THE FACE OF HIV: WOMEN OF SUB-SAHARAN AFRICA

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26 July 2011

INTRODUCTION

Between 1981 and 2006, the Human Immunodeficiency Virus (HIV) infected 60 million people world-wide, and the Acquired Immunodeficiency Syndrome (AIDS) it causes killed 25 million of those infected[1]. As strange and it may seem, the HIV/AIDS pandemic doesn't afflict just anyone, but disproportionately plagues a very specific demographic. Kofi Annan explained in 2002 that AIDS has an African woman's face, and he was right[2]. Those most at risk of infection are the world's poor, and among them, poor women are more vulnerable still. One of the poorest and least developed regions in the world is sub-Saharan Africa (SSA), and this is where the HIV/AIDS pandemic has hit the hardest. While the region itself is diverse in terms of history, culture, language, politics, and economics, SSA's women share a common context of gender-based human rights abuses and social marginalization that exacerbates their biological predisposition of susceptibility to infection[3].

My research aimed to identify and explore some of the reasons why women in this region are so much more likely to acquire HIV/AIDS than men. As convenient an explanation as it would be, we can't very well invoke sexism on the part of these tiny, protein-enclosed, nucleotide-filled viruses. Finding definitive answers to this question has been difficult. The health of any population, and the discrepancies in outcomes within it, is determined by a multiplex of interacting factors, including its social, economic, political, cultural, and environmental conditions[4], and the conditions in SSA are not always easy to determine. But our best information suggests that a number of biasing factors specific to the region, including

cultural attitudes, socio-economic inequalities, environmental conditions, and even biological processes that predispose the women of SSA to higher rates of infection. To understand these complicated causes, we will first explore the region's cultural characteristics that contribute to women's vulnerability. We will also look at why the region's natural and political environments play integral rolls through armed conflict and the co-morbidity of malaria. Finally, we will analyze the biological factors specific to women that, in combination with these other co-factors, render women disproportionately susceptible to HIV infection. It is important to note at the beginning that this issue is extremely complex and that this article is not intended as an exhaustive exploration of all the factors involved or their interactions, but rather as an overview of the topic to spur further investigation.

HIV/AIDS, A PRIMER

It is estimated that 33.3 million people are living with a Human Immunodeficiency Virus (HIV) infection, which attacks $CD4^+$ T helper cells of the human immune system[5]. HIV, a lentivirus because it targets the immune system, is also a retrovirus because it insinuates its genetic code into that of its host cell, where it can lie dormant for years. Once active in a host organism, HIV can lead to Acquired Immune Deficiency Syndrome (AIDS) by weakening the immune system and thereby allowing opportunistic infections to propagate. There is scientific consensus that HIV is a mutated virus acquired from *Pan troglodytes* Chimpanzee that was probably passed from chimp to human via hunting in West Africa around the late 19th and early 20th centuries[6]. AIDS was first described in 1981, and the HIV virus that causes it was definitively identified in 1983. In the beginning, the virus' transmission vector was unknown, and fear of the disease led to civil rights abuses around the world[6]. Eventually, scientists working with the virus established that HIV is a blood-borne, rather than airborne, pathogen and as such,

can only be transmitted via sexual intercourse (vaginal, oral, or anal), intravenous drug use, mother-to-fetus during *en utero* development, mother-to-child during breastfeeding, contaminated blood transfusions, and other direct fluid exchanges[7]. UNAIDS reports that the virus' spread peeked in 1999, and that infection rates have since declined in 33 nations, 22 of which are in sub-Saharan Africa[5]. New infections overall, new infections in children, and AIDS related deaths are all declining in most of the world[8]. Prevention efforts are largely responsible for this decline, but there is much work still to be done.

HIV/AIDS IN SUB-SAHARAN AFRICA

Of the 33.3 million people living with HIV, 22.5 million are in SSA. In other words, nearly 70 percent of the global HIV burden is borne by a mere 12 percent of the global population[8]. Nations of SSA differ in culture, politics, history, economics, climate, and even in how they have handled the HIV/AIDS crisis. As a region, however, SSA is constituted by some of the least developed nations in the world (nearly 70 percent)[9]. It was the setting for most of the world's conflict-related deaths between 1990 and 2007 (88 percent)[10], and its people are among the poorest in the world.

