

A Case for Girl-child Education to Prevent and Curb the Impact of Emerging Infectious Diseases Epidemics

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Not only do epidemics such as HIV/AIDS, Ebola Virus Disease (EVD), and the current Coronavirus Disease (COVID-19) cause the loss of millions of lives, but they also cost the global economy billions of dollars. Consequently, there is an urgent need to formulate interventions that will help control their spread and impact when they emerge. The education of young girls and women is one such historical approach. They are usually the vulnerable targets of disease outbreaks – they are most likely to be vehicles for the spread of epidemics due to their assigned traditional roles in resource-limited countries. Based on our work and the work of others on educational interventions, we propose six critical components of a cost-effective and sustainable response to promote girl-child education in resource-limited settings.

INTRODUCTION

“Study after study has taught us that there is no tool for development more effective than the education of girls. No other policy is as likely to raise economic productivity, lower infant and maternal mortality, or improve nutrition and promote health – including the prevention of HIV/AIDS.”

Kofi A. Annan, former Secretary-General, United Nations [1].

As it has been the case of HIV/AIDS and, most recently, the Ebola Virus Disease (EVD), the ongoing Coro-

navirus Disease 2019 (COVID-19) is a stark reminder of a painful reality: epidemics will continue to be the bane of human existence. Consequently, there is an urgent need to critically assess the literature of approaches that have previously mitigated outbreaks and design robust interventions to fight these emerging outbreaks. One such method is the education of young people, especially girls and women. The fact that education is an essential social determinant of health has been well documented [2]. Early childhood education provides access to higher-income earning potentials, reducing one’s likelihood of getting infected by disease during an epidemic [3]. The benefits of education in improving health outcomes are high in

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Abbreviations: EVD, Ebola Virus Disease; COVID-19, Coronavirus Disease; LMICs, Low-Middle-Income Countries; UNAIDS, Joint United Nations Program on HIV and AIDS; UNICEF, The United Nations Children’s Fund; MDGs, Millennium Development Goals; SDGs, Sustainable Development Goals; VC, Village Committee; FCUBE, Free Compulsory Universal Basic Education; WFP, World Food Program; GBV, Gender-based violence; HRW, Human Rights Watch; UNFPA, United Nations Population Fund.

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children and young people, who often depend on their parents and guardians for their livelihoods, including financial resources to access education [1,3]. For instance, a study in Ghana found that the higher the level of education a mother has, the better the child's chances of survival [4]. Also, according to UNICEF, young boys and girls who have higher education levels usually have more knowledge about infectious diseases, are less likely to get infected, and tend to adopt behaviors and attitudes that prevent them from being infected [1]. These health-related benefits of education become even more critical in epidemics such as HIV/AIDS and EVD. Indeed, several studies from around the world have confirmed that HIV infection rates are at least twice as high among adolescents who drop out of primary school than those who stay in school [3]. The 2014 West African EVD outbreak killed over 11,000 people, left many children orphaned, and exposed to malnutrition, hunger, and preventable deaths [5]. Deeply affected by the negative repercussions of the lack of quality education, young girls and women in low- and middle-income countries (LMICs) usually must contend with power dynamics, traditional roles, and social inequities in communities [1]. While the global community has made significant headway over the years to leverage access to education as a tool to enhance health outcomes for young girls and women, there still exist gaps in addressing health challenges for this vulnerable population in many LMICs across the globe [3]. Prior educational interventions have often failed to adequately engage the communities in which they operate or are not financially sustainable without long-term donor support [3]. Consequently, they crumble during epidemics when donor funding becomes limited, schools close, and teachers and administrators die or become sick. Financially sustainable and community-driven educational interventions for young girls can help to address these challenges and improve health outcomes in LMICs and help curb epidemics.

