

Literature Review on the Impact of Education Levels on HIV/AIDS Prevalence Rates



World Food
Programme

EXECUTIVE SUMMARY

While HIV and AIDS continue to spread rapidly throughout Africa and Asia, especially among young people aged 15-24, children aged 5-14 remain largely free of the virus. This group has been termed the “window of hope” for limiting the spread and mitigating the damage being wreaked by HIV.

Education has been cited by several well-respected sources, including the World Bank, as one of the most important factors in helping to prevent this group from contracting HIV and AIDS. Knowing the successful role that school feeding and take-home rations have played in increasing enrolment and attendance rates in poor schools, especially among girls, the World Food Programme has attempted to address the needs of orphans and other vulnerable children in countries with high HIV prevalence rates through support to education.

Relatively little research exists on the impact that education levels (i.e. number of school years completed) have on new cases of HIV (incidence) and the percentage of a population group which is HIV positive (prevalence). This literature review summarizes the research undertaken to date, drawing upon both qualitative and quantitative studies undertaken mostly in sub-Saharan Africa. It identifies gaps in the available research and raises some issues for WFP’s programming on HIV and AIDS.

Qualitative research conducted to date points to the benefits of education on individuals: increased ability to understand HIV prevention information, better access to health services, reduced social and economic vulnerability that exposes women to risky activities and a higher likelihood of participation in community groups that foster protection against AIDS.

It appears that there is a shift in the quantitative evidence surrounding education and HIV prevalence. In the early 1990s, evidence suggested that populations with higher education levels were likely to have higher HIV rates. More recent evidence in countries such as Zambia and Uganda suggests that now, more years of education are increasingly associated with safer sexual behaviour and lower HIV prevalence. This is particularly true for young women with secondary education, who demonstrated significantly lower HIV prevalence rates than their peers who had dropped out of school earlier.

These findings argue in favour of WFP continuing to expand its efforts to attract children, especially girls, into school, and to link closely with effective HIV prevention education and awareness.

1. INTRODUCTION

Currently, more than 40 million people worldwide are living with HIV/AIDS, including 2.3 million children under the age of 15 (UNAIDS, 2005). An estimated 26 million people are living with the disease in sub-Saharan Africa where the epidemic has hit the hardest. While data from Asia show lower national prevalence rates, the epidemic is also spreading quickly there, with 1.1 million new infections last year. According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), India is second to South Africa in the number of people currently infected.

HIV infections are spreading most quickly within youth populations. An estimated 11.8 million young people aged 15–24 are living with HIV/AIDS, and half of all new infections – over 5,000 daily – are occurring among them (UNAIDS, 2003). The 5 to 14 age group represents the one most likely to be free from HIV, therefore often termed the “window of hope.” It is also this group that should normally receive or have received a primary school education, which provides the protective effects of increased knowledge and life skills – both critical to raising a generation of young people who will be able to grow up without being infected with HIV.

While various stakeholders advocate increasing educational attainment levels for youth in order to halt the spread of the pandemic, there has been relatively little research on the correlation between levels of education and actual HIV prevalence and/or incidence rates. In contrast, much has been published on the socio-economic impacts of the HIV/AIDS epidemic on the education sector for current and future generations, and even more so on the effects of HIV/AIDS prevention education on youth. There are several reasons for this lack of research on the topic, which include difficulties in setting up appropriate and accurate analyses (Hargreaves, 2000).

Most of the research on the correlation between the levels of educational attainment and HIV prevalence rates has not focused on establishing a causal link between the two (De Walque, 2002). Instead, there has been more examination of the influence of a formal education (both primary and secondary) on sexual behaviour patterns such as condom use, number of non-marital sexual relationships and age of first sexual experience. As Hargreaves and Glynn (2002) state, “In the absence of a vaccine and widely available treatment, the primary focus for HIV control programmes must be on reducing transmission...the main method of reducing heterosexual transmission is by behaviour change.” Examining the effect that years of educational attainment have on sexual behaviour is therefore key to understanding the complex relationship between levels of educational attainment and HIV prevalence rates.