HIV/AIDS AND WOMEN IN SUB-SAHARAN AFRICA

It has been estimated that the global distribution of HIV/AIDS is roughly equal between genders. However, according to UNAIDS' most recent report (2010), SSA's HIV positive population is 60 percent female[5]. In fact, 80 percent of the global HIV positive female population is in this region[13]. The first explanation for these startling statistics is the most obvious: lack of prevention. In well-developed countries, HIV is preventable through basic education and low-cost prophylactics, and, even when contracted, it can be successfully controlled with

antiretroviral drugs. Condoms can reduce the risk of acquiring HIV by 80%[11], blood used in transfusions can be tested for viral content, formula can be given to a child in place of breast milk, and antiretroviral drugs can block mother-to-fetus transmission. Sadly, these preventive measures are rarely available to women in SSA.

ECONOMIC DISEMPOWERMENT: A SOCIAL NORM

Women in SSA often lack economic empowerment, which sometimes forces them to risk HIV infection for survival. A study conducted in Malawi, Mozambique, and Batswana found that young girls, often orphaned because of low life expectancy and AIDS-related deaths, are forced into relationships with older men (who have a much higher prevalence of HIV than the girls' male peers), or are forced to sell sex in order to obtain food and water, a practice termed "survival sex"[12]. Half of SSA's population lives in poverty, but 80 percent of these are women[3]. Teenage girls in SSA are three to five times more likely to contract HIV than males of the same age group because young females have little bargaining power in their sexual relationships to negotiate safe sex[13]. Elizabeth Cooper argues that existing research from various Sub-Saharan African countries shows that,

> *…as a result of existing social conventions (including national laws), widowed women and orphaned children are particularly vulnerable and prone to lose rights of access to properties they enjoyed during the lifetime of their husbands or fathers. Such alienation from property, including housing, land and other productive resources, has been linked to economic vulnerability, poverty traps, chronic poverty and the intergenerational transmission of poverty[14].*

In his article, *To Have and to Hold*, Richard Strickland agrees:

> *…preliminary evidence indicates the potential of these [property] rights to help prevent the spread of HIV/AIDS by promoting women's economic security and empowerment and thereby reducing their vulnerability to domestic violence, unsafe sex, and other AIDS-related risk factors. Conversely, the denial of property and inheritance rights drastically reduces the capacity for households to mitigate the consequences should a member be infected with HIV*[15].

Finally, fourty-two percent of young girls in SSA are subject to child marriage fueled by poverty. Child marriage prevents girls from pursuing education, acheiving optimal health, establishing strong peer relationships, and it denies them choice in life-partner selection. This practice also increases their risk for sexually transmitted diseases, cervical cancer, malaria, death during childbirth, and obstetric fistulas[16]. A common misconception is that girls who marry young are less likely to contract an STI. However, because young girls are most commonly married to older men who are expected to have had multiple partners, they are actually more likely to contract HIV than if they were single. In Kenya married girls have a 50 percent greater at risk of contracting HIV than their single female peers, and those in Zambia have a 59 percent greater risk[16].

Lack of Education

UNICEF reported in 2003 that there were 121 million school-age children across the world not attending school. The majority of these children were female, with the highest concentrations of unschooled females being in sub-Saharan Africa[17]. The United Nations Education Scientific and Cultural Organization asserts that for every additional school year a girl receives, she is better equipped to make informed choices about her sexual behavior: the risk of HIV infection is more than halved for girls who stay in school to complete basic education[18]. Considering that in South Africa, a girl has a greater chance of being raped than learning to read,

the situation for women in this region is bleak[3]. UNICEF also reports that 40 percent of all out-of-school children live in zones of conflict, an important factor in SSA for reasons we will now address[19].

