

The impact of HIV and AIDS on education in the Caribbean

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Summary

Recent research highlights the need for the assessment of the impact of HIV and AIDS on education in the Caribbean as integral to its mitigation. The analysis presented in this paper is the first to attempt such an assessment. Although only preliminary evaluations of the effects upon the supply of education are made, it is clear that HIV and AIDS may have a significant impact on the education systems in the region. In addition to the quantifiable impact, the impacts of HIV and AIDS may be disproportionate in small states, which predominate in the region. There is a pressing need for the development of country-level multisectoral strategies, increased by the unusually high disparity between Caribbean states. A more in-depth impact assessment is clearly needed to inform this process.

Impact of HIV and AIDS

Where the HIV prevalence in a country exceeds 1%, the country is experiencing a "generalized" epidemic, as the virus circulates by heterosexual sex in the general population. HIV infection can then threaten key areas such as the health and education sectors. Sixty-three percent of Caribbean countries are experiencing such a generalized epidemic (data from UNAIDS 2006 and CARICOM 2004). Addressing the impact of HIV and AIDS on education can present a complex challenge for governments and it remains an area that is under-represented in national strategic responses (Kelly and Bain, 2005).

The effects of the epidemic on social institutions, such as schools, are initially sporadic or hard to detect. However, as the epidemic progresses, the impact becomes more pronounced. For example, many sub-Saharan African countries are experiencing high levels of illness and death, orphaning and loss of key household and community members. In these contexts, the impact of HIV and AIDS on the functioning of the education system is considerable. In the Caribbean, some countries are at an earlier stage in the epidemic, where impact is at present negligible and increasing, while in others with higher HIV prevalence rates, impacts are already becoming substantial. Because small states may be more vulnerable to smaller shocks to the education system, the preponderance of small states in the Caribbean suggests it could suffer disproportionate impact.

The interaction between HIV and education

The response to HIV and AIDS has often been considered to be the sole preserve of the health sector. Nowadays, the education sector is recognized to have a major role to play in efforts to control the disease. School children are perceived as the "window of hope" (World Bank, 2002) for the future because they have the lowest rate of infection of any age group and can be kept free of infection by the "social vaccine" of

a good education. On the other hand, the HIV epidemic is damaging the education systems, which can provide the "social vaccine" and promote good health and nutrition of school age children. In countries with generalised epidemics, AIDS kills teachers, increases rates of teacher absenteeism, and increases the numbers of orphans and vulnerable children who are less likely to attend school and more likely to drop out. Girls are especially at risk from becoming infected and affected by HIV because of their socio-economic and physiological situation. Thus a paradox is apparent: education can prevent HIV infection, but HIV and AIDS damages, and has the potential to destroy, the system delivering this prevention. Understanding the likely consequences of HIV infection and AIDS on the education sector is a critical first step towards planning for and thereby mitigating their impact.

The impact of HIV and AIDS on education

The impact of HIV and AIDS is currently divided into three interrelated categories (Kelly, 2000). These are the impact on:

- the demand for education;
- the supply of education; and
- the quality of education.

The demand for education

A significant impact is evidenced in the increase of child vulnerability in terms of those orphaned and affected by HIV and AIDS. In the Caribbean region, the most recent estimate for orphans (UNAIDS, UNICEF and USAID, 2004) presents data for 2003 in ten Caribbean countries with an aggregate total of 1,035, 900 orphans due to AIDS, some 610,000 in Haiti alone. By 2010, the total is projected to increase to 1,087,000 in the ten countries. An increasing number of children are becoming infected by HIV, many of whom will have also experienced orphaning.

