

# An integrated public health approach for a successful strategy against HIV: The case of Swaziland

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## Abstract

Swaziland is an inland country in the southern Africa with a population of less than 1.5 million. Human immunodeficiency virus (HIV) is the main public health concern in Swaziland as 27.2% of adults are living with HIV infection. Swaziland is known to have the highest prevalence of HIV infected people in the world. However, this might be changing soon as the incidents of new HIV infection are decreasing and the prevalence of HIV infection are stabilizing. This is due to the multiple well-implemented programs that are targeting the different components of HIV transmission including condom availability, HIV education, sex education, male circumcision, and pre-exposure prophylaxis. Although the prevalence of HIV is stabilizing, there are multiple gaps that need to be addressed by new programs to ensure that the prevalence remains stable and aim to decrease it in the future by providing the appropriate antiretroviral treatment and better access to healthcare. However, such programmes cannot be effective without improving the socio-economic and educational levels of people, understanding their beliefs and meeting their needs.

**KEY WORDS:** Africa; education; incidence; health policy; HIV; Swaziland.

### Riassunto

Lo Swaziland è un Paese interno dell'Africa meridionale con una popolazione di meno di 1 milione di abitanti. Il virus dell'immunodeficienza acquisita (HIV) è la preoccupazione maggiore per la salute pubblica dal momento che il 27.2% della popolazione adulta in Swaziland è sieropositiva. E' risaputo che lo Swaziland ha la più alta prevalenza di persone HIV positive al mondo. Tuttavia, questo potrebbe cambiare presto dal momento che l'incidenza dei nuovi casi di infezione è in diminuzione e la prevalenza dell'infezione da HIV rimane stabile. Questo grazie ai molteplici e ben implementati programmi che hanno come target le differenti componenti della trasmissione del virus HIV inclusa la disponibilità dei preservativi, l'educazione sull'HIV, l'educazione sessuale, la circoncisione maschile e gli interventi di profilassi pre-esposizione. Nonostante la prevalenza dell'HIV sia stazionaria, ci sono molteplici gap che necessitano di essere colmati dai nuovi programmi per assicurare che la prevalenza resti stabile e diminuisca in futuro fornendo un appropriato trattamento antiretrovirale ed un migliore accesso alle cure. Tuttavia, tali programmi non possono essere efficaci senza migliorare le condizioni socio-economiche ed i livelli di educazione delle persone, comprendendo le loro convinzioni e soddisfacendo le loro necessità.

#### TAKE-HOME MESSAGE

*The incidence of HIV infection is decreasing in Swaziland due to the recent public health efforts based on educational campaigns set out by the government to contrast HIV transmission. However, it is needed to contrast a high HIV prevalence rate closing the gap with other sub-Saharan countries, through an integrated approach for a more effective public health strategy.*

**Competing interests** - none declared.

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## INTRODUCTION

Human immunodeficiency virus (HIV) has significantly increased in incidence and prevalence worldwide and became the worst epidemic of the twentieth century with more than 35 million fatalities [1]. The acquired immunodeficiency syndrome (AIDS), which is caused by HIV, is an epidemic ranked one of the first of all time alongside the influenza pandemic of the early 1900s and the Bubonic plague of the 14<sup>th</sup> century in terms of fatalities [2]. The impact of this disease has been felt in nearly every region in the world. By 2016, it is estimated that 36.7 million adults and children are living with HIV and 1.8 million people had been newly infected with HIV with an overall stabilization appearance of the overall prevalence of HIV [3].

Swaziland is an inland country in southern Africa with a population of less than 1.5 million [4]. HIV is the main public health concern in Swaziland with the highest worldwide prevalence of 27.2% of all adults living with HIV, an incidence of 8,800 new HIV diagnosis (9.37 per 1,000), and 3,900 AIDS-related deaths [3].

Certain groups might be at a higher risk of becoming infected with HIV, which includes female sex workers, men who have sex with men, intravenous drug abusers, and infants with infected mothers. HIV is transmitted through multiple routes including sexual transmission (hetero- and homosexual contact), parenteral transmission (injection drug users), and perinatal transmission (vertical transmission). The risk of getting HIV varies depending on the type of exposure or behavior such as sharing needles or having sex without a condom. For example, the risk for HIV transmission for receptive anal intercourse is 138 in 10,000 while the risk in receptive vaginal intercourse is 8 per 10,000 [5]. In Swaziland, the main mode of HIV transmission is unprotected heterosexual sex which accounts for 94% of all new HIV cases [6].