This review explores the quantitative research behind qualitative arguments that support the claim that education may be “the only vaccine against HIV/AIDS we have” (World Bank, 2002). Although this review aimed to locate studies conducted in countries all over the world, the reality is that most of the research is limited to sub-Saharan Africa. While there is reference to the South Asian region (India and Nepal), most of the cited studies here come from Kenya, Tanzania, Uganda, Zambia and Zimbabwe. Despite the limited regional scope, this review looks at diverse sources such as policy papers, scientific journals, NGO statements and other papers written by governmental and multilateral developmental

agencies. It will first examine the theoretical links between the levels of educational attainment and HIV prevalence shown by various researchers, and then present the available evidence of quantitative research correlating the two.

The review will then identify research gaps and, finally, will consider the implications for future programming and policies for the World Food Programme.

2. THEORY: THE QUALITATIVE ARGUMENTS

2.1 Introduction

Even without quantitative evidence, the qualitative arguments correlating levels of educational attainment and HIV prevalence rates are very strong. Two levels will be presented: the effects of formal education at the individual, micro-level, and the effects at the socio-economic developmental level.

2.2 Effects of education at the individual level

According to Kelly (2000), education has a critical role to play in mitigating the effects of HIV/AIDS, providing “knowledge that will inform self-protection; fostering the development of a personally held, constructive value system; inculcating skills that will facilitate self-protection; promoting behaviour that will lower infection risks; and enhancing capacity to help others to protect themselves.” Blanc (2000) argues that education promotes both logical and different ways of thinking, which allow better educated people to take action in protecting their health. De Walque offers a different spin on the same conclusion: that as a result of their investment in their future, better educated individuals have stronger incentives to protect their health.

A Global Campaign for Education report (2004) states that without education, young people are less likely to understand the information regarding HIV/AIDS education provided, and less confident in accessing services and openly discussing the HIV epidemic. Kilian (1999) and Blanc (2000) support this idea that school attendance may directly affect access to health services and exposure to health interventions.

The World Bank (2002) states that education protects against HIV infection through information and knowledge that may affect long-term behavioural change, particularly for women by “reducing the social and economic vulnerability that exposes [them] to a higher risk of HIV/AIDS than men”, including prostitution and other forms of economic dependence on men.

Gregson *et al.* (2001) conclude in their research that participation in well-functioning community groups has a negative correlation with HIV prevalence rates for young women in rural eastern Zimbabwe. They conclude furthermore that “the school setting can both facilitate the development of [community group formation] and provide students with easy access to it.” Thus, not only do schools provide the education, knowledge and life skills for decreased vulnerability to HIV infection, but they also provide the environment for communities to be able to protect themselves.

2.3 Effects of education at the country level

In this qualitative examination of the effect that educational attainment is expected to have on HIV prevalence rates, there is a more fundamental, extensively researched question to consider: what are the effects of educated populations on the socio-economic development of a country? Education's effect is felt not only on literacy, but also on the "promotion of democratic and tolerance values, and increased productivity...and better health" (Roundtable on Human Resources Development, March 2002). The World Bank reports that better-educated populations lead to higher economic growth. The recently released report, *Teach a Child, Transform a Nation* (2004) by the Basic Education Coalition, which includes CARE, International Youth Foundation, Save the Children and Women's Edge, also finds a negative correlation between education and important indicators, for example, health statistics such as infant mortality and fertility rates. An analysis of African data by the former World Bank chief economist, Lawrence Summers, showed that children born to mothers who had received five years of primary education were on average 40 percent more likely to survive to age five (Summers, 1994). Multi-country data show that educated mothers are around 50 percent more likely to immunize their children than are uneducated mothers (Gage, Sommerfelt and Piani, 1997). Another multi-country study indicates that doubling the proportion of women with a secondary education would reduce average fertility rates from 5.3 to 3.9 children per woman (Subbarao and Raney, 1995). While the overwhelming evidence in support of the positive impact of education on such health indicators would allow us to logically conclude that education imparts similar influences on HIV infection, the correlation of levels of education and HIV prevalence rates is more complex and requires further empirical studies.