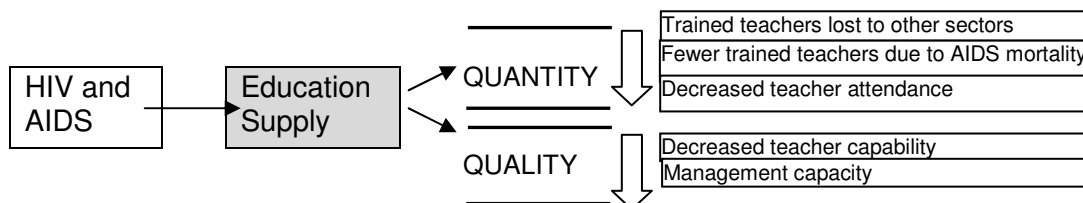
Additionally, the socio-economic impacts of HIV and AIDS include increases in household poverty that result in financial barriers to education (inability to pay fees, purchase uniforms, school materials and books, etc.) and opportunity costs when children may be called on to support household livelihoods; attitudinal impacts on participation in education, especially of those affected by HIV-related stigma and discrimination; and increased gender inequalities as girls are required to take on the responsibility for care of infected adults and affected siblings in the household.

The supply of education

The impact can be separated into quantity and quality effects (Figure 1).

FIGURE 1

Quantity and quality effects of HIV and AIDS on education supply



The most crucial effect on the supply of education is the decreased availability of experienced teachers. Two key questions are, therefore: how vulnerable teachers are to HIV infection and what steps need to be taken to support prevention at all stages

of their career? The loss of teachers and other education sector personnel to other sectors of the economy is a phenomenon that is being encountered in generalized HIV epidemics as the impact on human resources progressively accumulates.

The impact on teacher productivity may manifest itself as, for example, a decreased and erratic school attendance and the loss of energy and motivation as AIDS progresses in severity in the infected individual (Kelly, 2000). Other factors may include HIV-related illnesses in the family or community and attendance at funerals. Monitoring teacher attendance and productivity in the context of an HIV epidemic represents a distinct challenge for school management and for local education authorities. Access to anti-retroviral therapy (ART), however, is a key issue and is critically important for maintaining the productivity of teachers living with HIV and AIDS.

The quality of education

The quality of education, in terms of learning outcomes and classroom processes, may be negatively affected by HIV and AIDS and it impacts on both demand and supply side factors.

- On the demand side, the psychosocial condition of children affected by HIV and AIDS in their households may reduce their ability to participate and to focus in class and learn, especially if they are grieving or being bullied because of HIV-related stigmatization.
- On the supply side, the quality of education delivery will tend to be undermined by a combination of factors including the loss of trained and experienced teachers, the reduction in teacher productivity through illness and psychological stress and the loss of management capacity in the sector.

Assessing impact

To date, no country in the Caribbean region appears to have undertaken any comprehensive impact assessment in the education sector and little is known, especially at the country level.

It has been advocated (Kelly and Bain, 2005) that the education sector response in the region should rest on three pillars: 1) prevention of HIV transmission; 2) care and support for those who are infected or affected; and 3) management of the systemic and institutional impacts so as to mitigate negative effects. An HIV and AIDS impact assessment process is germane to the development of all three pillars in terms of sector policy, including workplace policy (ILO and UNESCO, 2006), and strategic interventions aimed at capacity-building and programmatic response.

Assessing the impact of HIV and AIDS can be undertaken by using mathematical models that combine available information on HIV prevalence with education and financial statistics to project the likely impact. These analyses require good quality data, good communication with stakeholders, and are complemented by qualitative research in schools. The Ed-SIDA model of the impact of HIV was developed for the education sector (World Bank and Partnership for Child Development, 2001, 2006; Grassly et al., 2003), which is a spreadsheet-format model incorporating UNAIDS HIV projections. Ministries of Education in thirty-three countries in sub-Saharan Africa are currently trained in using Ed-SIDA to manage and plan for HIV and AIDS in their education sector.

An assessment of impact on the supply of education in the Caribbean region

Ed-SIDA was used to assess the impact of HIV and AIDS on Caribbean teacher supply. A country by country analysis was performed and the results were summed to provide regional projections. Presented here are: projections over the entire Caribbean region; those for the Organisation of Eastern Caribbean States (OECS); and Guyana and Trinidad and Tobago which illustrate the impact upon individual states. Results from other countries are available on request. The baseline analyses assume ART was provided to all teachers requiring it from 2005 to 2015.

The following data were input into the model.

