DREAMS

WORKING TOGETHER FOR
AN AIDS-FREE FUTURE
FOR GIRLS & WOMEN

Evaluation Report

UCSF
University of California
San Francisco

Implementing and Collaborating Institutions

This outcome evaluation was led by the Ministry of Health, Community Development, Gender, Elderly and Children (RCHS Department) and the University of California, San Francisco (UCSF), with collaboration from the Centers for Disease Control and Prevention, Division of Global HIV & AIDS (CDC-DGHT) Tanzania, The Tanzania Commission for AIDS (TACAIDS) and PEPFAR Tanzania Country Office.

Study Team

Dr. Grace Mallya, MD, MMed	RCHS (MoHCDGEC)
Willi McFarland, MD, PhD	University of California, San Francisco
Susie Welty, MPH	University of California, San Francisco
Jenny Tiberio, MPH	University of California, San Francisco
Joel Ndayongeje, MSc, MPH	Global Programs; University of California, San Francisco
Christen Said, MPH	University of California, San Francisco
Ritha Mboneko	Global Programs; University of California, San Francisco
Tania Reza, MPP	University of California, San Francisco
Rachel Weber, MPH, PhD	U.S. Centers for Disease Control and Prevention
Callie Kaplan, MPH	ASPH/CDC Allan Rosenfield Global Health Fellow

Acknowledgements

We wish to acknowledge with gratitude all those who contributed to the study design, collection of data, analysis, and production of this document. We thank our team for their integrity and tireless work in the field and their commitment to this evaluation. Our sincerest appreciation goes to all participants of this study, adolescent girls and young women in particular, for their willingness to share valuable information. Without their contributions, this evaluation would not have been possible. We also acknowledge the support provided by the regional, council, and local government authorities during all periods of data collection. Particular appreciation is extended to the community stakeholders for their contributions during the planning of this study. A special thanks goes to implementing partners who made study recruitment and follow-up possible through the support of their peer educators and empowerment workers.

We acknowledge with special gratitude the financial support provided by the American People under the President's Emergency Plan for AIDS Relief (PEPFAR) through the U.S. Centers for Disease Control and Prevention (CDC).

Table of Contents

List of Acronyms

AFHS	adolescent-friendly health services *(services targeted to adolescents at government facilities)*
AGYW	adolescent girls and young women *(10-24 years of age)*
AIDS	acquired immunodeficiency syndrome
BCC	behavior change communication *(communication strategies to promote and sustain positive behavior change)*
CC	city council
CSO	civil society organization *(sub-grantees and on-the-ground implementers of the DREAMS program)*
DAMES	DREAMS auxiliary monitoring and evaluation system
DC	district council
DREAMS	determined, resilient, empowered, AIDS-free, mentored, safe
DV	domestic violence
EW	empowerment worker *(DREAMS provider in the Sauti program terminology; trained to lead DREAMS group interventions for vAGYW)*
FGD	focus group discussion
FSW	female sex worker
GBV	gender-based violence
HIV	human immunodeficiency virus
IEC	information, education, and communication
KII	key informant interview
MC	municipal council
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
OR	odds ratio
PE	peer educator *(volunteers of the DREAMS program, trained to reach, recruit, and educate their vAGYW peers)*
PEPFAR	President's Emergency Plan for AIDS Relief
RCHS	Reproductive and Child Health Services
STI/STD	sexually transmitted infection/disease
TACAIDS	Tanzania Commission for AIDS
UCSF	University of California, San Francisco
USD	United States dollars
VI	vulnerability index
VI+	expanded vulnerability index
WEE	women's economic empowerment *(the process by which women increase their right to economic resources and power to make decisions that benefit themselves, their families and their communities)*
vAGYW	vulnerable adolescent girls and young women *(economically, behaviorally, socially, or otherwise vulnerable to HIV acquisition)*

Executive Summary

Background:
In sub-Saharan Africa, adolescent girls and young women (AGYW) account for 25% of new HIV infections. Gender, age, and economic inequities are drivers of HIV infection for this group. To address these factors, the PEPFAR-funded "DREAMS" (Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe) program employs a holistic approach to reduce HIV incidence among AGYW aged 10-24. To evaluate the impact of these DREAMS interventions on HIV risk and vulnerability of AGYW in Tanzania, we conducted a mixed-methods, multi-pronged study. The study also assessed the reach and intensity of DREAMS service provision among vulnerable AGYW in the target communities, documented community, participant, and provider views on the strengths and weaknesses of the program, and community attitudes about the value of AGYW.

Methods:
DREAMS interventions targeted seven councils that included urban, semi-urban, and rural communities identified as uniquely vulnerable for AGYW due to their location along transit corridors, in major urban centers, or in proximity to mining activities. Councils with operating DREAMS programs at the time of this evaluation were included: Mbeya CC, Kyela DC, Shinyanga MC, Kahama TC, Msalala DC, Ushetu DC and Temeke MC. The evaluation framework comprised three components: (1) a prospective cohort that followed AGYW recruited from DREAMS communities for 12 months, measuring changes in participants' vulnerability to HIV; (2) a household survey to assess the proportion of vulnerable, DREAMS-eligible AGYW who were reached by the program; and (3) a qualitative study to characterize participants' and communities' perceptions of DREAMS, the program's quality of services, and attitudes about the value of girls and young women. Data were collected from May 2017 to February 2019.

Results:
DREAMS participants reported very high satisfaction with the program and expressed the indispensable nature of DREAMS services for their sexual and reproductive health education. Community members observed positive changes as a result of DREAMS intervention activities. DREAMS service providers expressed pride in their work. While community members were generally supportive of the DREAMS program, our qualitative results highlighted concerns from some participants about a growing perception that gender-based violence education is harming relationship and marriage dynamics.

The household survey documented low reach (27%) among the population of DREAMS-eligible AGYW. Additionally, AGYW who did not meet the program's definition of eligibility were being recruited into the program. Out of the 160 eligible AGYW who participated in DREAMS, 60% reported receiving the economic strengthening intervention (WORTH+), 51% reported receiving sexual and behavior change communication, and 38% reported receiving both. These results should be interpreted within the context of a PEFPAR program whose targets, eligibility criteria, program duration, minimum service package definition, and graduation criteria have fluctuated across different funding years depending on priorities.

We enrolled 778 AGYW into the study cohort, of whom 598 (77%) completed follow-up (70 were lost to follow-up, 59 moved, 49 dropped, and 2 died). We measured significant improvements in six outcomes that materially affect the vulnerability of young women to the HIV epidemic: economic reliance on commercial sex, food insecurity, adult support, having a plan for the future, self-esteem, and condom use self-efficacy. These positive changes were driven by AGYW who were characterized as most

vulnerable by DREAMS eligibility criteria, whereas less vulnerable (i.e., DREAMS-ineligible) AGYW exhibited reduced or no significant improvements in these outcomes.

Discussion:

Our evaluation provides evidence that the DREAMS interventions put vulnerable AGYW on the path to longer-term reductions in HIV vulnerability through alternative livelihoods, increased confidence, and self-reliance. As intended by the DREAMS ecological framework, significant improvements in six factors (i.e., economic reliance on commercial sex, food insecurity, adult support, having a plan for the future, self-esteem, and condom use self-efficacy) will ultimately lead to reductions in sexual risk behaviors and HIV acquisition in sub-Saharan Africa's highest incidence population. Our findings suggest the DREAMS program will have its greatest impact if focused on the most vulnerable AGYW. Qualitative results highlight the importance of conducting economic strengthening activities with intersectional approaches, with the inclusion of men, and continuing to prioritize education of the surrounding communities of vulnerable AGYW.

Introduction

HIV among adolescent girls and young women (AGYW) in Tanzania

Due to a confluence of cultural, structural, and socioeconomic factors, adolescent girls and young women (AGYW) are disproportionately affected by HIV/AIDS. Globally, it is estimated that 15% of women living with HIV are aged 15-24 years, and of those women, 80% live in sub-Saharan Africa (UNAIDS, 2014). Despite progress in HIV prevention, adolescent girls and young women (AGYW) in sub-Saharan Africa remain especially vulnerable, with an estimated 8,600 new infections every week (UNAIDS, 2016). The rates of new HIV infection are strikingly higher among AGYW than among their male same-age counterparts (UNAIDS, 2016).

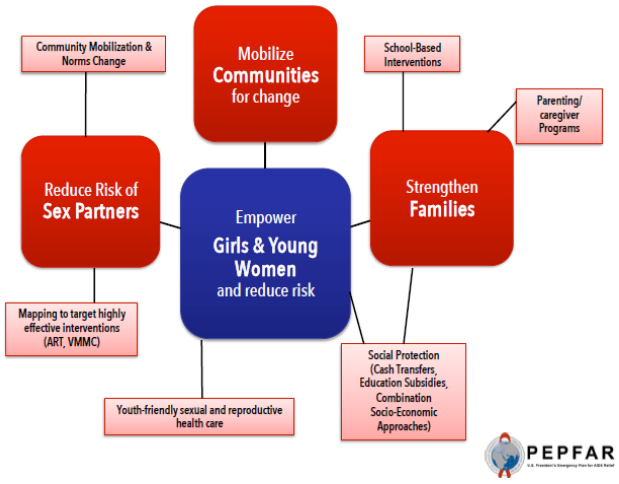
In Tanzania, by the early part of the current decade, almost one half (45%) of HIV-infected young women aged 15-24 years were concentrated in three regions: Dar es Salaam, Mbeya, and Shinyanga (National Bureau of Statistics, 2013; Tanzania Commission for AIDS, 2013). Cultural, behavioral, structural, and economic drivers in these regions are hypothesized to make AGYW especially vulnerable to HIV acquisition, including early marriage, early sexual debut, living along transit corridors or among mobile and migrant populations, older male partners, gender inequality, norms surrounding violence, multiple sexual partners, transactional sex, low contraceptive knowledge and uptake, and low prevalence of male circumcision.

The PEPFAR-Tanzania DREAMS Initiative

The DREAMS (Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe) program is a global partnership between PEPFAR (the President's Emergency Plan for AIDS Relief), Girl Effect, and the Bill and Melinda Gates Foundation with programs in 15 sub-Saharan African countries including Tanzania. Implementation in Tanzania began in May 2016 with the aim to reduce new HIV infections in vulnerable adolescent girls and young women (vAGYW) ages 10-25. In Tanzania, the DREAMS partnership includes the Tanzania Commission for AIDS (TACAIDS), Reproductive and Child Health Services (Ministry of Health, Community Development, Gender, Elderly and Children), the National AIDS Control Programme, and PEPFAR implementing partners.

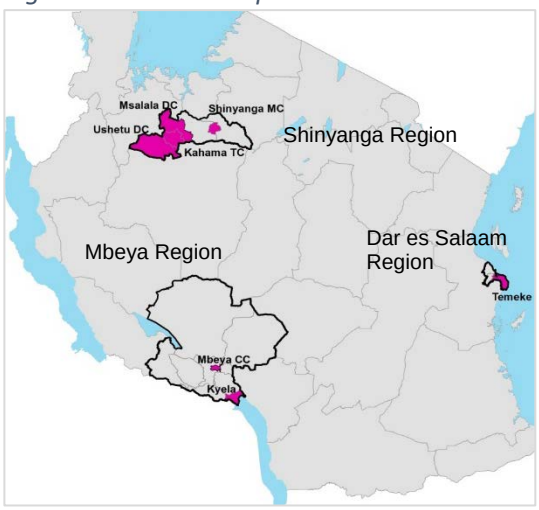
The goal of the DREAMS program is to reduce HIV incidence (new infections) among vulnerable AGYW though the provision of combination prevention activities targeting evidence-based drivers of HIV. The DREAMS program, which provides age-appropriate intervention packages for three age bands (10-14, 15-19, and 20-24 year olds) is characterized by a holistic approach that aims to intervene on the entire ecological model of vAGYW's lives and communities (Figure 1). The interventions are delivered in government health facilities, in schools, and by implementing partners at the community level, depending on the nature of the intervention.

Figure 1: DREAMS ecological model



Seven councils in Tanzania were initially selected for DREAMS implementation. (Figure 2). These included: (1) Mbeya City Council, (2) Kyela District Council, (3) Shinyanga Municipal Council, (4) Kahama Town Council, (5) Msalala District Council, (6) Ushetu District Council, and (7) Temeke Municipal Council. Mbeya City and Kyela District Councils are in Mbeya Region, which shares borders with Zambia, Malawi, and six other regions in Tanzania. These locations were identified as highly active transit corridors and also have mixed economies of agriculture and fishing. Shinyanga Municipal, Kahama Town, Msalala District, and Ushetu District Councils are in Shinyanga Region, which has mining and agricultural economic activities, and are also situated along major road networks. Temeke Municipal Council is in Dar es Salaam Region, which contains Tanzania's business capital, largest urban center, largest port, and is one of the top 10 fastest-growing cities in the world (Massy-Beresford, 2015).

Figure 2: DREAMS Implementation councils



AGYW aged 15-24 are recruited by peer educators, empowerment workers, and health care workers based on age-specific enrollment criteria. Annual, program-wide targets for recruitment of vAGYW aged 15-24 into the DREAMS program range from approximately 50,000 to 60,000 vAGYW each year. A "vulnerability index" (VI) was developed, piloted and validated by the DREAMS program to measure and quantify the vulnerability of vAGYW upon enrollment into the program[1]. Key domains include socio-demographics, sexual risk behaviors, and other areas of vulnerability such as food insecurity and experiences of gender-based violence (GBV).

The DREAMS intervention package for 15-24 year olds girls and young women includes education and provision of condoms and contraceptive methods for family planning; HIV testing and counseling at community and clinic levels, a combination of socioeconomic programs including savings and lending groups and entrepreneurship training (WORTH+), post-violence care, scale-up of adolescent-friendly health services (AFHS) in government facilities, community mobilization to change gender norms, cash transfers for economic support, scholarships for vocational education and training, and violence and HIV prevention education in communities. Aside from individual-level services such as HIV testing and post-GBV care, most DREAMS interventions are provided in a group setting, led by peer educators and empowerment workers who are trained and supervised by DREAMS civil society organizations (CSOs; sub-grantees of PEPFAR implementing partner organizations). While many of the DREAMS interventions have been evaluated as a single component in other settings, there is a need to gauge the impact of a comprehensive, multi-faceted, holistic program to maximize impact, better implement programming, and prioritize funding.

[1] Developed by Jhpiego to measure vulnerability of AGYW entering the program (Han, 2017).

DREAMS Tanzania interventions for 10-14 year-olds target in-school girls with education on HIV and violence prevention and reproductive health with the provision of reusable sanitary pads to reduce school absenteeism. Parents of vulnerable adolescents are also reached through a parenting program adapted to the Tanzania context. These programs were provided by Peace Corps and Pact Tanzania and an evaluation of the in-school menstrual hygiene management intervention (Huru) was conducted by DAMAX and is available through Peace Corps Tanzania.

DREAMS Evaluation

The University of California, San Francisco (UCSF) conducted an evaluation of the DREAMS initiative for vAGYW aged 15-24 year olds in Tanzania. The evaluation objective was to understand if and how the combination of DREAMS interventions impacted the vulnerability of AGYW at risk. Our mixed-methods evaluation study design sought to answer questions in three domains, specifically:

1. Did the Tanzania DREAMS program reduce participants' vulnerability to HIV?
2. What was the reach and intensity of the DREAMS program in the population of vAGYW?
3. What were the (a) prevalent attitudes about the value of girls and young women in communities, and (b) perceptions of the DREAMS program (intent and delivery of quality of services)?

Methods

Evaluation design and methods

The evaluation use a mixed-methods study design, comprising of qualitative and quantitative components. The multi-pronged study was implemented in three phases to address the overarching evaluation objectives, namely: (1) a quantitative, prospective, longitudinal cohort study to measure DREAMS' effectiveness in reducing risk behaviors and other characteristics related to HIV vulnerability; (2) a quantitative, cross-sectional household survey to assess the reach and intensity of DREAMS among the population of vAGYW in the target areas; and (3) a qualitative study to capture DREAMS vAGYW participants', communities', and providers' perceptions and reactions to the DREAMS program. Figure 3 illustrates the sequence of the DREAMS program and the evaluation study components. Table 1 summarizes activities of the evaluation that are described in detail below.

