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Sustained High HIV Incidence in Young Women in Southern Africa: Social, Behavioral and Structural Factors and Emerging Intervention Approaches

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Abstract

Young women in southern Africa experience some of the highest incidence rates of HIV infection in the world. Across southern Africa, HIV prevalence among women increases rapidly between the teenage years and young adulthood. Adult HIV prevalence is 16.8 percent in South Africa, 23 percent in Botswana, 23 percent in Lesotho and 26.5 percent in Swaziland. Existing research has illuminated some of the key social, behavioral and structural factors associated with young women's disproportionate HIV risk, including gendered social norms that advantage male power in sexual relationships, and age disparities in relationships between younger women and older male partners. Important structural factors include the region's history of labor migration and legacy of family disruption, and entrenched social and economic inequalities. New interventions are emerging to address these high levels of HIV risk in the key population of young women, including structural interventions, biomedical prevention such as PrEP, and combined HIV prevention approaches.

Keywords

women; HIV infection; southern Africa; structural factors; interventions

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Compliance with Ethics Guidelines

Conflict of Interest

Abigail Harrison, Christopher J. Colvin, Caroline Kuo, Alison Swartz, and Mark Lurie declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent

This article does not contain any studies with human or animal subjects performed by any of the authors.

Introduction

The sustained high HIV incidence among young women in southern Africa represents a significant and important health disparity [1]. In South Africa, the country with the world's largest HIV positive population, HIV infection rates are eight times higher among women in the teenage years than among young men of the same age [2]. HIV prevalence increases from 5.6% among young women aged 15-19 to 17.4% at ages 20-24, versus 0.7% among males aged 15-19 years and 5.1% of men aged 20-24 [2], a pattern that has remained relatively unchanged for over a decade [3]. Incidence of new HIV infections also differs sharply by gender: 2.5% in 15-24 year old women vs. 0.6% in men [2,4]. Similar epidemiological patterns are found in much of the southern African region, including Botswana, Lesotho, Swaziland, Mozambique, Namibia, Zimbabwe, Zambia and Malawi, all countries in which adult HIV prevalence is over 20 percent [5]. KwaZulu-Natal province in eastern South Africa, which has experienced the highest rates of HIV infection throughout the country's severe HIV epidemic, is now considered a key global ‘hotspot’ for tackling HIV infection, due to patterns of HIV prevalence that reach 44% of pregnant women under age 25 [4,9].

This pattern of ‘disproportionate risk’ for young women has long been evident [6]. In 2001, the epidemiologist Marie Laga authored a commentary in AIDS titled ‘to stem HIV in Africa, reduce transmission to young women’ [7]. Across southern Africa, women aged 25 and under were – and still are – significantly more likely than young men of the same age to be HIV-infected. In recent years, HIV prevalence in the general population across sub-Saharan Africa has declined, including in the heavily affected southern African region [8]. Among the sub-population of young women under age 30, however, HIV rates have stabilized rather than declined [2,5]. In fact, in some areas, the incidence of new HIV infections has increased in this group [4,9]. Young, high-risk women in southern Africa thus represent a ‘key population’ [99], with levels of HIV infection comparable to the highly vulnerable populations globally that are targeted for increased resources and intervention, such as male and female commercial sex workers, and men who have sex with men [10]. Sustained high HIV incidence in young women represents an enormous health disparity that requires appropriate interventions and resources, poses a threat to the well-being of the next generation, and is a critical factor driving the ongoing HIV epidemic in southern Africa [11]. We summarize the recent literature on social, behavioral and structural factors associated with HIV infection in young women in southern Africa, discuss current intervention opportunities, and identify areas for further research.

The Gendered Context of HIV Risk

Age-Disparate Partnerships

The statistical picture of HIV/AIDS in southern Africa underscores the ways that gender relations structure patterns of HIV risk [12,13,14]. Unequal gender relations are evident in young women's sexual partnerships with older men, in limited negotiating power within relationships and households, and in the epidemic of gender-based violence occurring in southern Africa [12]. The large discrepancies in HIV rates between young women and men of the same age point specifically to young women's partnerships with older men, who are

