

Review article

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Understanding the Scourge of HIV/AIDS in Sub-Saharan Africa

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Abstract

Sub-Saharan Africa is the part of the world that has been hit hardest by the HIV epidemic. To fight the spread of HIV in the continent, it is necessary to know and effectively address the factors that drive the spread of HIV. The purpose of this article is to review the factors associated with the spread of the HIV epidemic in sub-Saharan Africa and to propose 6 essential activities, which we refer to by the acronym "ESCAPER," to help curb the spread of HIV/AIDS in Africa.

Introduction

Sub-Saharan Africa contains just over 10% of the world's population but is home to nearly two thirds of the world's HIV/AIDS cases. An estimated 3.2 million people in Africa became newly infected with HIV in 2005, while 2.4 million adults and children died of AIDS.[1] Sub-Saharan Africa is the epicenter of the HIV/AIDS pandemic and faces an unprecedented devastation.[2-4] Africa is home to 95% of all mother-to-child transmissions of HIV and claims approximately 15 million orphans.[3,4] The spread of HIV/AIDS has reversed all progress in health, education, life expectancy, and standards of living that Africa has made since the 1950s.[5] Although the accuracy of HIV estimates in Africa has been challenged in recent years, experts estimate that on the basis of the current rate of increase, the number of HIV cases will reach 3035 million by 2010.[6] Unfortunately, until very recently, only less than 1% of HIV-infected people in Africa have had access to antiretroviral therapy. However, in the last 3 years, expanding access to antiretroviral therapy for HIV/AIDS has become a global objective, as well as a national priority for many African countries spanning the continent from Lesotho to Ghana.[7] The lack of a curative treatment or effective vaccine and the difficulty of convincing people at high risk to adopt healthy sexual behaviors underscore the need for new, more effective prevention strategies to curb the spread of HIV infection. This article provides an update on the factors fueling the

spread of HIV in sub-Saharan Africa and proposes 6 activities and a new slogan to fight the spread of HIV/AIDS there.

Factors Fueling the Spread of HIV/AIDS in Africa

HIV-Associated Stigma

Goffman[8] defined HIV/AIDS stigma as a deeply discrediting attribute that reduces the bearer of HIV/AIDS from a whole and valued individual to a tainted, discounted one. For Link and Phelan,[9] stigma exists when a person is identified by a label that ostracizes the person and associates them with undesirable stereotypes that result in unfair treatment and discrimination. Until recently, many African governments were hesitant to recognize the magnitude of the continent's HIV epidemic, dismissing critics as racist or misguided.[10-14] The pervasive silence surrounding the HIV/AIDS epidemic in sub-Saharan Africa has led to limited public discussion and continued stigmatization of those who are infected.[15] This lack of public response to HIV/AIDS was due to several factors. Cultural and religious taboos have inhibited open discussion about an epidemic that spreads primarily through sexual contact. Some faith groups in Africa believe that AIDS is a divine punishment for those who have been sexually promiscuous.[16] These factors explain, in part, the reluctance of many adults to openly admit to carrying the disease.[16]

Many governments viewed AIDS as a threat to investment and tourism, which also may explain the slow governmental response.[17] Moreover, the lack of political stability in some African countries also has contributed to governments' failure to generate an effective public response to HIV/AIDS.[15]

Kouyoumdjian and colleagues[18] reported that because of the stigma, lack of knowledge, and lack of emotional preparedness, primary caregivers in Africa were uncomfortable about discussing HIV and illness with their children. In addition, fears of contagion and death have negatively affected the attitudes of healthcare providers toward HIV-positive patients and, in turn, the quality of treatment that they provide to those patients.[19]

Stigma is of utmost concern because it is both the cause and effect of secrecy and denial, both of which are catalysts for HIV transmission.[20] People who have AIDS-like symptoms often claim to suffer from a less stigma-laden disease, such as cancer or tuberculosis. Stigma delays HIV testing, an essential first step to treatment and other preventative activities.[20] Stigma also prevents pregnant women from seeking HIV testing, leading infected mothers to expose their children to HIV infection through delivery or breast-feeding.[21-23] Unless the stigma associated with HIV/AIDS is acknowledged and addressed appropriately, prevention efforts to curb its spread are doomed to fail.

