INTEGRATED HIV AND SEXUALLY TRANSMITTED INFECTIONS (STIS) BIOLOGICAL AND BEHAVIOURAL SURVEILLANCE SURVEY AMONG KEY POPULATIONS IN SOMALILAND

Final Report

AUGUST 2017

65 YEARS
International Organization for Migration
The UN Migration Agency

Publisher: International Organization for Migration
17 route des Morillons
P.O. Box 17
1211 Geneva 19
Switzerland
Tel: +41 22 717 9111
Fax: +41 22 798 6150
E-mail: hq@iom.int
Website: www.iom.int

74_17

INTEGRATED HIV AND SEXUALLY TRANSMITTED INFECTIONS (STIS) BIOLOGICAL AND BEHAVIOURAL SURVEILLANCE SURVEY AMONG KEY POPULATIONS IN SOMALILAND

Final Report

AUGUST 2017

This report was written by Calistus Masika (Lead Research Consultant) with technical support from Kelsi Kriitmaa (Senior Health Technical Advisor, International Organization for Migration (IOM)), respondent-driven sampling statisticians (Paul Macharia, Zoran Dominkovic and Sandra Sevic), national consultant (Iman Hussein), and the Technical Working Group in Hargeisa, comprised of the Somaliland National AIDS Commission, Somaliland Ministry of Health, UNICEF, Somaliland military, IOM health coordinator in Hargeisa, and local Global Fund Sub-recipients (Committee of Concerned Somalis, Talowadaq, Sahan Network).

Acknowledgements

The International Organization for Migration (IOM) would like to sincerely thank the key populations for their courage to participate in this research. Special appreciation goes to the Global Fund to Fight AIDS, Tuberculosis and Malaria, for funding the research, and to UNICEF Somalia as the principal recipient. Our deepest appreciation goes to the entire research team, including the field staff and technical teams, for their immense contribution in their different roles. IOM would especially like to thank the Ministry of Health, Somaliland for their support and leadership. In addition, IOM extends gratitude to the Somaliland National AIDS Commission who jointly, with the Ministry of Health, co-supervised the data collection process. Support from the multisectoral Integrated Biological and Behavioural Surveillance Survey technical working group in Hargeisa was greatly appreciated, for their significant contribution and insights before, during and after data collection. IOM also thanks the Global Fund Sub-Recipients for offering study site space (Committee of Concerned Somalis) and their team who supported the survey.

Contents

List of tables

List of figures

Abbreviations and acronyms

ART	Antiretroviral therapy
GARPR	Global AIDS Response Progress Reporting
HIV	Human immunodeficiency virus
IBBS	Integrated Biological and Behavioural Surveillance
IOM	International Organization for Migration
MoH	Ministry of Health
NGO	Non-governmental organization
RDS	Respondent-driven sampling
RPR	Rapid plasma reagin
SD	Standard Diagnostics
SOLNAC	Somaliland National AIDS Commission
SOP	Standard operating procedure
STI	Sexually transmitted infection
SS-PSE	Successive sampling-population size estimation
TLS	Time location sampling
TWG	Technical Working Group
UNAIDS	United Nations Programme on HIV/AIDS
USD	United States dollar
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

Executive summary

Background

At the time of implementing the 2017 Integrated Biological and Behavioural Surveillance (IBBS) survey, two previous rounds of IBBS studies involving vulnerable women had been conducted in Somaliland, in 2008 and 2014. In 2008, an IBBS study was implemented in Hargeisa involving 237 vulnerable women using respondent-driven sampling (RDS). Human immunodeficiency virus (HIV) prevalence of 5.1 per cent (2008) and 4.8 per cent (2014) was established. Both studies were conducted in Hargeisa, Somaliland involving vulnerable women. Other key population groups at higher risk of HIV transmission or infection, such as uniformed personnel and truckers, were not included in the surveys. However, understanding the disease burden among these populations is key to the success of the Somaliland HIV response. This integrated HIV and sexually transmitted infections (STIs) IBBS survey among key populations in Somaliland included vulnerable women, uniformed personnel and truckers, providing trend date for vulnerable women and establishing a baseline for truckers and uniformed personnel.

