

Sub-Saharan Women Affected by HIV/AIDS: The Perfect Storm of Risk Factors

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Résumé :
(traduction)

Cet article examine la prévalence et l'incidence du VIH/SIDA qui touche les femmes vivant en Afrique sub-saharienne. Les facteurs de risque que la littérature académique suppose comme étant à l'origine de l'augmentation des taux de VIH/SIDA chez les femmes d'Afrique sub-saharienne sont identifiés. Parmi les facteurs de risque abordés, figurent les facteurs biologiques, les parasites, la malnutrition, un faible statut socio-économique, la violence conjugale, la guerre, l'inégalité entre les sexes et le manque d'éducation. Ces facteurs de risque sont liés à plusieurs déterminants de la santé, y compris le niveau de revenu et le statut social, l'éducation et l'alphabétisme, l'emploi, l'environnement physique, le sexe et la culture. Les auteurs présentent leurs points de vue concernant l'endigement de l'épidémie du VIH/SIDA, pensant surtout à réduire les effets de la pauvreté chez les femmes d'Afrique sub-saharienne.

Mots-clés :

le VIH/SIDA, l'Afrique sub-saharienne, les femmes, les facteurs de risque, le sexe, le genre.

Abstract:

This paper examines the prevalence and incidence rates of HIV/AIDS in women living in sub-Saharan Africa. The risk factors presented in the literature that are hypothesized to be responsible for the increasing rates of HIV/AIDS in sub-Saharan African women are identified. Risk factors discussed include biological factors, parasites, malnutrition, lower socioeconomic status, intimate partner violence, war, gender inequality and lack of education. These risk factors relate to multiple determinants of health: income and social status, education and literacy, employment, physical environment, gender and culture. The authors present their perspectives on mediating this epidemic, which involves reducing the ramifications of poverty on sub-Saharan women.

Keywords:

HIV/AIDS, sub-Saharan Africa, women, risk factors, gender.

Introduction

Gender inequality has plagued women since the beginning of civilization. Women have fought to be seen as equal counterparts to men in all aspects of life. Looking throughout history one can see that the status of women has greatly improved. However throughout the world women encounter various health inequities that put them at a higher risk for disease.

A woman's health has an effect on the family unit, the development of a country, and the development of the world. Firstly, a child's risk of death increases significantly if his or her mother is deceased. This trend is more pronounced for female children; thus, maternal death perpetuates health inequalities for future female generations. Secondly, a family's finances are negatively affected by an illness of the woman in the household because paid work productivity suffers when a person is faced with poor health. A woman's contribution to non-paid activities such as food preparation and water collection may also deteriorate. Episodes of psychological distress, such as depression, are more commonly experienced by other family members when the maternal figure is ill (Gill, Pande & Malhotra, 2007). The health of women also affects national economies. When women are healthy and educated, they are able to enter the workforce and contribute to the family income. Contributing to the family income gives women more bargaining power in the family, and women, compared to men, are more likely to spend their money on the needs of their children (Morrison, Raju & Sinha, 2007). Children of healthy and educated mothers are in turn healthier and more educated themselves. The future generation of children are then more productive and contribute more to society, which increases a nation's economic well-being (Morrison et al., 2007). The US Agency for International Development (USAID) estimated that the monetary cost of global maternal mortality is over US\$15 billion due to lost potential productivity (Gill et al., 2007). Thus, the importance of female health cannot be overlooked.

In sub-Saharan Africa, women suffer disproportionately compared to their male counterparts with respect to HIV/AIDS. For example, women are faced with detrimental health inequities that put them at an increased risk for contracting the disease. Around the world, nearly 50% of the 40 million people living with HIV/AIDS are women. This is a sizeable increase from 1985 when only 35% of HIV positive people were women (Rodrigo & Rajapakse, 2010). Sub-Saharan Africa is home to 67% of people living with AIDS worldwide, and 72% of global AIDS-related deaths take place there (Magadi & Desta, 2011). In 2010, there were 20,100,000 adults over the age of 15 living with HIV in sub-Saharan Africa; 59% of these adults were females (World Health Organization, 2011; UNAIDS, 2011; UNICEF, 2011).

In this paper the reasons reported in the scientific literature supporting this epidemiological trend will be explored. Risk factors identified involved six of the determinants of health: income and social status, education and literacy, employment, physical environment, gender and culture. Last, the author's point of view, which is that a multi-solution approach to combating the effects of poverty should be adopted, will be presented.