Socioeconomic Status

The HIV epidemic has disproportionately affected the most impoverished regions of the world and, within affected countries, HIV infection is concentrated in the most marginalized groups. Poverty, disease, famine, political and economic instability, and structural inequalities continue to fuel the epidemic throughout the world.[24,25] The relationship between poverty and HIV/AIDS is bidirectional in that poverty is a key factor in the transmission, and HIV/AIDS can impoverish people in such a way as to intensify the epidemic itself.[24] Poverty leads to poor nutrition, which weakens the immune system, making poor populations more susceptible to infectious diseases such as tuberculosis. In addition, people infected with HIV are likely to fall into poverty due to lack of work and the high cost of treatment.[26,27]

Because of their reproductive role and their place in society, African women suffer the greatest burden of HIV. Poverty-stricken people focus more on their daily survival than their health and are stymied by a crushing sense of powerlessness which leads to hopelessness and, in some cases, to risky behaviors, including prostitution.

Many young women become sexually involved with numerous male friends or clients in exchange for financial

support.[28,29] The prevalence of HIV throughout Africa is consistently higher among prostitutes compared with the general population. Morison and coworkers[30] found that the prevalence of HIV among sex workers was 75% in Kisumu, 69% in Ndola, 55% in Cotonou, and 34% in Yaounde. Rodier and colleagues[31] found that 36% of street prostitutes and 15.3% of prostitutes working as bar hostesses in Djibouti were HIV-infected.

Cultural and Traditional Practices

Polygamy

In Africa, polygamy is a social practice used to ensure the continued status and survival of widows and orphans within an established family structure.[32] Demographic and Health Surveys in Ghana (1988), Senegal (1986), Kenya (1989), and Zimbabwe (1988/89) showed that the proportion of women in a polygamous union was 31% in Ghana, 48% in Senegal, 23% in Kenya, and 16% in Zimbabwe.[33] In urban settings and other areas where traditional polygamy is no longer the norm, men tend to have many sexual partners and employ the services of sex workers.[33] Mitsunaga and associates[34] found that men who have 3 or more wives were at a high risk of engaging in extramarital sex, reinforcing the belief that men are biologically programmed to need sexual intercourse with many women.[35] Also putting young African girls at risk of contracting HIV is the false belief that men can rid themselves of HIV/AIDS by engaging in intercourse with a virgin.[36] As a result of this misconception, many young girls have been raped and, subsequently, infected with HIV.

Widow inheritance

In many sub-Saharan African countries, a man's property, including his wife, passes to his adult sons or brothers after his death.[37-39] The fate of African widows ranges from disinheritance and forceful deprivation of property to the mandatory observance of harmful rituals. One of these traditional rituals is widow inheritance, a practice whereby the widow agrees to marry her husband's younger brother to continue as a member of the family. In case of refusal, she is expelled and left to care for her children alone.[37,38]

In a study of 92 widows whose husbands died of a chronic illness between November 1991 and October 1992 in Kenya, Okeyo and Allen[40] found that 47 women (51%) had already been inherited, 34 (37%) had plans to be inherited, and 11 (12%) refused to be inherited for fear of spreading HIV. Comparing the sexual behaviors of inherited and uninherited widows, Agot and colleagues[41] found that inherited widows were more likely to be sexually active (odds ratio [OR] = 2.7; 95% confidence interval [CI] = 1.94.0), to have sex with casual partners (OR = 7; 95% CI = 1.628.5), and to engage in ritual sex (OR = 4.3; 95% CI = 1.114.7), but the difference between the 2

groups with regard to HIV seroprevalence was not significant. If a man died of AIDS and had infected his wives, the younger brother(s) will in turn become infected. However, a younger brother may be HIV-infected and, upon marrying his deceased brother's wife or wives, he will infect her or them.[42]

Dry sex

Dry sex has several meanings. It may refer to the sexual rubbing and motion of 2 bodies whereby no male fluids enter the vagina, anus, or mouth.[43] For the purposes of this article, however, dry sex is the drying and/or tightening of the vagina using various methods of douching and/or application of caustic leaf concoctions, powders, or household detergent to absorb vaginal lubrication.[44,45]

The main purpose of dry sex is to increase friction during intercourse, enhancing the male's experience. These practices are destructive and costly in terms of women's health. The destruction of the vagina's natural flora facilitates the proliferation of other potentially harmful microorganisms. The lack of lubrication results in lacerations of the epithelial lining of the vagina, creating a portal for HIV entry. In addition, condoms break easily due to the increased friction, exposing woman to sexually transmitted diseases (STDs). In a study of 329 women ages 15-50 attending an STD clinic in Lusaka, Sandala[48] found that 50% of the women had engaged in at least 1 dry sex practice, and about 58% of those women were HIV-positive. The most common methods of dry sex were drinking "porridge," a suspension believed to cause drying of the vagina (28%); removing vaginal secretions with a cloth (22%); and placing caustic leaves in the vagina (11%).