more likely to be HIV-infected [15,16], although partner age differences may not be the main driver of increased HIV incidence [110]. The practice of younger women partnering with older men is common throughout southern Africa, and is often thought of as the ‘sugar daddy’ phenomenon [17,18]. In reality, average partner age differences are in the range of 3-5 years, a difference clearly large enough to place younger, sexually inexperienced women at risk from older partners [16]. Also, young women in such relationships may be less able to negotiate safer sex, due to men's greater relationship power [15], and may experience violence for insisting on condom use [19]. Men's greater power in relationships frequently has an economic dimension, and both ‘age and economic asymmetries’ are important in discussing women's relative position within relationships [20]. Women's vulnerability to economic need is well documented in the region. The economic basis of relationships for many young women in southern Africa reflects the limited access to employment or family resources for many young people, and can take different forms, ranging from small gifts to long-term dependence to selling sex for survival to more formalized commercial sex [18,79], and may often provide a means of paying for school or associated costs, such as books, uniforms or transportation.

Gender-based Violence

Levels of gender-based violence are extremely high in southern Africa [21,22,23]. Young women are more often victims of non-fatal violence, like domestic abuse and sexual assault, and women under the age of 18 have been found to be most at risk for rape [24]. Strong associations between the experience of violence within intimate partnerships, or sexual abuse, have been found in epidemiological studies, and women who experience trauma, abuse, or other forms of sexual violence are at increased risk for HIV [22]. Thus, southern Africa's severe epidemic of gender-based violence and the HIV/AIDS epidemic intersect in important ways [12,23]. The high rates of gender-based violence in southern Africa do not occur in isolation, but rather reflect high levels of community and interpersonal violence, which are also of public health concern [25].

Considered together, these ‘dynamics of hypervulnerability’ [18] related to gender inequality, relationship power, sexual coercion and economic need frame an understanding of the gendered context of HIV risk for women in southern Africa. In response to epidemiological evidence from multiple settings across sub-Saharan Africa, the 2012 UNAIDS report on the state of the global AIDS epidemic declared that ‘gender inequality drives the HIV epidemic’, devoting the issue to the gender-related risk factors that influence HIV infection among women [1].

Developmental and Biological Factors

Developmentally, the period of adolescence, defined broadly as the period between ages 10-19, is a unique life phase characterized by rapid physical, emotional and developmental change, which extends into the transition to adulthood between ages 18 and 25 [26]. As such, adolescents are considered a uniquely vulnerable population with special intervention needs, especially in relation to sexual risk behaviors and HIV prevention [27]. Prevention of chronic disease and health promotion efforts directed at sexual and other risk behaviors are especially important at this time, in the interest of establishing life-long habits [26,27].

Younger women are also biologically more likely to acquire HIV infection, due to cervical ectopy, which is particularly pronounced in younger women, the presence of cofactors such as other sexually transmitted diseases or other infections, and the greater ease of transmission from men to women [28]. For young women in southern Africa, risk for HIV infection is particularly high in the later years of adolescence, between ages 18 and 25, during the transition into adulthood. Clearly, existing prevention efforts have failed to address adequately the needs of this population at this critically important point in the lifecourse.

Adolescents and young adults may often be impulsive and inclined toward higher risk-taking, sometimes related to perceived invulnerability [26]. For higher risk youth, mental health is particularly important, and low self-esteem and other outcomes may be particularly salient at this time [29]. Poor mental health outcomes are frequently linked to increased substance use and in turn to heightened sexual risk behavior, and the joint effects of multiple risk behaviors can be particularly detrimental for young people [30].

Sexual Risk Behaviors

There is a substantial body of literature on sexual risk behaviors among young people in southern Africa [3, 31-34,103]. Here, we review recent literature on two key preventive behaviors, condom use and HIV testing and counseling.

Condom Use

Reported condom use has increased dramatically among young people across southern Africa [36]. In South Africa, national surveys show condom use ranging from 50- 80 percent of both young men and women reporting condom use at last sex [2], although survey data like these are self-reported and prone to social desirability bias. However, condoms remain stigmatized in committed relationships, and partners who initiate condom use may be accused of infidelity [37]. Even in casual relationships, reported condom use often is inconsistent, particularly among adolescents [38,102], a concern since 100% condom use is needed for efficacious prevention in high prevalence settings. Achieving consistent condom use also affords ‘dual protection’ against STIs and pregnancy, and is important for reducing unplanned pregnancies [35,39]. Condom use also declines in the context of alcohol or other substance use [105]. For women, alcohol use may increase during the transition to adulthood, in response to life stressors, including pregnancy, or with exposure to adults with heavier drinking behaviors [40,41,105]. Structural and community level interventions have an important role to play in increasing condom use [104].