IMPACT OF GLOBAL EDUCATIONAL EFFORTS ON IMPROVING HEALTH OUTCOMES

Given the limited resources available for tackling the myriads of global health challenges, we must assess prospective educational interventions in the light of rigorous evidence before implementing them. Consequently, we ask: how exactly have global education efforts to improve health performed so far? Evidence from published literature sheds some light. In a study of eight sub-Saharan African countries, Gupta *et al.* found that females who had eight or more years of schooling were 13% more likely to avoid sex before age 18 compared to their peers with less education [6]. Also, in Zimbabwe, studies have con-

firmed that among 15-18-year-old adolescent girls, those who drop out of school are about five times more likely to have HIV than their colleagues who stay in school [1]. Evidence from surveys in Malawi, Haiti, Uganda, and Zambia further corroborates these findings by showing a secure link between higher education and fewer sexual partners [7]. The general observation here is that these outcomes are not limited to one country. Indeed, Kirby *et al.* also found that, in 11 countries, women with some form of schooling were about five times more likely to have used condoms during sexual encounters than uneducated women in similar backgrounds and settings [8]. These findings underscored global commitments such as the Millennium Development Goals (MDGs) related to HIV/AIDS, Education and Girls; the Dakar Framework for Action related to Girls' Education; and the current Sustainable Development Goals (SDG #4) to promote inclusive and equitable quality education for all [1]. Based on these initiatives, many LMICs have made commitments to improving girl-child education. In Ghana, the early 2000s was the era of media campaigns dubbed "send your girl child to school" [9].

Similarly, many other African governments, with the help of international partners, joined these laudable efforts by providing hundreds of millions of dollars to establish schools for girls and to embark on public education programs in rural communities [9]. A natural follow-up question would be; how have these educational commitments and interventions affected health outcomes so far? In a recent systematic review, Psaki *et al.* concluded that, even though investments in schooling may yield positive ripple outcomes for sexual and reproductive health, these effects may not be as pronounced as expected [10]. In a similar light, Mensch *et al.* also concluded in their review that, while improvements in women's educational outcomes such as grade attainment have helped to improve health in several places, the effect may be overestimated [11]. Regardless, these two studies highlight the critical roles that educational quality and an intervention's implementation level (community versus national) might play in the synthesis of these outcomes and the conclusions they reported.

THE "EVER-WIDENING GAP" BURDEN OF EPIDEMICS

Although there is a wealth of evidence that education is essential for preventive health in the population, the global community failed to meet the MDG #3 of equal access to education for girls by 2015. Why then are educational efforts still failing to address the health challenges of young girls and women, as we have observed in the HIV/AIDS epidemic and, most recently, the EVD crisis [12]?

Cocoa360's Innovation: "Farm-for-Impact"

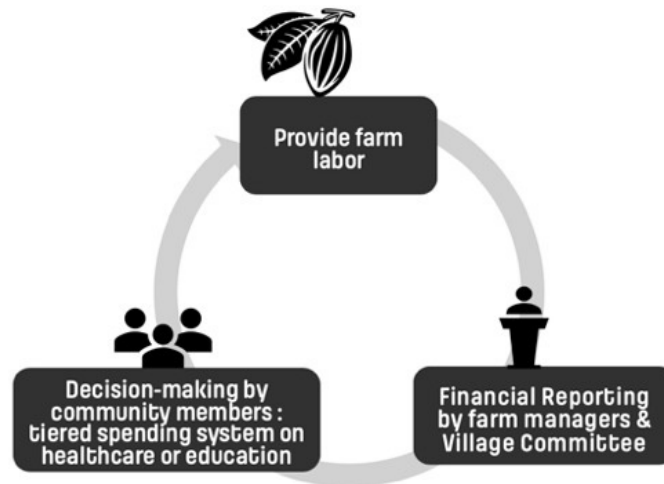


Figure 1. Cocoa360's Innovation: "Farm-for-Impact" Model.

The answer to this question may stem from the challenges of financial sustainability and community engagement that these epidemics expose. This answer corroborates the caveats that Mensch *et al.* (2019) and Psaki *et al.* (2019) highlighted. For instance, during the HIV/AIDS and recent EVD outbreaks, many young girls had to drop out of school to provide and care for their families who were sick and dying, consequently increasing their risk of exposure to these lethal viruses [13]. In these situations, when parents or guardians died, these girls dropped out of school due to default in payment of school fees. In 2003, there were as many as 15 million AIDS orphans [1], and the 2014 West African EVD outbreak left tens of thousands of orphans in its wake [14]. Faced with a compounded challenge of affording their nutritional and accommodation needs, they engaged in risky transactional sex as a means of survival [14].