STDs

The World Health Organization (WHO) estimates that of the 340 million new cases of syphilis, gonorrhea, chlamydia, and trichomoniasis that occurred worldwide in 1999 among men and women aged 15-49 years, the highest rate per 1000 residents occurred in sub-Saharan Africa.[56] Research demonstrates that the presence of untreated STDs significantly increases the risk of contracting HIV. Further, an individual who is infected with both HIV and another STD transmits HIV more easily.[57-60] Both ulcerative and nonulcerative STDs attract CD4+ lymphocytes to either the ulcer surface or the endocervix, which disrupts epithelial and mucosal barriers to infections and establishes a potential mechanism to increase a person's susceptibility to HIV infection.[59,60] The presence of STDs does not appear to deter people from having sex in Southern Africa. Men with bleeding genital ulcers reported having sexual intercourse with women, including sex workers.[61] Similar findings were reported among female sex workers in Kenya.[62] Sex workers are

at higher risk for HIV than any other group in Africa. The national AIDS program of Cote d'Ivoire reported that 86% of prostitutes in Abidjan were infected with HIV.[63] Because women are at higher risk of contracting HIV, HIV/STD prevention messages and services should be provided through family planning services.[64]

War and Armed Conflicts

Many African countries resorted to war to obtain their independence in the 1960s. After gaining independence, struggles between rival tribes for political and economic power and control over natural resources led to armed conflicts that ravaged the continent.

The relationship between AIDS and armed conflict is complex but mutually reinforcing. Armed conflicts destroy economic and social infrastructures, resulting in massive internal displacement of people, loss of livelihoods, separation of families, collapse of health and education services, and dramatic increases in instances of rape and prostitution.[65] In turn, HIV/AIDS increases the burden on fragile health structures, depletes public revenues, and increases competition for resources, all of which can increase political antagonism and violence.[66] As a result of armed conflict, displaced people face the prospect of a life of poverty, powerlessness, and social instability, all conditions that increase their vulnerability to HIV/AIDS.

Another contributing factor to the spread of HIV infection during armed conflicts is the involvement of military or peacekeeping forces. In conflict situations, the primary perpetrators of sexual abuse and exploitation are armed forces or armed groups.[65] In Africa, the rate of HIV in the military and uniformed populations often exceeds the rate in the civilian population.[67] Various ministries of defense report HIV infection rates as high as 20% among military personnel.[66-69] It is, therefore, not surprising that a high prevalence of HIV/AIDS is found in African countries that recently faced war or civil unrest (South Africa, Zimbabwe, Mozambique, Ethiopia, Uganda, Rwanda, Congo, etc.). Almost all African militaries have adopted model "best practice" policies to provide troops with voluntary testing and counseling, but few can afford to actually provide such services.[70]

Labor and Migration

While the prevalence of HIV differs among countries in Africa and within those countries, the infection rates are usually higher in urban areas. HIV infections in rural areas most often come from urban sources, and migration has been determined to be a principal risk factor.[71]

Change of residence has been found to be associated with an increased risk for HIV infection in the rural population and to result in more risky sexual behavior among those

who move.[72,73] The search for work and income that began during the colonial time has led thousands of men and women to leave their families. Migration disrupts traditional social constraints on and control of sexual behavior.[71] The fact that married people travel without their spouses increases their risk for extramarital sex with commercial sex workers, who have much higher rates of HIV infection than the general adult population. Military personnel, transport workers, mine workers, construction workers, agricultural farm workers, informal traders, domestic workers, and refugees are the most vulnerable groups.

