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The "Education Vaccine" Against HIV

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Introduction

Evidence is emerging that the social profile of the AIDS pandemic is changing over time. During its initial stage, the more educated, mobile and better-off members of society seem to be most vulnerable to HIV infection. With increased information, knowledge and awareness, however, their behavior changes faster than that of illiterate and poor people in terms of delaying first sexual encounter, reducing the number of partners, increasing condom use, and other actions to decrease risk of infection.

Relatively little has been published on the socio-economic correlates of HIV infection. A few studies have shown higher prevalence rates at higher levels of income (Over & Piot, 1993, p. 464). This article attempts to fill some of the void in the existing literature. It focuses on the correlation between HIV infection and the level of education, the latter being a good proxy indicator for a person's overall socio-economic status. If the hypothesis holds true that, beyond the initial stage of the AIDS pandemic, education reduces the risk of HIV infection, then new HIV infections will gradually become concentrated among illiterate and poor people as the epidemic spreads among the population.

The hypothesis implies that education is the best available protection against HIV infection. Indeed, the "education vaccine" against HIV is likely to be the only one available for the foreseeable future. This article discusses the way "education vaccine" works. Furthermore, it provides some direct and indirect evidence in support of the changing social profile of the disease and highlights the significance of the empirical results.

Education and HIV Infection

An inverse association between the disease burden and the level of education exists for most infectious diseases. The incidence of malaria and cholera, for instance, are known to be negatively associated with the level of education. But because of its main propagation channel, HIV/AIDS first affects those with more opportunities, including more educated, mobile and better-off people. Beyond the initial stage, the disease burden quickly follows the normal pattern of other contagious diseases. Particularly in the case of HIV/AIDS, the segments in society that are initially most vulnerable are also best equipped to protect themselves and change their behavior. Thus, the argument about the "education vaccine" is already obvious from existing evidence for other infectious diseases. It is often said that people who wear a tie do not get cholera. In the case of HIV/AIDS, education is likely to determine a person's vulnerability to HIV infection.

Some studies contest the validity of the "education vaccine" against HIV (Hargreaves & Glynn, 2000). Those that lump together evidence from countries that are at very different stages of the HIV pandemic will not capture the changing profile of the disease. If the evidence of countries that are at different stages of the pandemic-such as Botswana and Bolivia or Malawi and Malaysia[1] - are lumped together for analytical purpose, then it is unlikely that a clear pattern will be discernible between the level of education and the HIV prevalence rate.

Studies based on data for the late 1980s and early 1990s-when the pandemic was emerging-mostly show a direct and positive relationship between the level of education and the prevalence rate[2]. More recent studies, however, no longer show a positive correlation between education and HIV infection. Some are beginning to show a negative correlation (Mnyika et al., 1996; Konde-Lule et al., 1997).

If the social profile of the pandemic changes as infection spreads, then in countries where the HIV prevalence rate is low, surveys are likely to show an inverse correlation between education and the risk of HIV infection. In countries with high levels of HIV infection, surveys are likely to indicate a positive correlation. In countries with intermediate HIV prevalence rates, surveys are likely to show a weak correlation or no correlation at all between education and HIV infection. Thus, when evidence from countries that are at different stages of the AIDS pandemic is pooled, no clear pattern between education and HIV infection is likely to emerge.

What the evidence does not allow us to conclude is exactly how the 'education-vaccine' against HIV works. Some argue that it works mainly through AIDS information and sex education at school. Others believe that basic education is more important as it equips and empowers a person-especially young women-to understand and internalize relevant information and to translate knowledge into behavioral change. The spread of education also changes the family and community environment in which such behavioral change become socially acceptable. Indeed, young women who want to protect themselves against HIV must often change their behavior in ways that conflict with traditional values and customs.