Figure 3: Study Graphic

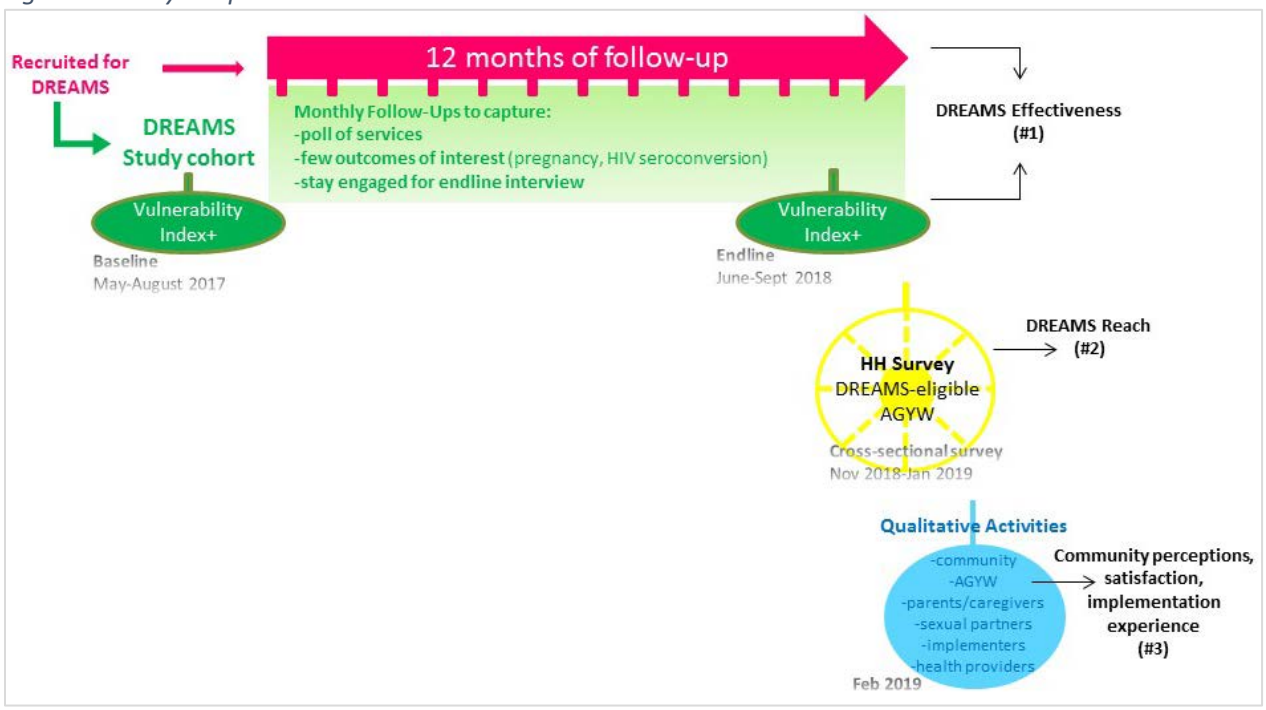


Table 1: Summary of quantitative and qualitative activities

Objective	Population	Activity	Sampling Methodology	Content
DREAMS' effectiveness (impact) (#1)	vAGYW (aged 15-24) with no previous DREAMS exposure who were ready to enroll in the program	Established a prospective cohort in each DREAMS council to be followed over 12-months after enrollment into the program	Recruitment at DREAMS intervention sites within each council until minimum sample size (104 per council) was reached	--Administered baseline and endline index (VI+) in person by trained data collector --Monthly surveys to assess DREAMS exposure and outcomes of interest
Intensity and reach of DREAMS; profile of those reached by DREAMS (#2)	vAGYW (aged 15-24) in DREAMS areas	Quantitative, cross-sectional survey (Mbeya CC and Kyela DC)	Household survey of vAGYW in 2 DREAMS councils; wards randomly selected proportional to female population size; minimum sample size 624 vAGYW	--Assessed proportion of vAGYW in communities who were exposed to DREAMS --Administered VI+ to characterize level of vulnerability and describe those who were reached by DREAMS

Objective	Population	Activity	Sampling Methodology	Content
Investigate contextual, qualitative information about valuing of AGYW, perceptions of DREAMS, experiences in and delivering the program (#3)	Community members, leaders, teachers, parents/ caregivers, employers of vAGYW, etc.	1 FGD with 8-10 participants per council (Mbeya CC and Kyela DC)	Purposively sampled with support from community leaders and TACAIDS Community HIV/AIDS Coordinators	Attitudes about gender equality and the value of girls in the community; DREAMS influence on the community; perceptions of DREAMS, unintended consequences
	Potential sexual partners	2 KIIs per council (Mbeya CC and Kyela DC)	Convenience sample based on male partner characterization	Attitudes about gender equality, cross-generational relationships, and the value of girls in the community
	Health care providers	2 KIIs per council (Mbeya CC and Kyela DC)	Purposively sampled with support from DREAMS partners and MoHCDGEC	Experience delivering AFHS; appropriateness of IEC and BCC around sexual behavior for this population
	DREAMS Participants	4 KIIs per council (Mbeya CC and Kyela DC)	Randomly then purposively sampled from DREAMS program data and service delivery points	Attitudes around empowerment, agency, self-perception
	DREAMS Professionals	2 KIIs per council (Mbeya CC and Kyela DC)	Purposively selected from DREAMS implementing organizations	Fidelity of DREAMS implementation and operational factors affecting service delivery

Formative assessment

A formative assessment was conducted in April 2017 through purposively sampled key informant interviews to gain insight into logistical aspects of the study approach, such as acceptable and appropriate reimbursement amounts, feasibility of using mobile phone communication for follow-up with vAGYW in the cohort, and to pilot test survey questions with the target populations for all components of the study.

Prospective cohort study

Recruitment and baseline interview

To evaluate the effectiveness of DREAMS interventions (Objective #1), a cohort study of vAGYW enrolling in DREAMS was implemented in each DREAMS council (Mbeya CC, Kyela DC, Shinyanga MC, Kahama TC, Ushetu DC, Msalala DC, and Temeke MC). Cohort recruitment occurred from May-August 2017. A minimum of 104 vAGYW per council were recruited and screened by DREAMS program peer educators, and then enrolled into the cohort by a study data collector. Eligibility criteria for the study mirrored on-the-ground recruitment practices of the DREAMS program: out-of-school, sexually active

AGYW aged 15-24 years old[2]. Study eligibility criteria replicated the DREAMS program's recruitment criteria to ensure the prospective cohort was a sub-sample of the program population. The only additional criterion imposed by the cohort study was that participants be unexposed to the DREAMS program. DREAMS program peer educators, paired with data collectors, were responsible for: a) identifying AGYW in the community for enrollment into the program, b) providing a brief introduction to the DREAMS program, and c) eligibility screening of interested AGYW who chose to participate in DREAMS and in the study. AGYW who met the eligibility criteria for the study underwent the informed consent process, providing verbal consent so that no record existed with their name or signature.

Data collectors administered the one-on-one baseline interview immediately following enrollment into the study and prior to exposure to program activities. The tool was an expanded version of the program's Vulnerability Index (VI)[3] (Appendix I). The VI measures vulnerability to HIV through a series of questions about condom use, multiple concurrent sexual partnerships, cross-generational and transactional sex [defined as having sex because of expecting gifts, help paying for things, or help in other ways], pregnancy, contraceptive use, sexual violence, food insecurity, and age at marriage. The study team added additional outcomes of interest to the VI for an expanded tool (VI+) that included measures on condomless transactional sex, commercial sex [receiving money for sex], commercial sex as primary income source, condom use self-efficacy (Shaweno & Tekletsadik, 2013), self-esteem (Rosenberg, 1965) (Westaway, Jordaan, & Tsai, 2015), HIV risk perception (Napper, Fisher, & Reynolds, 2012), and health service utilization. In the absence of the ability to directly measure HIV incidence, the behavior of condomless transactional sex was identified as the closest available proxy for HIV risk in the context of the AGYW target population.[4]

Tablets were used for data collection. Participants were provided a unique identification code that was entered into a tablet for data collection and included on a participant-held ID card. Age and date of birth were also collected. At the end of the baseline interview, the data collector recorded a phone number to reach the participant for monthly follow-up, the best times to call, and the participant's chosen name for the call center data collector to introduce herself. Aside from phone number, no other identifying information was collected. A sim card registered to the study was provided to participants who either

[2] Though the DREAMS program definition for eligibility stipulates different criteria for the 20-24 year old age band (engaging in commercial or transactional sex), we found these criteria were not being implemented by recruitment practices on the ground. Instead, peer educators employed the criteria for 15-19 year olds (out of school and sexually active) globally to all 15-24 year old AGYW being recruited for DREAMS.

[3] Developed by Jhpiego to measure vulnerability of AGYW entering the program (Han, 2017).

[4] Condomless transactional sex as opposed to any transactional sex was the focus for several reasons. While it is widely documented that there is an association between transactional sex and HIV acquisition [(Jewkes, Dunkle, Nduna, & Shai, 2012); (Choudry, Ambresin, Nyakato, & Agardh, 2015)], advocating for women to halt transactional sex entirely may prove infeasible as many women depend on it for economic reasons. Furthermore, substantial research on cultural understandings of transactional sex in Tanzania [(Wamoyi, Wight, Plummer, Mshana, & Ross, 2010); (Wamoyi, Fenwick, Urassa, Zaba, & Stones, 2011); (Deane & Wamoyi, 2015)] suggests transactional sex may be a local sexual norm and has deeper historical roots than just for economic gain. There are several reasons that a participant would want to have sex without a condom that do not necessarily denote vulnerability to HIV. These include having sex with a regular, monogamous partner, or wanting to become pregnant. Therefore, using condomless sex more generally as the main outcome would not be a valid measure of HIV vulnerability. Thus, we measured change in condomless sex *within* transactional encounters to measure if women are able to protect themselves whilst engaging in it.

did not have their own or preferred a separate anonymous study line. Within 24 hours, each participant was called to establish phone contact which confirmed and concluded enrollment into the study cohort.

Minors who reported engaging in sex work, or participants who reported experiencing gender-based violence or living with HIV but were not linked to care were provided with referrals to support services. Upon completion of the baseline interview, peer educators enrolled the participants into the DREAMS program.

Monthly Follow-Ups

Each month, the study call center contacted the participants to record participants' exposures to DREAMS program intervention activities, and self-reported HIV and pregnancy status. Monthly phone calls also helped to maintain contact for the endline survey. Participants received 3,000 Tanzania Shillings (approximately 1.30 USD) for each call center interview in the form of phone credit as reimbursement for their time. Halfway through the 12-month follow-up period, a data collector/field tracer was sent to each region to trace participants who were lost to follow-up or unable to be reached through direct phone contact. The field tracer re-connected those participants with the call center to continue with the monthly phone interviews.

During the last monthly interview, the call center data collector also recorded participants' responses to five security questions (favorite musician, favorite color, number of siblings, mother's initials, and father's tribe if known) so that interviewers were able to confirm the participant's identity for the in-person endline survey.

Endline survey

The endline survey occurred from June-September 2018. After confirming the participant's identity through her ID card and responses to security questions, data collectors administered the endline interview on a tablet. Participants who had lost contact with the study but were still connected to the DREAMS program were linked to data collectors via peer educators. The interview included the same measures as the baseline survey along with additional questions asked regarding exposure to services and their experience with DREAMS program activities. Participants were given 15,000 Tanzania Shillings (approximately 6.50 USD) as reimbursement for their time. A list of participants who had not been linked to services after enrolling into DREAMS and consented to have their information shared was provided to implementers of the DREAMS program in each council so participants could be connected to services.

Cross-sectional household survey

To evaluate the reach and intensity of the DREAMS program in the target communities of vAGYW (Objective #2), a cross-sectional survey was implemented from November 2018 to January 2019 in a representative sample of councils where DREAMS was active. Based on the pre-survey formative assessment and the observed recruitment methods practiced in the DREAMS program, a household-based survey among communities targeted for DREAMS interventions in two councils was administered. Mbeya City Council (CC) and Kyela District Council (DC) were selected to represent each community prevention partner (Henry Jackson Foundation and Sauti/Jhpiego) and both urban and rural communities.

The study team conducted a scoping visit in October 2018 to Mbeya CC and Kyela DC to meet with council officials to understand the current administrative boundaries, and to map prevailing economic

activities, such as fishing and agriculture, to inform the sampling activities. The household sampling design comprised of two stages. First, 13 wards (sub-divisions of councils) in Mbeya CC and 8 in Kyela DC were randomly selected proportionate to their relative female population sizes (National Bureau of Statistics, 2013) to self-weight the sample. For Kyela DC, additional stratification was used to ensure inclusion of the major economic zones (urban mixed economy, border crossing, fishing, and mixed agriculture). Second, interview teams conducted random walks to consecutive households starting from a central point within the ward (Mbeya CC: a ward council office, health facility, school, or other landmark; Kyela DC: a randomly selected village or cluster of houses identified from Google Earth satellite images) and moving in different directions approaching each consecutive household to screen for eligible AGYW. The sample size for each randomly selected ward was 30 DREAMS-eligible AGYW to achieve a total sample size of 624 (397 in Mbeya CC and 227 in Kyela DC), powered to measure use of DREAMS programs within a ±3.5% margin of error over a wide range of possible exposure levels. The ward-level sample size (n=30) was inflated (n=40) to account for non-response and ineligible respondents to ensure the minimum sample size was met (Appendix II).

Data collection teams screened each household for vAGYW who met the following criteria: (1) between the ages of 15-24 years and residing in the council for a period of at least six months since 2016, and (2) met the DREAMS eligibility criteria (15-19 years: out of school and sexually active; 20-24 years: engaging in transactional or commercial sex). All eligible vAGYW in the household were invited to participate. Participants who were deemed ineligible for DREAMS by the study team but screened positive for DREAMS program exposure were invited to participate in an abbreviated survey to confirm their participation in the DREAMS program[5] and to determine if they were eligible at the time of recruitment (in which case she was invited to partake in the full survey). Three return attempts to each household were made at different times of day to include identified eligible vAGYW before replacement households were selected by continuing the random walk.

Interviews were conducted in private, in Kiswahili, by a single data collector. Participants provided verbal, informed consent. The interview, lasting between 30-90 minutes, comprised the expanded vulnerability index (VI+), as well as whether participants had heard of DREAMS, had been approached by DREAMS peer educators or other recruiters, elected to participate, or sought out DREAMS services on their own. Additionally, participants were asked about facilitators and barriers to their engagement in the program. Participants were reimbursed 15,000 Tanzania Shillings (approximately 6.50 USD) for their time. Minors who reported engaging in sex work, or participants who reported experiencing gender-based violence or disclosed they were living with HIV but were not in care, were referred for support services.

Qualitative study

A qualitative study among DREAMS participants and community members provided contextual information (Objective #3) to inform the results of the cohort and household surveys. Themes investigated included:

[5] Due to multiple possible entry points into DREAMS with no consistent branding of the program across councils, confirming whether an AGYW participated in DREAMS required several sequential questions probing about each activity.

- ❖ The prevalent attitudes about the value of AGYW among DREAMS participants and within communities;
- ❖ AGYW participants' and communities' perceptions of DREAMS and quality of services; and
- ❖ The perceptions of DREAMS staff and implementers on whether the DREAMS interventions were implemented as expected.

Mbeya CC and Kyela DC were selected to represent each community prevention partner (Henry Jackson Foundation and Sauti) and both urban and rural communities. Data collection occurred in February 2019. Persons included in the qualitative study were DREAMS participants, health facility providers at DREAMS facilities, DREAMS program implementers, potential sexual partners of vAGYW, parents, caregivers and employers of vAGYW, and local government authorities. Identification and selection of participants occurred as follows:

- DREAMS vAGYW: vAGYW qualitative respondents were recruited from the DREAMS study cohort. Cohort participants were first stratified by those who reported being linked to DREAMS services during the endline survey, and then ten who were linked to services from each council were selected using a random number generator. Four from each council were purposively selected to include a range of perspectives (participants with both positive and negative experiences in DREAMS, participants who had and had not experienced violence, and participants who did and did not report incidents of GBV) for participation in key informant interviews (n=8).
- DREAMS program implementers were purposefully selected from each DREAMS CSO (n=3) by the study team according to their roles and availability to participate in key informant interviews.

All other qualitative participants were identified and recruited by local government authorities who were knowledgeable about the communities, using the following criteria:

- Health care providers: To represent both larger and smaller DREAMS facilities, the study team purposively selected health clinics in each council to include a) a hospital or health center, and b) a dispensary. For each council, two health care providers working in departments frequented by AGYW (reproductive and child health services, family planning, and antenatal care), were invited to participate in key informant interviews (n=4).
- Potential sexual partners of AGYW: Local officials (i.e., Ward Executive Officers) identified and recruited men (n=4) with characteristics of those common in relationships with vAGYW (e.g. chips seller, teacher, boda boda driver) based on the findings of the male partner characterization activity, which was conducted by implementing partners with vAGYW DREAMS participants.
- Parents, caregivers, employers of AGYW (e.g., informal food seller or "mama ntilie"), and local government authorities: Participants were identified by Ward Executive Officers for focus group discussions (target number of 8-10 participants in each council).

Verbal informed consent was obtained from all participants before commencing the interview or focus group discussion. Key informant interviews (KIIs) were conducted by a two-person data collection team:

one person acted as the primary interviewer and the other took notes. Focus group discussions (FGDs) were conducted by a four-person team: one primary and secondary facilitator, and two note takers. Semi-structured guides were used in both KIIs and FGDs (Appendices III and IV), and all activities were conducted in Kiswahili. Tape recorders were employed during FGDs only, and only if FGD participants consented to being recorded. Data collection teams expanded on their field notes at the completion of each KII and FGD to document observations, nonverbal responses, and verbatim participant statements, and held daily debriefing meetings to identify new information and outstanding questions for further investigation.