3. EVIDENCE: PAST AND PRESENT

3.1 Introduction

The evidence from the early 1990s suggested that higher levels of education were correlated with higher HIV prevalence. Since then, however, the evidence is beginning to show that better-educated populations are reacting more strongly than less-educated populations in their responses towards protection through changes in risky sexual behaviour (De Walque, 2002). Recent evidence, unfortunately, does not point to a categorical negative correlation in the available research across the board. However, it is safe to say that in countries like Uganda and Zambia, where the correlation was once positive, the correlation is now shifting to a negative one.

3.2 Evidence from the early 1990s

Data from the early 1990s points to either no correlation or a positive correlation between educational levels and HIV prevalence rates (see Deheneffe, 1998 regarding 1989 to 1991 evidence). Researchers theorize that the effect of higher education on non-marital sex is related to increased opportunities for mobility and sexual relations for higher income, better-educated men. De Walque (2002) describes sexual adventure within the economics framework, calling it a "normal good", a good that is in greater demand due to growing income. Others

like Deheneffe (1998) posit that more years of schooling lead to more liberal sexual values. He also discusses the possibility of a longer time period for educated individuals between their first sexual experience and their first stable relationship, which increases opportunities for sexual relations.

Still others point to inconsistent analyses of the early evidence, claiming that much of it is based on data when young women were becoming sexually active in the early and mid-1980s and little was known about AIDS (Vandemoortele, 2000). Vandemoortele also claims that some studies have been ill-designed, referring to Hargreaves and Glynn (2000) who used data collected before 1996 and aggregated evidence from different countries at different stages of the epidemic, which do not accurately portray the patterns between levels of education and HIV prevalence. While Hargreaves and Glynn determined a positive correlation between education and HIV prevalence, they did acknowledge that at the time of publishing their article, conflicting data was beginning to emerge in various countries in Africa.

While the bulk of the research conducted in the early 1990s indicates either no correlation or a positive correlation between levels of education and HIV prevalence rates, it is important to address particular nuances in the available research. For example, developing countries with large disparities in education and income levels between males and females often have larger HIV epidemics (World Bank, 1997).

Thus, while overall literacy/educational levels might be higher in one developing country than in others, wide disparities between sub-populations might in fact increase the risk of HIV by exacerbating existing economic and social inequalities (Gregson, Waddell and Chandiwana, 2001).

It may seem, therefore, that educational levels are positively correlated with HIV prevalence rates, when in fact they are not. This analysis is supported by Mead Over (2001) of the World Bank, whose research arrives at the same conclusions: that gender inequality in illiteracy rates and access to work, together with poverty and income inequality, facilitate the spread of HIV. He concludes that controlling the epidemic requires economic and social development to reduce income and gender inequality. Moreover, processes often correlated with higher socio-economic development, such as increased urbanization, can increase the spread of HIV, leading to the "perverse possibility that some HIV epidemics might be better described as epidemics of development than of poverty" (Gregson, Waddell and Chandiwana 2001).

3.3 What does the recent evidence say?

Researchers such as Damien De Walque note the difficulty in making the causal link between years of education and HIV prevalence. Instead of trying to test this correlation, researchers have continued to test the effects of levels of educational attainment on sexual behaviour such as condom use, numbers of non-marital sexual relations, and age of first sexual experience.

While the evidence among the research available in this Literature Review points to an **increasingly** negative correlation between levels of education and

HIV prevalence, there still remains some uncertainty over this correlation in many countries due to changes in sexual behaviour since the early 1990s.