During colonization, male mine workers lived in barracks for long periods, separated from their wives and families. Men passed the time drinking and seeking female companionship and sex, either as long-term sexual partners; casual, short-term partners; or cash clients. This system has taken a toll on marriages, creating high rates of divorce and abandonment.[74] The pattern of mixing genital microflora, which is attributed to mining camps, contributed to the spread of STDs and HIV among miners. When the miners finally returned home with enough money to marry and start families, they infected their wives, who, in turn, transmitted the virus to their children during delivery or breastfeeding. The high prevalence of HIV infection in African countries with extensive mining operations (South Africa, Namibia, Zimbabwe, Zambia, Congo) is striking.

Drug and Alcohol Abuse

Injection-drug use

Sex between men and women is by far the most common mode of HIV transmission in Africa. However, the significance of intravenous-drug use appears to be higher than commonly believed.[75] Heroin injection is a serious problem in Kenya and Mauritius and is now emerging in other countries in the region, including Ethiopia. In Mauritius, where HIV/AIDS prevalence rates are lower than in other Eastern and Southern African countries, a sample of HIV-infected people revealed that 21% used intravenous drugs.[76]

Alcohol

Alcohol consumption reduces a person's ability to make informed choices concerning safer sex and protection from HIV infection. In a study of 149 men and 78 women attending an STD clinic in Cape Town, South Africa, Simbayi and coworkers[77] found that 52% of men and 17% of women abuse alcohol. Alcohol abuse was found to be associated with greater numbers of sex partners in the month prior, history of condom failures, and lifetime history of sexually transmitted infections, as well as lower rates of practicing risk-reduction skills.[77,78] When investigating the association between alcohol consumption and HIV seropositivity in a rural Ugandan popula-

tion, Mbulaiteye and associates[79] found that HIV prevalence among adults living in alcohol-selling households was 15%, compared with 8% among those living in households not selling alcohol (OR 2.0, 95% CI: 1.13.6); individuals who had, at any point, consumed alcohol experienced an HIV prevalence twice that of those who had never done so: 10% vs 5% (OR 2.0, 95% CI: 1.52.8). These findings underscore the need for comprehensive and accessible substance abuse treatment programs.

Male Circumcision and Female Genital Mutilation

Data from Africa showed that countries in which fewer than 20% of males are circumcised, such as Zimbabwe, Botswana, and Zambia, experience a high prevalence of HIV infection (greater than 19%), whereas countries in which more than 80% of males are circumcised, such as Cameroon, Gabon, and Ghana, have a lower prevalence of HIV infection (less than 10%)[80] Moreover, preliminary results from a South African randomized trial[81] showed that male circumcision can reduce the risk of contracting HIV by 70%, a level of protection far better than the 30% risk reduction set as a target for an AIDS vaccine. Inungu and colleagues[82] summarized the mechanisms thought to explain the protective effects of male circumcision. First, the foreskin contains a high density of Langerhans cells (the prime target for sexual HIV transmission) compared with cervical, vaginal, or rectal mucosa. Second, the foreskin increases the risk for ulcerative STDs, which facilitate the transmission of HIV. Third, the susceptibility of the foreskin epithelia to disruption during intercourse may facilitate HIV transmission. Fourth, the moisture and temperature under the foreskin may promote microorganism survival and replication. Finally, a circumcised penis develops a layer of keratin that minimizes the risk for HIV transmission.

Female genital mutilation, commonly called female circumcision, involves the partial or complete removal of the external female genitalia. This practice, carried out in many African and Middle Eastern countries for cultural reasons, leaves behind abnormal scarring. Hrdy[83] and Brady[84] identified female circumcision as a contributing factor to the spread of HIV. However, in a study of 638 women ages 15-44 in Tanzania, Klouman and coworkers[85] failed to find an association between female mutilation and HIV infection (or other STDs or infertility). Msuya and associates[86] reported similar findings. More studies are needed to clarify whether female genital mutilation increases the risk for HIV.

Six Essentials to Stem the Spread of HIV A New Slogan for HIV Prevention

Shaken by the horrific devastation that is ravaging the continent, African governments are finally speaking out about the HIV epidemic. It is time to mobilize the non-governmental and community-based organizations, as

well as the community leaders, to join forces to fight the HIV conundrum. To assist them in the effort to curb the spread of HIV in Africa, we are proposing a new slogan, known as ESCAPER, which is the acronym for the following 6 essential activities to consider when planning a comprehensive HIV prevention program:

1. Educate
2. Know your HIV Status
3. Care for the marginalized and those who are infected
4. Train effective Personnel to staff and manage HIV prevention programs
5. Empower people and encourage self-efficacy
6. Banish harmful Rituals and instead promote love and justice