Methodology

The 2017 IBBS survey involved three study groups: (a) vulnerable women; (b) uniformed personnel; and (c) truckers. A total sample size of 858 respondents (n=286 per group) were recruited in Hargeisa. Data was collected between 18 April 2017 and 13 June 2017. RDS was used to recruit vulnerable women, and time location sampling (TLS) was used for uniformed personnel and truckers. Consenting participants aged 18 years and above meeting other eligibility criteria (established by a screener) were recruited and interviewed, and HIV and syphilis tests were undertaken. Somaliland HIV and syphilis testing algorithms were adopted. Serial HIV testing involved use of three tests (Standard Diagnostics (SD) Bioline for HIV, Abon and Stat-Pack) while testing for syphilis involved use of SD Bioline for syphilis and rapid plasma reagin (RPR) tests for confirmation. Respondents testing positive for HIV and/or syphilis were counselled and linked to care and treatment at Hargeisa Group of Hospitals antiretroviral therapy centre (HIV positive respondents only) and the International Organization for Migration's migration response centre clinic (syphilis cases). Biological data was captured on paper-based data collection tools, whereas behavioural data was captured using a mobile phone data collection application, mFieldwork. Behavioural data was cleaned and merged with biological data. Analysis of RDS data was conducted in RDS-Analyst (RDS-A) for univariate and bivariate analysis using Gile's sequential sampler estimator. This estimator takes into account network characteristics and generates adjusted proportions called "Estimated population proportions" with corresponding 95 per cent confidence intervals. Both univariate and bivariate analysis of TLS data were conducted using Stata version 12.

Findings

Most participants were aged between 18 and 24 years among vulnerable women and truckers, whereas uniformed personnel were generally older (mean of 45 years). A high proportion had either no education or primary education. Although the majority of participants from truckers and uniformed services were married, most vulnerable women were either separated, divorced or single. The majority of participants had stayed in Hargeisa for more than two years at the time of this data collection.

Vulnerable women

The mean age of vulnerable women in Hargeisa is 30.4 years, with the majority aged between 18 and 24 years, with no education (61.7%). The prevalence of HIV is 3.6 per cent, whereas syphilis prevalence is 5.2 per cent (ever infected) and 3.3 per cent (active infection). HIV composite knowledge is 48.9 per cent. In addition, 37.9 per cent report condom use during last transactional sex, and only 36.6 per cent know their HIV status. Lastly, coverage of HIV prevention programmes is low (23.1%).

Uniformed personnel

The mean age of uniformed personnel respondents is 40.2 years, half (51.7%) of whom have no education. HIV and syphilis prevalence is 0 per cent among uniformed personnel. HIV composite knowledge level is 1.4 per cent. Of the uniformed personnel, 9.6 per cent reported condom use during last transactional sex. Coverage of HIV prevention programmes is 3.0 per cent, and only 4.9 per cent know their HIV status.

Truckers

The mean age of truckers in Hargeisa is 29.2 years, while almost half (46.7%) have no education. The proportion of those who frequently visit neighbouring countries is 39.3 per cent, more than half (55.2%) travelling on a weekly to monthly basis. HIV prevalence among truckers is 0 per cent, while syphilis prevalence is 1.4 per cent (both active and non-active). Like the other two surveys, both HIV composite knowledge (3.7%) and condom use during last transactional sex (10.3%) is low. Only 4.7 per cent of truckers in Hargeisa know their HIV status. Lastly, coverage of HIV prevention programme among truckers is 0.7 per cent.