Materials and Methods

A literature review was performed using the database "Scholars Portal Journals." Keywords used for the search were "women," OR "female" OR "mother" AND "HIV" OR "AIDS," AND "sub-Saharan Africa." This search was limited to articles published after 2005 and resulted in 102 articles. Inclusion criteria applied required that that the articles were peer-reviewed research articles, the population of study was women living in Sub-Saharan Africa (and not just of sub-Saharan origin), and the language of publication was English. Studies using both quantitative and qualitative data were included. Thirty five articles were found to fit the inclusion criteria; 21 articles were finally selected based on relevance, validity of study and overlap of findings.

Results

Biological

Women are more biologically vulnerable to contracting HIV during heterosexual intercourse than men; it is estimated that male to female transmission of the virus is two to three times more efficient than female to male transmission (Heimer, 2007). Possible explanations for this intrinsic susceptibility are that females have a larger area of exposed mucous membrane, male sexual fluids have a higher viral load, and more fluid is passed from a male to a female rather than vice versa (Campbell, Baty, Ghandour, Stockman, Francisco & Wagman, 2008). Gynaecological infections and precancerous lesions that can develop in the vagina and cervix also increase this inherent vulnerability (Rodrigo & Rajapakse, 2010). In addition, pregnancy puts women at an increased risk for HIV because of the increased need for health interventions such as medication delivered via injection and blood transfusions (Himmelgreen, Romero-Daza, Turkon, Watson, Okello-Uma & Sellen, 2009).

Genital Lesions/Parasites

The presence of genital lesions and parasites commonly found in sub-Saharan Africa make a woman more vulnerable to contracting HIV. Genital lesions, which can be

caused by gynaecological issues such as genital schistosomiasis and STIs can facilitate viral transmission. Genital lesions make a woman three times more susceptible to contracting HIV during one sexual encounter. The lesions cause inflammation, which brings the immune cells targeted by the HIV virus to the genital area, thus facilitating viral entry into these cells (Stillwaggon, 2008). Genital schistosomiasis, an infection caused by a parasite, is quite prevalent in sub-Saharan Africa. In a region in Tanzania, 63% of the population was infected with schistosomiasis at the time of study, and 37% of females over 15 had schistosomiasis in the lower reproductive tract (Mabala, 2006). In addition to causing genital lesions, schistosomiasis damages the intestines, bladder, and other organs. This damage can cause anemia and protein-energy deficiency, which both lower immune functioning. Females come into contact with the schistosomiasis-causing parasite while performing water-related household tasks such as washing clothing, collecting drinking water, and collecting aquatic vegetation for nutritional or building purposes. The parasites enter through the skin and travel throughout the body. Other intestinal parasites such as hookworms, roundworms and amoebas can increase the risk of HIV by causing malnutrition related to intestinal blood loss and chronic diarrhoea. Parasites can also directly lower immune function as a consequence of the immune system being deteriorated from trying to combat the parasites (Stillwaggon, 2008). Malaria is associated with an increase in HIV viral load. Areas with high presence of the malaria-causing parasite also have increased HIV rates (Stillwaggon, 2008; Cuadros et al., 2011).

Malnutrition

Poor nutrition increases susceptibility to HIV by lowering immune function. From 1970 to 1999, 21 famines occurred worldwide and 19 of those occurred in sub-Saharan Africa. Females are especially susceptible to food shortages because of lack of access to land, education, and health services (Sacks & Levi, 2010). Deficiencies in macronutrients such as protein and micronutrients including iron and zinc lower the efficiency of the immune system. Iron, zinc, and vitamin A specifically affect the protective barrier of the skin and the production of B cells, T cells, and natural killer cells (Stillwaggon, 2008). Malnutrition not only makes a woman herself more susceptible to infection, but vertical transmission from mother to child has also been found to be higher in women with lower CD4 cell counts, a condition associated with malnutrition (Himmelgreen et al., 2009). Vitamin A deficiency has also been associated with increased maternal transmission (Stillwaggon, 2008). Anemia, which can be caused by deficiencies in iron, increases the amount of virus particles released in a woman's birth canal, thus acting as

another factor that increases maternal transmission. Food insecurity also results in behavioural changes that increase a woman's risk of HIV. A study from Botswana and Swaziland found that women with food insecurity were more likely to engage in transactional sex and use condoms inconsistently (Himmelgreen et al., 2009). Two studies from Malawi also found that food insecurity results in unsafe sexual practises (Himmelgreen et al., 2009).