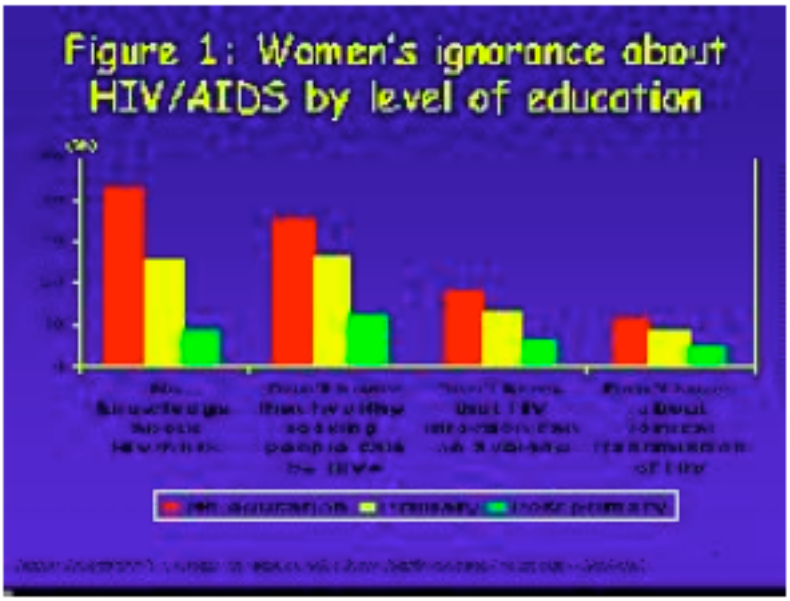
In many countries, open and frank discussions about HIV transmission at home, in school or in public are still challenged by a wall of silence that surrounds the disease. The four allies that make the virus so prevalent in many developing countries all start with 's'. They are silence, shame, stigma and superstition. These four "S's thrive in a climate of ignorance and illiteracy. Education is key to defeating this deadly alliance. Both AIDS-specific information and basic education are likely to play a role. Disentangling their relative importance is difficult, if not impossible because AIDS-specific information is more easily absorbed by literate people and because basic education helps to address the four S's even without AIDS-specific information. Both types contribute to behavioral change that reduces the risk of HIV infection.

Knowledge about HIV/AIDS

Since the early 1990s, Demographic and Health Surveys (DHS) have regularly incorporated questions related to the knowledge about HIV/AIDS. Our analysis of 32 such surveys indicates that nearly one in every two illiterate women is ignorant about

the basic facts about HIV/AIDS. Their lack of minimum knowledge about AIDS is about five times higher than that for women with post-primary education (Figure 1). Among those with basic knowledge about the disease, illiterate women are three times more likely to think that a healthy-looking person cannot be sero-positive. Their belief that there is no way to avoid AIDS is about four times higher compared with their educated counterparts. The proportion of women who do not know that the HIV virus can be transmitted from mother to child is, on average, three times higher for uneducated women than for those with post-primary schooling[3].

Figure 1. Women's ignorance about HIV/AIDS by level of education



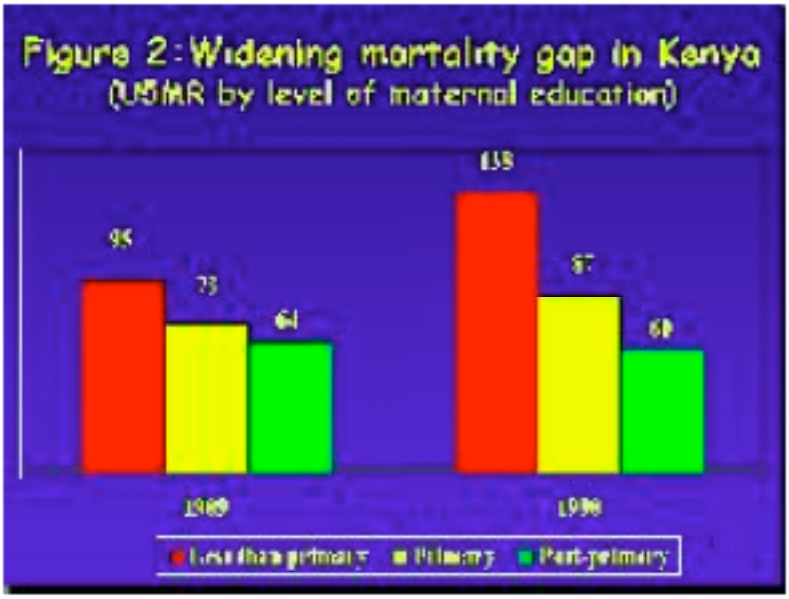
Evidently, cross-country averages hide huge differences. In Peru, for instance, women are three times more likely to lack basic knowledge about HIV/AIDS than women in Uganda-a country with a long-standing public campaign about HIV/AIDS (Kaleeba et al., 2000). But the difference between these two countries is most striking for illiterate women. Nearly eight in ten illiterate women in Peru do not know about AIDS, against only one in ten in Uganda. The difference between the two countries for women with post-primary education is not as striking-11 and three percent respectively, according to the data in their DHS.