Conclusion and recommendations

There is variation in HIV and syphilis prevalence across the three surveys in Hargeisa. Generally, HIV prevalence is below 5 per cent but highest among vulnerable women (3.6%) compared to uniformed personnel (0%). This is a slight drop from the 4.8 per cent HIV prevalence recorded in 2014 and 5.1 per cent in 2008. Prevalence of non-active syphilis among vulnerable women is 5.2 per cent, and active syphilis is 3.3 per cent, in comparison with 2.4 per cent in 2014 and 3.4 per cent in 2008. The variation across key indicators (including Global AIDS Response Progress Reporting indicators) across surveys indicate the need to target and tailor HIV response intervention to address specific HIV programming gaps identified from this survey. These gaps include low condom usage during transactional and non-transactional sex with clients; low proportion of key populations who know their HIV status; less than 5.0 per cent coverage of HIV prevention programmes for key populations, and high proportion of key populations avoiding access to HIV programmes due to stigma and discrimination associated with either HIV services or sex work. Key interventions such as design and optimization of a peer education strategy could significantly improve key indicators, such as HIV programme coverage and increase access to HIV services, while minimizing stigma and discrimination. Future IBBS surveys should be conducted to track progress of key indicators. Such future IBBS surveys will help to measure the success of the HIV response in Somaliland. It is recommended that future IBBS surveys explore inclusion of additional key population groups at higher risk of HIV.

1. Introduction

1.1. Background

In 2014, estimates showed more than 30,000 people were living with human immunodeficiency virus (HIV) including 9,531 in Somaliland, 16,363 in South Central and 3,832 in Puntland (UNAIDS, 2015). In addition, the same report indicated a total of 2,338 new HIV infections among adults aged 15 years and above recorded the same year. Previous studies in Somalia have shown HIV to be a concentrated epidemic, particularly among vulnerable women; therefore, reducing prevalence among vulnerable women and other vulnerable populations is a critical measure of a national HIV response. Previous studies among key populations in Somaliland have established existence of vulnerable women. Other vulnerable populations comprise of truckers, port workers, seafarers, fishermen, khat clients, tea clients and uniformed personnel (International Organization for Migration (IOM), 2016; UNAIDS, 2014; Kriitmaa et al., 2010). The majority of vulnerable women meet their clients and engage in high-risk HIV activities either at their homes or the homes of the clients. Across the literature, the aforementioned other vulnerable populations have been reported to engage in sexual relations with vulnerable women. Several factors have been cited to exacerbate their vulnerability to HIV infection or transmission; these factors include alcohol and khat consumption, low literacy levels, mobility (particularly among truckers), religious and cultural practices against use of condoms and limited access to HIV prevention activities.

1.2. Previous IBBS studies in Somaliland

Two rounds of Integrated Biological and Behavioural Surveillance (IBBS) surveys involving vulnerable women have been conducted in Somaliland to date, in 2008 and 2014. In 2008, an IBBS study was implemented in Hargeisa involving 237 vulnerable women using respondent-driven sampling (RDS) (Kriitmaa et al., 2010). With an average age of 29 years, most of the vulnerable women had never attended school. In the 2008 IBBS, 6.9 per cent of vulnerable women participants were refugees, whereas 29.8 per cent were economic migrants (ibid.). The majority (57.2%) of participants in the 2008 IBBS were been born in Ethiopia, compared to 82.1 per cent in the 2014 IBBS whose place of birth was Somaliland (IOM, forthcoming (a); Kriitmaa et al., 2010). An HIV prevalence of 5.2 per cent and a syphilis prevalence of 3.1 per cent were established in this first round of IBBS survey, which was slightly higher than the 4.8 per cent recorded in 2014 (IOM, forthcoming (a)). The proportion of vulnerable women who reported use of condoms in their last transactional sex prior to the study was 24 per cent in 2008 compared to 31.5 per cent in 2014. Most of the vulnerable women across the two IBBS studies had their vaginal sexual debut at less than 18 years, though most of them had their first paid sex at the age of 18 years and above. Although the 2008 IBBS indicated 36.7 per cent of vulnerable women met their clients by the roadside, the majority of vulnerable women in the 2014 IBBS met their clients either at their homes or clients' home. This concurs with recent studies, including the 2016 mapping and size estimation study, which showed that homes are the major venue for both meeting clients and where vulnerable women engage in sex (IOM, forthcoming (c)). Though khat sellers, truck drivers and businessmen were cited by vulnerable women participants in 2008 IBBS survey as frequent clients, the majority of vulnerable women participants did not know the occupation of their clients (Kriitmaa et al., 2010). Truckers, khat sellers and businessmen in Hargeisa were cited by vulnerable women in the 2014 IBBS survey as their most frequent clients.