HIV infection may present with multiple different clinical manifestations or might even be asymptomatic in the initial stages [7]. A

variety of signs and symptoms are associated with HIV infection including fever, fatigue, myalgia, skin rash, headache, pharyngitis, cervical adenopathy, arthralgia, night sweats, and diarrhea. All of those signs and symptoms are not specific, hence, diagnosis patients who are infected with HIV are challenging and require experience and the appropriate screening and testing tools. When there is the possibility of an acute or early HIV infection it is important to follow an appropriate algorithm to diagnosis HIV appropriately. The most sensitive screening immunoassay available in addition to an HIV viral load test is the standard of testing, which includes the reverse transcription polymerase chain reaction test [8].

In the past decade, Swaziland has been going through a lot of changes that affected the prevalence of HIV significantly. The prevalence of HIV in Swaziland has stabilized with the reduction in the incidence of new HIV infections. This is most likely due to the intensive programs targeting HIV in this epidemic region. As a result, Swaziland has one of the highest rates on antiretroviral therapy coverage of 79% in sub-Saharan Africa and 68% of those treated have a suppressed viral load, which indicates successful treatment [3].

Swaziland has adopted and implemented multiple preventative programs that have to lead to the stabilization of the HIV prevalence. Therefore, it is important to focus on the ones that have been highly successful and discuss them further.

## DISCUSSION

In Swaziland, Ministry of Health (MOH) coordinates about 80% of Swaziland's response to HIV and AIDS through the Swaziland National AIDS Programme (SNAP), which was established in 1987 to coordinate HIV programmes in the country and to ensure that the response is efficiently and effectively managed at national, regional and facility level. This program is based on three thematic areas, which are HIV Prevention, HIV Care and treatment, Research and Cross Cutting Interventions. According to SNAP, by 2020 90% of people living with AIDS know their

HIV status, 90% of those diagnosed with HIV receive sustained antiretroviral therapy, and 90% of people receiving antiretroviral therapy will be virally suppressed (UNAIDS 90-90-90) [9].

This is due to the multiple well-implemented programs that are targeting the different components of HIV transmission concerning condom availability, HIV education, sex education, male circumcision, and pre-exposure prophylaxis.

Condoms have been well-known to be one of the most effective protection measures in reducing the chances of acquiring HIV. Hence, many programs have been intensively educating the public in Swaziland about the appropriate use of condoms and, also to increase the availability. As a result, in 2014 the data showed that 66% of women and 83% of men used a condom in their last sexual intercourse, which is an increase from the previous report in 2007 of only 56% and 48% for women and men, respectively [10]. In Swaziland, there are multiple programmes that help in distributing condoms such as 'free or not' and 'got it, get it' which are national campaigns. The number of condoms distributed has been increasing with 51 condoms available for each man per year in Swaziland, that is an estimated total of 17 million condoms, which is higher than the requirement of the United Nations Population Fund of 30 condoms per male per year [11].

Another important weapon in the prevention of HIV infection is sex education. Fifty-six percent of young people living in Swaziland know how to prevent the transmission of HIV [12]. One of the most successful programs implemented in Swaziland is called the 'comprehensive life skills education program', which is a program adopted by secondary schools to educate the students about safe sex and has also been implemented by the Ministry of Sports Culture and Youth Affairs of Swaziland to reach the community outside of school, by including radio advertisements as well as television shows to educate the public about HIV and how to prevent it [12].

Additional successful prevention program

focused on the mother-to-child HIV transmissions (MTCT). Counseling and voluntary testing in the period of the antenatal care have been shown to reduce the transmission of HIV to the fetus, however, 95% of those transmissions happen in developing countries where such tests are not regularly performed [13]. Most programmes have targeted this group to increase their awareness of preventing the transmission to the fetus by expanding the MTCT programmes to better reach out the community, increasing the follow-ups, and providing new-born infants testing and care. A recent survey conducted in Swaziland has suggested a reduction in the MTCT as the overall HIV-free survival rate for infants between the ages of 18 to 24 months was 95.5% (95% CI 94.1-97.2), while the HIV-exposed infants that are infected through the MTCT process was 3.6% (95% CI 2.4-5.2) [14].

Moreover, the correlation between medical male circumcision and lower HIV transmission is well-documented in the literature [15]. In Swaziland, the voluntary medical male circumcision strategy was adopted and implemented to reduce the incidence and prevalence of HIV. In fact, the rate of circumcision has risen in the past decade from 7% to 26.7%, which is a significant increase, however, it is far from the initial target of 80% [16]. Programmes have targeted this group of men to increase their awareness and enhance the rate of performing the procedure.