Educate

Educate the population about the signs and symptoms of HIV/AIDS, its modes of transmission, and effective methods to prevent its spread. Abstinence is the only known effective method to prevent the spread of HIV infection. School children and young adults should be encouraged to delay sexual relationships until marriage. Married adults should be encouraged to remain faithful. However, considering the fact that a high number of school children are already sexually active, the prevention program must offer them alternative means to protect themselves. Lessons regarding resisting peer pressure and negotiating the use of condoms are important strategies to use with young adults. Although condoms are not 100% safe, to date they remain the only simple and effective tool available to reduce the spread of HIV infection. Education also must address such pressing issues as the stigma and discrimination associated with AIDS and must promote acceptance of and support for people living with HIV/AIDS.

Know Your HIV Status

HIV testing is the first important step in the continuum of HIV care. People whose test results are negative should undergo counseling to promote risk-reduction behavior; those with positive results should be counseled about the need to notify and protect their partners and/or protect their unborn children via treatment during delivery. HIV-positive individuals must also be urged to seek care to prevent opportunistic infections. HIV testing must be an integral part of primary care. Early diagnosis and treatment of STDs, including HIV, and the promotion of proper nutrition would significantly reduce individuals' risk of contracting HIV. While HIV counseling is being removed

from testing sites in the United States, it should be strengthened in Africa. Counseling is the only chance for people who cannot read or write to learn about HIV/AIDS.

Care for the Marginalized and Those Who Are Infected

Infected people should and must become the central piece of the HIV prevention effort. They must be encouraged to disclose their HIV-positive status to protect their uninfected partners. Improved access to antiretroviral therapies, as well as STD treatments, will reduce patients' infectiousness and decrease the incidence of new HIV cases. Appropriate treatment delays the occurrence of opportunistic infections and prolongs lives. However, the efficacy of the treatment depends on several factors, including (but not limited to) adherence to treatment and nutritional recommendations. Costly treatment for HIV could be reduced significantly if marginalized groups such as homeless individuals, prisoners, migrants, and others were educated and cared for to prevent them from getting infected.

Train Effective Personnel to Staff and Manage HIV Prevention Programs

Strong and smart leadership is important. Only in nations in which leadership was exercised such as in Senegal and Uganda has the incidence of HIV declined. We should learn from the experience of the gay community in the United States in the 1990s. The decline in the HIV infection rate in this community was due, in part, to the total mobilization of the community. Mobilizing the community to achieve a common goal will ensure success. This requires trained staff working hand-in-hand with volunteers and community activists.

Empower People and Encourage Self-Efficacy

The term "self-efficacy" represents a person's confidence in his or her ability to achieve a specific goal in a specific situation; this is a challenge for many people at risk of acquiring HIV. Effort must be made to empower marginalized people, especially women. This can be achieved by providing training to women to enable them to develop the skills needed to become financially independent from men who exploit them. Keep young girls in school so that they become educated and productive members of society. Healthcare staff must also be empowered to design and implement culturally sensitive and scientifically sound approaches to promote HIV prevention activities.

Banish Harmful Rituals and Instead Promote Love and Justice

Harmful traditional practices, such as widow inheritance, dry sex, and polygamy must be outlawed. African governments should promote a culture of dialogue to resolve conflict instead of resorting to force, which leads to armed conflicts and war. Finally, the international community

can assist Africa in this effort by promoting fair trade, supporting democratic institutions, preventing illegal arms sales, and prosecuting war lords for crimes against humanity.

Conclusion

Cultural, economic, and historical factors converge to fuel the spread of HIV in Africa. While the impact of HIV/AIDS in sub-Saharan Africa is overwhelming, it is certainly not a lost cause. Positive results from Uganda and Senegal clearly demonstrate that change is possible. Even though Africa has many competing needs, we believe that the adoption and implementation of ESCAPER will protect the continent from further destruction. Only when Africa begins to appreciate how access to highly active antiretroviral therapy (HAART) can help to overcome ignorance and stigma, and only when Africa mobilizes and empowers affected communities for prevention as well as for treatment, will it be able to mount and sustain an effective response to the HIV epidemic.[87] Expanding free access to HAART on a global scale provides a potential means to curb the growth of the HIV pandemic.[88]

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