Analysis

Cohort study

Data were analyzed using Stata v.14 (College Station, TX) and the analysis followed a cascade approach. First, in keeping with the DREAMS ecological model and objective of promoting community-level improvements, we used conditional logistic regression to test for significant changes in all outcomes of interest between baseline and endline at a significance level of 95%. This analysis included the cohort as a whole: all participants who completed the endline survey regardless of direct exposure to DREAMS interventions (i.e. evaluating whether DREAMS programs affected persons in the target communities apart from those who directly participated). Second, outcomes of interest (i.e. condom use, reporting violence) were grouped with exposures to related DREAMS activities (i.e. condom-use education and provision, participating in gender-based violence programming), and tested for associations using conditional logistic regression at a significance level of 95% to assess which interventions (or combination of interventions) were most strongly associated with reducing vulnerability in individuals before versus after being exposed to the DREAMS program. Finally, significant results were stratified by participants who met the DREAMS program's age-specific eligibility criteria (i.e. aged 15-19 years: out of school and sexually active; 20-24 years: engaging in transactional or commercial sex) and those who did not.

Cross-sectional household survey

Data were analyzed using Stata v.14 (College Station, TX) to determine what proportion of vAGYW respondents in targeted DREAMS areas was aware of, approached by, and reached by at least one DREAMS intervention. The frequencies and proportions of DREAMS-eligible vAGYW who were reached by the program were stratified by socioeconomic characteristics and vulnerability index score (scoring methodology in Appendix V). The chi-squared test was used to determine whether the household survey respondents reported significantly different levels of vulnerability from those recruited by the DREAMS program and enrolled into the study cohort.

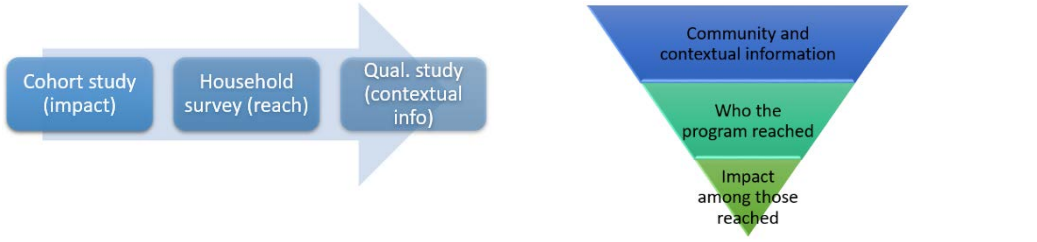
Qualitative Study

Transcripts were entered into Microsoft Word and translated to English. Analysis was guided by grounded theory. One analyst coded the data using the pre-conceived themes specified in the interview guide as analytical categories and organized them in a data display matrix in MS Excel that was reviewed by a second analyst. Other categories that emerged from the data were included in the analysis. Finally, themes uniting the categories were identified and summarized.

Results

The methods section discusses the study components in the chronological order in which they were implemented; however, the results are presented beginning with the broadest lens (community perspective and program experience) followed by the household survey (documenting who DREAMS reached from the wider community), and finally zooming in to results of the cohort study (the impact of DREAMS among those it reached) (Figure 4).

Figure 4: Chronology of the study vs. broad-to-narrow perspective of results



Qualitative study participants

We conducted 19 KIIs (8 vAGYW, 4 potential sexual partners, 4 health care providers, and 3 DREAMS program implementers) and 2 FGDs among community members (1 in each council, comprised of community leaders, parents and caregivers, teachers, and employers of AGYW). Qualitative study participants included a mixture of ages (ranging from 16 to 59 years), genders (24 women and 14 men), and individuals with varying and overlapping roles in the community (4 parents, 4 teachers, 7 community leaders, 3 farmers, 2 informal/self-employed workers, 3 employers of AGYW, 3 DREAMS program implementers, 4 health care providers, and 8 DREAMS vAGYW participants).

Cross-sectional survey participants

We surveyed 771 DREAMS-eligible vAGYW who were identified from 4022 households visited in Mbeya CC and Kyela DC. Ward selection is described on page 26 with the results of the cross-sectional household survey.

Cohort study participants

We recruited and interviewed 836 respondents, 778 (93%) of whom completed enrollment into the cohort study. Of those, 598 (77%) were determined to be within DREAMS age eligibility criteria (15-24 years), unexposed to DREAMS at baseline, and completed the endline interview (70 were lost to follow-up, 59 moved, 49 dropped, and 2 died). Of the 598 who completed the endline interview, 422 (71%) reported that they had been linked to a DREAMS group and started receiving DREAMS services.

Valuing of AGYW, perceptions of DREAMS, and program implementation *(Objective #3)*

Prevailing attitudes about opportunities for AGYW in society

Community members in the focus-group discussions agreed that boys and girls deserve the same opportunities for education, leisure, sports, and work, though this attitude did not extend to physical labor, as it was generally held that women are not suited for physical labor. There was no consensus on whether prevailing gendered roles were acceptable or not. Some community members cited that parents discriminate at home, requiring a girl to do chores while the boy gets to play, and reminded the group that "Equality starts in the family." Conversely, another community member explained that "girls should know how to cook, unlike men [for whom] it is not necessary. Women in our community should

never feed the livestock; this is men's work along with farming." There was a general consensus that there is equality in some areas of society, such as education and sports, but not everywhere, such as work and farming.

> *[AGYW] anatumika kama chambo cha kuleta mahitaji.*
>
> *She is used like bait for bringing [home the family's] needs.*
>
> -Potential sexual partner

Community members described AGYW as being in a precarious place, though there was variation in how AGYWs' agency is perceived in the health and societal risks that they face: some cited poverty as the major driver, and explained that poor families put AGYW at risk, as they can be used as the breadwinner of the family. A potential sexual partner of AGYW said: "She is used like bait for bringing [home the family's] needs." Other community members expressed that AGYW have a higher desire for money, alcohol, or possessions such as smart phones, which drive them to go out with men to get what they want. The discourse was often framed around temptation and seduction: "When a lady has something [work] to do, she will stay away from seduction." Sex was frequently painted in a dangerous light, something for parents to teach their children to fear, especially in the context of HIV, and for some, it was considered a sin for parents to teach children about sex. There were simultaneous concerns expressed about a lack of parenting and parental support to educate children properly, which varied depending on the individual (and included condom use and family planning for some). The effects of smart phones were frequently attributed to changes in young people's behavior, and cited as a danger to youth because they expose them to sexual information, pornography and globalization. Unwanted pregnancy was cited most as the challenge AGYW face. Feeling undervalued because of becoming pregnant was mentioned by multiple AGYW key informants.

Community members proffered differing arguments for and against the position of prioritizing girls' education in a resource-constrained environment, and those in favor were not necessarily positive or empowerment-focused for AGYW:

In favor of prioritizing girls' education	**Against prioritizing girls' education**
"School is safer, there is security which could protect her from HIV." "Prioritize the girl because the boy can always find something to do, he will fight for himself, but the girl will always go for the shortcut, including sex work."	"The risk of teen pregnancy could mean that the money is wasted on choosing to educate a girl over a boy. If she is polite, she can go. If she is naughty, she shouldn't be prioritized for going to school."

Transactional sex and cross-generational relationships

The majority of community members reacted negatively to the idea of transactional sex: "People should do sex for fun and not for payments; transactional sex results in the spread of disease because that kind of woman has a lot of men. The female body will have no value at all." An alternative opinion emerged after the initial negative responses: "There is a good side about this, when someone gets what she expected, e.g. school fees, house rent, etc." The belief that transactional sex relationships are ubiquitous was common: "There are very few men who don't participate in these kind of relationships, maybe 1 out of 10." Community members and potential sexual partners agreed that transactional relationships used to be initiated exclusively by men, and while they mostly still are, nowadays anyone can start them. When asked about what type of women are (a) available for and (b) off limits for engaging in transactional sex, potential sexual partners individually generated the following collective criteria:

Women who are perceived as approachable for transactional sex	Women who are perceived as "unavailable" for transactional sex
"Women who have nothing to do workwise" "Girls who are in an age of aspiring for big things they can't afford like smart phones" "Starting from 15 years old" "Especially those with low intelligence (easily seduced)" "Those who show they may agree if you put more effort when you talk to them" "Also those sugar mamas" "Those who drink alcohol" "FSW"	"Those who have work and are busy with finding money" "Women who have self-determination" "Those who can stand on their own" "Those who are serious with school, if you talk to them they will cut you short" "Those with permanent partners" "True women who are in love for real" "Positive, dignified women, self-sufficient" "Those busy with their work and can afford their own expenses"

There was a lack of consensus around various risks that AGYW engage in, such as cross-generational relationships (i.e., with a partner ten years or more her senior). The majority of this discourse was also framed around sexual desire, either in terms of satisfying the man ("marrying a younger girl is good so she will be able to stand the sex when a man is still in need") or for the AGYW ("the younger girl may get bored as the husband ages, and that causes her to cheat and bring diseases"). Most community members did not object to cross-generational relationships, though one raised the concern of uneven power dynamics, and explained she will not be able to make decisions in this type of relationship.

Women's power to make decisions

On the topic of decision making, community members and potential sexual partners linked women's perceived value to their roles as mothers. It was commonly felt that women can make small decisions, but the head of the household should have the final say. In the absence of a man as head of household, then she may have the last word. "Every group should have a leader. For example a hen leads its chicks, so it is a father who is supposed to have decision capacity as a leader." This belief was countered by some who said a woman should be able to make decisions even in the presence of a man: "In a family when a father dies, a family always continues well, but when a woman dies, things change."

Gender-based violence (GBV)

While there was no dispute that it occurs, there was variance in the perceived acceptability of physical punishment for a female partner by her male partner or spouse. One male participant, whose occupation was farming, said "Yes. The system we have allows a man to beat his partner." Conversely, another male participant, whose occupation was teaching, said "Punishment reduces love, brings hatred and can cause frustration and even separation. If it is okay to punish the wife that means it is okay for me to be punished as well when I go wrong." Focus group participants linked beating to more uneducated, rural communities; to when a man drinks; or to when a woman does not listen. A community leader explained their experience with responding to cases of domestic violence: "At the moment the level of fighting is based on the season. During harvest season [reaping crops], each day I get three to four cases, but when it is farming season [cultivating crops] the fighting cases are very low. People love each other during farming season." Being beaten was raised by one-fourth of qualitative interviews with AGYW key informants as reasons for feeling undervalued.

Condoms and family planning

Potential sexual partners of AGYW all reported that they discuss condom use with their male peers, especially when one of them contracts an STI, or when they talk about unwanted pregnancy for those who are engaging in relationships with married people or students. These respondents said the type of relationship determines whether or not a condom will be used, namely, they would not use a condom with long-term partners. Alcohol was also considered a deterrent to condom use. They expressed concerns that using a condom after the first, second, and third encounter may make a sexual partner question whether he trusts her. Similarly, they reported using condoms with partners who they do not trust, for example those with multiple partners. They expressed the perception that sex workers are the ones who use condoms. It was stated that a woman should be able to suggest using a condom, though not married women. They also acknowledged that age difference makes it difficult for a woman to have input on condom use.

AGYW key informants said that if an AGYW "recognizes her value," she can recommend condom use to a male partner. "Some women are confident; when they arrive at the guest house, she asks 'Have you carried the condom?' If he says 'No,' she says 'I have them, we can use mine, it helps in STDs and HIV prevention.'"

In general, potential sexual partners to AGYW believed that marital status was the biggest factor in whether a woman should be able to use family planning: "There is no importance of using family planning; if she agreed to get married she should be ready to have children." Similarly, "Adolescent girls should not use family planning, as it is like you are teaching them to go and practice sex without getting pregnant." One potential sexual partner differed: "She has the right to decide on when to have children and at what range."

For health facility providers, age appropriateness for family planning services was left up to individual opinion, and some providers may turn away an AGYW they deem too young for long-acting reversible contraceptives, instead recommending condoms. One provider said that 20 years is the right age to begin learning about family planning, and another cited misinformation: "If you give a 14 year-old girl a contraceptive injection, in 10 years she may not be able to get pregnant at all." These provider attitudes are particularly poignant when contrasted with AGYW key informants' responses that early pregnancies are one of the most prominent reasons for feeling undervalued. Many AGYW key informants ardently expressed "[family planning] is our right."

> *[Uzazi wa mpango] ni haki yetu.*
>
> *[Family planning is our right]*
>
> -AGYW key informant

Influences of community norms and evolving beliefs

Community members attributed changes in gender roles and belief systems to what they observe in social media and the "living models in the community", such as women becoming bajaj drivers and parliamentarians. Education, NGOs, community meetings, technology and globalization, the Beijing Conference, and former Tanzanian President Kikwete appointing female senior government officials were also cited as influences on evolving gender beliefs. The increased interactions between tribes also afforded the exchange of new customs. A potential AGYW sexual partner said that observing female peers doing well in school and having a female boss who did a good job influenced him to see young women differently. Another spoke of sports: "Back then I thought a girl's job was washing dishes but now I realize that sport is the way of refreshing the mind and so everyone needs it."

The vast majority of community members and potential AGYW sexual partners said HIV prevention is the broader community's responsibility, though one said "it's their [AGYW's] responsibility because it's up to them to decide to use condoms or not." Another related it to age: "if she's over 20, it's her responsibility." Community members said the best way to help AGYW is for parents to be open to telling them the truth about HIV, and empowering them through education and economic entrepreneurship.

> *We should analyze why are they lost, not necessarily to be done by a CSO but starting with a parent…Do not wait for your neighbor to tell you about your child's behaviors. Do not wear the father's face [role] all the time.*
>
> -Male parent/caregiver (community member)

Experiences in the DREAMS program

Reported satisfaction with the DREAMS program was very high, among both AGYW key informants and DREAMS study cohort participants, particularly among those linked to services.

Out of the 422 cohort participants who were linked to a DREAMS group:

- 98% reported feeling good (i.e., marking the 😊 icon) or really good (😄) about participating in the program
- 95% said they benefitted from participating in the program
- 92% would recommend DREAMS to their friends
- 86% said they felt more empowered/important/valued than before they joined DREAMS, and an additional 11% said they felt somewhat more empowered
- 78% said they felt the community had changed (responded "yes" or "somewhat") to become a more friendly environment for girls and young women over the past two years. 65% of all cohort participants agreed with this statement, regardless of linkage (or not) to DREAMS services.

> *They were teaching us well, calling us by our names when asking questions; this feels so good even if you came from home unhappy, you go back happy.*
>
> *They give us good services and treat us like their own sisters.*
>
> -AGYW key informants

Education provided through DREAMS groups appears to be essential for delivering sexual and reproductive health education: One AGYW key informant stated: "For those not in the [DREAMS] groups, it's very hard to learn about family planning and HIV prevention until they get pregnant and go to the clinic."

Similarly, health facility providers expressed the opinion that DREAMS training had been critical for their provision of AFHS: "Back then we used to be surprised whenever you see a young pregnant student… I found a board at RCHS saying 'HUDUMA RAFIKI KWA VIJANA' [adolescent-friendly health services], I didn't understand the meaning then… after DREAMS training my view changed."

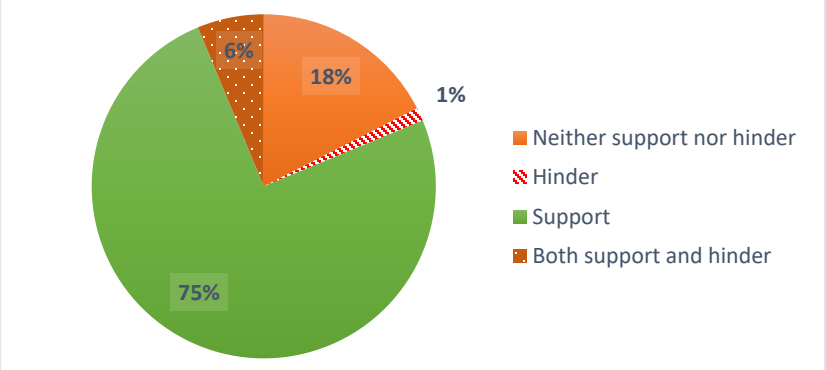
When asked what DREAMS services were most beneficial, AGYW key informants mentioned free HIV testing services, condom use education, family planning, entrepreneurship, and GBV education. They described their experiences with these services:

HIV Testing: *Has made me confident even when someone asks me to test I do without fear due to how I live with my husband.*
HIV education: *It has taught me that even if I am found with HIV it is not the end of the world, what is needed is starting the treatment as early as possible and I will just be as normal as other people who aren't infected and you can't even differentiate the two. Even if I find someone who is sick I can help her, if she happens to have sores I will wear the gloves… but I will let her know that I am wearing gloves to protect myself, it's not like I don't love you, I do.*
Condom education: *Has taught me that it protects you from diseases especially when you don't have a permanent partner. Before, I knew a man should wear a condom by himself but later I was taught how to put it on him properly since others don't wear them or they can pierce them intentionally.*
Family planning: *Behavior change has taught me and helped me a lot psychologically. When I delivered my first child I stayed only a year and got another but this BCC (behavior change communications) helped me on using family planning.*
GBV: *I have learned to know my values, to be valued by my family. Sexual violence education has helped me, particularly in marriage, if there is an act that you do not want or have been forced to have anal sex.*
Entrepreneurship: *Has made me brave, I used to be shy, now I don't feel shy anymore. It has helped me to help my peers not to feel shy as well. Entrepreneurship has been the biggest help, after borrowing money from the group I opened a small market (genge), later I did poultry farming, I started with 5 chickens and now I have 40. I also learned about salon works, I can plait hair and do hair styles. This has made me be valued.*

Community members' feelings about the DREAMS program were very positive and the majority who knew the program attributed many positive changes to DREAMS. They believed DREAMS taught AGYW skills and how to protect themselves from HIV, built self-awareness and confidence, and reduced HIV stigma, childhood and unplanned pregnancies, GBV, and unprotected sex. Exposure to sensitive issues relating to sexuality was the only negative thing mentioned by community members: "it has become a way of getting into bad things...after having education they went to try and see what happens. As a result they get pregnant and HIV."