This uncertainty is warranted given the varied methods of data collection, the lack of longitudinal data, and as Martha Ainsworth of the World Bank indicated (August 2004), the lack of data on HIV incidence¹ (rather than HIV prevalence). In any case, the evidence is proving increasingly optimistic. For example, recent evidence from surveillance and population-based surveys out of Zambia (Fylkesnes *et al.*, 1999) show a decline in HIV prevalence among young people in both rural and urban areas. These declines are attributed to increasing levels of education, while rising HIV rates were correlated with lower levels of education.

Moreover, for young women in particular, the research points to impressive benefits, especially for those who have completed secondary school. Albert Kilian (1999) presents data from Uganda in which these women showed the strongest decline in HIV prevalence, whereas the risk for illiterate women remained high. Secondary school students in one of the districts of the study reported higher levels of knowledge on HIV prevention and more positive attitudes towards AIDS patients.

Recent evidence is telling of the significant impact of education on HIV prevalence rates (statistics taken from Herz and Sperling, 2004 and World Bank, 2002):

- In 1998, a 72-country analysis finds that where the literacy gap between boys and girls exceeds 25 percent, HIV prevalence exceeds 5 percent. Conversely, where the literacy gap is below 5 percent, HIV prevalence falls below 3 percent;
- A **Zambian** study finds that AIDS spreads twice as fast among uneducated girls (Vandemoortele and Delamonica, 2000);
- Another **Zambian** study finds a marked decline in HIV prevalence rates in 15–19 year-old boys and girls with a medium to higher educational level, but an increase among those with lower education levels (Kelly, 2000);
- Young rural **Ugandans** with secondary education are three times less likely than those with no education to be HIV-positive (De Walque, 2004);
- A **Kenyan** study finds that girls who stay in school are four times more likely to be virgins than those who drop out (UNICEF, 2002);
- **In Zimbabwe**, secondary education had a protective effect against HIV infection for women that lasted into early adulthood. Girls aged 15-18 who had dropped out of school were six times more likely to be HIV-positive than those who were still enrolled (Gregson, Waddell and Chandiwana, 2001);
- Some analysis suggests that 700,000 cases of HIV would be prevented each year globally if all children received a complete primary education (five to six years of schooling) (Bruns, Mingat and Rakotomalala 2003) and
- Young people with little or no education may be 2.2 times more likely to contract HIV as those who have completed primary education (De Walque, 2004).

¹ HIV incidence refers to the proportion of people who have become infected with HIV during a specified period of time. AIDS incidence refers to the number of new AIDS cases in a specific period. HIV prevalence refers to the proportion of individuals in a population who have HIV at a specific point in time. The relevance of this is that when you look at prevalence, you capture all cases, new and old. The incidence rate, however, would only allow the measurement of new cases and to state whether a higher proportion of them are now among the educated or uneducated individuals.

Despite these impressive statistics showing the benefits of education, the correlation between levels of education and HIV infection are dependent on “the dynamic[s] of the epidemic and of public policy (including treatment policy) and are superimposed on societies with different social inequality and cultural characteristics” (Ainsworth, 2004). Ainsworth provides the example of Brazil where in the early 1990s, AIDS cases were disproportionately common among the more educated. By the mid-1990s, AIDS was more likely among the uneducated. With many patients now on anti-retroviral therapy, she speculates that the more educated are likely to be on the therapy, take it successfully, and thus have longer life expectancy, tracking HIV prevalence over time in relation to education might indicate that a higher proportion of those with HIV have more years of education. Furthermore, she points out that tracking HIV prevalence as a proxy for HIV incidence is becoming less useful, an idea affirmed by De Walque (2002).

As these correlations are dependent on the dynamics of the epidemic and other public policy, and on methods of reporting HIV prevalence/incidence rates, the recent evidence is still mixed according to researchers such as Hargreaves (Hargreaves, email communication, 23 August 2004) and Ainsworth. *The most recent evidence from the research used in this review, however, still points to an increasingly negative correlation between the level of educational attainment and HIV prevalence.*

3.4 Education's impact on HIV knowledge

It is important to point out that education not only affects changes in sexual behavior, but also predicts level of knowledge about the disease. A study based on data from the 1998–1999 National Family Health Survey (NFHS) of India found that the higher the level of education of women, the more likely it is that they will have greater awareness of and accurate knowledge on AIDS. Another significant result from this analysis was the importance of informal learning in rural areas: women's knowledge of AIDS depended on interaction with people of equal or higher education levels (Aggarwal, 2004).