- *Country-specific HIV prevalence* projections were based on antenatal clinic surveillance data and scaled to UNAIDS' (nine countries) or the Caribbean Epidemiology Centre's (twenty-two countries) 2004 estimates.
- *Number of teachers* provided by UNESCO Institute of Statistics (UIS). Estimates were extrapolated from UN Population Division estimates of population size for those countries providing no teacher data.
- *Attrition and recruitment* data from Grenada (Junior Alexis, pers. comm.); rates were assumed to be equal across the region.
- *Financial* data were obtained from Fitzgerald and Gomez (2003) (anti-retroviral medicine cost); Lewin, 2002 (Teacher salary and training cost); country reports on social security at <http://www.ssa.gov> (funeral cost); and Jenelle Babb (Pers. comm.; Jamaica teacher training and salary cost)

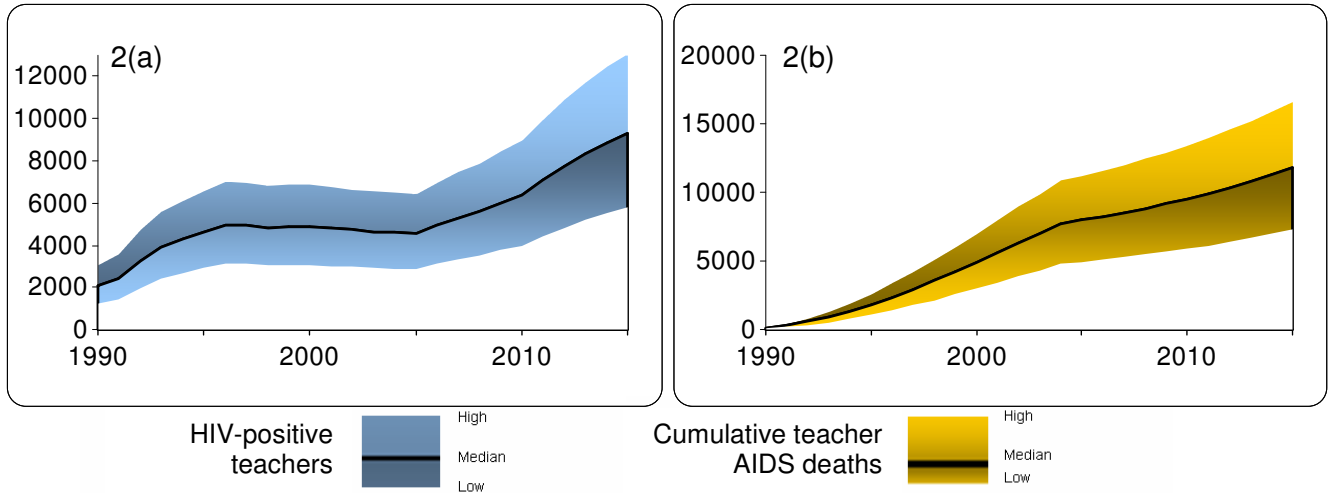
Several assumptions were made. There are currently few data on HIV prevalence among teachers. However, Badcock-Walters et al., 2003 found that teacher mortality in South Africa was lower than that in pregnant women. It was consequently assumed that teachers have a prevalence and incidence of 80% of the country-specific projections. The efficacy of ART in preventing deaths and AIDS-related absences was assumed, conservatively, to be 50%.

Results

Estimates of the number of HIV-positive teachers and AIDS deaths for the region are presented in Figure 2. The black line represents the median estimated prevalence scenario. The boundaries of the coloured sections represent the high- and low-prevalence scenarios. It is clear that under all these scenarios the number of both HIV-positive teachers and teacher AIDS deaths will increase. The projected number of teacher deaths shown would represent a significant impact on education supply in the region.

FIGURE 2

(a) HIV positive teachers and (b) cumulative AIDS deaths among teachers in the Caribbean



Figures 3, 4 and 5 present projections from OECS, Guyana and Trinidad and Tobago, respectively. The prevalence in Guyana and Trinidad and Tobago has reached generalized levels (2.4 per cent and 2.6 per cent, respectively in 2005 [UNAIDS, 2006]), whereas in OECS there are still few people in the general population who are affected. It is assumed that all teachers in need are provided with ART from 2005 onwards; this results in a decline in the mortality rate, but is assumed to have no impact on the incidence of infection.