CONFLICT AND WOMEN'S HEALTH

Conflict and development go hand in hand. When nations are in conflict, the time, will, and resources necessary for development are redirected to waging war. If you think about it, we in the United States not only understand this relationship, but often celebrate it: Eisenhower's campaign slogan, "peace and prosperity", for example, conflated the nation's then economic boom with its exit from the Korean War.. According to the authors of *Global Health in Times of Violence*, conflict affects the health of a nation in several ways: by destroying healthcare infrastructures; by limiting or denying international humanitarian interventions; by disrupting health information systems, and preventive care and treatment services[4]. In some cases, sexual violence against women is used as a tactic of war. In the Democratic republic of Congo, for example, it has been reported that more than 200,000 rapes have occurred since the outbreak of civil war over a decade ago; during the Tutsi genocide in Rwanda in 1994, an estimated 250,000 women were systematically raped[20]. Rape victims are more likely to contract HIV because the force involved is likely to create lacerations through which the virus can enter the victim's bloodstream. The United Nations Population Fund (UNFPA) reports that conflict makes women and children more vulnerable to contracting HIV through several gender-related factors:

- *Breakdown of family and other social and community structures*
- *Lack of access to health care, including safe blood supply, and social services*

- *Increased sexual and gender-based violence including coerced sex with men infected with HIV*
- *Sexual interaction between civilians and combatants (who often have much higher STI and HIV prevalence than civilian populations), and increased presence of sex workers near military installations*[21]

The breakdown of social and familial structures leads to risk behaviors: men having multiple partners; rape as a cultural norm as seen in Congo; and women's increased dependence on men for survival, leading to forced 'survival sex'. UNFPA further states that in times of war, military personnel have 50 times higher rates of STIs than the civilian population, making them potent vectors of sexually transmitted viruses like HIV. Nations in conflict also usually lack safe emergency blood supplies, often inadvertently infecting their own population with HIV.

SEMEN: AN HIV ENHANCER

Transmission of HIV can occur through blood transfusions, intravenous drug use, and mother-to-child relationships, about 80 per cent of all transmissions occur through sexual intercourse[22]. As dramatically as HIV has spread, it is a fragile virus. Professor Dawn Anderson, who has worked with HIV in a lab setting, has said that it is a difficult virus to work with because the protein spikes located in its outer membrane break easily and often render it innocuous when not inside a host cell. Because of its fragility risk of male-to-female intravaginal HIV infection is roughly 1 in every 200-2000 sexual interaction[22]. In 2007 a group of researchers found a protein in semen which forms fibrils they call "Semen-derived enhancer of virus infection" which "capture HIV virions and promote their attachment to target cells, thereby enhancing the infectious virus titer by several orders of magnitude"[22]. It is certainly not

conclusive that this biological factor has lead to the disproportionate rate of HIV among women; it should not be ignored as a potential factor.

MALARIA'S ROLE

Malaria plays an interesting roll in HIV among women in sub-Saharan Africa. Malaria is and infectious disease caused by a mosquito-borne parasite that infects red blood cells; each year malaria kills 2 million people[23]. This disease is particularly prevalent in sub-Saharan Africa (Figure 6) where 90 per cent of all deaths due to malaria occur, mostly in children under the age of 5[24]. Every year about 30 million African women become pregnant in malaria-endemic nations[25]. In 2000 a group of scientists determined that pregnant women are two times more likely that others to attract mosquitoes and get malaria based on two physiological factors: increased heat and increased release of volatile substances from the skin surface[26]. These women are also less capable of coping with the parasite because pregnancy compromises their immune system. Higher incidences of malaria in Africa, among pregnant women in particular is important because, as it turns out infections common to Africa, such as malaria, have recently been linked to increased susceptibility to HIV. In 2010 a group of researchers from the University of California found that women in Africa have more activated immune cells in their genital tracts than do females in the United States[27]. It is also know that HIV-related immune-suppression increases the risk of malaria infection and that malaria infection increases the viral load of HIV in the system. The relationship between malaria and HIV is an unintentional symbiotic one, in which both work together to strengthen the other[28].