The final significant program that helped Swaziland reach a stable stage in the prevalence of HIV is the pre-exposure prophylaxis. A literature review has strongly suggested that the new antiretroviral medication can be used as a prophylaxis in patients who are at high risk of acquiring HIV [17]. In Swaziland, a new antiretroviral medication known as Truvada has been used as a prophylaxis for HIV, however, the scale of using this medication is limited and not widespread yet. It has also been suggested that perhaps an injectable option might be more viable than the oral option as it lasts longer [18]. Some of these prophylaxis medications, such as Truvada,

are made free to the public by the Swaziland public health facilities [19]. This medication should be used in high-risk patients such as men who have sex with men and female sex workers.

The gold standard treatment for patients infected with HIV is antiretroviral treatment. The use of multidrug regimen substantially reduces the progression of HIV to full blown AIDS and its associated complications such as opportunistic infections. The goal of such treatment is to reduce HIV-related mortality and morbidity and prevent transmission, which is achieved by suppressing the HIV replication. HIV antiretroviral medications should be offered to all HIV infected patients even if they are asymptomatic [20]. There are multiple different classes of medications to manage HIV, which includes the nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, protease inhibitors, and integrase strand transfer inhibitors [20].

In Swaziland, the treatment of HIV with antiretroviral therapy has been increasing and is proven to be effective in controlling the viral load as mentioned previously. The cost of such treatments ranges from \$118 to \$183 per women per month, which is considerably high as this is a low-income country [21]. Although these treatments are expensive, there are multiple programs that aim at reducing prices and provide access for all such as treatment as prevention program, which provided access to the public health and assessing the local framed responses [22]. With the right treatment and compliance, patients are expected to have a great prognosis and quality of life [23].

All these measures to tackle the HIV epidemic in the country have been producing good results. Indeed, as confirmed by Swaziland HIV Incidence Measurement Survey (SHIMS2), a type of Population-based HIV Impact Assessment (PHIA), Swaziland nearly halved the rate of new HIV infections between 2011 and 2016. Over the same period, rates of HIV viral load suppression – a marker of effective treatment and reduced infectivity – doubled [24]. Analysis showed furthermore that the

HIV epidemic is stabilizing and shifting to older populations [3].

However, one of the main drawbacks of controlling the prevalence of HIV in Swaziland remains to be the stigma associated with being labeled as an 'HIV patient'. Stigma is experienced differently by women and men, as women usually experience a higher felt stigma than men in Swaziland and do not have the needed social or family support to encourage them to seek management [25]. This is a problem because in Swaziland women are disproportionately affected by the HIV epidemic, with a percentage of 34.7% of all women living with HIV, compared to 19.6% of men [3]. Although data on female sex workers are limited, in this country HIV prevalence among female sex workers is very high (60.5%) [26]. Moreover, many of residents live below the poverty line and this has a negative impact on people living with HIV. Indeed, low salaries are forcing the women to exchange sex for money as another strategy to supplement their meagre incomes.

Probably, socio-cultural determinants of HIV infection, such as poverty, gender inequality and risky cultural practices such as sexual promiscuity [27] are barriers to be addressed through an integrated approach including interventions at socio-economic, cultural, and educational levels with improving healthcare HIV services accessibility and quality [28]. This strategy could be decisive to close the gap with other sub-Saharan countries regarding the high HIV prevalence. Indeed, despite the successes achieved so far, HIV prevalence rate among adults aged 15-49 living with this disease in Swaziland is essentially remained stable from 2007 to 2016 with an average rate of nearly 27% [29].

### ***Recommendations***

The future of HIV management in Swaziland should target the major gaps and try to close them by adopting new programmes that can address these issues and integrating them. A proposed program should target the compliance and adherence to management with antiretroviral medication to patients who are



already infected with HIV to try to increase the percentage of viral controlled patients, which is an indicator for a successful treatment. Another program of this broad strategy could implement an up-to-date surveyor with an electronic medical system that can monitor the longitudinal progression of the viral load in patients infected with HIV to ensure the appropriate management of such cases. This program could be managed by the government and made available to the public in all clinics and hospitals to ensure easy access and monitoring of the HIV prevalence in Swaziland. Programs should also focus on the basics of prevention and provide a better access to patients for testing and HIV treatment. However, such programmes cannot be effective without improving the socio-economic and educational levels of people, understanding their beliefs and meeting their needs.