FIGURE 3

(a) HIV positive teachers and (b) cumulative AIDS deaths among teachers in the OECS

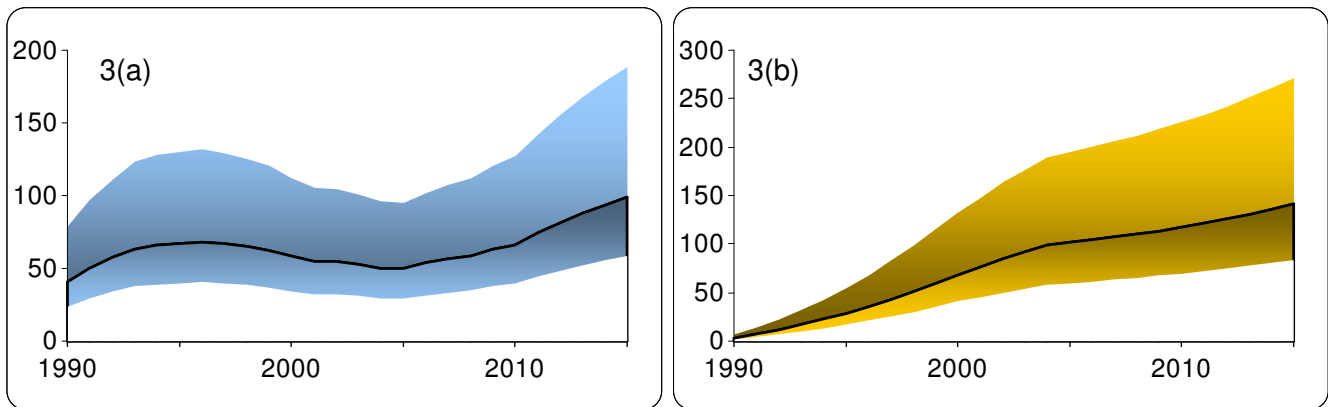


FIGURE 4

(a) HIV positive teachers and (b) cumulative AIDS deaths among teachers in Guyana

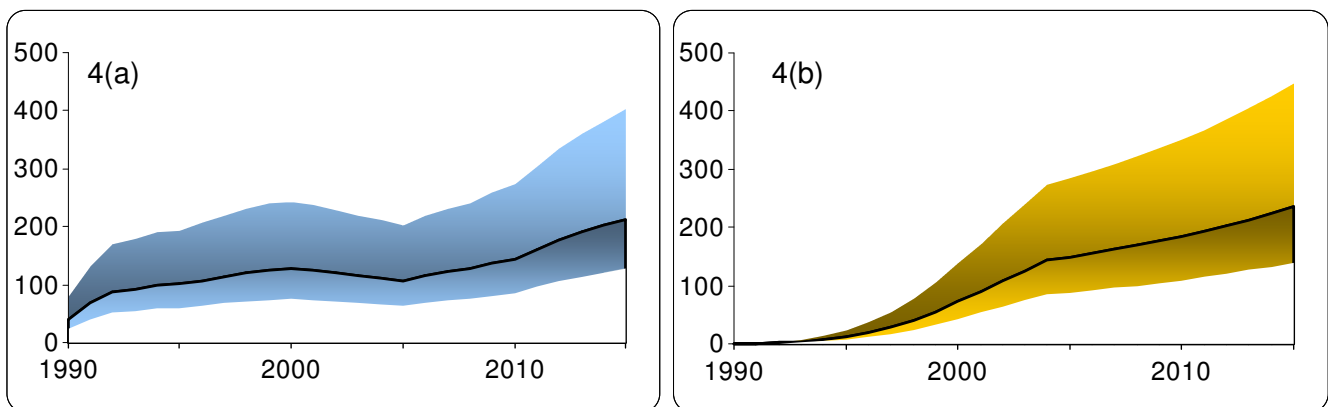
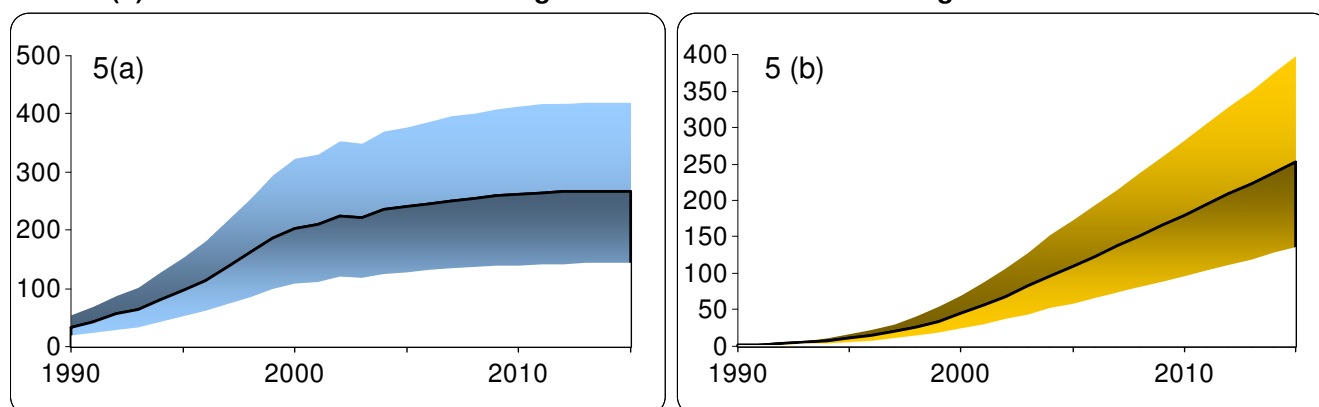