When asked whether their families and communities supported or hindered their participation in DREAMS, 75% of DREAMS participants in the household survey reported feeling supported, and 7% said they were hindered in some way (Figure 5).

Figure 5: Familial and community influencers in DREAMS participation



Successes cited by program implementers

DREAMS program implementers (CSO staff) spoke enthusiastically about the changes they were observing in DREAMS participants' lives as well as in broader DREAMS communities. Though many DREAMS entrepreneur programs included batik making, hair styling, and other professions traditionally prioritized for women, the inclusion of more diverse professional-development opportunities, such as electricians and drivers, showed communities that opportunities for AGYW do not need to be limited by traditional gender roles. According to one program implementer, "In the electric course we took 11 girls and 9 of them passed; and the drivers we took 5, 4 of them passed."

> *People's lives have changed. There are those who have had electrical training now, they are good technicians, and before their lives depended on men. At the beginning people were doubting if a girl can install power efficiently but after seeing it done from one house to another, faith has been built up…and the community has begun to change the attitude and believe women can.*
>
> -DREAMS program implementer

One program implementer explained that they successfully engaged municipal health service providers so that if a DREAMS participant shows her DREAMS (Shujaa) card, she can receive HIV testing and reproductive health services for free.

Programmatic and implementation challenges cited by DREAMS participants and program implementers

There were some negative experiences reported by DREAMS participants, largely related to factors of program implementation. An AGYW key informant said "At the beginning the teacher [peer educator] we had was so good, but later she didn't come to the group meetings anymore."

Similarly, 4% of cohort study participants who were linked to groups reported that their PE left the group in the hands of someone else to run it "every or nearly every time" and an additional 14% said this happened "a few times." While 86% of those linked to groups reported meeting every week or month, 14% said their groups met every two months or less often.

During the endline survey, 194 (32%) of cohort participants knew of an AGYW who dropped out of DREAMS, often citing insufficient time or money to participate. Traveling, distance to reach the meetings, husbands prohibiting participation, and having different expectations of the DREAMS program or not perceiving any benefits from participation were other reasons believed to cause their peers to leave the program. Five cohort respondents (<1%) either knew a DREAMS participant who had engaged in a romantic or sexual relationship with DREAMS staff or had heard about the existence of such a relationship.

DREAMS program implementers discussed a number of challenges in implementing the program, primarily in two areas:

Meeting participant/community expectations and needs:

- Lack of financial capital to provide for the girls in the economic-strengthening interventions. Community prevention partners perceived that they were being compared to other organizations who do provide capital to the AGYW, saying that once the AGYW get "self-awareness" [realizing no capital is provided] they "chase the groups away."
- High expectations from participants that could not be delivered, such as tangible financial aid, money (cash transfer), and technical trainings, "But the program did not focus on these things," one program implementer stated.

- Rolling out certain interventions (i.e. cash transfer) in some wards and not others resulted in negative feelings from communities, claiming the CSOs were unfair, or that they were discriminating.
- Language barriers with some vAGYW (who did not speak Swahili)

Meeting implementation expectations (PEFPAR targets, funding timelines, program delivery)

- As volunteers, peer educators had a high number of DREAMS participants to manage, which was difficult to balance with their other responsibilities outside of DREAMS.
- Funding delays presented a challenge for morale, followed by stress and hectic schedules to implement when funding finally became available. For example:
    - "When the money comes late, we continue with small activities; that is, we have to test HIV in remote wards but for the lack of fuel money we end up changing the schedule and we test the nearby wards."
    - "Money is always supposed to come in October but it does not come until December. At the same time, all the quarterly activities have to be done [to continue operations and programming and to meet targets]."
    - "We still work hard regardless of the hardship despite the fact that we are employed [and not getting paid] but we work like volunteers so the work goes on even when the money does not come."
- CSOs (implementing organizations) experienced other financial delays caused by internal processes in finalizing reconciliations
- Targets for identifying HIV-infected individuals through HIV testing services were reportedly hard to reach. Results from the cohort study corroborated this qualitative finding: out of the 75 DREAMS cohort participants who reported testing more than the recommended frequency of every 3 months, 18 (24%) cited pressure from providers or peer educators as their reason for undergoing such frequent HIV tests.

Health facility providers at smaller facilities reported challenges with maintaining DREAMS/AFHS programming in the facility when the trained health care worker(s) was absent from work or relocated to another post.

Implementation recommendations from DREAMS program implementers

DREAMS program implementers provided the following recommendations:

- Community involvement "should be bottom-up design and not top-down; if people were involved [in planning] they would explain their core needs and donors would see what they can do, even if [donors] wouldn't deliver 100%."
- Set more realistic program targets "in line with the situation on the ground…Those setting the targets should visit what is happening on the ground more."
- Establish DREAMS graduation criteria: "So far no one graduates and we are still enrolling; that results in over-flooding of participants."
- Allocate budget lines for capital or start-up materials: "The aim of the project was to reduce vulnerability for girls and the major issue that brings [vulnerability] is economic, and we have invested very low resources on economy [providing financial capital for economic strengthening

activities]." They cited the capital or "start-up kits" provided by other DREAMS implementing partners upon completion of vocational training, however not all DREAMS participants (or implementers) have access to these.

Health facility provider key informants made recommendations on improving service delivery, increasing access to family planning services among AGYW, as well as making AFHS more visible and improving reach:

- Train more staff and plan refresher trainings for DREAMS/AFHS programming; all facilities should receive some DREAMS training; provide closer supportive supervision and allowances for working on a Saturday.
- Ensure availability of tools, equipment, and supplies (e.g., HIV test kits and condoms).
- Identify specific service providers for DREAMS/AGYW, and provide some symbol or uniform to identify those service providers.
- Family planning services should be provided at no cost to AGYW, with a focus on education all around, such as playing a DVD with reproductive education while waiting for services.
- AGYW should be prioritized when seeking family planning services, especially when seeking services with a partner or husband.
- Implement a specific time for AGYW to access family planning to reduce stigma and long wait times.
- Advertise adolescent-friendly health services more widely (e.g., through fliers, on the radio, at church, in village meetings, and with billboards) to improve reach.

What DREAMS interventions can be rolled into ongoing community or health facility programming?

DREAMS program implementers felt that DREAMS groups (the main venue where DREAMS group-centered activities are implemented) and GBV education were the most feasible elements to continue, even after specific funding for DREAMS may stop:

- "We have induced group ownership to the participants themselves…We are in the process of helping [savings and lending groups] with government registration and looking for loans...These groups carry a large part of DREAMS program activities and so DREAMS will last, however the task of establishing new groups will be difficult. Perhaps [it can be done] by using DREAMS ambassadors [participants who have been identified as role models and are used as examples of success from DREAMS activities]."
- "GBV education is also widely understood and it does not need money to continue to remain in the society."

One DREAMS program implementer expressed great concern about the future of family planning initiatives, citing programmatic budget reductions and perceived lack of government support for family planning interventions. "Family planning is a very important intervention, but now we have a low budget in a way that we can't afford to bring the expert to teach the girls; instead the peer educators are taught and they go teach the girls. Removal of family planning experts [due to low budget] has

If the government continues like this, family planning programs will die.
-DREAMS program implementer

reduced the number of girls who seek that service because the peer educators can't train [the girls] as well as experts, so the girls lose interest."

Community perceptions of unintended consequences of DREAMS

In both councils, DREAMS program implementers voiced their concerns about a growing perception in communities that GBV education is harming relationship and marriage dynamics. One implementer said, "Male partners of AGYW are complaining that due to GBV education, the girls don't want to be touched at all, I mean they are even telling their partners the type of GBV he is committing (emotional, physical, etc.) and this is depriving them the freedom to punish even when they are wrong."

> *There has been a growth of fear in the community now that we are eliminating the patriarchal system and empowering the female system [mfumo wa kike].*
>
> -DREAMS program implementer

Another implementer shared a particular DREAMS participant's experience: "There was a girl in a relationship and she didn't know that she was being abused. After our training and services, she realized she was being abused for a very long time, having her income stolen by her husband so that he could drink, and being beaten when she asked about it. The girl brought her partner but he was not ready to change, and she was not ready to continue tolerating [the abuse] so she decided to leave him and the marriage was broken. So we see [the marriage] has indeed broken as a result of the intervention and the girl was able to leave the violence she was experiencing and realize her rights."

While these results undoubtedly highlight positive change (i.e. evolving norms about the acceptability of GBV and AGYW's threshold to tolerate it), these anecdotes were shared by program implementers with concern in the context of discussing unintended consequences of the program (i.e. the end of a marriage and an uncertain future for this AGYW) and community members' fears that DREAMS is driving this cultural shift. Transforming gender norms and cultural attitudes about GBV without alienating communities and partners, and increasing women's vulnerability, is a difficult balance; this topic is explored further in the discussion section.

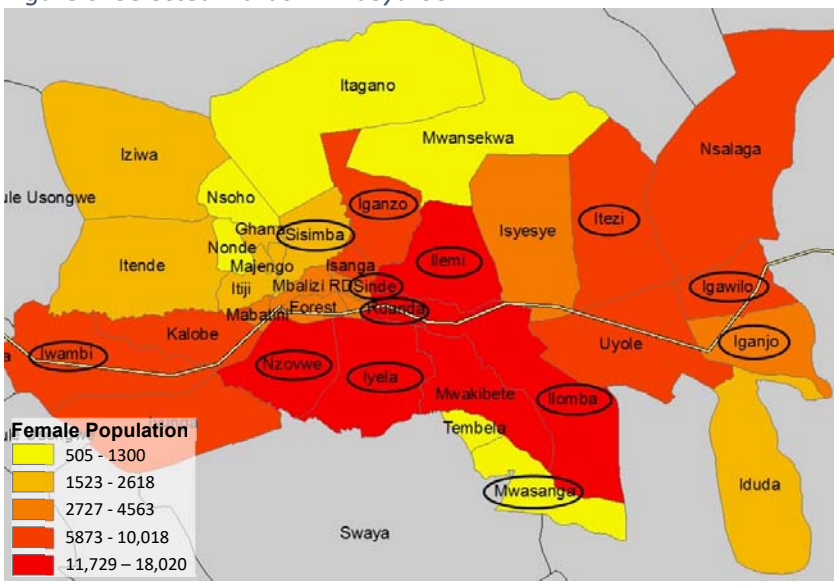
Reach of the DREAMS program among vAGYW in select councils *(Objective #2)*

The household survey, which assessed the reach of the DREAMS program, was conducted in two councils, Mbeya CC and Kyela DC.

The following wards were randomly sampled, proportionate to female population size (Census 2012), for inclusion in the household survey in Mbeya CC (Figure 6):

Iganjo	Iganzo
Igawilo	Ilemi
Ilomba	Itezi
Iwambi	Iyela
Mwasanga	Nzovwe
Ruanda	Sinde
Sisimba	

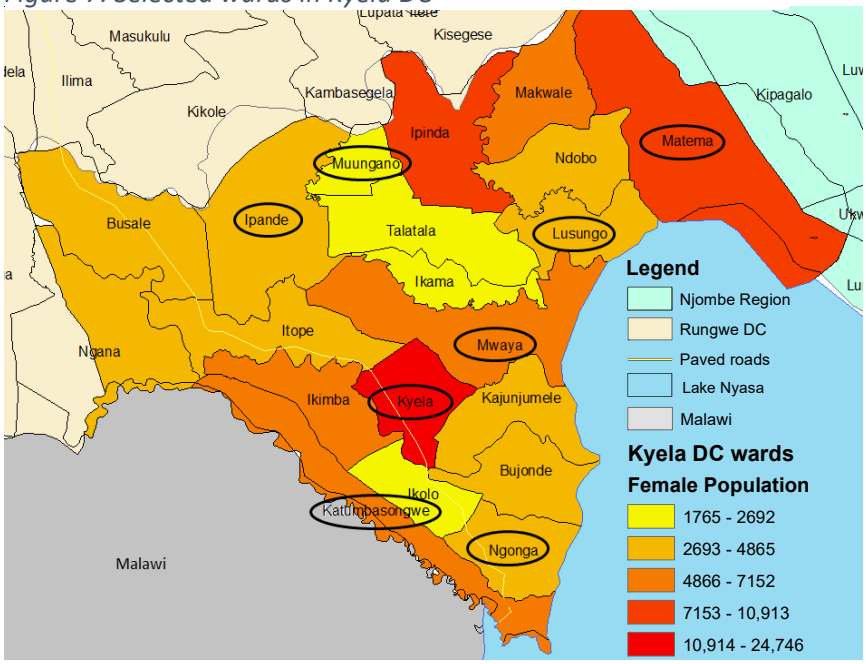
Figure 6: Selected wards in Mbeya CC



In Kyela DC, the following wards were selected through random sampling based on relative female population size, stratified by economic zones to account for heterogeneous economic activities (Figure 7).

Ipande	Matema
Kyela (town)	Muungano
Katumbasongwe	Mwaya
Lusungo	Ngonga

Figure 7: Selected wards in Kyela DC



Overall, the household survey found low levels of DREAMS reach in the population of DREAMS-eligible AGYW. Out of 771 DREAMS-eligible respondents identified in 4022 households visited, 209 (27%) were reached by the program (either approached by a peer educator for recruitment into DREAMS, or sought out services at DREAMS implementation sites, i.e. CSO office, on their own) (Figure 8). More than one

hundred non-eligible AGYW (did not meet the program's age-specific eligibility criteria: for 15-19 year olds: out of school and sexually active, and for 20-24 year olds: engaging in transactional or commercial sex) had been recruited into DREAMS (n=121)[6]. Twenty-one percent of the DREAMS-eligible AGYW population participated (engaged in services) in DREAMS activities. While some AGYW sought out services on their own (n=10, 1%), 26% of the broader vAGYW eligible population were directly approached by a DREAMS peer educator, and of those approached, 75% accepted. The most common reasons for not joining the program included not having time to participate or being busy with other activities/responsibilities, traveling frequently, not having money to contribute to group savings and lending activities (which is expected in order to participate), being forbidden from participation by a husband, partner, or parent (or assuming they would not be permitted), and not understanding the program.

Out of the 160 AGYW who participated in DREAMS interventions, 60% reported receiving the economic strengthening intervention (WORTH+), 51% reported receiving sexual and behavior change communication (SBCC), and 38% reported receiving both. This translates to 12%, 11%, and 8%, respectively, of the overall population of DREAMS-eligible vAGYW in the target areas.

