoomu et al., 2019). The inadequate staffing of public primary schools, despite numerous Grade Three teachers being produced annually, continues to hinder the quality of education. Ensuring sufficient and well-distributed staffing remains a priority (UNESCO, 2019).

The introduction of the Universal Secondary Education (USE) in 2007 aimed to improve access to quality secondary education for primary school graduates. However, issues such as inadequate infrastructure and resources persist, affecting both primary and secondary education quality (TISSA, 2013). The curriculum and assessment systems need alignment with contemporary societal and employment needs (Rukwengye, 2018). Furthermore, the limited use of information and communication technology (ICT) in education highlights the need for teacher training and improved ICT infrastructure (Aguti et al., 2006).

In summary, while Uganda has made significant strides in educational policy and access, several challenges remain. Addressing these issues requires a concerted effort from the government and private sector to ensure quality education for all.

Data analyses and source data verification

Data presented was provided by the Official Statistics Provider for Uganda (Uganda Bureau of Statistics, UBO; Office of the Prime Minister, ‘Uganda Nutrition Action Plan 2020-2025: leaving no one behind in scaling up Nutrition Actions’, Kampala, Uganda, 2020) and the Uganda Demographic and Health Survey (UDHS) 2022. Data is of public consumption and is stored in The PLATFORM for the NEEDY and the research team analyzing the data of the current report.

Data collation was performed using GraphPad Prism 5.0. The steps of the outbreak investigation followed the previously described guidelines (14,15).

Results

Social and Economic Impact of Child Undernutrition on Health

The social and economic impact of child undernutrition on health reveals significant burden. A total of 975,450 children were identified as underweight. This population experienced an estimated 1.6 million additional morbidity episodes annually, highlighting the extensive health implications of undernutrition. The economic cost associated with these health impacts was substantial, amounting to UGX 525.8 billion per year. Notably, families bore the majority of this financial burden, covering approximately 87% of the total economic cost (**Table 1**). These findings underscore the critical need for interventions to address child undernutrition and alleviate its extensive social and economic consequences.

Table 1. Socioeconomic impact of undernutrition on health’s children

Underweight children	975,45
Annual additional morbidity episodes	1.6 million
Economic Cost	UGX525.8 billion
Proportion covered by the families	87%

Impact of Undernutrition on Repetition

In our study examining the impact of early childhood undernutrition on academic performance, we found a notable difference in repetition rates between students who experienced stunting and those who did not. Specifically, students who were stunted during childhood had a repetition rate of 12.2%, compared to a lower rate of 9.1% observed among their non-stunted peers (**Figure 1**). This difference suggests that stunting in early childhood is associated with a higher likelihood of academic repetition, highlighting the long-term educational consequences of undernutrition. These findings underscore the importance of addressing nutritional deficits early in life to mitigate their adverse effects on educational outcomes.

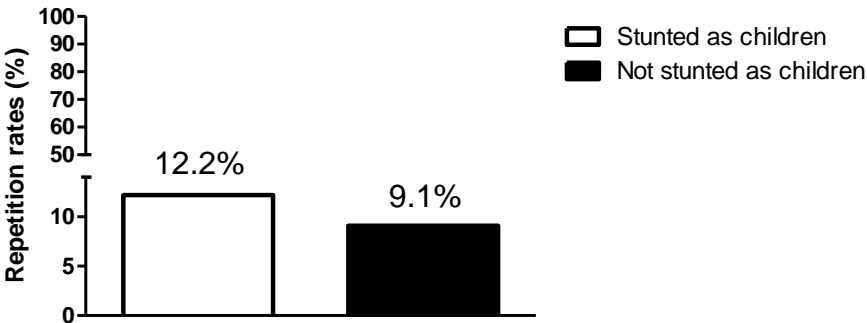


Figure 1. Impact of undernutrition in repetition rates of students

In our analysis of the economic impact of grade repetitions linked to child undernutrition, we found that 5.8 million school-aged children are affected by stunting. This condition is associated with 7.30% of grade repetitions, resulting in an economic burden estimated at UGX20 billion (approximately USD 9.5 million). Notably, the education system, considering

only primary education, covers 46% of this cost (Table 1). This highlights a significant financial implication of undernutrition on educational outcomes, underscoring the need for integrated strategies addressing both nutritional and educational challenges to mitigate economic losses and improve academic progression.