## CONCLUSION

HIV prevalence in Swaziland has stabilized in the past decade, however, it still remains the

highest HIV prevalence country in the world. Multiple different programmes have targeted numerous methodologies to slow down the progression of HIV and reduce the prevalence, some have been highly successful while others were not. The lesson learned is that a well throughout and implemented program is achievable by integrating the local community and understanding residents' beliefs, needs, and restrictions so that the program can be effective in addressing the specific issues. It is essential to understand the gaps and try to close them by adopting new strategies. For instance, the treatment of HIV with anti-retrovirals is still not optimal as a high percentage of the HIV infected population are receiving treatment but only 68% of them are optimally managed with a controlled viral load. Other issues are the lack of accessible up-to-date data that can provide a live stream of raw data. In summary, HIV prevalence in Swaziland has shown great results due to the multiple programmes successfully implemented in the country during the past decade, however, there is still a long way to go.

## References

1. Degenhardt L, Peacock A, Colledge S, Leung J, Grebely J, Vickerman P, et al. Global prevalence of injecting drug use and sociodemographic characteristics and prevalence of HIV, HBV, and HCV in people who inject drugs: a multistage systematic review. *Lancet Glob Health*. 2017;5(12).
2. Centers for Disease Control and Prevention, The Global HIV/AIDS pandemic, 2006. *MMWR Morb Mortal Wkly Rep*. 2006;55(31):841-844.
3. Joint United Nations Programme on HIV/AIDS (UNAIDS). Global Aids Update, Report. Ending AIDS. Progress toward 90-90-90 Target. UNAIDS; 2017 [cited 2018 Aug 04]. Available from: [https://samumsf.org/sites/default/files/2017-07/Global\\_AIDS\\_update\\_2017\\_en.pdf](https://samumsf.org/sites/default/files/2017-07/Global_AIDS_update_2017_en.pdf).
4. Worldmeters. Swaziland Population. 2017 [cited 2018 Jul 25]. Available from: <http://www.worldometers.info/world-population/swaziland-population/>.
5. Patel P, Borkowf CB, Brooks JT, Lasry A, Lansky A, Mermin J. Estimating per-act HIV transmission risk: a systematic review. *AIDS*. 2014;28(10):1509-1519.
6. Gouws E, Cuchi P, International Collaboration on Estimating HIV Incidence by Modes of Transmission. Focusing the HIV response through estimating the major modes of HIV transmission: a multi-country analysis. *Sex Transm Infect*. 2012;88 Suppl 2:i76-85.
7. Tozser J. Stages of HIV replication and targets for therapeutic intervention. *Curr Top Med Chem*. 2003;3(13):1447-1457.
8. Delaney KP, Heffelfinger JD, Wesolowski LG, Owen SM, Meyer WA, Kennedy S, et al. Performance of an alternative laboratory-based algorithm for HIV diagnosis in a high-risk population. *J Clin Virol*. 2011;52. Suppl 1:S5-10. doi: 10.1016/j.jcv.2011.09.013. Epub 2011 Oct 22.