Figure 8: Reach and participation in the DREAMS program among DREAMS-eligible AGYW

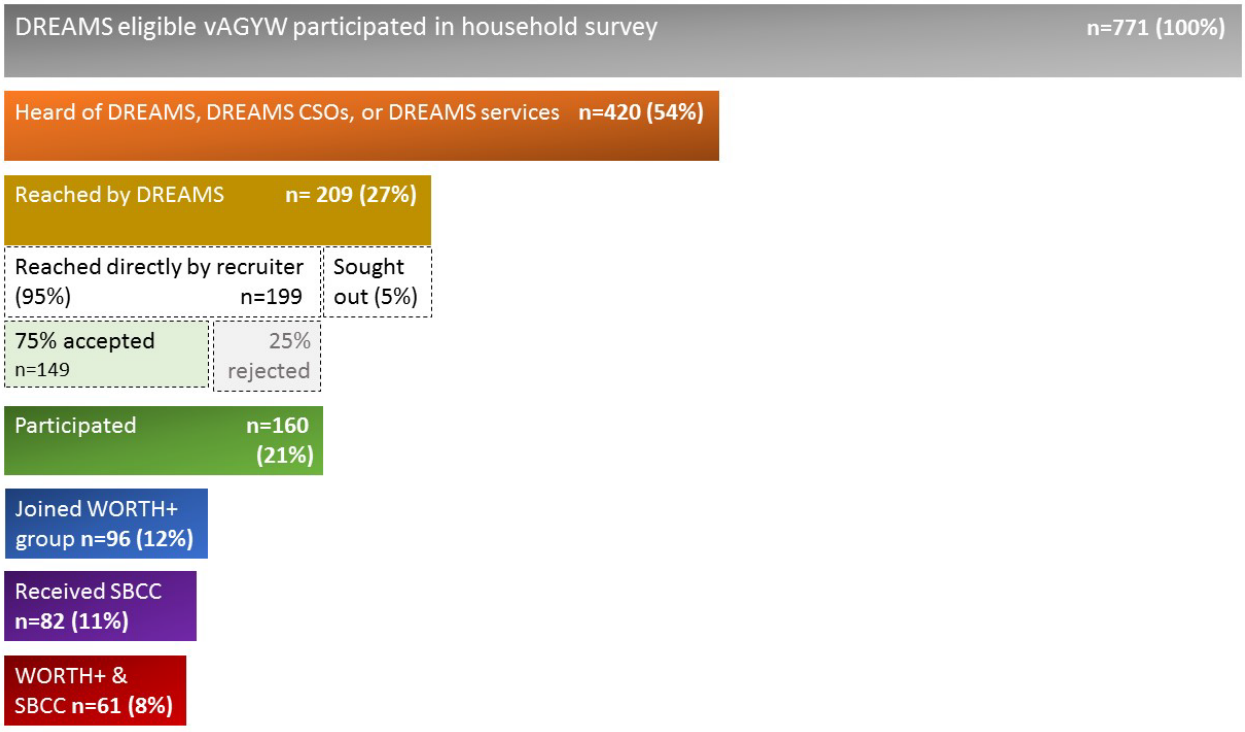


Table 2 shows the sociodemographic characteristics of those who reported being approached directly by DREAMS peer educators (n=199) and participating in DREAMS (n=160)[7]. AGYW who were not currently married or co-habitating (62%), but had married at older ages (i.e., 18 years or older) among those who did marry (71%), with sexual debut under 18 years (72%), and a history of pregnancy (72%) at older ages (18 years or older) (58%) were recruited into the DREAMS program more than their counterparts.

[6] Proportion not available because the survey did not aim to reach a representative sample of ineligible AGYW.
[7] Transactional sex was one of the eligibility criteria for 20-24 year olds to participate in the household survey.

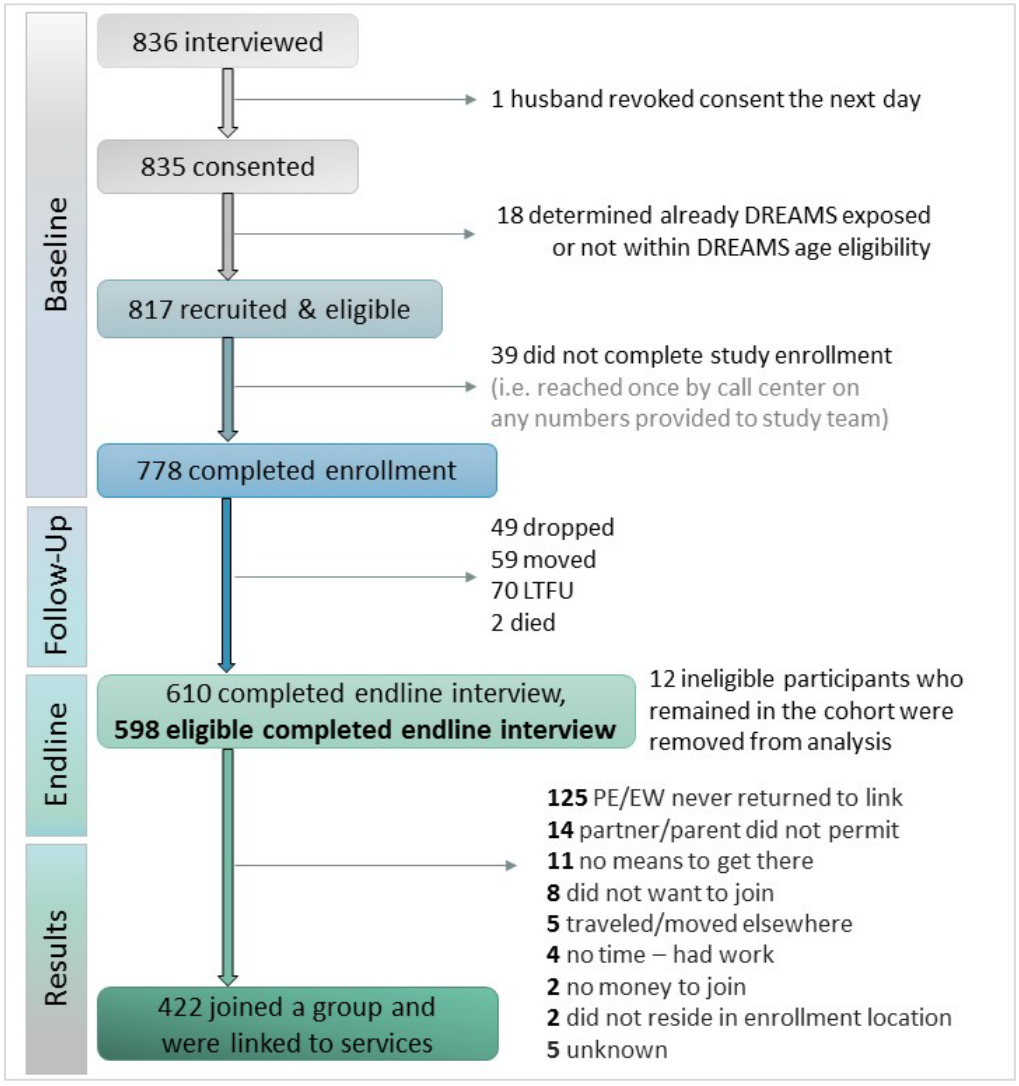
Table 2: Sociodemographic characteristics by reach (directly by peer educator) and participation

	Approached by program		Participated in DREAMS	
	Num.	%	Num.	%
Age				
15-19	106	53%	80	50%
20-24	93	47%	80	50%
Total	199	100%	160	100%
Ever Married/Co-habitated				
Yes	104	52%	90	56%
No	95	48%	70	44%
Total	199	100%	160	100%
Currently Married/Co-habitating				
Yes	76	38%	67	42%
No	123	62%	93	58%
Total	199	100%	160	100%
Age Married				
Under 18	30	29%	24	27%
18 and Older	74	71%	66	73%
Total	104	100%	90	100%
	Median=19; Range:14-23		Median=18; Range:14-23	
Education				
Primary or Below	105	53%	87	54%
More than Primary	94	47%	73	46%
Total	199	100%	160	100%
Age at Sexual Debut				
Under 18	143	72%	113	71%
18 and Older	56	28%	47	29%
Total	199	100%	160	100%
	Median=17; Range:12-22		Median=17; Range:12-24	
Ever Pregnant				
Yes	144	72%	122	76%
No	55	28%	38	24%
Total	199	100%	160	100%
Age at First Pregnancy				
Under 18	61	42%	52	43%
18 and Older	83	58%	70	57%
Total	144	100%	122	100%
	Median=18; Range:13-25		Median=18; Range:13-25	
Has Children				
Yes	134	67%	113	71%
No	65	33%	47	29%
Total	199	100%	160	100%
Ever had Transactional Sex				
Yes	132	66%	108	68%
No	67	34%	52	33%
Total	199	100%	160	100%

DREAMS' effectiveness (impact) of reducing HIV vulnerabilities *(Objective #1)*

We recruited and interviewed 836 respondents, 778 (93%) of whom were eligible (18 were already DREAMS exposed or not within age eligibility[8]) and completed enrollment into the cohort study. At the end of the 12-month follow-up period, 610 participants (78%) were retained in the cohort (70 were lost to follow-up, 59 moved, 49 dropped, and 2 died), however 12 ineligible participants who had remained in the cohort were removed from the analysis. Of the 598 eligible participants who completed the endline survey, 422 (71%) reported that they had been linked to a DREAMS group and started receiving DREAMS services. The number one reason participants reported for not being linked to services was that the peer educator or empowerment worker did not return to complete DREAMS program enrollment. See Figure 9 for a breakdown of recruitment, enrollment, retention, and linkage to services.

Figure 9: Cohort recruitment, enrollment, retention and linkage to services



[8] Even though age was screened at enrollment, age or date of birth was misreported by some participants who later confirmed and clarified their correct age.

Table 3 describes the socio-demographic characteristics of those who completed the 12-month endline survey by DREAMS program eligibility status. Out of the 598 cohort participants who completed the endline survey, 374 (63%) were eligible for DREAMS, according to the program criteria that 15-19 year olds must be out of school and sexually active, and 20-24 year olds must be engaging in transactional or commercial sex. During cohort recruitment, DREAMS CSO peer educators applied the first criterion (out of school and sexually active) globally for recruitment of AGYW of all ages 15-24. This meant a majority of AGYW aged 20-24 (61%) were technically not eligible for DREAMS, though it did not affect their enrollment in the study cohort[9].

Ushetu DC and Temeke MC recruited the highest proportions of DREAMS-eligible participants into the study cohort (71.8% and 70.8% respectively) while Shinyanga MC had the lowest proportion of DREAMS-eligible cohort participants (48.9%) (Table 3). All 15-19 year olds recruited to the study cohort were DREAMS-eligible (100%) while 38.8% of 20-24 year olds met the DREAMS eligibility criteria for that age band (engaging in transactional or commercial sex). DREAMS eligibility decreased with higher educational attainment (70.8% were DREAMS-eligible among those with no formal education versus 54.9% of those with more than primary school education). A higher proportion of AGYW with earlier sexual debut (under 15 years old) were DREAMS-eligible (80.8%) than AGYW with later sexual debut.

[9] Eligibility criteria for the cohort study mirrored on-the-ground recruitment practices of the DREAMS program (out-of-school, sexually active AGYW aged 15-24 years old) to ensure the prospective cohort was a sub-sample of the program population. The only additional criterion imposed by the cohort study was that participants be unexposed to the DREAMS program.

Table 3: Socio-demographic characteristics of final study cohort

	Eligible for DREAMS Program					
	Yes		No		Total	
	Num.	%	Num.	%	Num.	%
District [n=598]						
Kahama TC	48	58.5%	34	41.5%	82	100%
Kyela DC	52	65.0%	28	35.0%	80	100%
Mbeya CC	57	62.6%	34	37.4%	91	100%
Msalala DC	49	60.5%	32	39.5%	81	100%
Shinyanga MC	44	48.9%	46	51.1%	90	100%
Temeke MC	68	70.8%	28	29.2%	96	100%
Ushetu DC	56	71.8%	22	28.2%	78	100%
Age [n=598]						
15-19	232	100%	0	0.0%	232	100%
20-24	142	38.8%	224	61.2%	366	100%
			Median=20; Range: 15-24			
Education [n=598]						
None or Certificate	17	70.8%	7	29.2%	24	100%
Some or completed Primary	223	67.6%	107	32.4%	330	100%
More than Primary	134	54.9%	110	45.1%	244	100%
Age at Sexual Debut [n=598]						
Under 15	80	80.8%	19	19.2%	99	100%
15-17	218	68.6%	100	31.4%	318	100%
18-20	74	43.5%	96	56.5%	170	100%
21+	2	18.2%	9	81.8%	11	100%
Married or Co-Habitating [n=598]						
Yes	103	45.0%	126	55.0%	229	100%
No	271	73.4%	98	26.6%	369	100%
Total	374	62.5%	224	37.5%	598	100%
Age at Marriage/Co-Habitation [n=229]						
12-13	0	0.0%	2	100.0%	2	100%
14-17	48	60.8%	31	39.2%	79	100%
18-20	51	42.5%	69	57.5%	120	100%
21-24	4	14.3%	24	85.7%	28	100%
			Median=18; Range: 12-23			
Ever Pregnant [n=598]						
Yes	208	54.5%	174	45.5%	382	100%
No	166	76.9%	50	23.1%	216	100%
Total	374	62.5%	224	37.5%	598	100%
Age at First Pregnancy [n=382]						
13-14	4	66.7%	2	33.3%	6	100%
15-19	171	60.0%	114	40.0%	285	100%
20+	33	36.3%	58	63.7%	91	100%
			Median=18; Range: 14-23			

Results were considered in the cohort as a whole (n=598), regardless of direct DREAMS program participation (linkage to DREAMS services), for two reasons. First, the DREAMS-Tanzania program is informed by an ecological model which posits that in order to support an AGYW, interventions are required at all levels of the ecology (or her social context). DREAMS communities were purposefully selected for program implementation because they were hypothesized to be highly vulnerable communities for AGYW where the program could have the greatest impact, and many elements of the interventions were intended to change communities through diffusion of information. Second, limiting the analysis to just those who were linked to services or to those who received specific interventions would be susceptible to selection bias.

Our analysis further examined whether certain outcomes were attributable to specific interventions or were more pronounced for certain populations. This exploratory analysis looked for associations between the outcomes and the interventions that were hypothesized to be most relevant, as well as stratifying by measures of vulnerability such as history of transactional sex, or eligibility for the DREAMS program. Of note, stratifying results to examine different effects by age was not possible, as the eligibility criteria differed for the two age groups with respect to vulnerability.

While no changes were observed in the outcome of condomless transactional sex, engagement in any compensated sex, or other measures of vulnerability (Appendix IV), significant change emerged in six areas of vulnerability:

- ✓ Reliance on commercial sex as primary income source
- ✓ Food insecurity
- ✓ Adult support
- ✓ Having a plan for the future
- ✓ Self-esteem
- ✓ Condom self-efficacy

Reliance on commercial sex as primary income source

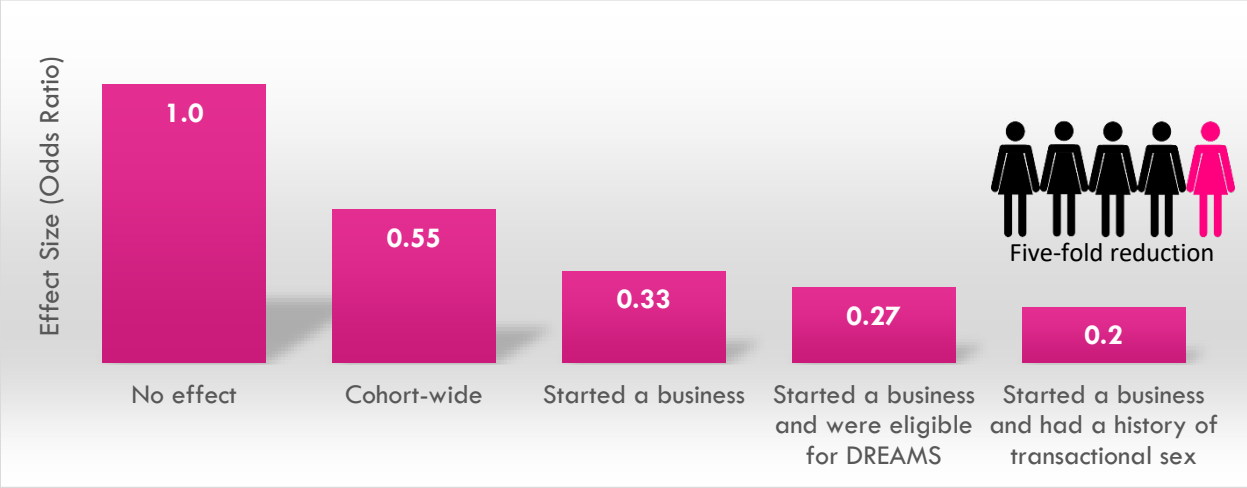
Cohort-wide (n=598), we observed a significant reduction in dependence on sex work [receiving money for sex] as primary income source (OR=0.55, p<0.05) at the endline survey (Figure 10). The effect was particularly strong among those who participated in the economic strengthening group intervention and whose business was established by the end of follow-up (OR=0.33, p<0.05). Further, it appears the effect may be driven by those AGYW who are most vulnerable as targeted by DREAMS. That is, dependence on sex work was more reduced among those who started a business and were eligible for DREAMS (OR=0.27, p<0.05). Finally the effect was strongest, exhibiting a five-fold reduction in reliance on commercial sex as primary income source, when restricted to those who started a business and had a history of transactional sex (OR=0.2, P<0.05).

Refresher on Odds Ratios

An odds ratio quantifies the *magnitude of association* between an outcome and exposure.

An odds ratio **greater than 1** means the exposure is associated with **higher odds of the outcome**, whereas an odds ratio **less than 1** means the exposure is associated with **lower odds of the outcome**, and 1 signifies no effect.

