

# Building a Sustainable Garden in Swaziland, Africa: Empowering HIV-Positive Youth and Achieving Food Security

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## ABSTRACT

**Background:** Despite advances in HIV awareness and antiretroviral therapies, people living with HIV/AIDS (PLWA) still experience stigma and have difficulties achieving personal and professional advancement, leading to negative mental health effects such as depression. Young PLWA should be given opportunities to contribute to their communities and better themselves.

**Local Setting:** Swaziland is a sub-Saharan country with a population of 1.3 million, and approximately 75% of the population is engaged in subsistence agriculture. With a 28.8% adult HIV prevalence rate, Swaziland carries the highest burden of HIV in the world.

**Methods:** In 2016, researchers collaborated with local nonprofit organizations in Mbabane, Swaziland to recruit young PLWA between the ages of 19-24 for a weekly sustainable garden construction and maintenance project. With supervision, education and direction from local public and nonprofit officials, the young PLWA were given training to build and manage the garden.

**Results:** Starting March 2017, the garden produced its first harvest and every week, the young PLWA took home fresh vegetables for themselves and their families. A partnering HIV/AIDS clinic distributed surplus vegetables to patients. By July 2017, approximately 15-20 patients (including the young PLWA) received produce weekly. Study researchers in collaboration with local nonprofit partners assessed the capacity of the garden and set a goal to serve 50 patients weekly by December 2017 once the garden became fully productive.

**Conclusion:** When given guidance, young PLWA in Swaziland can effectively build and sustain a vegetable garden that serves themselves, their families, and their communities. This project will continue to empower young PLWA and provide a tangible skill set for sustainable farming within the agricultural economy of Swaziland.

## INTRODUCTION

In nations that have high HIV prevalence rates, a stigma exists against those who are infected. This stigma towards people living with HIV/AIDS (PLWA) manifests specifically in the form of family rejection, isolation by community members, denial of healthcare access and barring from social institutions and festivals.<sup>1-3</sup> Due to this stigma, PLWA often fear going to clinics to get tested for HIV or receive medications, fail to disclose their HIV status to partner, and avoid condom use due to implications of infection to partners.<sup>4</sup> Importantly, as a consequence of this stigma, many young PLWA develop feelings of hopelessness for the future and lose their self-identities, causing profound mental health effects.<sup>5-6</sup> As such, HIV stigma—and disease stigma as a whole—has profound public health implications that medications alone cannot alleviate.

Given the discriminatory attitudes towards young PLWA, it is important to identify ways in which these individuals can achieve personal development and empowerment while also gaining marketable skills for employment and community contribution. By identifying ways to integrate PLWA into the economic fabric of the community, this community mobilization strategy can shift the paradigm of the value of PLWA.<sup>7</sup> Because subsistence farming forms the majority of the economic activities in Swaziland, this study strives to provide young PLWA with skills in garden construction that can be used to provide for their families and give back to the community.

## LOCAL SETTING

Swaziland is a low-income country in southern Africa with a population of approximately 1.3 million

people, nearly 75% of whom practice subsistence agriculture in home and community gardens.<sup>7</sup> Since 2016, subsistence farmers have had significant difficulties in providing crops for their families due to a drought affecting many countries in southern Africa. Despite the United States Agency for International Development (USAID) response in the region to fund food security initiatives, farmers still must learn how to effectively and efficiently utilize their lands and resources for maximum crop production.<sup>8</sup> Swaziland also has the highest HIV prevalence rate in the world, with 28.8% of all adults infected with HIV.<sup>9</sup> Although the government provides access to free antiretroviral medication to all affected patients, only 49% of patients over age 15 are undergoing treatment, contributing to the low life expectancy in Swaziland, which is just under 50.<sup>10</sup> Stigma plays a role in reduced adherence and compliance rates. According to Rao and colleagues, HIV-infected individuals reporting high levels of HIV stigma are three times more likely to be non-adherent with their medications compared to those with low HIV stigma concerns.<sup>15</sup>