Similarly, the two surveys (1994 and 1997) in Indonesia that collected AIDS-related information show improved knowledge about AIDS between 1994 and 1997. However, progress was only observed among educated women, whereas their illiterate counterparts saw no improvement at all in their knowledge about HIV/AIDS. In short, the Demographic and Health Surveys evidence is compelling. Without any exception, all 32 countries that were surveyed in the middle 1990s show a uniform pattern: knowledge about the various aspects of HIV/AIDS increases with higher levels of education.

Child Mortality

The changing profile of the pandemic is also reflected in mortality rates. DHS surveys in Kenya, for instance, show that the average under-five mortality rate (U5MR) increased from 91 to 105 per 1,000 live births between the 1989 and 1998. But Figure 2 indicates that the impact was not the same for all Kenyan children. Children whose mother had no education or did not complete primary school, saw their risk of premature death rise by a staggering 45 per cent. Children whose mother had post-primary education, on the other hand, continued to see a fall in their U5MR.

Figure 2. Widening mortality gap in Kenya (U5MR by level of maternal education)



In a period of less than 10 years, the disparity in the risk of premature mortality between these two groups of children soared from 1.5 to 2.3. Similarly, widening disparities between rich and poor children in terms of infant mortality and child malnutrition have been documented for other countries (Sahn, Stifel & Younger, 1999). After decades of steady decline, the increase in U5MR in Kenya is likely to be related to the HIV/AIDS pandemic[4]. If so, the differential increase in U5MR by level of maternal education points towards the effectiveness of the "education vaccine" against HIV.

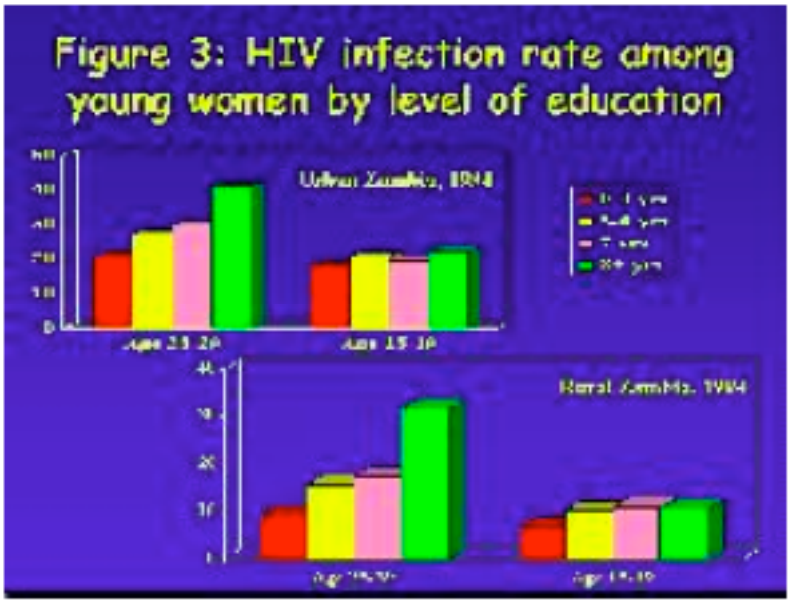
Sero-Prevalence and Education

DHS surveys indicate the person's knowledge about AIDS by level of education and the level of maternal education of children who die before their fifth birthday. They do not report actual HIV infection rates by level of education. Thus, they provide suggestive evidence about the "education vaccine" against HIV. To probe this impact of education further, we examined the results of small-scale surveys in Zambia and Uganda that report the education level of sero-positive people.