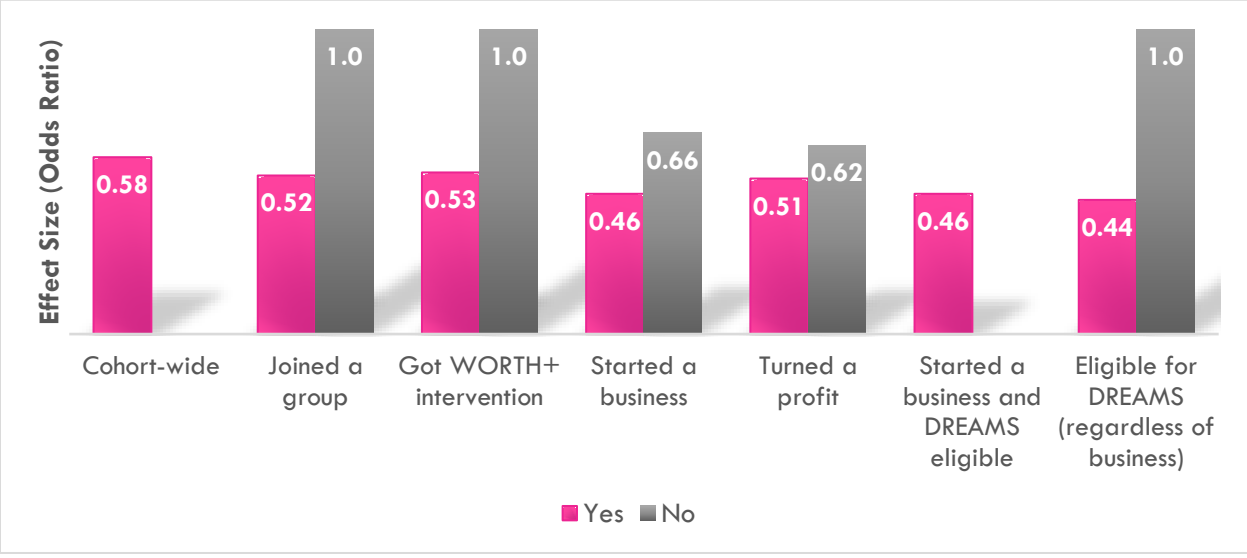
Figure 10: Reduction in reliance on commercial sex as primary income source among AGYW as reported at endline survey



Food insecurity

In the cohort as a whole (n=598), AGYW reported significantly reduced food insecurity at the endline survey (going to sleep hungry due to not being able to afford food or not having enough food to eat in the home) in the past four weeks (OR=0.58, p<0.05) (Figure 11). Those who joined a DREAMS group and those who got the economic strengthening WORTH+ intervention reduced food insecurity from baseline (OR=0.52 and 0.53, respectively) whereas those who did not get the WORTH+ intervention exhibited no reduction in food insecurity (p>0.05). While those who did not start a business (OR=0.66, p<0.05) or started a business that was not profitable (OR=0.62, p<0.05) experienced a reduction in risk, the magnitude of change was less than those who did start the business or turned a profit (OR=0.46 and 0.51, p<0.05 respectively). No effect was detected among those who started a business but were not eligible for DREAMS. However, the fact that those who were eligible for DREAMS improved more than any other group (OR=0.44) regardless of exposure suggests that eligibility for DREAMS matters more than exposure to any specific intervention.

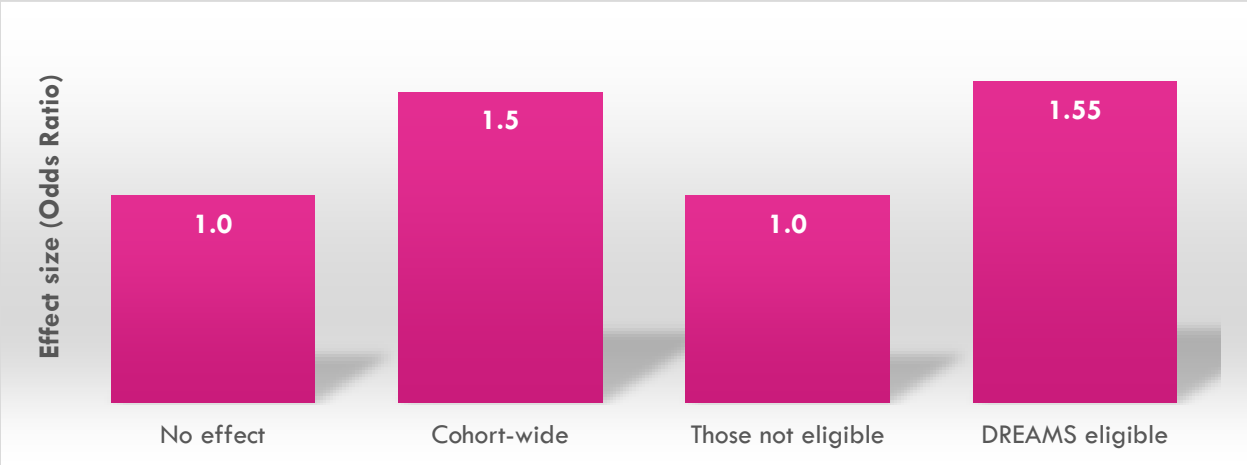
Figure 11: Reduction in food insecurity as reported by AGYW at endline survey



Adult support

The outcome of having emotional or financial support from an adult at home or in the community (Figure 12) improved at endline (OR=1.5, p<0.05). No effect was detected among those who were not eligible for DREAMS, while those eligible for DREAMS improved the most (OR=1.55). Joining a DREAMS group did not amplify the effect.

Figure 12: Increase in adult support as reported at endline survey



"I have a plan for the future"

The odds of agreeing with the statement "I have a plan for the future" (Figure 13) after the 12-month follow-up period was five times greater cohort wide than at baseline (OR=5.0, p<0.05). However, when stratified by DREAMS eligibility, no effect was detected among those who were ineligible. The effect was amplified by those who received the economic strengthening intervention of WORTH+ (OR=8.0, p<0.05).

Figure 13: Increase in reporting "I have a plan for the future" at endline survey

Self-esteem

A validated scale measuring self-esteem was employed to assess a number of elements related to self-esteem, including whether participants felt satisfied with themselves, felt they have good qualities, felt useless at times, agreed that they are a person of worth at least on an equal plane with others, whether

they had respect for themselves, and whether they felt like a failure. The majority of cohort participants (57%) improved their scores, and the effect was highly significant ($p<0.001$).

Condom use self-efficacy

Self-efficacy is an individual's belief in their ability to execute certain behaviors or achieve goals. A validated scale assessing condom use self-efficacy assessed a number of factors including assertiveness ("I feel confident in my ability to suggest…") in a number of scenarios, fear of partner rejection ("I wouldn't feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I have an STD") and intoxicant control ("I feel confident that I would remember to use a condom even after I have been drinking"). Half of cohort participants (50%) improved their scores, and the effect was significant ($p<0.05$).

Cohort versus household survey participants

Overall, participants in the cohort study (DREAMS-enrolled AGYW) reported lower levels of vulnerability at baseline than participants in the household survey (a representative sample of all DREAMS-eligible AGYW in the community). Participants of all ages in the cohort study were less likely to experience food insecurity and to lack adult support than household survey participants. Participants aged 15-19 years in the cohort were less likely to have ever engaged in anal sex, while the older age group (20-24 years) were less likely to have ever engaged in transactional sex and cross-generational relationships than household survey participants, all at a significance level of $p<0.05$. Cohort participants were more likely to report experiencing sexual violence than participants in the household survey ($p<0.05$), the only measure of vulnerability found to be higher in the cohort. A table of associations can be found in Appendix VII.

No significant harm detected at the community level

No significant harm was detected cohort wide after the 12-month follow-up period in any measure of sexual health or well-being in the VI+. When stratifying by levels of vulnerability based on the participants' vulnerability index scores, the least vulnerable (participants in the bottom half of index scores) were more likely to report experiencing violence at the end of the 12-month follow-up period than they were at baseline ($p<0.05$). It is plausible that these participants entered a period of vulnerability thus making them more likely to experience violence, or they were more comfortable disclosing experiences of violence during the endline interview.

Reported adverse events

Four adverse events of violence were brought to the investigators' attention during the study and reported to all institutional review boards (IRBs) as well as program implementers. These events included domestic violence, reportedly linked to participation in the DREAMS program and study cohort. In response, investigators incorporated strategies to augment counseling provided to potential DREAMS participants regarding the potential risks of participation before consenting participants in the cohort. DREAMS program implementers planned enhanced tracking of individual dropouts in the DREAMS program, scaling up GBV screening among AGYW by peer educators and empowerment workers, and bolstering messaging and targeted engagement of male partners in DREAMS activities, including through the use of male community-based service providers.

HIV seroconversion

Five cohort participants (0.84%) of the 598 who completed the endline interview self-reported HIV seroconversion during the 12-month follow-up period. Their ages ranged from 17 to 24 (median 19 years), two out of five were married at the ages of 15 and 17 years), and sexual debut for all was 17 years or younger. While two reported ever engaging in transactional sex, none of the five reported engaging in transactional sex in the 12 months prior to the baseline survey, and one of the five reported engaging in transactional sex during the 12-month follow-up period. Three reported that their "gut feeling about the likelihood of becoming infected with HIV" (from HIV risk perception scale) was high or very high. None reported ever experiencing sexual violence, but two reported physical violence during the 12-month follow-up period. Three were linked to a DREAMS group after enrolling in the program; two were not, but all five reported being connected to care and treatment services

Discussion

This mixed-method evaluation found significant improvements in six outcomes of interest related to vulnerability when comparing these factors before versus after enrollment in DREAMS. These outcomes of interest included reduced reliance on commercial sex as a primary source of income, reduced food insecurity, increased adult support, having a plan for the future, improved self-esteem, and improved condom use self-efficacy. While no significant results were observed in behavior change measures, such as a reduction in transactional sex or condom use, sustained change of such complex behaviors may take longer than 12 months to occur (and many participants engage with the DREAMS program for longer than 12 months). Further, the power to enact these behavioral changes may not always be within reach for vAGYW, such as the decision to exchange sex for money or to use a condom during a sexual encounter. However, as one DREAMS participant commented: a confident young woman is one who can advocate for condom use to her male partner. The improvements we measured in self-esteem, condom self-efficacy, and a reduction in vulnerabilities such as food insecurity and economic reliance on commercial sex suggest DREAMS has the potential to put vAGYW on the path to change through alternative livelihoods and increased confidence and self-reliance, eventually leading to improvements in sexual risk behaviors.

The effects we observed appear to have been diluted by less vulnerable DREAMS participants, i.e., older AGYW who did not engage in transactional sex. Further, those who were not linked to services and thus got less or no direct exposure to the intervention are likely dampening the observed effect sizes. In our cohort, nearly 30% of those recruited did not join a DREAMS group by the end of follow-up. During our follow-up efforts, we documented challenges in handover of participants when a peer educator was promoted, shifted to another ward, or left the program entirely, suggesting challenges in linking or maintaining participants in the program were not limited to the study cohort. Nevertheless, decreased rates of linkage to the program serve to dilute the measured effects, and the observed associations would hypothetically be stronger if more cohort participants received direct exposure to the program.

Our findings that the most vulnerable AGYW experienced the largest reduction in risks echo the findings of previous studies of at-risk youth in the literature. A cohort study of African-American youth aged 13-16 years in Baltimore undergoing an HIV risk-reduction intervention found that the decline of sexual risk was greatest among those who were already engaging in the highest degree of sexual risk. "Response of adolescents to the intervention is directly related to the sexual risk behavior at baseline. These data may suggest that the response to risk behavior intervention depends in part on the risk behavior profile of

the population to which it is being applied." (Wu, et al., 2005) Our findings suggest the DREAMS program would have a greater impact if focused on the most vulnerable, i.e., those meeting the DREAMS program's eligibility criteria. We believe the PEPFAR-Tanzania implementing partners are best suited to lead the discussion of how to target more vulnerable AGYW while not incentivizing risk behaviors among less vulnerable AGYW in order to gain access to the program.

We documented low levels of reach in the population of vulnerable, DREAMS-eligible AGYW. A contributing factor is that non-eligible AGYW are being recruited into and participating in DREAMS. Renewed screening and targeting efforts would ensure the right participants are entering the program. Nevertheless, social scientists have observed a "tipping point" in the spread of ideas, whereby a minimum proportion of individuals in a society are required to exact social influence at a population level, encouraging society to adapt its beliefs or behaviors. Numerous observational and qualitative studies have found that between 10%-25% of committed opinion holders are required to influence society, while more recent experimental evidence supports the theory that 25-30% is the critical mass required for minority groups to initiate social change (Centola, Becker, Brackbill, & Baronchelli, 2018). At 27% of vAGYW reached, DREAMS still stands to make meaningful, sustained change at a population-level of vAGYW, and improving reach among the eligible population of vAGYW would increase the likelihood of overturning established norms.

Undoubtedly, it is not just AGYW whose attitudes and behaviors must evolve in order to enact long-term reductions in vulnerability. The finding that there is a growing concern among communities about the shift in gender and marital relations should not be taken lightly. A report by Oxfam America on intersectional approaches for practitioners working in women's empowerment posits different scenarios for how women's economic empowerment (WEE) and domestic violence (DV) can be related in different contexts:

> *WEE could decrease DV if: it increases women's household bargaining power and ability to leave a violent relationship; household poverty decreases; women learn skills that help them negotiate household gender power relations, or; at the community level, it contributes to shifts in attitudes, gender relations of power and a reduction of the acceptance or impunity surrounding DV. On the other hand, WEE could increase DV risk if: men use violence as a way to take or control women's income or resources, or to express dissatisfaction about shifting household roles, or; there is more widespread anger or backlash among men at the community level in response to women's increasing market activity or economic status.* (Bolis & Hughes, 2015)

Several respondents – community members, potential sexual partners, and community implementers alike – commented on the power of witnessing capable women in new positions, activities, and professions for changing attitudes and beliefs. DREAMS is providing both AGYW and the communities in which they live with additional, diverse opportunities to witness and embody shifting gender norms and roles. Further, potential sexual partners have a very clear picture of who to target for transactional sex, and it is powerful that DREAMS is working to intervene on the very criteria that make AGYW vulnerable and approachable for men to engage in such relationships. This, as well as our qualitative findings, highlights the importance of (1) empowering AGYW to be "living models in the community" of new roles and capabilities of young women; (2) imparting skills to AGYW to negotiate household gender power relations, and (3) continuing to prioritize activities focused on shifting community norms and attitudes

about gender and violence, not just norms and attitudes among AGYW. Including men and communities in education efforts is critical to reducing the potential backlash for AGYW as they become more empowered through their exposures to DREAMS.

There were a number of contextual factors that are worthy of mention. During the follow-up period, the mines located in Shinyanga region, specifically Msalala DC, were closed down and a considerable outflux of people and AGYW occurred, as many of Shinyanga's economic activities developed in close proximity to and are linked with these mining activities. The closure of the mines and resulting migration resulted in increased loss to follow-up and perhaps also retention in the DREAMS program. This occurrence is indicative of a larger challenge in serving vulnerable, mobile, and hard-to-reach populations: it may be the most vulnerable who are the hardest to engage and retain in DREAMS interventions. Nevertheless, within our study and within the program, there is a wide continuum of levels of vulnerability, even amongst those retained in the study and in the program.

Finally, a number of implementation factors should be considered when interpreting the results: eligibility criteria, program duration, graduation criteria, and a minimum service package definition are all still under development. It is difficult for DREAMS partners to implement with fidelity and monitor the quality of service provision when guidance is still shifting throughout program implementation.

Limitations

As with any study, our evaluation was subject to a number of limitations. We identify the principal limitations as:

1. We did not directly measure the outcome of HIV incidence. The cohort sample size that would have been required to reliably measure incidence would have been prohibitively large, and the effects take longer to see. Instead, the outcome we chose (condomless transactional sex) is closely linked to the intervention point of the DREAMS programs. Given high incidence among AGYW, reducing their risk of HIV acquisition from reduced dependency on sex work should ultimately reduce riskier behaviors and more distally, HIV incidence.
2. As with all longitudinal studies, loss to follow-up presents potential biases. Because of mobility, death, and dropouts from the study, 23% of cohort participants were lost to follow-up.
3. Our study was designed to detect a significant change in condomless transactional sex; however, a significant change in this outcome was not apparent.
4. Our study was observational, not a randomized controlled trial, thus it is possible some of the observed changes in communities could have been due to other factors.
5. Our study included those AGYW participants recruited by the program for engagement in the study as well as the DREAMS program. As described above, the program may not be reaching the most vulnerable, and saturation of the community is not as intended.
6. The original intent was to conduct a survey of reach in all seven DREAMS councils, but funding was not sufficient. We therefore chose two representative councils.

Despite limitations, this evaluation provides evidence that the DREAMS interventions are an important tool for reducing HIV vulnerability among AGYW, namely by producing significant improvements in six areas – economic reliance on commercial sex, food insecurity, adult support, planning for the future, self-esteem, and condom self-efficacy – that materially affect the vulnerability of young women to the HIV epidemic. Through these positive outcomes, the DREAMS program shows progress towards

reducing HIV incidence and vulnerability among vAGYW by intervening on intersecting areas of vulnerability in their lives and communities.

References

Bolis, M., & Hughes, C. (2015). *Women's economic empowerment and domestic violence: links and lessons for practitioners working with intersectional approaches.* Oxfam America. Oxfam Intersectionality Series. Retrieved from oxfamilibrary.openrepository.com

Centola, D., Becker, J., Brackbill, D., & Baronchelli, A. (2018). Experimental evidence for tipping points in social convention. *Science*, 1116-1119.