Table 2. Economic costs of grade repetitions associated with child undernutrition

Number of stunted children of school age	5.8 million
% of repetitions associated with stunting	7.30%
Economic Cost	UGX20 billion (9.5 million)
Proportion covered by the education system (only considers primary school)	46%

Impact of Undernutrition on Retention

In our analysis of educational attainment relative to nutritional status, we observed a notable disparity in the average years of schooling between stunted and non-stunted populations. Specifically, individuals identified as stunted exhibited an average of 4.9 years of schooling, whereas those without stunting had an average of 6.1 years (Figure 2). This difference underscores the significant impact of nutritional deficits on educational outcomes, highlighting a potential area for targeted interventions to improve both nutritional status and educational achievements.

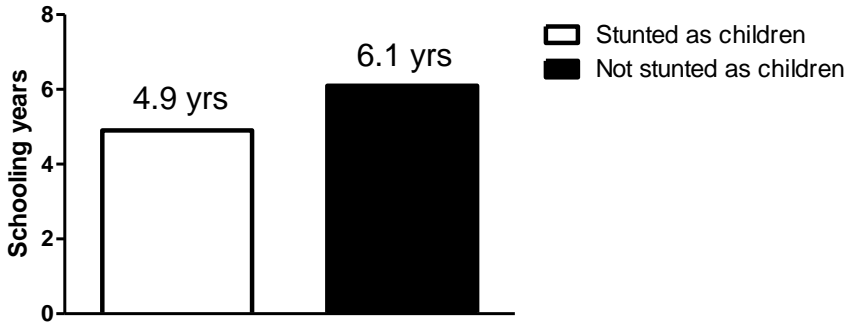


Figure 2. Expected schooling years by nutritional status

In this study, we examined the economic impact of child undernutrition on productivity among the working-age population in Uganda. Our findings reveal that among the 15-64 age group, approximately 8 million individuals are affected by stunting, which represents a prevalence rate of 54%. The undernutrition has led to significant productivity losses, with manual activities experiencing a reduction valued at UGX 417 billion (approximately USD 201.5 million). Non-manual activities also suffered, with a productivity loss of UGX 241 billion (around USD 116.5 million) (Table 3). These figures underscore the substantial economic burden associated with undernutrition, highlighting the critical need for targeted nutritional interventions to mitigate its impact on the workforce.

Table 3. Losses in productivity associated with child undernutrition

Stunted population of working age (15-64)	
Number	8 million
Estimated prevalence	54%
Lost productivity in manual activities	UGX417 billion (201.5 million)
Lost productivity in non- manual activities	UGX241 billion (116.5 million)

Losses in Productivity due to Working Hours Lost as a Result of Mortality

In the context of child undernutrition, the annual losses in productivity due to working hours lost as a result of mortality are substantial. Our analysis reveals that a total of 943 million working hours are forfeited each year, which corresponds to 3.80% of the current workforce. This productivity loss translates to an economic impact of UGX 657 billion, or approximately USD 317 million (Table 4). These figures underscore the significant economic burden of child undernutrition, highlighting the urgent need for targeted interventions to mitigate these losses and enhance overall workforce productivity.