It is important for us to recognize that in HIV-positive youth, stigma has been associated with other factors that may impact adherence and compliance. In a psychometric study measuring stigma in people with HIV, conducted by Berger et al., individuals (M=23) with perceived stigma attempted to alter their behaviors in efforts to reduce or avoid enacted stigma, further warranting strategies to combat external and self-stigma, for better patient outcomes.<sup>16</sup>

## OBJECTIVES

According to the Global Information and Early Warning System on Food and Agriculture (GIEWS) Report, in 2016 the National Maize Corporation (NMC) in Swaziland announced a 66 percent increase in the sale price of maize, the country's main source of food, to reflect the record high maize grain prices in South Africa. Given the recent farming crisis in Swaziland in addition to the increased cost of maize and ancillary crops, access to fresh crops has been difficult for many families, especially PLWA. The Garden enables PLWA to have access to adequate nutrition, reduces the cost of groceries for families and enables the PLWA to monetize their newly acquired skill set.

The researchers collaborated with Swazi's Angels (SA), a California-based non-profit organization

that has been building sustainable home gardens for families in Swaziland since 2013,<sup>11</sup> to address two public health concerns: HIV stigma and food insecurity. Young PLWA who are patients at the Baylor College of Medicine Children's Foundation Swaziland (BCMCF-SD) who previously participated in a digital mentorship program (also led by study investigators) were given the opportunity to join the garden construction project. A total of 10 young PLWA ages 19-24 were recruited.

Starting in November 2016, study investigators formed a formal partnership with SA and BCMCF-SD with two core objectives. The first was to create and administer a garden construction project to promote personal and professional development, and opportunities for community engagement in the form of social entrepreneurship for young PLWA who often otherwise experience discrimination in the workplace and in community events.<sup>12</sup> By giving these young adults an opportunity to contribute to their community by distributing the fruits and vegetables of their labor, the investigators projected that the garden would serve as a confidence-building exercise and a value add to the produce recipients. The second objective was to produce young farmers who were effectively trained by experts in maintaining a garden in a difficult growing season by giving them and their families the tools and skill sets to monetize and gain relative stability within the agrarian country.

## APPROACH

The planning phase of the project was carried out from November 2016 to March 2017, during which land near Mbabane was acquired from the government and young PLWA were recruited for the program. In March 2017, study investigators traveled to Mbabane for an initial meeting with the 10 young PLWA representatives from SA and representatives from BCMCF-SD. The young PLWA engaged in a day-long leadership workshop with study investigators at the clinic and the new plot of land to learn about each young PLWA's story, and life goals i.e. career aspirations. In addition, they discussed important traits of leadership—communication, teamwork, and problem solving, among others—in the context of building a sustainable garden.

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Starting in March 2017, the young PLWA visited the plot of land one morning a week under the supervision of representatives from both SA and BCMCF-SD. SA’s trained staff members volunteered to assist the young PLWA as they prepared the land, planted seedlings, and ensured proper land irrigation. To address the current water crisis and to share effective solutions, we invited local government officials from the department of agriculture to help teach the young adults about basic piping systems that they then used to connect a distant water tank to the plot of land. Study investigators provided funds and strategy to BCMCF-SD to facilitate the transportation and meals for the young PLWA for each weekly visit to the garden.

By the end of April 2017, the garden produced basic vegetables such as spinach and green peppers, and the young PLWA continued to maintain the garden. Initially, only enough produce was harvested for the young PLWA to take home to their families, but by the end of May 2017 a surplus of spinach, green peppers, broccoli and cauliflower was distributed to a point person at BCMCF-SD who determined which patients were in most need of adequate nutrition. As of July 2017, the garden is yielding enough produce for approximately 15-20 people weekly, and by the end of the year study investigators expect up to 50 people to benefit weekly.