FIGURE 5
(a) HIV positive teachers and
(b) cumulative AIDS deaths among teachers in Trinidad and Tobago



These projections indicate that both HIV positivity and AIDS deaths are likely to increase among teachers during the next few years. There will be more HIV positive teachers primarily because if all teachers are given anti-retroviral therapy, more HIV-positive teachers will remain alive. Despite this, deaths will continue to mount during this time as teachers who became infected during the initial peak in incidence at around 2000 die despite treatment. These charts indicate that countries with higher HIV prevalence and larger populations would lose more teachers. However, smaller islands may be disproportionately affected by small shocks to the education system.

The special challenges of small states in educational development have been described (for example Bray, 1991, 1992), and they include human resource difficulties in specialist areas resulting in the need for “multifunctionalism”. However, the analysis and understandings need to be updated in the context of HIV and AIDS.

Even with the best data, it is important to note that the future of the epidemic is difficult to predict, especially at the country level. The results presented here are a preliminary analysis using limited data.

TABLE 1
Estimates of number of teachers HIV positive in 2015 and dead from AIDS by 2015

	HIV-positive teachers in 2015	Teacher AIDS deaths to 2015	AIDS deaths in 2015 as % of all attrition
Caribbean	9300	11800	13%
OECS	100	100	5%
Guyana	200	200	13%
Trinidad and Tobago	300	300	9%

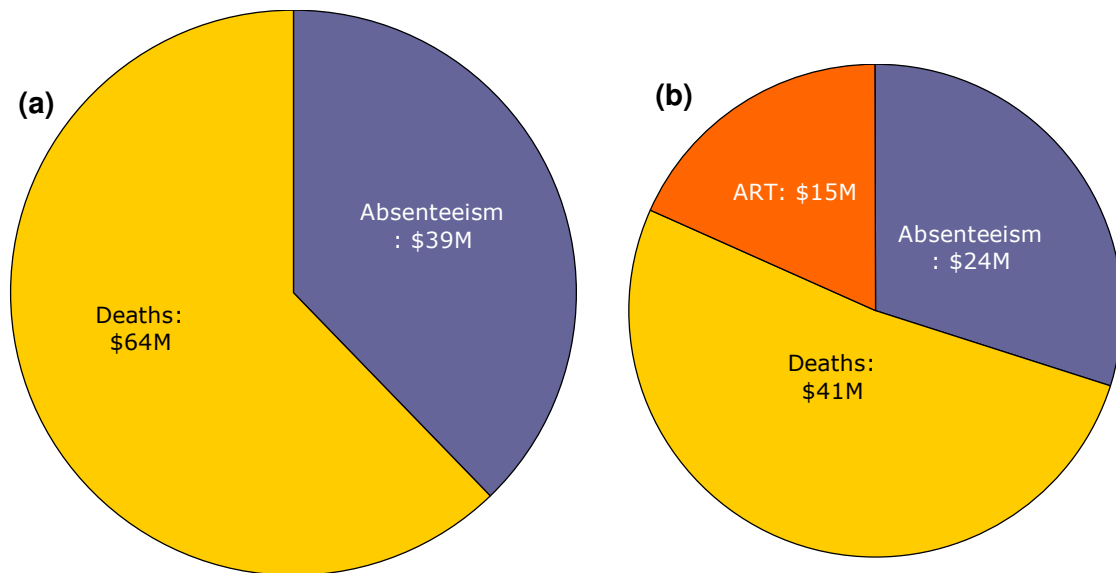
Note: Data rounded to nearest 100, assuming a median-prevalence scenario and ART given to all teachers needing it (baseline attrition rate from Grenada)