Table 4. Losses in productivity due to mortality associated with child undernutrition

Total annual working hours lost	943 million
Percentage of Current Workforce	3.80%
Cost	UGX657billion (317 million)

Perspectives

In the analysis of strategies to address child undernutrition, two scenarios were evaluated to understand their impact on stunting reduction and associated economic savings. To achieve the goal of halving the prevalence of child undernutrition by 2025, a 1.10% annual reduction in stunting is required, translating to total savings of UGX2.8 trillion (approximately USD1.4 billion). In comparison, the more ambitious "10 and 5 by 2025" scenario, which aims for a 10% prevalence reduction by 2025 and a 5% reduction in stunting, necessitates a higher annual reduction rate of 1.60%. This scenario could result in significantly higher total savings of UGX4.3 trillion (about USD2.2 billion). Correspondingly, the average annual savings under the "10 and 5 by 2025" scenario would be UGX267 billion (USD132 million), compared to UGX179 billion (USD88 million) under the halving prevalence scenario. These findings underscore the substantial economic benefits associated with more aggressive stunting reduction targets, highlighting the potential for significant fiscal impact alongside improvements in child nutrition outcomes.

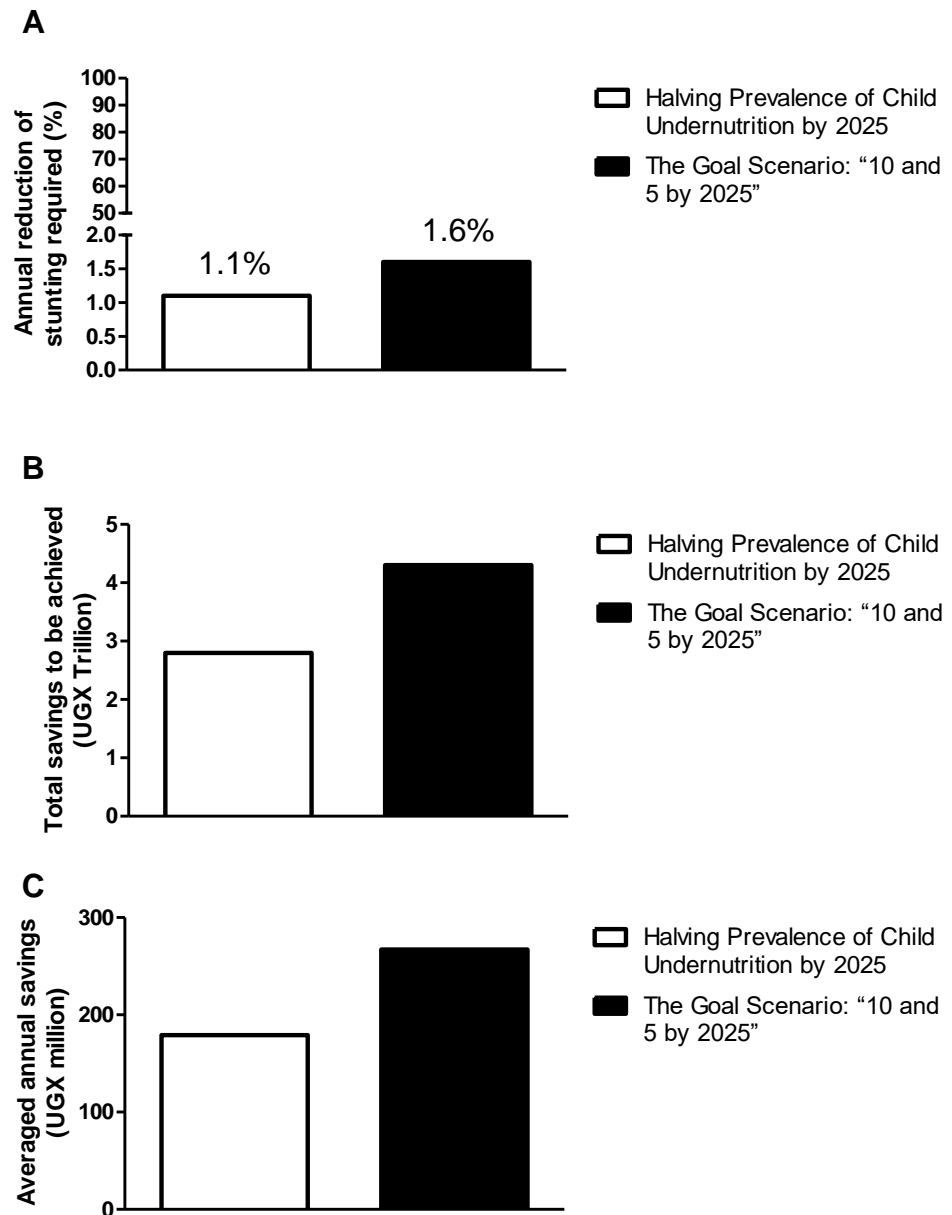


Figure 3. Expected scenarios to be achieved. (A) Annual reduction of stunting required. (B) Total savings to be achieved with implementation of strategies. (C) Average of annual savings expected.

Discussion

Discussion

The findings of our study highlight significant challenges and opportunities in addressing educational and nutritional issues in Uganda. Our analysis underscores the complex interplay between educational outcomes and child undernutrition, which is critical for informing policy and intervention strategies.

Educational Challenges and Policy Responses

Uganda has made notable progress in expanding access to education, particularly with the introduction of Universal Primary Education (UPE) in 1997 and Universal Secondary Education (USE) in 2007 (World Bank Report, 2014; World Bank Report, 2018). Despite these efforts, substantial challenges remain. The increased enrollment rates following UPE led to a rise in the teacher-student ratio from 1:40 to 1:57, reflecting a shortage of teachers and educational resources (World Bank Report, 2014). The inadequacy of infrastructure and the imposition of additional fees by schools disproportionately affect students from poorer and rural areas, contributing to high dropout rates (Nabugoomu, 2019).