In the coming months, all of the young PLWA will be given home garden kits so that they may use their new skill sets to continue to provide for their families. A new cohort of young individuals will be recruited to maintain the garden. Additionally, the young PLWA will be creating educational pamphlets that the clinic will distribute to all patients receiving produce from the garden that highlights all aspects

of HIV transmission, prevention and treatment, as education has been found to be a vital key in reducing the stigma surrounding HIV/AIDS.<sup>13</sup>

### **BUILDING CONFIDENCE**

During the March 2017 field visit to Mbabane, the young PLWA engaged in a day-long leadership workshop with the study investigators. The workshop was divided into 3 sessions: Qualities of a Leader, Stigma & Confidence Building, and Action. The first session was an interactive session engaging the PLWA to define a leader. The PLWA discussed leadership qualities that top leaders and celebrities around the world shared from their perceptions in order to help them realize that the qualities that they admired from their role models were all qualities that they possessed and had capacity to exercise. The goal was to showcase that circumstances in life do not define one’s capabilities but rather act as a catalyst to their success. Study investigators also discussed why leadership was important for one’s own self-worth, community, country and world. The PLWA came up with the following qualities they believed all leaders possessed: good communication skills, good listening skills, wisdom, ability to have a vision, and the ability to have patience, among others.

After they defined all the qualities, the PLWA shared their personal stories, and obstacles they had to overcome. It was here when study investigators reaffirmed the motive of the Garden Project and the focus on building self-confidence. Study investigators tied each story back to the qualities of a leader, showcasing that they inherently possess these qualities, transitioning to the next session to focus on how to eliminate self-stigma to strengthen one’s self-confidence.

The second interactive session acted as a safe space

Date	July 11, 2017	
Which Young Adults helped harvest the fruits and vegetables? List all of their names. If all, please just write 'all'.	(Names not provided for patient protection)	
Which fruits and vegetables were harvested today? <i>Friendly reminder, be sure to take pictures!</i>	Spinach, Broccoli, Green peppers	
How many of each fruit and vegetable were harvested?	<b>Name of Fruit/Vegetable</b>	<b>Amount harvested today</b>
	Spinach	60 Leaves
	Broccoli	10
	Green pepper	15

where the young PLWA talked about the challenges they face in society regarding stigma and steps they can take to combat those stigmas. The session's goal was to encourage self-identity, education, empowerment, leadership, self-advocacy and confidence. Many young people shared best practices, such as 'lifting yourself up' through your work and 'rebuilding your identity' through staying healthy and living your life with purpose.

The final session was an introduction to the garden project at the plot of land. As an observation from study investigators, many young PLWA viewed the project as a metaphor to start their own ventures e.g. to become a teacher, to start a catering business or to become a business owner. Some young PLWA also showed interest in using their new skills to benefit their families with extra income or to subsidize grocery costs by growing their own more efficiently.

During the garden construction, representatives from SA reported on a young PLWA who shared his thoughts about his personal growth while building the garden. Prior to participating in the weekly meetings, he and his family were struggling to grow

- Teaching young PLWA about garden construction and maintenance yielded the successful creation of a garden that is serving themselves and their community during a drought.
- Collaborating with a local HIV/AIDS clinic is a valuable consideration that allowed surplus produce to be used by those patients who need adequate nutrition the most.
- This model may be a way to reduce stigma towards PLWA by incorporating educational pamphlets distributed to every individual who receives produce from the garden.

Table 2. Summary of main lessons learnt

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Table 1. Example weekly activity log

food due to the drought. The young man's family asked him to stop going to school so that he could help grow crops or get a job to pay for provisions. After graduating from the garden construction project, he now hopes to re-enroll in school to continue his education. Many other young PLWA still regularly visit the garden because they are learning about the importance of consistent

hard work and self-confidence in achieving goals. Further details about this young man are not provided to protect patient privacy.

## OBSTACLES

While the project has successfully yielded strong young leaders and farmers who are educated about garden construction during the drought and who are confident contributors to their community, there are challenges to be addressed. Firstly, recording the amount of produce harvested weekly and number of new patients benefiting from the garden—crucial in delineating the impact of the garden—has been difficult for representatives from BCMCF-SD, given the other responsibilities that these individuals have as part of the HIV/AIDS clinic (Table 1). Study investigators are still identifying solutions for efficient documentation, such as the provision of tablets for real-time data entry and sharing of weekly produce collection and distribution. Secondly, pipes directing water from a far water tank source to the garden were recently stolen. SA staff members used this as a problem-solving activity for the young PLWA who traveled to the water tank to find out why water was not reaching the land. Ensuring some residual funds, perhaps through local sale of a small portion of the garden produce, for such situations is crucial for the success of the collaborative effort.