Choudry, V., Ambresin, A.-E., Nyakato, V. N., & Agardh, A. (2015). Transactional sex and HIV risks - evidence from a cross-sectional national survey among young people in Uganda. *Global Health Action*.

Deane, K., & Wamoyi, J. (2015). Revisiting the economics of transactional sex: evidence from Tanzania. *Review of African Political Economy*.

Han, H. (2017). *Characterizing the Sauti vAGYW HIV risk assessment tool to measure vulnerability of adolescent girls and young women in Tanzania.* Baltimore.

Jewkes, R., Dunkle, K., Nduna, M., & Shai, N. J. (2012). Transactional Sex and HIV Incidence in a Cohort of Young Women in the Stepping Stones Trial. *Journal of AIDS & Clinical Research*.

Massy-Beresford, H. (2015). Where is the fastest growing city in the world? *The Guardian*.

Napper, L. E., Fisher, D. G., & Reynolds, G. L. (2012). Development of the Perceived Risk of HIV Scale. *AIDS and Behavior*.

National Bureau of Statistics. (2013). *2012 Population and Housing Census.*

Rosenberg, M. (1965). Society and the adolescent self-image. *Princeton University Press*.

Shaweno, D., & Tekletsadik, E. (2013). Validation of the condom use self-efficacy scale in Ethiopia. *BMC International Health & Human Rights*.

Tanzania Commission for AIDS. (2013). *Tanzania HIV/AIDS Malaria Indicator Survey 2011-12.*

UNAIDS. (2014). *The Gap Report.*

UNAIDS. (2016). *HIV prevention among adolescent girls and young women: putting HIV prevention among adolescent girls and young women on the Fast-Track and engaging men and boys.* UNAIDS.

Wamoyi, J., Fenwick, A., Urassa, M., Zaba, B., & Stones, W. (2011). "Women's Bodies are Shops": Beliefs About Transactional Sex and Implications for Understanding Gender Power and HIV Prevention in Tanzania. *Archives of Sexual Behavior*.

Wamoyi, J., Wight, D., Plummer, M., Mshana, G., & Ross, D. (2010). Transactional sex amongst young people in rural northern Tanzania: an ethnography of young women's motivations and negotiation. *Reproductive Health*.

Westaway, M. S., Jordaan, E. R., & Tsai, J. (2015). Investigating the Psychometric Properties of the Rosenberg Self-Esteem Scale for South African Residents of Greater Pretoria. *Evaluation & the Health Professions*.

Wu, Y., Burns, J., Stanton, B., Li, X., Harris, C., Galbraith, J., & Wei, L. (2005). Influence of prior sexual risk experience on response to intervention targeting multiple risk behaviors among adolescents. *J Adolesc Health*, 56-63.

Appendix I: Original and Expanded Vulnerability Indices

Question	VI or VI+
How old are you?	VI
What level of education did you reach?	VI+
Are you currently enrolled in a school?	VI
Have you attended classes more than 10 days in the last three months, when not on public holidays or school vacation?	VI
Are you currently married or living together with a man as if married?	VI
How old were you when you got married/began living with a man as if married?	VI
Is there an adult in your household or community to whom you can go for emotional and/or financial support if you need it without having to give something in return?	VI
In the past four weeks, did you go to sleep at night hungry because you could not afford to buy food or there was not enough food for you to eat at home?	VI
How often did this happen?	VI
Have you ever been pregnant?	VI
What age were you first pregnant?	VI
Have you become pregnant in the past 12 months?	VI+
Did you want to become pregnant at that time, later, or not at all?	VI+
How old were you when you first had sex?	VI
Thinking about your current and past sexual partners, estimate the biggest ever age difference between you and any one of your sexual partners.	VI
Have you ever had vaginal sex, anal sex, or both?	VI
In the last 12 months, have you had vaginal sex?	VI
Of the times you had vaginal sex in the last 12 months, how often did you use a condom?	VI
In the last 12 months, have you had anal sex?	VI
Of the times you had anal sex in the last 12 months, how often did you use a condom?	VI
In the last 12 months, what are the most number of sexual partners you have had during the same month (30-day period)	VI
Considering all your sexual partners in the past 12 months, including current partners, do you know of their HIV status? Were they HIV+ or HIV-?	VI
Have you ever had sex with anyone because you expected that he would provide you with gifts, help you to pay for things, or help you in other ways?	VI
In the past 12 months have you had sex because you expected that he would provide you with gifts, help you to pay for things, or help you in other ways?	VI+
Did you have sex in order to get help with basic necessities, or you wanted nice things?	VI+
If you had sex because of expecting to get something, did you receive money for it?	VI+
Is getting money for sex your primary source of income?	VI+

In the past 12 months have you had sex because you expected that he would provide you with gifts, help you to pay for things, or help you in other ways, and you didn't use a condom?	VI+
If your sex partner does not want to use condoms, there is little you can do about it.	VI+
Condom Use Self-Efficacy Scale	
I feel confident in my ability to discuss condom usage with any partner I might have.	VI+
I feel confident in my ability to suggest using condoms with a new partner.	VI+
I feel confident I could suggest using a condom without my partner feeling "diseased".	VI+
I feel confident in my ability to persuade a partner to accept using a condom when we have sex.	VI+
I wouldn't feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I have a STD.	VI+
I wouldn't feel confident suggesting using condoms with a new partner because I would be afraid he/she would think I thought they had a STD.	VI+
I feel confident that I would remember to use a condom even after I have been drinking.	VI+
I feel confident that I would remember to use a condom even if I were high.	VI+
HIV Risk Perception Scale	
What is your gut feeling about how likely you are to get infected with HIV?	VI+
I worry about getting infected with HIV.	VI+
Picturing myself getting HIV is something I find:	VI+
I am sure I will NOT get infected with HIV.	VI+
I feel vulnerable to HIV infection.	VI+
There is a chance, no matter how small, I could get HIV.	VI+
I think my chances of getting infected with HIV are:	VI+
Getting HIV is something I have:	VI+
Have you had an HIV test in the past 12 months?	VI+
What was the result?	VI+
Did you have a health issue/concern in the past 12 months?	VI+
Did you seek care?	VI+
Where did you seek care?	VI+
Why not?	VI+
Self-Esteem Scale	
On the whole, I am satisfied with myself.	VI+
At times I think I am no good at all.	VI+
I feel that I have a number of good qualities.	VI+
I am able to do things as well as most other people.	VI+
I feel I do not have much to be proud of.	VI+
I feel that I'm a person of worth, at least on an equal plane with others.	VI+
I wish I could have more respect for myself.	VI+
All in all, I am inclined to feel that I am a failure.	VI+

I take a positive attitude toward myself.	VI+
I have a plan for the future.	VI+
Would you be able to avoid sex any time you did not want it?	VI+
Have you experienced physical, psychological, or sexual violence in the past 12 months?	VI+
What kinds of violence have you experienced in the past 12 months?	VI+
Who did this to you?	VI+
Did you report it to the police or did you present at a health centre?	VI+
Why not?	VI+
At any time in your life, as a child or as an adult, have you ever experienced sexual violence?	VI
How often have you experienced this kind of sexual violence?	VI

Appendix II: Household Survey Ward Sample Size Calculations

District sample size calculations:

	Female Pop (2012 Census)	***District Population Ratio***	***AGYW***	***AGYW per ward (cluster size)***	***# of Wards***	***Inflated target # of AGYW per ward***	***Inflated Target Sample***
Mbeya CC	202,659	64%	397	30	13	40	520
Kyela DC	115,478	36%	227	30	8	40	320
	318,137		**624**				**840**

Kyela DC ward sample size calculations with additional stratification of economic zones:

Strata	***Ward***	***Female Population***	***Proportion of female district population***	***Targeted sample of AGYW***	***Non-inflated targeted sample of AGYW***
Mixed economic activity	Kyela town	33,182	29.3%	94	66
Border	Katumbasongwe (+Njisi)	7,152	6.2%	20	14
Fishing	Matema	8,958	7.8%	25	18
Mixed agri	All others	65,556	56.8%	182	129
		115,478	100.0%	**320**	**227**

Appendix III: Key Informant Interview Guides

Key Informant Interview Guide for DREAMS Participants

Interviewer: _____KII ID:_____

Note taker: _____

Ward/District:_____

Date:_____Starting Time:_____Ending Time:_____

Sexual and Reproductive Health Questions

I'm going to start by asking questions about sexual and reproductive health. When I say sexual and reproductive health, I mean: family planning, sexual relationships, sexually transmitted infections, and pregnancy.

1) Where do many adolescent girls and young women learn about sexual and reproductive health matters? *Probe:* How? Who? Where? When?
2) How should adolescent girls and young women be treated when seeking sexual and reproductive health services?
   Probe about treatment by provider, whether it is a right or only some deserve, and who, etc.
3) In your opinion, should sexual and reproductive health services be offered to adolescent girls and young women?
   Probe for different types of services: family planning, STI and HIV testing, information, about puberty and sexuality, pregnancy, etc.
   a. Is it their right to be offered these services? Why or why not?
   b. What types of contraceptives are appropriate for AGYW?
      Probe for different types of contraceptives: condoms, injection, pills, IUD, diaphragm
4) Does it depend on age, marital status, or other factors?
5) What do you think would make you or your peers more likely to access sexual and reproductive health services?

Value Questions

6) In your opinion, are women/girls valued more, less, or equally than men?
   Probe for explanation and reasons
7) How valued do you feel by your community? Why or why not?
   a. By your family?
   b. By your boyfriends/partners?
   c. By men generally?
   d. Have you always felt this way, or has this changed in the recent/distant past?
8) Can you give an example of when you felt more/less/equally valued (*depending on answer above)?*

9) How do you think these values affect your opportunities?
    a. Your health?
    b. Your ability to support yourself?
10) Should an adolescent girl or young woman be able to say no to sex?
    a. Should she be able to negotiate condom use?

DREAMS Experience

I'm going to ask you some questions about your experience with DREAMS.

11) Can you tell us what you know about the DREAMS programs? [use the branded term the girls will know best, i.e. Shujaa]
12) What services have you received in the last year? *Probe if not all service categories are reported (ie. Facility-based services)*
13) What service or services were the most useful to you?
    Probe for reasons
14) Were there any services that were not helpful? Please tell us about it/them.
15) Did you ever have a really good experience with a service provider or service? Please tell us about it.
16) Did you ever have a bad experience with a service or a provider?
17) Can you tell us about your experience with _____ service?
    (*probe on a couple services listed earlier*)
18) Overall, how do you feel you were treated by service providers?
    Probe for different types of service providers, i.e. health, financial literacy, etc.
19) Can you tell us about a time when someone from DREAMS treated you very well or with respect? What did he or she do?
20) Can you tell us about a time when you felt you were not treated well or with respect? What happened?
21) What did you learn from the program?
22) What skills did you gain?

DREAMS Feedback

23) Which services would you recommend to your friends or peers? Why?
24) Are there any services you would not recommend to your friends or peers? Which one(s)? *Probe for reasons*
25) Can you tell us about any services you think we should add?
26) What suggestions do you have to improve the program?
27) Overall, how do you feel about the program/services provided to you?

Key Informant Interview Guide for Men in the community

[potential sexual partner]

Interviewer: _____KII ID:_____

Note taker: _____

Ward/District:_____

Date:_____Starting Time:_____Ending Time:_____

1) What are some of the challenges that adolescent girls and young women face in your community?
    a. *Probe:* Are they different than the challenges adolescent boys and young men face?
2) Do you think girls and women deserve the same opportunities as boys and men? Why or why not?
    a. *Probe:* education, economic opportunities, work, sports, leisure time, getting together with friends, leadership positions, support from organizations like NGOs or CSOs
    b. What kind of work do you observe young women doing in your community?
    c. What kind of jobs <u>should</u> young women be doing in your community?
    d. Have you always felt this way about boys/girls?
        i. (*If not*) How/when did your opinion change?
3) Do you feel women should be able to make decisions in the household? Why or why not?
    a. (*If the answer is no*) Under any circumstance?
    b. Should a man be able to punish/discipline his partner?
        i. How about beat her?
    c. Is the reality different than what you think it should be?
    d. Does a woman have the right to refuse sex if she does not want it?
        i. Does it depend on who the partner is?
4) Do you feel that adolescent girls and women should be able to make decisions for their own health/finances?
    a. Why or why not?
    b. Have you always felt this way?
        i. *(If not)* How/when did your opinion change?
5) What are your thoughts about cross-generational relationships? I mean, sexual relationships between a young girl or adolescent woman and an older man, ten years or more her senior?
    a. Have you always felt this way?
    b. (*If not*) How/when did your opinion change?
    c. *If people mostly voice either positive or negative opinions, ask them about the opposite:* Are cross-generational experiences also (good/bad)? What determines if it is good or bad?
6) Whose role is it to prevent HIV in adolescent girls and young women?
    a. Should the community be involved in supporting HIV prevention efforts in adolescent girls and young women? Why or why not?
    b. *(For those who say yes)* How should they be involved?
7) Do you talk about condom use with your male peers?
8) What do you think determines whether a man is willing to use a condom? And a woman?
    a. Should a woman be able to request or suggest a condom before having sex? Why or why not?
    b. Does it depend on her age, or relationship status?

9) What do you think about a girl or young woman's right to use other forms of contraception, such as pills, injection, IUD, etc? Does it depend on who (age, relationship/marital status)?
10) What are your thoughts about transactional sex? I mean, having sex with the expectation of receiving something, like a gift, help paying for something, or any kind of help?
    a. How does it start? *Probe:* who starts these relationships? How about ___ *(opposite)?*
    b. How are terms understood or agreed upon? Are they open or unspoken?
    c. What type of women are available for this type of relationship?
        i. *Probe:* characteristics, acquaintances, strangers
    d. Are there women who are not available for this type of relationship?
        i. How about men? Are there men who don't participate in these types of relationships?

Key Informant Interview Guide for health providers

Interviewer: _____KII ID:_____

Note taker: _____

Ward/District:_____

Date:_____Starting Time:_____Ending Time:_____

1) Can you tell me about what services you are offering to adolescent girls and young women?
2) What are you most proud of in this work?
3) What are some of the main challenges in providing these services?

    Probe for details

4) Which services or aspects of a service do you think are the most effective? Please explain.
5) Can you tell me about any services that you think may not be effective?
    a. What are the reasons they are not effective?
6) Did you receive any training to provide health services to adolescent girls and young women? If yes, please describe.
    a. How about on discussing sexual and reproductive health issues?
7) In your opinion, should sexual and reproductive health services be offered to adolescent girls and young women?

    Probe for each service mentioned on reasons to offer/not to offer (there may be different answers for various services from the same provider)

    a. At what age are girls and young women ready to learn about sexual and reproductive health?
8) Have you ever turned away an adolescent girl or young woman who was requesting services?

a. If yes, for what reason?

b. If not, do you believe this happens with others?

9) How should adolescent girls and young women be treated when seeking reproductive health services (i.e. family planning, ANC, HTC, etc.)?

10) What recommendations do you have to improve the DREAMS program?

11) Overall, how has your experience been offering services to adolescent girls and young women?

12) How can we get more adolescent girls and young women into health care services?

Key Informant Interview Guide for DREAMS professionals

Interviewer: _____KII ID:_____

Note taker: _____

Ward/District/National:_____

Date:_____Starting Time:_____Ending Time:_____

1) Can you tell me about your experience working with DREAMS programs? How long have you been involved, and in what capacity?

2) Which programs within DREAMS do you work on?

3) What are you most proud of about your work with DREAMS?

4) What challenges did you experience during implementation, either before or during DREAMS?

   a. Was there a time things did not go according to the plan?

   b. *Prompt:* Were there challenges with timeliness, with delivering a particular component, with supplies, with adequate training, etc.

5) What successes have you observed?

6) What level of community engagement in DREAMS did you observe?

7) Do you think there were any unintended consequences of the program, good or bad? I mean, changes that took place that were not planned or anticipated?

8) Moving forward, what would you do differently?

9) What do you wish others could have done differently?

10) If DREAMS-specific funding is not continued, what aspects of your program, if any, will be able to be integrated into ongoing programming?

Appendix IV: Focus Group Discussion Guide

Moderator: _____FGD ID:_____

Note takers: _____and_____

Ward/District:_____# Participants:_____

Date:_____Starting Time:_____Ending Time:_____

DISCUSSION

Now that we know the rules we will be observing during our discussion, let us start.