Low Socioeconomic Status

Lower socioeconomic status is associated with a higher risk of HIV in women. Firstly, women with lower socioeconomic status have riskier sexual behaviours. For example, a South African study found that living in a low income household was associated with earlier loss of virginity, greater chance that the first encounter was forced, higher rates of future episodes of forced sex, and increased rates of transactional sex. Impoverished girls cannot afford safe transport to and from school, live in dangerous neighbourhoods, and attend lower quality schools. These factors put impoverished schoolgirls at a higher risk for violence, including sexual violence, which subsequently increases their risk for HIV. The likelihood of a woman performing transactional sex also increases as socioeconomic status lowers (Hallman, 2005). Conversely, some studies found a correlation between wealth and increased HIV rates (Magadi & Desta, 2011). This association has been linked to the wealthy having more reckless lifestyles, more sexual partners, higher levels of drug use, and more purchasing of sexual intercourse (Magadi & Desta, 2011; Rodrigo & Rajapakse, 2010). Although this contradicts the association between poverty and HIV, wealth is correlated with an increase in HIV rates for both sexes while poverty disproportionately increases the risk for women.

Intimate Partner Violence

Studies conducted in sub-Saharan Africa reveal that there is a greater association between HIV-positive women and lifetime partner violence than HIV-negative women and lifetime partner violence (Campbell et al., 2008). Several reasons explain this association. Firstly, out of all relationships that are violent, 40-45% also include forced sex. Forced sexual intercourse can cause vaginal or rectal lacerations that increase the likelihood of HIV transmission (Campbell et al., 2008). Rape increases a woman's risk of HIV infection by 30% (Mabala, 2006). Also, women may fear that if they request the use of condoms or refuse sex their partners will react violently. Therefore, levels of safe sexual activity are diminished in violent male-female relationships (Feldacker et al., 2011). Another possible explanation is that abused wo-

men have decreased immune functioning as a result of stress, depression, and chronic anxiety caused by the abuse. Although research on abused African women is lacking, studies in the United States have found an association between intimate partner violence and both decreased T-cell function and altered levels of the hormones cortisol and dehydroepiandrosterone. These changes may be behind the mechanism causing the association between decreased immune functioning and intimate partner violence (Campbell et al., 2008). It was also found that sub-Saharan men who have multiple sexual partners are twice as likely to display intimate partner violence. Furthermore, Tanzanian men who acted violently towards their partners were 1.8 times more likely to have had pre-marital and extra-marital sexual encounters, which increases the risk of HIV transmission (Campbell et al., 2008).

Conflict/War

An association that surfaced in the 1980s found that the presence of war puts women at an increased risk of HIV infection. The predominant mediating factor between war and increased HIV rates in women is rape. During the 1994 genocide in Rwanda, it is estimated that between 200,000 and 500,000 rapes occurred. In a study performed five years post-conflict, UNICEF found that, of a sample of 2000 women who were raped during that time, 80% were HIV positive. It should be noted, however, that other studies, such as that of Spiegel et al., found the relationship between rape and HIV during the conflict in Rwanda to be positive but much more conservative than the relationship estimated by others. Spiegel et al. reported a 5% increase in HIV prevalence among women who were raped during the conflict versus those who were not (as cited in McInnes, 2009). War also causes displacement of populations. This can result in intermingling of high prevalence populations with low prevalence populations, thus expanding the epidemic (Rodrigo & Rajapakse, 2010).

Gender Inequality

Gender inequality in male-female relationships and the generally patriarchal society in sub-Saharan Africa put women at an increased risk for contracting HIV/AIDS. Countries rating high on the Gender Equality Index, such as Mauritius, were found to have lower HIV prevalence, while countries rating low on the Gender Equality Index, such as Mozambique and Zambia, were found to have higher HIV prevalence rates (Stockemer & Lamontagne, 2007). In sub-Saharan Africa, women often receive less education than men, which puts them at a disadvantage occupationally and economically. This culture of patriarchy puts women in a position of vulnerability when it comes to safe sex. Women who

are reliant on their husbands or other men financially may not feel that they have the right or courage to speak out regarding the use of condoms or the refusal of sex. For example, a woman may feel that if she insists on the use of condoms her husband may leave her. In addition, it is traditional for a husband to provide a sum of money to the wife's family. This financial interaction may cause men to feel that they are entitled to do what they want regarding sexual intercourse. Requesting the use of condoms use may anger the male because he may feel that the woman suspects he is being unfaithful or that he is somehow "dirty" (Adamczyk & Greif, 2011).