## CONCLUSIONS

Table 2 summarizes the main lessons learned from this garden construction program. The program demonstrated that, when given guidance, young PLWA in Swaziland can effectively build and sustain a vegetable



garden that serves themselves, their families, and other community members. Strong collaboration between local non-profits, clinics, and trained farmers is vital to the success of such a program and to providing surplus vegetables to patients who are in most need of adequate nutrition. This project will continue to flourish as new young PLWA are recruited, inspiring confidence in future young leaders and giving them an applicable skill set within their agricultural community.

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## REFERENCES

- Holzemer WL, Uys L, Makoae L, et al. A conceptual model of HIV/AIDS stigma from five African countries. *J Adv Nurs*. 2007;58(6):541-551. doi:10.1111/j.1365-2648.2007.04244.x.
- Root R. Situating experiences of HIV-related stigma in Swaziland. *Glob Public Health*. 2010;5(5):523-538. doi:10.1080/17441690903207156.
- Surkan PJ, Mukherjee JS, Williams DR, et al. Perceived discrimination and stigma toward children affected by HIV/AIDS and their HIV-positive caregivers in central Haiti. *AIDS Care*. 2010;22(7):803-815. doi:10.1080/09540120903443392.
- Sweeney SM, Mitzel LD, Vanable PA. Impact of HIV-related stigma on medication adherence among persons living with HIV. *Current Opinion in Psychology*. 2015;5:96-100. doi:10.1016/j.copsyc.2015.06.002.
- Tsai AC, Bangsberg DR, Kegeles SM, et al. Internalized stigma, social distance, and disclosure of HIV seropositivity in rural Uganda. *Ann Behav Med*. 2013;46(3). doi:10.1007/s12160-013-9514-6.
- Raja SK, Aggarwal S, Raman KR, et al. From businesswoman to banana vendor: mental health implications of HIV stigma in Tanzania. *AIDS*. 2016;30(17):N33-N35. doi:10.1097/QAD.0000000000001246.
- WHO | Swaziland. WHO. <http://www.who.int/countries/swz/en/>. Accessed July 16, 2017.
- Crisis in Swaziland | Disaster Assistance | U.S. Agency for International Development. <https://www.usaid.gov/crisis/swaziland>. Accessed July 16, 2017.
- HIV and AIDS in Swaziland | AVERT. <https://www.avert.org/professionals/hiv-around-world/sub-saharan-africa/swaziland>. Accessed July 17, 2017.
- Human Development Report 2014 | Human Development Reports. <http://hdr.undp.org/en/content/human-development-report-2014>. Accessed July 17, 2017.
- Swazi's Angels | Swazi's Angels | Non Profit sustainable nutrition program Swaziland. <https://www.swaziangels.org>. Accessed July 17, 2017.
- J Ogden, L Nyblade. Common at its Core: HIV-Related Stigma Across Contexts. Available at: [www.icrw.org/sites/default/files/publications/Common-at-its-Core-HIV-Related-Stigma-Across-Contexts.pdf](http://www.icrw.org/sites/default/files/publications/Common-at-its-Core-HIV-Related-Stigma-Across-Contexts.pdf) (Last accessed June 2, 2016).
- Aggarwal S, Lee DH, Minter WB, et al. Another Generation of Stigma? Assessing Healthcare Student Perceptions of HIV-Positive Patients in Mwanza, Tanzania. *AIDS Patient Care and STDs*. 2017;31(2):87-95. doi:10.1089/apc.2016.0175.
- Remien RH, Rabkin JG. Psychological aspects of living with HIV disease: A primary care perspective. *Western Journal of Medicine*. 2001;175(5):332-335.
- Rao D, Kekwaletswe TC, Hosek SG, Martinez J, Rodriguez F. Stigma and social barriers to medication adherence with urban youth living with HIV. *AIDS Care*. 2007;19:28-33. [PubMed]
- Berger BE, Ferrans CE, Lashley FR. Measuring stigma in people with HIV: Psychometric assessment of the HIV Stigma Scale. *Res Nurs Health*. 2001;24:518-529. [PubMed]