9. Swaziland National AIDS Programme. (2018). Index - Swaziland National AIDS Programme [cited 2018 Aug 04]. Available from: <http://swaziidsprogram.org/>.
10. UNFPA-USAID. The National Condom Strategy 2010-2015. The Kingdom of Swaziland; 2010 [cited 2018 Aug 04]. Available from: [https://www.k4health.org/sites/default/files/National\\_Condom\\_Strategy.pdf](https://www.k4health.org/sites/default/files/National_Condom_Strategy.pdf).
11. Stover J, Bollinger L, Izazola JA, Loures L, Delay P, Ghys PD. Correction: What Is Required to End the AIDS Epidemic as a Public Health Threat by 2030? The Cost and Impact of the Fast-Track Approach. *Plos One*. 2016;11(6).
12. Clarke DJ, Aggleton P. Life Skills-Based HIV Education and Education for All. UNESCO-EFAGMR; 2012 [cited 2018 Aug 04]. Available from: <http://unesdoc.unesco.org/images/0021/002178/217866e.pdf>.
13. Sagna ML, Schopflocher D. HIV counseling and testing for the prevention of mother-to-child transmission of HIV in Swaziland: a multilevel analysis. *Matern Child Health J*. 2015;19(1):170–179.
14. Chouraya C, Machekano R, Mthethwa S, Lindan K, Mirira M, Kudiabor K, et al. Mother-to-Child Transmission of HIV and HIV-Free Survival in Swaziland: A Community-Based Household Survey. *AIDS and Behavior*. 2018;22(S1):105–113.
15. Schenker I. Cutting-Edge Success in Preventing Heterosexual HIV Transmission in Africa: Voluntary Medical Male Circumcision Has Reached 15 Million Men. *AIDS Educ Prev*. 2018;30(3):232–242.
16. Kripke K, Okello V, Maziya V, Benzergera W, Mirira M, Gold E, et al. Voluntary Medical Male Circumcision for HIV Prevention in Swaziland: Modeling the Impact of Age Targeting. *Plos One*. 2017 Jan 3;12(1):e0169697. doi: 10.1371/journal.pone.0169697. eCollection 2017.
17. Traeger MW, Schroeder SE, Wright EJ, Hellard ME, Cornelisse VJ, Doyle JS, et al. Effects of Pre-exposure Prophylaxis for the Prevention of Human Immunodeficiency Virus Infection on Sexual Risk Behavior in Men Who Have Sex With Men: A Systematic Review and Meta-analysis. *Clin Infect Dis*. 2018 Feb;67(5):676–686.
18. Siedner MJ, Hetteema A, Hughey A, Oldenburg CE, Kohler S, Bärnighausen K, et al. Preference for injectable over oral HIV pre-exposure prophylaxis in public-sector primary-care clinics in Swaziland. *Aids*. 2018;32(11):1541–1542.
19. Swaziland-New HIV Drug-Health (2017). Swaziland rolls out free new HIV prevention drugs - Apanews.net. [online] [cited 2018 Aug 04]. Available from: <https://mobile.apanews.net/index.php/en/news/swaziland-rolls-out-free-new-hiv-prevention-drugs>.
20. Saag MS, Benson CA, Gandhi RT, Hoy JF, Landovitz RJ, Mugavero MJ, et al. Antiretroviral Drugs for Treatment and Prevention of HIV Infection in Adults: 2018 Recommendations of the International Antiviral Society-USA Panel. *JAMA*. 2018;320(4):379–396.
21. Cunnamana L, Abrams EJ, Myer L, Gachuhi A, Dlamini N, Hlophe T, et al. Cost and cost-effectiveness of transitioning to universal initiation of lifelong antiretroviral therapy for all HIV-positive pregnant and breastfeeding women in Swaziland. *Trop Med Int Health*. 2018;23(9):950–959.
22. Vernooij E, Mehlo M, Hardon A, Reis R. Access for all: contextualising HIV treatment as prevention in Swaziland. *AIDS Care*. 2016 Feb;28(Sup3):7–13.
23. Ntshakala TT, Mavundla TR, Dolamo BL. Quality of life domains relevant to people living with HIV and AIDS who are on antiretroviral therapy in Swaziland. *Curationis*. 2012 Dec 6;35(1):87. doi: 10.4102/curationis.v35i1.87.
24. CDC. Country with world's highest HIV prevalence is now controlling its HIV epidemic. CDC; 24 Jul 2017 [cited 2018 Aug 04]. Available from: <https://www.cdc.gov/media/releases/2017/p0724-hiv-swaziland.html>.
25. Shamos S, Hartwig KA, Zindela N. Men's and women's experiences with HIV and stigma in Swaziland. *Qual Health Res*. 2009;19(12):1678–1689.
26. UN AIDS DATA 2017 [Internet]. 2017 [cited 2018 Aug 04]. Available from: [http://www.unaids.org/sites/default/files/media\\_asset/20170720\\_Data\\_book\\_2017\\_en.pdf](http://www.unaids.org/sites/default/files/media_asset/20170720_Data_book_2017_en.pdf).

27. The Kingdom of Swaziland. Swaziland Global AIDS Response Progress Reporting 2014. [Internet]. UNAIDS; 2014 [cited 2018 Aug 04]. Available from: [http://www.unaids.org/sites/default/files/country/documents/SWZ\\_narrative\\_report\\_2014.pdf](http://www.unaids.org/sites/default/files/country/documents/SWZ_narrative_report_2014.pdf).
28. Church K, Wringe A, Fakudze P, Kikuvi J, Simelane D, Mayhew SH. Are integrated HIV services less stigmatizing than stand-alone models of care? A comparative case study from Swaziland. *Int J STD AIDS*. 2013;16(1):179–181.
29. Swaziland - HIV/AIDS - adult prevalence rate - Historical Data Graphs per Year [Internet]. Zambia GDP - per capita (PPP) – Economy [cited 2018 Aug 04]. Available from: <https://www.indexmundi.com/g/g.aspx?c=wz&cv=32>.