Education

In sub-Saharan Africa higher education is associated with safer sexual behaviours, such as later age of first sexual encounter, lower number of sexual partners, fewer casual sexual relationships, and increased condom use. Education works by increasing knowledge. In 1999, HIV/AIDS education was introduced at the primary school level (Adamczyk & Greif, 2011). Many women who are currently sexually active would have not been taught this in school but education increases their access to the media, increases their ability to read, and makes them more likely to belong to community organizations. All of these factors increase a woman's exposure to HIV/AIDS information. Education can enhance a woman's self-esteem thereby making her less likely to enter or stay in a relationship characterized by inequality, which would put her at higher risk for HIV. Furthermore, it is traditional for women to "marry up", meaning they marry a husband with a higher status, education, and income level than themselves. This fact means that an educated woman would marry a more educated man, who himself would be more inclined to practise safe sex. A more educated woman would presumably have fewer financial problems; therefore, she would have less need to perform paid sexual acts (Adamczyk & Greif, 2011).

Discussion

Himmelgreen et al., referred to the situation described above as the, "perfect storm for the making of an epidemic" (2009, p.403). Impoverished conditions create a web of interconnected risk factors. Poverty puts women in situations of malnutrition, which lowers immune functioning. A lack of clean water leads to contact with parasites like schistosomiasis (Himmelgreen et al., 2009). In addition to lowering immune functioning, long-term food insufficiency can increase gender inequality by increasing a woman's dependence on men for resources (Greif, 2012). Therefore, trying to increase the status of women without first increasing food security

would be counterproductive. In addition, many qualitative findings suggest that women turn to transactional sex in order to feed their children and themselves (Heimer, 2007). Sexual practices will not be easy to change in the face of poverty. Both sexual practices and the status of women are preserved and exacerbated by poverty.

In order to see progress, small steps toward improving the living conditions for women are needed in addition to medical treatments. A single solution will not be sufficient to fully manage this epidemic. Alleviating unsanitary conditions would have beneficial effects on other diseases that exacerbate HIV/AIDS, such as malaria. Improving sanitary conditions such as sewage and garbage disposal eliminates breeding grounds for the mosquito that acts as a vector for malaria (Lauer, 2006). Making nutritional changes in a population is feasible and affordable. For the price of one condom, most macronutrients can be supplied to a woman for the duration of a year. Vitamin A costs only US\$0.02 per capsule, and only two capsules are required per year. If taken weekly, iron supplements cost US\$0.02 per year for a child. Treatment for parasites cost US\$0.02-0.25 per year. In addition, the presence of intestinal parasites can cause anti-retroviral treatment to fail (Stillwaggon, 2008). Thus, solutions should focus on reducing the ramifications of poverty prior to tackling behavioural change.

Some questions surrounding this topic are still unanswered. An increase in mortality rates of young women born during the 1983 famine in Ghana was witnessed starting in 2002. This trend could be explained by a possible latent effect of perinatal hunger on the functioning of the immune system that puts women at an increased risk of contracting HIV later in life when they have reached sexual maturity (Lauer, 2006). To the best of the author's knowledge, this possibility has yet to be fully explored.

Conclusion

This paper discussed the factors that are putting sub-Saharan women at risk for HIV/AIDS. Risk factors discussed related to 6 of the 12 determinants of health identified by the Public Health Agency of Canada: income and social status, education and literacy, employment, physical environment, gender and culture (Public Health Agency of Canada, 2011). The author recommends a solution mediating the results of poverty before behaviour change approaches are adopted because social change cannot be brought about in a population of poverty and disease.

The issue of HIV/AIDS in women in sub-Saharan Africa is part of a larger issue embedded in the need to achieve adequate living conditions for women including adequate nutrition and sanitary conditions. This is an important topic

with worldwide repercussions. If women are healthy their children are healthier and more likely to attend school. As adults, these children are in better health and more productive. This leads to economic growth and development on both the national and global scale (Morrison et al., 2007).