HIV Testing and Counseling

HIV testing has increased in South Africa in recent years, in response to a national government-led HIV Testing and Counseling (HTC) campaign and the adoption of ‘know your status’ as a key prevention message [42]. Among youth aged 15-24, HIV testing rates have increased from 32.7% of females and 17.7% of males in 2003 to just about half of all South African youth reporting HIV testing [43]. Recent national survey data indicate almost universal awareness of HIV testing - 90.5% of South African youth aged 15-24 were aware

of a nearby HIV testing site - but only 50.6% reported having ever been tested for HIV [2]. While promising, these improvements in uptake remain inadequate in a generalized epidemic setting. Factors that enable uptake of HTC include ease of access to testing, including via community-based testing, testing initiatives that attenuated fear of HIV-related stigma, freely available or affordable services, and support from family, peers and broader social networks [44,45].

Reproductive Health and HIV Risk

Women's HIV risk is co-incident with other reproductive health outcomes, including pregnancy [46].

Pregnancy

Across the region, 35-40 percent of women have a first child by age 19, and over 70 percent by age 25, signifying increased HIV risk through high levels of unprotected sex [46,48]. Indeed, the rapid increase in HIV infection among young women corresponds with a dramatic increase in fertility: in South Africa, 19 percent of 18 year old women have ever been pregnant, versus 38 percent at age 19, 43 percent at age 21, and 72 percent at age 23 [47]. Most adolescent pregnancies are unplanned: according to Demographic and Health Surveys, approximately two-thirds of pregnancies among young women under age 25 are reported as ‘unintended’ [47,49]. Early adolescent pregnancy also increases the risk for HIV acquisition [49]. Pregnancy rates are similar in Lesotho, Botswana and Swaziland, although in Lesotho the age of marriage remains lower (mean age = 21 years), so that the context of most early pregnancy and associated HIV risk is within marital relationships.

Pregnant women generally experience higher rates of HIV infection than their non-pregnant counterparts [39]. For multiple reasons, pregnancy may be a time of higher risk and vulnerability for women [40]. Across the southern African region, 40 percent or more of pregnant women attending antenatal health services are HIV-infected [50]. In South Africa, 15-24 year old non-pregnant women have an HIV prevalence of 20 percent, compared to 39 percent among pregnant women in the same age group [50]. Also, once pregnant, women may be more likely to acquire HIV infection [51].

Contraceptive Use

Family planning, one of the most basic interventions for women, is also an important HIV prevention strategy [52]. For HIV infected and uninfected women, preventing unintended pregnancy presents opportunities for HIV prevention, particularly through the use of condoms and other barrier methods for dual protection [52]. For HIV positive women, this can mean prevention of mother-child transmission, as well as onward transmission to uninfected partners [55]. Opportunities for contraceptive uptake may be expanded through HIV treatment programs [55]. For sexually active, HIV-uninfected women, dual protection is the key to preventing HIV acquisition for themselves [35]. Patterns of contraceptive use, however, represent a paradox. Despite the high rates of unintended pregnancy, contraceptive use is often sporadic and intermittent, rather than consistent, with high rates of method discontinuation. The context of unequal partnerships also means that male partners often

strongly influence women's contraceptive and other health-related choices. Male partners often disapprove of contraceptive use, as well as condom use, in committed relationships.

Throughout southern Africa, modern contraceptive use skews heavily toward injectable hormonal methods, such as DepoProvera, which have long been the most widely available methods of effective modern contraception in the region. With older formulations particularly, women experienced frequent side effects such as bleeding and amenorrhea, contributing to high rates of discontinuation [53,54]. Even more important for women in the generalized HIV epidemic setting of southern Africa, hormonal methods, along with other non-barrier methods such as oral contraceptives, the IUD, and implants, provide no protection against HIV and other STIs. A recent scientific debate has emerged around concerns that hormonal contraception use, particularly DepoProvera, may be associated with an increased risk of HIV acquisition [56-58]. Although ongoing studies have not produced a definitive answer regarding the level of risk to women from use of injectable hormonal contraception, recent data from epidemiological studies, trial analyses, and systematic reviews suggest a moderate increase in HIV risk [59,60]. These risks are balanced by the risks to young women from unintended pregnancy. It is also not clear that HIV risk would be decreased through non-use of contraception, or by switching to other non-barrier methods such as oral contraceptives or implants [106-109]. The real issue is to expand women's choices, a promise held out by the recent increase in availability of long-acting reversible contraceptive methods such as implants and IUDs, along with more successful promotion of dual protection through condoms or other barrier methods [35,55]. Evidence supports the use of the IUD for HIV positive women, for whom some other contraceptives are not recommended due to potential drug interactions [106-107].