A 1994 sentinel survey in Zambia (Figure 3) shows a positive correlation between sero-prevalence and education among pregnant women aged 25-29 (Fylkesnes et al. b, 1997). At face value, this might contradict our argument about the "education vaccine" against HIV, but it must be recalled that women who belonged to that age group in 1994-the

year of the survey-became sexually active in the early and mid-1980s. That was the time when little was known about the spread of HIV. The positive correlation actually confirms that educated and better-off people are more vulnerable to HIV infection during the initial stage of the pandemic than illiterate people are.

Figure 3. HIV infection rate among young women by level of education



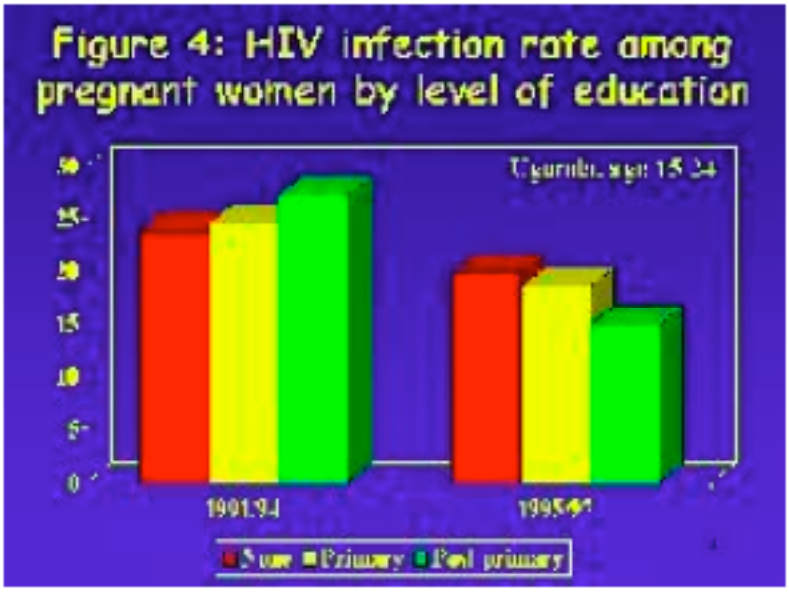
However, the correlation between sero-prevalence and education was no longer observed for the age group 15-19, the group that became sexually active a decade later when information on the pandemic was more widespread. The survey suggests that educated women started to change their behavior in the 1990s based on information and knowledge. A steep reduction in their average infection rate was observed both in urban and rural areas. By contrast, the HIV prevalence rate among women without education remained relatively constant[5].

A sentinel survey of childbearing women in a town in Western Uganda provides further evidence of the changing social profile of the AIDS pandemic (Kilian et al., 1999). Uganda is a country where strong public information campaigns have been used since the mid-1980s in an effort to reduce new HIV infections. Implemented under a slogan of 'Faithfulness, Abstinence, Condoms,' the efforts of these information campaigns are now paying off. In 1987, there were an estimated 239,000 new cases of HIV/AIDS each year. By 1997, the figure had fallen to 57,000 (UNICEF, 1999, p. 19). But even in this exceptional case, the positive impact on the poor-those with little or no education-has been the least.

Figure 4 shows that in the period 1991-94, young women (age 15-24) with secondary education were still more likely to be infected than their illiterate counterparts albeit that the positive association between education and HIV infection was already weaker than in the case of Zambia for the age cohort 25-29, as shown in Figure 3. But the positive association between the level of education and the rate of HIV infection was no longer observed in 1995-97. The relationship was actually reversed during the 1990s due to

behavioral change among educated women, such as condom use, delayed first sexual encounter and fewer partners (Kilian et al, 1999, p. 397; Blanc, 2000, p. 17). The HIV infection rate among educated women dropped by almost half, whereas it fell less steeply for women without formal schooling.