The decentralization of education management in 1998 aimed to improve local oversight (Republic of Uganda, 1997). However, the persistence of high dropout rates and insufficient teacher staffing highlights the need for continued investment in educational infrastructure and resources. The recent emphasis on curriculum reform and alignment with contemporary societal needs (Rukwengye, 2018) is a positive step, but further integration of Information and Communication Technologies (ICT) in education is needed to enhance teaching and learning (Aguti & Fraser, 2006).

Impact of Child Undernutrition on Education

Our study reveals that child undernutrition has far-reaching consequences for educational outcomes. The high prevalence of stunting among school-aged children is associated with increased repetition rates and lower educational attainment (Nabugoomu, 2019). Stunted children exhibited a repetition rate of 12.2% compared to 9.1% among their non-stunted peers, underscoring the detrimental effects of undernutrition on academic performance. This issue is compounded by the significant economic burden of grade repetitions, with stunting contributing to approximately UGX 20 billion (USD 9.5 million) in costs related to primary education (Nabugoomu, 2019).

The disparity in average years of schooling between stunted and non-stunted individuals further emphasizes the need for integrated strategies that address both nutritional and educational challenges. Stunted individuals averaged 4.9 years of schooling compared to 6.1 years for their non-stunted counterparts, highlighting a critical area for intervention.

Economic Implications and Strategic Recommendations

The economic impact of child undernutrition extends beyond immediate educational outcomes. Our analysis reveals substantial productivity losses associated with stunting, amounting to UGX 657 billion (USD 317 million) in lost working hours due to mortality (Atim et al., 2019). This substantial economic burden highlights the urgency of addressing child undernutrition through targeted interventions.

Evaluating scenarios for reducing stunting demonstrates the potential for significant economic savings. Achieving a 10% prevalence reduction by 2025 could yield total savings of UGX 4.3 trillion (USD 2.2 billion) (Education for All, 2015). These findings underscore the economic benefits of aggressive stunting reduction targets, which could result in substantial fiscal impact alongside improved nutritional outcomes.