Social and Contextual Factors

The social and contextual factors driving southern Africa's HIV/AIDS epidemic are rooted in the region's complex social and historical context [61]. Present day inequalities reflect the region's history of labor migration with its resulting disruptions in family life, and patterns of residential segregation that continue to this day [62]. In Lesotho and other countries surrounding South Africa, marriage and family dynamics were influenced by the ‘oscillatory’ labor migration common to southern Africa [63,64,65], whereby men moved back and forth to South Africa's mines on a regular schedule that required long – sometimes semi-permanent – absences from home, and spousal separations [62, 63, 64]. The negative impacts on family cohesion, household dynamics and well-being included high levels of marital and family instability [62-65], and an ongoing epidemic of sexually transmitted infections [65-67]. These conditions created a ‘near-perfect environment’ for the transmission of sexually transmitted diseases, a reality noted as early as the 1940s by renowned South African community physicians and epidemiologists Sydney and Emily Kark [61,68]. The entrenched social inequalities derived from this era strongly influence the epidemiology of the current HIV/AIDS epidemic in southern Africa [68]. With regard to young women and sustained high levels of HIV infection, we examine the impact of these social dynamics at the partnership and household levels.

Partnership Context of HIV Risk

Living arrangements, family relations and marital patterns were permanently altered through the labor migration system [69]. Declining levels of marriage have been evident in South Africa since the 1950s; today, a unique demographic feature is the relative absence of formal marriage [69,70]. The median age of marriage is 26.8 years in South Africa, and only a quarter of adults aged 18 and above are married [70,71]. The age of marriage is similarly high in Swaziland and Botswana, although overall marriage rates remain higher in those countries. By contrast, in much of sub-Saharan Africa, most women are married by the end of the teen years [70]. A later age at marriage has been associated with HIV infection at both individual and population levels, an effect that is assumed to result from the longer period between sexual debut and formal marriage, with more frequent partner change and more casual partnering leading to higher HIV risk [70]. In South Africa, however, it is clear that overall partnership patterns have become more fluid. Many relationships are characterized by distance and frequent separation, many young people are in long-term relationships with partners they see infrequently, and multiple partnerships are common [16,69,72].

Impact of AIDS Epidemic on Households

HIV/AIDS itself has further disrupted social relations. The disproportionate impact of the HIV/AIDS epidemic on women's caregiving burdens and economic vulnerability has multiple consequences for families and households [73,74]. HIV/AIDS may lead to an expansion of household size through the addition of orphaned or other vulnerable children [74,75], or through absorbing and caring for sick family members [73,74,75]. Further, HIV/AIDS may increase household fluidity, via children's migration, parental death and other mechanisms [76,77]. Overall, households may face increased household needs in the face of HIV/AIDS, at the precise moment when there are fewer economic resources available [73-76]. Young people's own vulnerability is often increased in such circumstances [79,80]. The links between economic factors, such as poverty and household well-being, and multiple health outcomes, including HIV/AIDS, are well established [78], and promising new intervention approaches have emerged in response [76].

These social and contextual factors are important considerations not only in HIV prevention efforts among this key population of women, but also in new and emerging efforts to link and engage women effectively in HIV treatment and care. They have also led to a call for greater focus on structural interventions for this population in this setting [81,82,83].

Intervention Approaches

A number of youth HIV prevention interventions, in schools and other settings, have been conducted in sub-Saharan Africa, including several large randomized trials [34,84,85,86,87]. These interventions have demonstrated a modest impact on self-reported HIV preventive behaviors such as condom use, delayed sexual debut, and reductions in sexual partners, but no impact on HIV infection [32, 34]. Also, a growing body of research argues for addressing gender as part of the social structure underpinning HIV risk [12, 13,81-83,92,98], and adopting intervention approaches that can help youth address contextual factors, including gender inequality, that influence risk behaviors.