A study undertaken in Nepal (Reproductive Health Matters, 2003) confirmed these results: there was a significant correlation between women's level of education, both formal and informal, and their knowledge of HIV/AIDS.

While the positive correlation between level of education and accurate HIV/AIDS knowledge is significant, this does not necessarily reflect a negative correlation between HIV/AIDS knowledge and prevalence rates. In fact, some studies suggest otherwise. The latest research by De Walque (2002) shows that the role of education in reducing HIV prevalence among young adults cannot necessarily be attributed to exposure to HIV prevention classes. His research on Ugandan 18-29 year olds shows that most would have left school by the time school-based HIV prevention classes began in 1996. Thus, it appears that general schooling, not these classes, is what makes the most profound impact on young people's sexual behaviour. Despite such evidence, accurate HIV/AIDS knowledge remains an important and effective component of the comprehensive strategy to protect individuals against infection.

3.5 Education has varied effects on different types of sexual behaviour

While the above statistics show that increasing levels of education have a protective effect against HIV infection through changes towards safer sexual behaviour, *not all* types of risky sexual behaviour were avoided with increased levels of education. It is important to distinguish the differential impact that education has on different sexual behaviour, namely condom use, multiple sexual partnerships and age of first sexual experience.

3.5.1 Condom Use

For condom use, the evidence presented is quite conclusive: *increasing the educational status of women and men leads to a significant increase in condom use*. A survey of over 4,600 non-spousal partnerships in cities in Benin, Cameroon, Kenya and Zambia, showed that higher educational levels led to higher rates of condom use (Lagarde *et al.*, 2001). These results are further confirmed by the research of Blanc (2000), Waithaka (2001) and Filmer (2002). International Family Planning Perspectives (2003b) presents quite surprising evidence out of Côte d'Ivoire (1994 DHS survey), that while men with a secondary or higher education were significantly more likely than men without formal schooling to have used a condom, the level of accurate AIDS knowledge did not predict the probability of condom use.

3.5.2 Multiple sexual partnerships

While the evidence on the effects of education on condom use is conclusive, *the evidence on the effects of education on multiple sexual partnerships is mixed*. The 1998 Kenya Demographic and Health Survey (KDHS) showed that men and women with some primary school education were more likely to have had more than one sexual partner within the past 12 months than those with no formal education. *However, that percentage decreased for those with some secondary schooling*. Filmer not only confirms these findings, but also explains how despite this positive correlation between levels of education and multiple sexual partnerships, HIV prevalence rates are able to decrease. He concludes that although "the probability of having had a non-regular partner increases with educational level, the probability of using a condom increases at a faster rate" (Filmer, 2002). In contrast, De Walque shows that when the epidemic reaches a high level, the correlation between education levels and the proportion of people with more than one sexual partner becomes increasingly negative.

3.5.3 Age of first sexual experience

As Peter Piot, Executive Director of UNAIDS, stated:

In countries where there is a high prevalence of HIV, a young person's first sexual experience can be very risky...If you can persuade youngsters to delay their first sexual contact for a couple of years, you can have a big impact (Dyer, 2004: 3).

For this reason, the effect of education on age of first sexual experience

needs to be explored. Similar to the evidence for multiple sexual partnerships, the evidence of education's impact on the age of first sex is also mixed, this time for both males and females. UNAIDS research has shown that for young men, education is positively correlated with having sex earlier (UNAIDS, 2000). According to this same analysis, in contrast, better-educated girls were delaying sex: secondary school educated girls were 24 percent less likely to be sexually experienced at age 18 than those with primary school education. These statistics have important implications, especially for girls' education. With the latest UNAIDS report (2004) indicating the startling statistic that 13 women are infected for every 10 men, delaying girls' sexual debut through increased education would begin to change these numbers.