Conclusion

In summary, while Uganda has made commendable strides in expanding access to education, significant challenges remain in addressing the quality of education and the impact of child undernutrition. The interplay between educational and nutritional factors highlights the need for comprehensive and integrated approaches to improve both educational outcomes and nutritional status. Continued investment in educational infrastructure, targeted nutritional interventions, and alignment of educational curricula with contemporary needs are essential for addressing these challenges and ensuring sustainable progress.

Recommendations

Based on the comprehensive analysis presented, here are several impactful and practical recommendations to address the educational and nutritional challenges in Uganda:

1. Enhance Educational Infrastructure and Resources

- **Increase Investment in Schools:** Allocate more funding for building new schools, improving existing infrastructure, and providing essential educational materials to address the current shortages. Prioritize rural and underserved areas to ensure equitable access to quality education.
- **Expand Teacher Recruitment and Training:** Develop and implement strategies to recruit, train, and retain qualified teachers. Address the teacher-student ratio by increasing the number of teachers and ensuring their equitable distribution across schools, especially in high-need areas.
- **Strengthen School Management:** Support local governments in managing education by providing training and resources to improve administrative efficiency and oversight. Ensure that decentralized management contributes effectively to educational quality.

2. Address Nutritional Deficits and Promote Health

- **Implement School-Based Nutrition Programs:** Introduce and expand programs that provide nutritious meals and snacks in schools, particularly in areas with high rates of child undernutrition. This will improve students' health, reduce absenteeism, and enhance academic performance.
- **Increase Access to Health Services:** Improve access to primary health care, including nutritional counseling and services, especially in rural areas. Provide free or subsidized services to address common nutritional deficiencies and prevent stunting.
- **Promote Early Childhood Nutrition:** Launch public awareness campaigns on the importance of early childhood nutrition. Provide support to families with children under five years old through targeted nutrition programs and parental education.

3. Improve Educational Outcomes Through Curriculum and Technology

- **Revise and Update the Curriculum:** Align the educational curriculum with current societal and employment needs. Incorporate practical skills, critical thinking, and problem-solving into the curriculum to better prepare students for the modern workforce.

- **Expand ICT Integration:** Invest in Information and Communication Technology (ICT) infrastructure in schools. Provide training for teachers on integrating ICT into their teaching practices to enhance learning experiences and bridge the digital divide.
- **Support STEM Education:** Encourage and support Science, Technology, Engineering, and Mathematics (STEM) education at all levels. Create partnerships with industry to provide resources, training, and real-world experiences for students.

4. Implement Targeted Interventions to Reduce Dropout Rates

- **Address Barriers to Education:** Identify and address barriers contributing to high dropout rates, such as long distances to schools, early pregnancy, and economic pressures. Implement programs to provide transportation, financial support, and accessible reproductive health services.
- **Support at-Risk Students:** Develop programs to support students at risk of dropping out due to academic challenges or personal issues. Offer counseling, mentoring, and academic support to help them stay in school and succeed.

5. Leverage Partnerships and Community Involvement

- **Engage with the Private Sector:** Foster partnerships with businesses and non-governmental organizations to support educational and nutritional programs. Encourage corporate social responsibility initiatives that contribute to improving education and health outcomes.
- **Promote Community Involvement:** Engage communities in supporting educational and nutritional initiatives. Encourage local participation in school management, health programs, and awareness campaigns to build local ownership and sustainability.

6. Monitor, Evaluate, and Adapt Programs

- **Establish Robust Monitoring Systems:** Develop and implement systems to regularly monitor and evaluate the effectiveness of educational and nutritional programs. Use data-driven insights to make necessary adjustments and improve program outcomes.
- **Adapt Strategies Based on Evidence:** Continuously assess the impact of interventions and adapt strategies based on evidence and feedback. Ensure that programs remain relevant and effective in addressing the evolving needs of students and communities.

By implementing these recommendations, Uganda can make significant progress in enhancing the quality of education, addressing nutritional deficits, and improving overall outcomes for children and the workforce. This integrated approach will help create a more sustainable and equitable educational and health system.

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