The majority of youth HIV prevention interventions focus on school-going adolescents in the teenage years, or have a general focus on youth across a broad age spectrum of 15-24 years. Given the high HIV risk experienced by young adult women in southern Africa between ages 18 and 25, there is an evident need for interventions specifically tailored to the needs and priorities of this age group. The Stepping Stones intervention in South Africa, one of the few interventions focused on an older population of 18-29 year olds, and including both young men and women, demonstrated a significant impact on incidence of herpes simplex virus-2 (HSV-2) but not HIV incidence [84], and the recent SISTA evaluation also focused on this age group [93]. Gender-focused structural interventions for men are also being developed [98].

Biomedical HIV Prevention

The advent of ARV-based biomedical HIV prevention such as PrEP holds enormous promise for the high risk sub-population of young women [88]. Indeed, CAPRISA 004, the successful trial of tenofovir gel for HIV prevention, was conducted in South Africa [89]. Two confirmatory trials of CAPRISA 004, however, failed to confirm the trial results, and encountered significant challenges with women's adherence to the study products [90]. In the VOICE trial, low adherence to both oral and topical PrEP was attributed to a range of factors, including association of the study products with HIV infection (and therefore with concerns about stigma from community and family), women's complex lives and social relationships, and the highly mobile nature of women's lives and relationships which were further shaped by conditions of poverty [91]. More recently, a trial of pericoitally administered tenofovir gel (pre- and post- sexual intercourse) conducted by the Follow-on African Consortium for Tenofovir Gel Studies (FACTS) encountered similar problems with women's adherence to the study products [100]. A separate study, FEMPrEP, failed to confirm the efficacy found in CAPRISA 004. These products hold great promise for HIV prevention among high risk women, but clearly must be paired with behavioral or structural components to increase their acceptability among the target population [101]. Examples of potentially successful strategies include combination prevention packages with involvement of the target community and meaningful community engagement [99].

Gender Transformative Interventions

‘Gender-transformative’ interventions are a type of structural intervention that aims to reduce gender inequalities as a pathway to HIV prevention [92]. The Stepping Stones intervention [84], and more recently SISTA South Africa [93] and an anti-violence program for men [98], used gender-focused approaches to address the HIV prevention needs of young adult women and their male partners. Stepping Stones used a group process to help men and women address gender inequality and its impact on their lives and relationships, including gender-based violence, whereas SISTA South Africa employed a gender and culturally relevant approach to enhance relationship control for women.

Conditional Cash Transfers and Economic Interventions

Conditional cash transfers are a type of structural intervention designed to address the economic component of HIV risk through providing cash transfers, thereby increasing the amount of cash that a young person, or their family, has available. When cash transfers are

'conditional', the receipt of cash is dependent on meeting a certain condition, such as remaining in school [94,96], or remaining free of sexually transmitted infections or pregnancy [95]. Initial results from several trials in east Africa have shown the potential to impact HIV or other STIs, and in South Africa a large randomized controlled trial is currently underway to evaluate the effect of young women's receipt of cash, conditional upon school attendance, to reduce HIV incidence [96].

Multilevel interventions that combine one or more approach also have potential. In South Africa, the IMAGE project, a large randomized trial, evaluated the effect of a gender-focused sexual risk reduction strategy for women, in combination with a micro-finance intervention [78,97]. The intervention did not reduce HIV incidence, or sexual risk behaviors, but did lead to a significant reduction in experience of intimate partner violence.

Summary/Conclusion

Sustained high HIV incidence in young women in southern Africa is rooted in multiple social, behavioral and structural causes, and reflects multiple structures of disadvantage that are reinforced by inherent developmental and social vulnerabilities. The factors underlying high HIV rates in this population are complex and multifactorial. The syndemic effects of HIV, high fertility, gender inequality, and poor mental health create conditions of hypervulnerability that coincide with significant structural barriers. The transition to adulthood is a vulnerable time for young women in this setting, which further compounds high levels of risk. Women's lives are complex, and social relations at family, partner and community levels are fluid and changing. Frequently, women's choices may be constrained even when they intend to act in ways that promote, rather than inhibit, HIV prevention. Developing multilevel interventions that combine biomedical, behavioral and structural approaches are essential for this highly vulnerable key population going forward.

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