References

- Adamczyk, A., & Greif, M. (2011). Education and risky sex in Africa: Unraveling the link between women's education and reproductive health behaviors in Kenya. *Social Science Research, 40*(2), 654-666. doi:10.1016/j.ssresearch.2010.12.003
- Bleich, S. N., Jarlenski, M. P., Bell, C. N., & LaVeist, T. A. (2012). Health inequalities: Trends, progress, and policy. *Annual Review of Public Health, 33*, 7-40. doi:10.1146/annurev-publhealth-031811-124658
- Campbell, J. C., Baty, M. L., Ghandour, R. M., Stockman, J. K., Francisco, L., & Wagman, J. (2008). The intersection of intimate partner violence against women and HIV/AIDS: A review. *International Journal of Injury Control and Safety Promotion, 15*(4), 221-231. doi:10.1080/17457300802423224
- Feldacker, C., Ennett, S. T., & Speizer, I. (2011). It's not just who you are but where you live: An exploration of community influences on individual HIV status in rural Malawi. *Social Science & Medicine, 72*(5), 717-725. doi:10.1016/j.socscimed.2011.01.003
- Fox, A., Jackson, S., Hansen, N., Gasa, N., Crewe, M., & Sik-kema, K. (2007). In their own voices. *Violence Against Women, 13*(6), 583-602. doi:10.1177/1077801207299209
- Gill, K., Pande, R., & Malhotra, A. (2007). Women deliver for development. *The Lancet, 370*(9595), 1347-1357. doi:10.1016/S0140-6736(07)61577-3
- Greif, M. J. (2012). Housing, medical, and food deprivation in poor urban contexts: Implications for multiple sexual partnerships and transactional sex in Nairobi's slums. *Health and Place, 18*(2), 400-407. doi:10.1016/j.healthplace.2011.12.008
- Hallman, K. (2005). Gendered socioeconomic conditions and HIV risk behaviours among young people in South Africa. *African Journal of AIDS Research, 4*(1), 37-50.
- Heimer, C. A. (2007). Old inequalities, new disease: HIV/AIDS in sub-saharan africa. *Annual Review of Sociology, 33*, 551-577. doi:10.1146/annurev.soc.31.041304.122203
- Himmelgreen, D. A., Romero-Daza, N., Turkon, D., Watson, S., Okello-Uma, I., & Sellen, D. (2009). Addressing the HIV/AIDS—food insecurity syndemic in Sub-Saharan Africa. *Afri-*

can Journal of AIDS Research, 8(4), 401-412.

doi:10.2989/AJAR.2009.8.4.4.1041

Lauer, H. (2006). Cashing in on shame: How the popular “Tradition vs. modernity” dualism contributes to the “HIV/AIDS crisis” in Africa. *Review of Radical Political Economics*, 38(1), 90-138. doi:10.1177/0486613405283319

Mabala, R. (2006). From HIV prevention to HIV protection: Addressing the vulnerability of girls and young women in urban areas. *Environment & Urbanization*, 18(2), 407-432. doi:10.1177/0956247806069624

Magadi, M., & Desta, M. (2011). A multilevel analysis of the determinants and cross-national variations of HIV seropositivity in sub-Saharan Africa: Evidence from the DHS. *Health and Place*, 17(5), 1067-1083. doi:10.1016/j.healthplace.2011.06.004

McInnes, C. (2009). Conflict, HIV and AIDS: A new dynamic in warfare? *Global Change, Peace & Security*, 21(1), 99-114. doi:10.1080/14781150802659440

Morrison, A., Raju, D., & Sinha, N. (2007). Gender Equality, Poverty and Economic Growth. Policy Research Working Paper 4349. Retrieved from http://www.development.wne.uw.edu.pl/uploads/Courses/DW_additional_gender.pdf

Oster, E. (2005). Sexually transmitted infections, sexual behavior, and the HIV/AIDS epidemic*. *The Quarterly Journal of Economics*, 120(2), 467-515. doi:10.1093/qje/120.2.467

Public Health Agency of Canada. (2011). *What determines Health*. Retrieved from <http://www.phac-aspc.gc.ca/ph-sp/determinants/#determinants>

Rodrigo, C., & Rajapakse, S. (2010). HIV, poverty and women. *International Health*, 2(1), 9-16. doi:10.1016/j.inhe.2009.12.003

Sacks, A., & Levi, M. (2010). Measuring government effectiveness and its consequences for social welfare in sub-Saharan African countries. *Social Forces*, 88(5), 2325-2351. doi:10.1353/sof.2010.0044

Stillwaggon, E. (2008). Race, sex, and the neglected risks for women and girls in Sub-Saharan Africa. *Feminist Economics*, 14(4), 67-86. doi:10.1080/1354570080226292

Stockemer, D., & Lamontagne, B. (2007). HIV/AIDS in Africa: Explaining the differences in HIV prevalence rates. *Contemporary Politics*, 13(4), 365-378. doi:10.1080/13569770701822847

World Health Organization, UNAIDS, UNICEF. (2011). Global HIV/AIDS response: Epidemic update and health sector progress towards universal access: Progress report 2011. Retrieved from <http://www.who.int/hiv/data/en/>