1) What are some of the challenges that adolescent girls and young women face in your community?
    a. *Probe:* Are they different than the challenges adolescent boys and young men face?
2) Do you think girls and women deserve the same opportunities as boys and men? Why or why not?
    a. *Probe:* education, economic opportunities, work, sports, leisure time, getting together with friends, leadership positions, support from organizations like NGOs or CSOs
    b. If you had a boy and a girl, and only enough money for one to go to school, who do you select? Why?
    c. What kind of work do you observe young women doing in your community?
    d. What kind of work <u>should</u> young women be doing in your community?
    e. Have you always felt this way about boys/girls?
        i. (*If not*) How/when did your opinion change?
3) Do you feel women should be able to make decisions in the household? Why or why not?
    a. (*If the answer is no*) Under any circumstance?
    b. Should a man be able to punish/discipline his partner?
        i. How about beat her?
    c. Is the reality different than what you think it should be?
4) Do you feel that adolescent girls and women should be able to make decisions for their own health/finances?
    a. Why or why not?
    b. Have you always felt this way?
        i. *(If not)* How/when did your opinion change?
5) What are your thoughts about cross-generational relationships? I mean, sexual relationships between a young girl or adolescent woman under the age of 20 and an older man, ten years or more her senior?
    a. Have you always felt this way?
    b. (*If not*) How/when did your opinion change?
    c. *If people mostly voice either positive or negative opinions, ask them about the opposite:* Are cross-generational experiences also (good/bad)? What determines if it is good or bad?

6) Whose role is it to prevent HIV in adolescent girls and young women?
    a. Should the community be involved in supporting HIV prevention efforts in adolescent girls and young women? Why or why not?
    b. *(For those who say yes)* How should they be involved?
7) What are your thoughts about transactional sex? I mean, having sex with the expectation of receiving something, like a gift, help paying for something, or any kind of help?
    a. How does it start? *Probe:* who starts these relationships? How about ___ *(opposite)?*
    b. How are terms understood or agreed upon? Are they open or unspoken?
    c. What type of women are available for this type of relationship?
        i. *Probe:* characteristics, acquaintances, strangers
    d. Are there women who are not available for this type of relationship?
        i. How about men? Are there men who don't participate in these types of relationships?
8) Please raise your hand if you have heard of DREAMS. *(record #_____)* Do not feel shy if you have not heard of it.
    a. How about programs focused on AGYW in your area, or programs at the facility level for AGYW; how many of you have heard about these? *(record #_____)*
    b. What have you heard about these AGYW programs? Can you list any of them?
    c. Do you know anyone involved in these AGYW programs?

[Give brief introduction]: DREAMS is a program from the US Government implemented with TACAIDS and the Ministry of Health in three regions in Tanzania, including this region and district. It is designed to promote health and wellness in young girls and adolescent women. Some of the DREAMS services include:

- Providing health and reproductive services so that they are friendly and accessible to adolescents
- Providing subsidies for girls to stay in school
- School-based violence prevention
- Financial literacy and economic opportunities such as cash transfers
- Programs to build parent and caregiver skills
- Linking the men who may be interacting with this population to treatment for HIV
- HIV testing and counselling
- Promoting condoms and contraceptives (only among those 15-24)
- Providing behavior change communication about risky behavior

    d. Had you heard about any of these programs, but did not know what they were called?
    e. How do you feel about the fact that such a program exists?
9) What are your thoughts on how DREAMS services, or any of these specific programs, have affected the community?
    a. *Probe:* Positive aspects?
        i. For some of the programs mentioned *(mention a few again)*, what are the benefits? Which are most important?

b. Negative aspects?
c. Has it impacted your relationship with any girls/young women? In a good or bad way?
d. Did it have any unintended consequences?

10) What do you think is the best way to help these groups of girls and young women?

Appendix V: Vulnerability Index and Scoring Methodology

SAUTI VAGYW INDEX Version 3.0 Date: 09.05.2017

STANDARD OPERATING PROCEDURES OF
ADOLESCENT GIRLS AND YOUNG WOMEN VULNERABILITY INDEX, draft 09 May 2017

The Adolescent Girls and Young Women's (AGYW) Vulnerability Index aims to identify adolescent girls and young women who are most vulnerable to HIV acquisition.

The Index is administered to **adolescent girls and young women age 15-24 years ONLY**

The Index should be administered at the following venues:

1) At biomedical service delivery points such as mobile community-based HTC (CBHTC) or Home Based HIV Testing and Counselling (HBTC) services
2) At venues (e.g., bars, guest houses, salons, market places, etc.) where community mobilization, behavior change communication (BCC) and recruitment for saving and loaning services or any other economic empowerment service takes place
3) Any other venue where DREAMS related activities are taking place

The Index is typically administered by trained interviewers from the project, such as peer educators (PE), community workers or empowerment workers (EW) working in the entry points listed above.

Project managers and coordinators should be responsible to supervise the administration of the Index by the interviewers, as part of the routine supportive supervision

The Index is based on a scoring system. After administering the questions, the interviewer should review the form to make sure all responses are complete and then calculate the total sum out of all points scored.

The responses from the Index should be handed over on daily basis by the interviewers to the project M&E team, who is responsible to enter it into an electronic database on daily. In the event that questionnaires are incomplete, the project M&E team should alert the Project managers and coordinators for coaching and mentoring the interviewers on data documentation, completeness and correctness. As part of quarter data quality assurance, the project M&E team should conduct random checks to verify the correctness of the recorded information, the existence of the clients, and the accuracy of client scoring.

If information is collected through the electronic data collection system, data will be directly available once entered and entry restrictions will ensure complete data entry.

This index was developed by Jhpiego as part of the Sauti Project with support from the U.S. Agency for International Development through the U.S. Government's PEPFAR and DREAMS initiatives.

AGYW VULNERABILITY INDEX

Introductory script to be read to each client before the interview starts:

Hi, my name is *(name)* and I am a *(title)* for the *(title)* program.

I would like to ask you a few questions to help me advise you about services available to adolescent girls and young women in this community. These questions will take approximately 15 minutes to answer. I am aware that some of these questions are personal, so please be assured that I will not judge you in any way based on the answers you give. I have been trained to make sure that anything you tell me will remain strictly confidential. Your name will not be recorded. Your participation in this interview is voluntary and you can stop the interview at any time. Do you have any questions? *(Answer questions)*

Are you willing to participate? *(If yes)* Are you ready to begin now?

Part 1. Context Information		
	Question	**Response**
1	Date of administration *(DD/MMM/YY e.g. 01.Aug.2017)*	|__|__|.|___|___||___|___|___|___|
2	First Name of who administers questionnaire	
3	Last Name of who administers questionnaire	
4	Cadre: O EW O PE O Clinical staff O Researcher O other, specify: _____	
5	Participant's unique identification number; **use following instructions:** 12 characters (FFSSRRRXDDYY) – FF - Client's **first name** – Last 2 letters – SS - Client's **surname**– Last 2 letters – RRR - Region of birth – First 3 letters – X - sex code (1 for male, 2 for female) – DD- Date of birth (2 digits for day of birth e.g. 01 for 1st August 1977) – YY - Year of birth – last 2 digits	
6	a. SCAN QR CODE	7. TAKE GIS DATA
8	Region	
9	District	
10	Ward	
11	Village	

This index was developed by Jhpiego as part of the Sauti Project with support from the U.S. Agency for International Development through the U.S. Government's PEPFAR and DREAMS initiatives.

12	Venue	1. CBHTC+ 2. Economic empowerment groups 3. BCC activities 4. HBHTC 5. Venue-based (e.g., bars, guest houses, salons, market places, etc.) 6. Other community mobilization/campaign sites 7. other, specify:_____
Part 2. Respondent age		
1	Client age (years)	[____|____] years **If the participants is under 15 or over 24 years of age, end interview and thank her for her time**
Part 3. Respondent eligibility criteria – School status		
1	Are you currently enrolled in a school?	1. Yes: move on to next question 2. No: **ELIGIBLE**, **continue to PART 4**
2	Have you attended classes more than 10 days in the last three months, when not on public holidays or school vacation?	1. Yes: end interview and thank her for her time 2. No: **ELIGIBLE**, **continue to PART 4**
Only continue in girls **not in school aged 15-19** and **all girls aged 20-24** Otherwise end the interview and thank her for her time and availability.		

Part 4. Risk Questions

For each question, circle the response and the corresponding number of points in the point column. Calculate the total score by adding all points circled together after you have completed the questionnaire.

	Question	Response Categories	Points
1	Are you currently married or living together with a man as if married? If yes, how old were you when you got married/began living with a man as if married?	Married/began living with a man as if married at [__|__] years old. *(enter 66 if not married)*	
		1. No, not married or living together with a man as if married.	0
		2. Yes, under 18 years old.	3
		3. Yes, 18-20 years old.	2
		4. Yes, older than 20 years.	1
2	Is there an adult in your household or community to whom you can go for	1. Yes, both emotional and financial support.	0

This index was developed by Jhpiego as part of the Sauti Project with support from the U.S. Agency for International Development through the U.S. Government's PEPFAR and DREAMS initiatives.

	emotional and/ or financial support if you need it without having to give something in return? *(this refers to persons only and excludes structural programs)*	2. Yes, but only emotional support.	2
		3. Yes, but only financial support.	2
		4. No adult who supports me.	3
3	In the past four weeks, did you go to sleep at night hungry because you could not afford to buy food or there was not enough food for you to eat at home? If yes, how often did this happen?	1. Not gone to sleep at night hungry in the past four weeks	0
		2. Yes, rarely (Once or twice in the past four weeks).	1
		3. Yes, sometimes (Three to ten times in the past four weeks).	2
		4. Yes, often (More than ten times in the past four weeks).	3
4	Have you ever been pregnant? If yes, what age were you when you were first pregnant?	First pregnant at [__|__] years old *(enter 66 if never been pregnant)*	
		1. Never been pregnant	0
		2. Yes, younger than 15 years old	3
		3. Yes, between 15 and 17 years old	2
		4. Yes, between 18 and 20 years old	1
		5. Yes, older than 20 years old	1
5	How old were you when you first had sex? *(For the purposes of this interview, 'sex' is penetrative sex: when a male puts his penis inside of a **female's vagina or anus**, including non-consensual sex such as rape.)*	[__|__] years old *(enter 66 if never had sex)*	
		1. Never had sex in my life	0
		2. Younger than 15 years old	3
		3. Between 15 and 17 years old	2
		4. Between 18 and 20 years old	1
		5. Older than 20 years	1
6	Thinking about your current and past sexual partners, estimate the **biggest** ever age difference between you and anyone of the sexual partner?	[__|__] years age difference *(enter 66 if never had sex)*	
		1. The biggest age difference was less than 3 years	0
		2. Between 3 and 5 years	1
		3. Between 6 and 10 years	2

This index was developed by Jhpiego as part of the Sauti Project with support from the U.S. Agency for International Development through the U.S. Government's PEPFAR and DREAMS initiatives.

	(Estimate age difference if exact age is not known and consider how old the girl was at this time)	4. Over 10 years	3
		5. Never had sex in my life *(Double check with previous answer choices. Has the participant really never had sex previously?)*	0
7	Have you ever had vaginal sex, anal sex, or both? *(For the purposes of this interview, 'sex' is penetrative sex, including non-consensual sex such as rape.)*	1. Yes, vaginal sex only	2
		2. Yes, anal sex only	3
		3. Yes, both vaginal and anal sex	3
		4. Never had sex in my life *(Double check with previous answer choice. Has the participant really never had sex previously?)*	0
8	In the last 12 months, have you had vaginal sex? *(refer to calendar month, "e.g. between today and last year this month")*	1. No, I did not have vaginal sex within the past 12 months, but before.	1
		2. Yes, had vaginal sex at least once in the last 12 months	2
		3. Never had sex in my life *(Double check with previous answer choices. Has the participant really never had sex previously?)*	0
9	Of the times you had vaginal sex in the last 12 months, how often did you use a condom? *(This includes any penetrative sex irrespective of partner or relationship type or consensus and independent of time)*	1. Never used a condom when having vaginal sex	3
		2. Almost never used a condom when having vaginal sex	3
		3. Sometimes used a condom when having vaginal sex	2
		4. Almost always used a condom when having vaginal sex	1
		5. Always used a condom when having vaginal sex	0
		6. I don't know	3
		7. Never had sex in my life *(Double check with previous answer choices. Has the participant really never had sex previously?)*	0
10	In the last 12 months, have you had anal sex?	1. No, I did not have anal sex within the past 12 months, but before.	1
		2. Yes, had anal sex at least once in the last 12 months	2

This index was developed by Jhpiego as part of the Sauti Project with support from the U.S. Agency for International Development through the U.S. Government's PEPFAR and DREAMS initiatives.

	(refer to calendar month, "e.g. between today and last year this month")	3. Never had sex in my life *(Double check with previous answer choices. Has the participant really never had sex previously?)*	0
11	Of the times you had anal sex <u>in the last 12 months</u>, how often did you use a condom? *(This includes any penetrative sex irrespective of partner or relationship type or consensus and independent of time)*	1. Never used a condom when having anal sex	3
		2. Almost never used a condom when having anal sex	3
		3. Sometimes used a condom when having anal sex	2
		4. Almost always used a condom when having anal sex	1
		5. Always used a condom when having anal sex	0
		6. I don't know	3
		7. Never had sex in my life *(Double check with previous answer choices. Has the participant really never had sex previously?)*	0
12	In the last 12 months, what was the most number of sexual partners you have had during the same month (30-day period)? *(includes any penetrative sex irrespective of partner or relationship type or frequency of sex with this partner)*	1. One sexual partner	1
		2. Two sexual partners	2
		3. Three or more sexual partners	3
		4. Never had sex in my life *(Double check with previous answer choices. Has the participant really never had sex previously?)*	0
14	Considering all of your sexual partners in the past 12 months, including current partners, do you know of their HIV status? Were they HIV+ or HIV-?	1. None of the partner(s) is HIV+ positive	1
		2. There is at least one HIV + partner	2
		3. Don't know the HIV status of all my partners	3
		4. Never had sex in my life *(Double check with previous answer choices. Has the participant really never had sex previously?)*	0
15	Have you ever have had sex with anyone because you expected that he would provide you with gifts, help you to pay for things, or help you in other ways?	1. No, had sex but without such expectations	1
		2. Yes, only gifts	3
		3. Yes, only for other services	3
		4. Yes, only for money	3

This index was developed by Jhpiego as part of the Sauti Project with support from the U.S. Agency for International Development through the U.S. Government's PEPFAR and DREAMS initiatives.

		5. 5. Yes, for money, gifts or other services	3
		6. Refuse to answer	3
		7. Never had sex in my life *(Double check with previous answer choices. Has the participant really had never had sex previously?)*	0
16	At any time in your life, as a child or as an adult, have you ever experienced sexual violence? If yes, how often have you experienced this kind of sexual violence? *(For the purposes of this survey, 'sexual violence' is any physical sexual act that is perpetrated against your will (this includes, for example vaginal or anal penetration).*	1. Never experienced sexual violence	0
		2. Yes, once	1
		3. Yes, two times	2
		4. Yes, three times or more	3
		TOTAL SCORE	

4. Total risk score category (circle only one that applies)

1. Very high (32-43 or more than 3 concurrent partners OR sex for good OR sex for cash)
2. High (22-31)
3. Medium (11-21)
4. Low (0-10)

If the client answered in any of the following ways, THEN SHE IS CATEGORIZED AS VERY HIGH VULNERABLE, REGARDLESS OF THE TOTAL SCORE

- Question 12, Response 3 (3 or more sexual partners)
- Question 14, Responses 2, 3 or 4 (Sex in exchange for gifts/ services, cash or both)

This index was developed by Jhpiego as part of the Sauti Project with support from the U.S. Agency for International Development through the U.S. Government's PEPFAR and DREAMS initiatives.

Appendix VI: Outcomes of interest showing no significant change from baseline to endline

Outcome	Odds Ratio	P Value
Condom use (always) during vaginal sex	1.25	0.506
Ability to change partner's mind about condom use	1.07	0.612
Unplanned pregnancy	0.95	0.741
Cross-generational relationships	1.38	0.137
Transactional sex	1.19	0.291
Transactional sex out of necessity (vs. for nice/desired things)	1.21	0.310
Condomless transactional sex	0.96	0.798
Commercial sex	0.97	0.863
Ability to avoid sex any time do not want it	0.81	0.201
Experience of any violence	1.28	0.147
Unreported violence	0.96	0.846

Appendix VII: Chi-square results of household and cohort surveys

For all p values <0.05, we can reject the null hypothesis of independence, and confirm that these outcomes of interest were dependent on which survey (household or cohort) participants were recruited into.

Variable	Household vs. Cohort (All ages)	Household vs. Cohort (15-19)	Household vs. Cohort (20-24)
Food insecurity	21.0, p=0.00	3.7, p=0.054	22.4, p=0.00
Adult support	84.1, p=0.00	60.3, p=0.00	27.6, p=0.00
Anal sex	0.77, p=0.381	3.8, p=0.051	0.30, p=0.585
Transactional sex	48.4, p=0.00	0.20, p=0.655	254.4, p=0.00
Cross generational relationship	5.4, p=0.021	0.13, p=0.721	10.5, p=0.001
Sexual debut	0.13, p=0.720	4.7, p=0.031	0.002, p=0.967
Sexual violence	21.5, p=0.00	23.9, p=0.00	3.7, p=0.054
Education more than primary	0.69, p=4.07	0.08, p=0.782	0.09, p=0.763
Older age group (20-24)	7.7, p=0.006	N/A	N/A