3.5.4 Conclusion

Although the impact of increasing levels of education on different sexual behaviour patterns for both sexes in different countries at different stages of the HIV/AIDS epidemic may vary, *it is safe and accurate to say that the **recent** evidence gathered for this review points to an **increasingly** negative correlation between levels of education and HIV prevalence.* As Kelly states and many others corroborate, "a general basic education is making its own specific, intrinsic contribution to the reduction of HIV prevalence rates among young people" (Kelly, 2002).

Furthermore, the latest surveys of young people reported in the most recent Youthnet Issues Paper (Burns, 2004) concludes that the strongest protective factors against sexual risk-taking are school-related, including feelings of school connectedness, academic performance and the number of years of education. Consistent risk factors included being out of school and experiencing physical or sexual abuse. Evidence examining condom use among adolescents in Zimbabwe (Gage, A., as cited in Betts *et al.*, 2003) confirms education as a strong force against risky sexual behaviour:

Adolescent decision-making around sexuality issues is an interaction of individual, social, family, peer, and socio-cultural factors. Data from the present study illustrate this ecological concept since factors related to parents, school, and participation in extracurricular activities were significant discriminators of safe versus unsafe sex (p. 170).

4. GAPS: WHAT RESEARCH IS MISSING?

While this review attempts to be comprehensive, the unavailability of some research prevents a thorough analysis of the correlation between levels of education and HIV prevalence. The following are research gaps:

- Evidence shows that early in the AIDS epidemic, there was a positive correlation between levels of education and HIV prevalence. What is less evident is whether this correlation is a global pattern or country-specific, i.e. countries where the epidemic has had a later start could initially experience the same positive correlation between level of education and HIV prevalence at the population level, and over time show evidence that the higher educated respond more quickly to the epidemic through sexual behaviour changes than the less educated. It would be interesting to see the evidence and analysis correlating education and HIV prevalence over time in countries with earlier incidences of HIV, such as the Democratic Republic of Congo and Rwanda, compared with the evidence from countries with late incidences of HIV.
- While the influence of a secondary education seems to have a greater impact than primary education on decreasing HIV infection levels, there is no specific breakdown of the impact that each additional year of education (for primary school and secondary school) has on HIV rates. In addition, further research and analysis on the percentage of primary school students who enter secondary school would be relevant.
- While there has been much research on the differential impact of education on males and females, there has been relatively little on rural and urban sub-populations. The evidence available indicates a *less* negative correlation between education levels and HIV prevalence for rural populations. In any case, these sub-populations need further examination.
- There is strong evidence of the positive effect of mothers' levels of education on the health of their children. It may be interesting to examine the effect of mother and father education levels, and their impact on the HIV infection levels of their children, although this may be difficult to research and correctly attribute. A higher parental educational level/lower child infection rate would have interesting implications in terms of producing a compound effect of decreasing prevalence rates.
- The research available seems to indicate that DHS survey evidence and other surveillance data collected between "1990-1995/6" constitutes the "early evidence", showing no correlation or a positive correlation between education and HIV prevalence. Unfortunately, it is difficult to be more precise because the time range does not determine which year or years were the turning point towards negative correlation. This may be a limitation in making conclusive statements concerning the available research.

5. IMPLICATIONS FOR WFP PROGRAMMING AND POLICIES

5.1 What could WFP focus on?

As seen, the evidence of the impact of education on changes in sexual behaviour and on HIV prevalence rates for girls is quite clear and impressive: increasing levels of education for girls is crucial for decreasing their infection levels. While secondary schooling led to more significant declines in HIV rates, primary schooling was just as strong an indicator of safer sexual behaviour. In any case, WFP needs to continue to ensure schooling for girls. Further, it is clear that primary education for both sexes is key to stopping the pandemic. Thus, expansion of school feeding in high endemic areas should be key to WFP's HIV/AIDS strategy.