Figure 4. HIV infection rate among pregnant women by level of education



Significance

The evidence presented in this article seems to confirm the hypothesis that the social profile of AIDS pandemic is changing. The disease is increasingly discriminating against illiterate and poor people. This underscores the urgency for achieving universal primary education with a view to equipping the poor with basic capabilities to protect themselves against HIV infection. It also implies that public awareness campaigns need to be devised so as to reach the illiterate and less educated people and to be understood by them.

Above all, the changing social profile of the AIDS pandemic makes a compelling case for using education as one of the most powerful tools for slowing and reversing the spread of HIV. Girls' education appears as an absolute priority. Recent studies in Africa show that teenage girls are five to six times more likely to be infected by the HIV virus than boys are their age (UNAIDS, 1999, p. 15). Moreover, gender-specific infection rates seem to be closely related to the overall HIV prevalence rate. At low prevalence levels, the infection rate among male adolescents is higher than among females; but young females become the most vulnerable group in society when the country reaches a high prevalence rates. In Peru, for instance, young males (ages 15-24) are twice as likely to be sero-positive as young females their age (0.4 and 0.2 percent respectively). In Lesotho, however, HIV infection among girls is twice as high as for boys (26 and 12 per cent respectively) (UNICEF, 2000, p. 4-5). In most countries, adolescent females are disproportionately represented among the newly infected people.

The implication of the changing social profile of the pandemic is far-reaching. A disease that affects predominantly poor and illiterate people is unlikely to generate the same level of political commitment and public resources as a disease, which does not discriminate against the poor. This is valid both at the international and national levels. For example, research and development on diseases that occur only in developing countries often fail to attract much attention and resources. For example, out of 1,223 new chemical entities that were developed between 1975 and 1997, only 13 treated tropical diseases (Pecoul, Chirac, Trouiller & Pinel, 1999).

Once AIDS is perceived as a disease that predominantly affects the poor, then public commitment to find a cure or a vaccine or to support public awareness campaigns could be in jeopardy. When the non-poor no longer feel they have a stake in such efforts, the voice of the poor and the illiterate alone is unlikely to be strong enough to maintain public support and strong political commitment. Susan George (1999) makes this point obvious: "As the disease [AIDS] moves inexorably down the social scale, the 'biopolitician' will learn that few votes are garnered by funding programmes for the dregs of humanity" (p. 145).

At the same time, the above evidence provides a glimmer of hope in an otherwise gloomy context. Indeed, the good news is that HIV infection rates are declining among people with primary and post-primary education, even in countries where the overall HIV prevalence rate is still on the rise. Similarly, the good news in Kenya is that the risk of premature death continued to decline for children whose mother had post-primary education during the 1990s, in spite the increase in the country's average U5MR. Such positive aspects deserve to be highlighted, because a world without hope offers few opportunities for improvement.

Notes

1. 1 At the end of 1999, the proportion of adults (ages 15-49) living with HIV/AIDS was estimated at 36 per cent in Botswana and 0.1 per cent in Bolivia; at 16 per cent in Malawi and 0.42 per cent in Malaysia. (www.unaids.org/epidemic_update/report/Table_E.htm, October 31, 2000)

2. These studies include evidence from Tanzania, Uganda and Zambia. Most, but not all, properly take into account other factors such as age and sexual behavior.

3. The differences between the (unweighted) averages for two education groups in the 32 surveys-no education and post-primary education-are statistically significant.

4. The latest data show that 14 per cent of Kenya's young women (15-24 years) are HIV-positive (UNICEF, 2000, p. 4).

5. 5 It could be argued that the difference between the two age groups does not necessarily suggest a change in behavior, but that it simply reflects a lower level of sexual activity among adolescents. However, DHS surveys for Zambia have shown that the majority of girls become sexually active before age 18, irrespective of their level of education.

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