In some cases, these were non-consensual sexual encounters. Evidence from the Children's Ebola Recovery Assessment of 617 girls in Sierra Leone found that many young girls who had dropped out of school ended up in Ebola-quarantined households where they became subjects of rape and other forms of sexual assault [15]. Moreover, the United Nations Population Fund (UNFPA) reported that many young girls in the Democratic Republic of Congo encountered rape and sexual attacks from members of armed groups in communities such as North Kivu and Ituri [16].

Beyond issues of gender-based violence and school drop-outs, epidemics also weaken the capacity and quality of educational systems. In many countries that are hard-hit by HIV/AIDS and EVD, many teachers died, and the few that survived also had to suspend their teaching

roles to cater for their sick and dying family members [1]. In 2000, at the peak of the HIV/AIDS crisis, about 815 of primary school teachers (45% of trained teachers) in Zambia died from the disease, and close to 8% of the 300 teachers in the Central African Republic also died [1,17]. These teacher shortages are prevalent in rural areas where schools lose staff. Teachers who are affected by disease outbreaks migrate to urban areas for better healthcare for themselves or concerned family members in their care [1]. In Malawi, the student-teacher ratio in many schools jumped to about 96 to 1 due to AIDS-related illnesses [18].

MAKING A CASE FOR SUSTAINABLE EDUCATION MODELS

Worldwide, 13 out of the 15 countries where over 30% of school-aged girls are out of school, are in Sub-Saharan Africa [19]. Yet, this same population of girls remains the most vulnerable during pandemics when schools are closed. In a recent comprehensive report, the Malala Fund forecasted that there is a high likelihood that more than 10 million secondary school-aged girls in LMICs may not return to school after the COVID-19 pandemic [20]. There is a need for educational interventions for young girls that can withstand the financial shortfalls and the capacity-weakening effects on educational systems that pandemics cause. An organization that implements such interventions is Cocoa360, a nonprofit in rural Western Ghana which transforms communities by using revenues from existing community resources such as cocoa, to finance educational and health outcomes (Figure 1). The details concerning Cocoa360's model

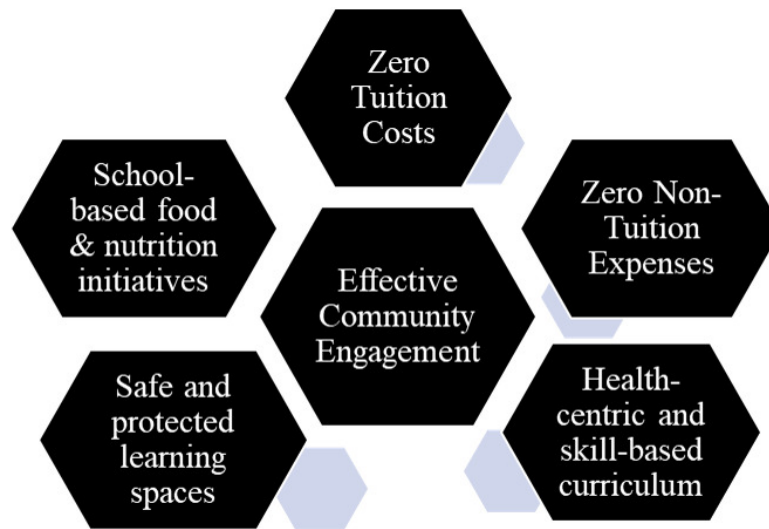


Figure 2. General Components of Sustainable Educational Models.

and its impact have already been discussed in a separate publication [21]. Herein, we draw on published evidence and our own experiences with Cocoa360 to propose six general components (Figure 2) that should be considered in insulating educational models from epidemics:

Active community engagement: In a review of interventions that improve girls' education and gender equality, Unterhalter *et al.* highlight the effectiveness of programs that focused on shifting gender norms and encouraging inclusion through community involvement [22]. This finding matches our experience and shared belief that the currency for successful interventions in sub-Saharan Africa is a strong community engagement. Working together with community leaders and members enables external project partners to appreciate cultural nuances and local contexts that need to be considered before, during, and after the implementation process. In many rural communities, community leaders and members coordinate mutual support such as construction labor, contribute resources such as land, and are willing to engage in initiatives that will help financially sustain the intended interventions over the long term. For an education model to be sustainable, it would similarly need to include the inputs and perspectives of the residents and their leaders right from the planning phase, throughout the implementation phase, and post-implementation evaluation efforts as well. Cocoa360, a nonprofit organization in rural Western Ghana, provides an example of how to solicit and successfully engage a community. As a community-based organization, Cocoa360 transforms rural communities by using revenues from existing community resources such as cocoa to finance educational and health outcomes [21].