5.2 What kind of approach needs to be taken?

5.2.1 Universal Primary Education (UPE)

While educating young people, especially girls, is critical to mitigating the epidemic, the harsh reality is that tuition and other school fees may hinder many students from receiving a primary education. There is a global push for universal primary education (Millennium Development Goal, no. 2) and some countries are putting Universal Primary Education (UPE) on their national agendas. WFP, in partnership with others, needs to work with governments to put UPE in place, not only as a Millennium Development Goal, but also as a strategy for combating the epidemic.

5.2.2 Improving education systems and HIV prevention curricula

While WFP's school feeding programme may attract young people to schools, it is important to know what young people are actually learning, if they are learning, and how much of what they are learning is relevant to their lives. There needs to be closer scrutiny of both general education curricula, which are often overloaded and outdated, and HIV prevention curricula, and whether they will both live up to the challenge of educating a generation growing up in the era of AIDS. HIV prevention curricula need to be taught within an environment of frank discussion and concrete learning. Some research has shown that this has not been the case in many countries, however. General education curricula need to incorporate subjects "relevant to the most important issues of their lives and [which] equip them to address health, social and economic issues with accurate, practical information", as recommended by participants from a US Agency for International Development (USAID) Colloquium on HIV/AIDS and Girls' Education (25-26 October 2000). WFP, with others, should advocate for education curricula which address the needs of this generation of young people.

Moreover, there has been much evidence and literature indicating the destructive impact of the epidemic on the education system as a whole. HIV/AIDS is rapidly decimating both the supply of educators and the demand for education by young people. Therefore advocating higher levels of education as a strategy for stemming future HIV infections may place even greater pressure on a system on the brink of collapse. WFP should partner with NGOs and other

agencies in the field to address this issue of maintaining and strengthening the education sector so that it can equip future generations of young people with the tools and knowledge to protect themselves from HIV infection.

5.2.3 Community Participation

Gregson *et al.* (2001) note in their research on women in rural Zimbabwe that despite their high levels of knowledge on HIV/AIDS, positively correlated with higher levels of educational attainment, the risk of HIV infection is still high. Their research indicates that participation in well-functioning community groups, determined by the education level of the members, is often positively associated with HIV avoidance. This suggests that “programmes that are more participatory and address underlying structural and community-level factors appear to be essential” and that “promotion of and organisational development and training among community groups could well be an effective HIV control strategy” (Gregson *et al.*, 2001). Since young women with secondary education participate disproportionately in well-functioning community groups, young uneducated women would benefit from community group interaction. WFP’s food-for-training or other similar initiatives could be an entry point for WFP’s intervention in aiding community group mobilization.

6. CONCLUSION

As Vandemoortele and Delamonica conclude, the face of AIDS is changing. While evidence from the early 1990s showed a positive correlation between levels of education and HIV prevalence, recent evidence presented in this review indicates otherwise – the less educated are becoming increasingly vulnerable to HIV infection. While the effect of education on sexual behaviour such as condom use, multiple sexual partnerships and the age of first sexual experience may differ depending on the affected sub-population, and while all the evidence correlating levels of education and HIV prevalence is not yet conclusive, *higher levels of educational attainment are increasingly correlated with safer sexual behaviour and thus lower HIV prevalence rates*. With the changing face of AIDS, an appropriate response to this recent evidence would be to increase the educational opportunities available to young people, particularly for those children least likely to receive them.

Despite the fact that “sustaining and building upon existing education services will be extremely difficult and will require extensive resources, [...] the attempt has to be made and will pay dividends in reducing HIV transmission, morbidity, mortality, as well as in underpinning more positive development strategies” (Gregson and Waddell, 2001). To this end, WFP has an important role to play: focusing on educating children of some of the poorest and highest AIDS-impacted regions of the world by increasing enrolment and attendance in school through school feeding programmes, and working collaboratively with governments, donors and NGOs to achieve this objective.

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