CONCLUSION

In conclusion, it is clear that women's vulnerability to HIV/AIDS in sub-Saharan Africa is due to the convergence of many complicated socio-cultural factors and a couple of biological predispositions. Economic disempowerment leading to child marriage and survival sex, lack of education among girls, conflict, malaria and many other factors influence the lives of millions of women and girls all over the world, but the repercussions are particularly felt in SSA where HIV/AIDS takes the opportunity offered by these determinants to spread rapidly. It should be stated that the pandemic is declining due to preventive, education, humanitarian and aid efforts. The number of AIDS related deaths have decreased by 20 percent in SSA alone since 2004 and will continue to do so as organizations like UNAIDS rush to supply HIV positive individuals of SSA with antiretrovial drugs[5]. This response to supply the population with antiretroviral drugs will not only decrease the number of individuals who die of AIDS relates diseases but will also decrease the number of children born with HIV through mother-to-fetus transmission.

VISTA GLOBAL: A PLACE IN THE WORLD FOR GLOBAL ISSUES

"The Face of HIV: Women in Africa" is the inaugural article of my web log, *Vista Global*, which I have started to document my research on the human development issues of global health, policy, and human rights. *Vista Global* has several purposes. Foremost, it is intended as a tool of education and awareness-raising regarding important global issues. The Internet has proven to be a powerful resource for learning, and while it is not yet universally available, it is incredibly influential among those with access. Secondly, blogs are the perfect medium of expression for students wishing to document and showcase their educational development and academic accomplishments over time. By publishing my research through an open-access platform, I assure that my work - often requiring days, or even months, to complete - will be available to other students and researchers who may benefit from it, and to anyone else who shares my passion for development issues. It creates the possibility for connection, collaboration, and community where the traditional printed research document cannot. Blogs are made up of rich, dynamic documents: well organized, searchable, and available anywhere with Internet access. Each blog article can contain links, images, tables and graphs, video, and related content.

There are three things I hope to accomplish with *Vista Global*: to educate others; to share my perspective on and understanding of current events in fields of interest; and to document my growth and accomplishments throughout my education, training, and career. *Vista Global* will focus on important problems that I believe everyone should be aware of with the aim of enabling readers to contribute to solutions. People are more likely to contribute to an effort if they understand it and the consequences of their inaction. By describing a problem as well as suggesting possible solutions through links to reputable efforts, I hope readers will be called to

action. As a repository for my research and writings, *Vista Global* will act as a virtual resume for universities, employers, and potential collaborators.

Creating a blog can be pretty easy to do and there are many online resources available. I used WordPress.com - a free, hosted, open-source platform - because it is a user-friendly, template-driven content management system. With WordPress, there is a pretty big learning curve because each entry requires a lot of behind-the-scenes management. If you have never created web content, this can be a challenge at first. Also, as any artist will tell you, it is difficult to get something to look exactly like you want it to.

For the design of my blog I used a template theme called "The Morning After". WordPress has many templates to choose from and while most are free, the premium themes - those with the most robust and customizable features, the best design, and richest typography - cost between $40 and $75. Of all the free blog templates, I liked the combination of minimalist, grid-based design elements and the flexibility of different post statuses offered by "The Morning After". Because the topics I write about are serious, I tried to avoid bright colors and jumbled sections - the design had to be appropriate to the content. Once I selected a template theme, I had a lot of freedom to rearrange sections (called widgets) and customize categories, tags, and menus. I chose to have five categories in the main navigation: About, Health, Rights, Development, and Policy. Any time I post an article it will be associated with one or more of these categories. For example, my first post, "The Face of HIV: Women in Africa", will be categorized with Health and Development. The About section will have a picture of me, along with a short autobiography including my interests and career goals. The name of my blog, *Vista Global*, means global view, and captures the blog's theme while hinting at my interests in Spanish and multilingualism. The blog site is: http://krystinaglobal.wordpress.com/

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