From our experience with community engagement,

the following are essential ingredients for successful community engagement: (1) Community “knocking” – this is the first step in entering a community. Use this period to share your concept and vision about the project with community elders, usually, the chief, for their acceptance and input; (2) Shared leadership – the community should be involved in the governance of the project right from the start. Cocoa360 collaborated with their partner communities to establish a local decision-making body called the Village Committee (VC) [21]. This group comprises some of the community's respected citizens from diverse religious, ethnic, and occupational backgrounds. The VC serves as a link between Cocoa360 and the broader community and ensures that Cocoa360's operations, including those at its Tarkwa Breman Girls School and Tarkwa Breman Community Clinic, reflect the needs and cultural standards of the community and its members [21]. This alignment is especially important because many such rural communities still do not prioritize girl-child education due to persisting cultural beliefs; (3) Community education – the community should be reminded continually of the components, their role in the project's successes, and challenges. Such educational efforts will deepen buy-in and ensure the continued success of the program; (4) Shared successes – the project's progress should be celebrated with the community in such a way that they know and feel that their contributions matter; and (5) Sustainability plan – the community should be involved in formulating strategies that will ensure project longevity.

Zero tuition costs: Efforts to eliminate tuition costs and make education compulsory in many countries have helped increase educational access for young girls, significantly reduced their vulnerability to child marriages, and many sexually transmitted diseases such as HIV/AIDS.

For instance, eliminating tuition fees has been found to reduce child marriages in eight countries in Sub-Saharan Africa, including Ghana, Ethiopia, and Rwanda, despite the challenges encountered in the implementation of this policy [23]. Additionally, the government of Ghana's Free Compulsory Universal Basic Education (FCUBE), which aimed to provide tuition-free education for all students in public primary schools, has led to a marked increase in enrollment rates [24]. In countries such as Kenya, Uganda, and Tanzania, eliminating tuition fees has helped to improve school enrollment and student attendance rates, particularly for young girls [3]. In Uganda, the government's efforts at easing the burden of tuition led to a 30% increase in girls' enrollment in school with an almost double effect for the poorest economic fifth of girls [3]. In a systematic review of 35 studies from 75 reports, Baird *et al.* also substantiated such findings of the impact of financial incentives on educational outcomes [25]. They found that both conditional and unconditional cash transfer programs improved the likelihood of school attendance and enrollment compared to programs without cash transfers [25]. With that said, it is essential to note that zero tuition costs come at a cost to a nation. In response, several governments have devised ways of domestically financing such interventions via taxation and innovative funding models [26]. Public-private partnerships models for funding primary and secondary education should be encouraged.

Zero non-tuition expenses through community-led revenue generation: As Koski *et al.* have shown, removing the cost of tuition alone would not be enough to reduce child marriage since other barriers to school enrollment may persist [23]. In Ghana, despite the FCUBE, there are still gender disparities in educational access. Many young girls are not benefitting from the scheme, and these probably may be due to financial difficulties related to the cost of textbooks, school uniforms, and transportation, which disproportionately plague marginalized households in rural communities [24]. Stack *et al.* found in a study in rural Western Ghana that in the face of financial challenges, 44.5% of heads of households, typically males, opted for the male child against 27.7% who chose the female child. Of these, 26.5% stated that it would depend on the specific circumstances, while 1.3% refused to answer [27]. Thus, the contribution of non-tuition expenses towards school attendance is not trivial. Community and private initiatives could take this burden off parents and heads of households. A thriving community initiative like this is the Cocoa360's "farm-for-impact" model. Community members assist with work on a community-run cocoa farm in exchange for tuition-free education and subsidized healthcare. The revenues from the farm are applied to finance educational and healthcare services in rural communities in Ghana [21]. Evidence from meta-anal-

ysis and systematic reviews has suggested approaches such as Conditional Cash Transfers and bonuses as effective incentives for increasing girls' school enrollment in developing countries [1,28]. While successful, these approaches rely on external funding to meet non-tuition expenses, which may not always be available. On the other hand, interventions like Cocoa360's "farm-for-impact" model seek to consistently keep communities at the forefront of decision making and revenue-generation.