The loss of some 12,000 teachers in the Caribbean by 2015 represents a significant impact. Teacher turnover in Caribbean schools is fairly low compared to the UIS baseline of 3%, which results in a significant AIDS loss in terms of overall attrition.

The smaller OECS countries are also among those with lower prevalence, resulting in lower numerical impacts, though the disproportionate effect on smaller states is a possibility already mentioned.

Given the results shown above, it is clear that HIV and AIDS will have a financial impact on the supply of education in the region. Figure 6 shows estimates of the cost of HIV to the education sector.

FIGURE 6
Cost of AIDS absenteeism and deaths to the education sector from 2005-2015 throughout the Caribbean region



Note: (a) without ART, total cost \$104M; (b) with ART provided to all teachers who require them, total cost \$79M. \$ are US dollars, 2000 equivalent. ART is assumed to cost \$1000 per person per year.

It appears that, on current epidemiological trends, and without effective prevention measures, HIV and AIDS are likely to have significant consequences for the mortality of teachers. These consequences will be apparent over the next decade even if all affected teachers were provided with ART immediately. The major effects would be a need to recruit and train teachers to replace those who had died, at an estimated annual cost to the region of US\$4-5M, and to provide ART to affected teachers, at an annual estimated cost of US\$1.5M. The use of ART would prolong teacher's lives and reduce illness, resulting in an overall saving to the education sector of some \$25M. Whatever is done now, these costs will be incurred by the education sector, and future budgets will have to accommodate these significant increases. Table 2, showing a comparison between the estimated annual costs in 2005 and 2015 indicates that, due to the increasing numbers of HIV positive teachers and AIDS deaths, costs will continue to rise. It is important to note that a less conservative estimate of ART efficacy results in cost reductions between 2005 and 2015.

TABLE 2

Annual costs (1000 US\$) associated with HIV and AIDS to the Caribbean education sector if ART were provided to all teachers needing it from 2005–15

	Caribbean		OECS		Guyana		Trinidad and Tobago	
	2005	2015	2005	2015	2005	2015	2005	2015
Absenteeism	\$3062	\$4468	\$27	\$45	\$73	\$100	\$146	\$118
Deaths	\$7637	\$5062	\$67	\$50	\$200	\$118	\$186	\$188
ART	\$911	\$1592	\$10	\$19	\$22	\$33	\$48	\$53

The model incorporates discounting for future costs, which accounts for the decrease in the cost of absenteeism in Trinidad and Tobago while HIV positive teachers increase slightly.

This is a preliminary analysis, and does not include the human capital losses upon the death of a trained teacher. The cost-effectiveness of preventing teacher infection has also not been explored.

Conclusion

It is clear that HIV and AIDS will have a significant impact on the supply of education in the Caribbean region. It is critical that a thorough analysis is made at the country level to allow disparities between countries to be accounted for. Multisectoral strategies need to be developed that support the three pillars of an effective response: 1) prevention of HIV transmission; 2) care and support for those who are infected or affected (including provision of ART); and 3) management of the systemic and institutional impacts so as to mitigate negative effects. To date, the education sector response to HIV and AIDS has concentrated, appropriately, on HIV prevention. While efforts in this area need to be strengthened, it is time to make a comprehensive impact assessment in order to mitigate the negative effects on education delivery in the future.

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