Consequently, they provide a much better independent pathway to self-support the education of their daughters when donor funding becomes limited or ceases [21]. The process of community-led revenue generation and decision making further imbues a strong sense of communal ownership, which can translate into educational outcomes. For instance, preliminary findings from Cocoa360 show that the school attendance rate is 98%, compared to the national rural attendance rate of about 70% for similar schools under the Ghana government's Free Compulsory Universal Basic Education (FCUBE) program [21].

School-based food and nutrition initiatives: Epidemics such as HIV/AIDS and EVD cause many young girls to drop out of school when their parents and guardians are affected or die. Consequently, they end up resorting to transactional sex to obtain support for food and accommodation [1]. Even for families that remain intact without any deaths during outbreaks, school-based food programs may ease the burden of feeding. This challenge occurs because many families are generally in great need of food during epidemics, as many farmers fall sick and agricultural productivity and output may suffer as a result. Indeed, the World Food Program (WFP) found that in some places, when families were incentivized with food rations for sending their daughters to school, enrollment of girls in school tripled [29].

Health-centric and school-based curriculum: The instruction of health habits, hygiene, and sanitary conditions and local cultural contexts and their impact on health behaviors should not just be a footnote in educational programs. Instead, they should receive the same attention as math and reading. Right from an early age, schools should provide students with age-appropriate health education that will arm them with the knowledge, skills, and tools to take care of their health and be aware of risky health behaviors. In South Africa, such health-centric and life skills-based curricula have helped to improve young people's odds of using condoms during sex [30]. Synthesis of established evidence also shows that school-based sexual health education has the potential to improve condom use among young people in Sub-Saharan Africa and to reduce the prevalence of Sexually Transmitted Infections such as Chlamydia [31]. Such comprehensive approaches to education can be achieved by ensuring that

they are theory-driven, address social determinants like social norms, improve cognitive-behavioral skills, train facilitators like teachers, and include schools, families, and communities [32].

Safe and protected learning spaces: While schools serve as nurturing grounds for student learning, they can also expose young girls to gender-based violence (GBV) and negatively impact the attainment of educational objectives [33]. Several studies have reported a high prevalence of GBV, such as sexual harassment, unsolicited advances, touching, groping, and sexual assaults [34,35]. For instance, a Human Rights Watch (HRW) study in South African schools revealed that teachers raped young girls in empty classrooms, lavatories, and dormitories [35]. In Dodowa, Ghana, similar findings of sexual assault of young girls in schools have also been documented [34]. Such instances of school-based GBV make schools less attractive places for young girls, who consequently struggle to concentrate on their academics and may, therefore, drop out [36]. For other deterred girls, they may not enroll at all. Schools pursuing sustainable educational models should strive to make their learning environments safe for young girls by working with community leaders, teachers, students, and related government stakeholders to implement preventive and punitive measures for perpetrators. Evidence from systematic reviews highlights the role of interventions such as life skills training programs and positive peer relationship training approaches to promote self-esteem and to reduce bullying and rape [37]. Activities such as drama and arts can also help young people evaluate their gender roles and the steps they can take to ensure that their study spaces are safe and conducive to learning [1]. Successfully achieving this goal would require seeing boys as crucial partners to the solution, rather than external opponents.

CONCLUSION

Education has proven to be an effective intervention for improving health outcomes and reducing the spread and impact of epidemics. While the global community has made significant progress in leveraging quality girl-child education as a tool to enhance health in LMICs, challenges such as financial bottlenecks continue to impede such efforts, especially during outbreaks. Sustainable educational models that prioritize active community engagement, abolish tuition and non-tuition expenses, incorporate school-based food programs, infuse health-centric and skill-based curriculum, and promote safe learning spaces are much needed. Successful implementation of such efforts would significantly improve educational access and health outcomes for young girls and, consequently, provide long-lasting approaches to fight the spread and impact of epidemics when they emerge.

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