Few vulnerable women respondents in the two previous rounds of IBBS surveys in Hargeisa knew where to obtain an HIV test. Prior to the IBBS surveys, only 2.4 per cent of vulnerable women in 2008 and 21.3 per cent in 2014 reported having had an HIV test within 12 months and received the results. Self-reported access to condoms from HIV programmes, among vulnerable women,

was very low across the two IBBS studies with 0.7 per cent in 2008 and 3.8 per cent in 2014. More than half of the vulnerable women reported preferring to access condoms through pharmacies (IOM, forthcoming (a)). Only 4.3 per cent of vulnerable women in 2008 and 15.7 per cent in 2014 reported consistent use of condoms with clients one month prior to the study, with the majority of vulnerable women having poor composite knowledge about HIV prevention (10.4% in 2014 and 6.3% in 2008). These two IBBS studies, however, were limited to vulnerable women only and did not include other categories of key populations, such as truckers and uniformed personnel who constitute key vulnerable women clients.

1.3. IBBS justification

The previous two rounds of IBBS surveys in Somaliland were conducted in Hargeisa in 2008 and 2014, focusing on vulnerable women only. These surveys did not focus on other key populations who engage with vulnerable women, including truckers and uniformed personnel. This IBBS survey provides baseline data (truckers and uniformed personnel) and trends (vulnerable women) in HIV prevalence among key populations in Hargeisa, consequently providing useful indication of HIV prevention programme performance. The findings of this IBBS survey provide the national HIV programme with strategic information on current HIV and syphilis prevalence, as well as information on HIV and STI-related behaviours and risks. This information is essential for targeted planning of key population programmes towards realization of the 90-90-90 goal among key populations by 2020.

1.4. Study objectives

The overall objective of the survey was to undertake integrated HIV and sexually transmitted infection (STI) IBBS among key populations in Somaliland.

The specific objectives of this study included:

(a) To establish both baseline (client groups) and trend data (vulnerable women) for HIV and STI (syphilis) prevalence among key populations in Hargeisa;

(b) To determine risk behaviours and knowledge of HIV and STI among key populations in Hargeisa; and

(c) To establish an association between sociodemographic characteristics and HIV/STI risk behaviours among key populations in Hargeisa.

2. Methodology

2.1. Formative research stage

The formative research stage aimed to convene zonal partners and stakeholders to consult on the three key populations groups, as well as discuss the feasibility of conducting the IBBS surveys in Hargeisa. This stage involved the following:

(a) Review of previous studies conducted in Somalia, especially on key population risks, size estimates, locations, accessibility and potential barriers to the survey.

(b) Formation of Somaliland Technical Working Groups (TWG) comprising experts from the Ministry of Health (MoH), Somaliland National AIDS Commission (SOLNAC), UN agencies, and local non-governmental organizations (NGOs) working with key populations. During the pre-data collection TWG meeting, the study methodology including sampling techniques, survey logistics and level of compensation for participant's time and travel was discussed and agreed upon.

(c) Pre-study meetings with gatekeepers at prospective data collection sites/venues, and identification of potential RDS seeds was conducted.

2.2. Study sites and target population

The study was undertaken in Hargeisa among vulnerable women, uniformed personnel and truckers. These groups were prioritized based on available data, funding and feasibility of implementing an IBBS in Somaliland across different groups concurrently. According to the Global AIDS Response Progress Reporting (GARPR) report (2017), major towns and cities play a critical role in the HIV response because of their large and increasing number of people living with HIV and the increased vulnerability to HIV transmission associated with city dynamics, such as population density, migration, inequalities and high concentrations of key affected populations. Furthermore, such major towns and cities have a critical opportunity to provide leadership in the HIV response as drivers of economic and educational opportunity, innovation, accessible service delivery and inclusive, participatory approaches to governance.

2.3. Study design and sampling techniques

A cross-sectional study involved recruiting respondents using two sampling techniques: RDS and TLS.

2.3.1. Respondent-driven sampling

RDS is a variant of chain-referral sampling that produces data that are representative of the target population. RDS resembles snowball sampling, whereby members of the population recruit other members of the population within their social networks. However, unlike snowball sampling, recruitment is done in a controlled manner (maximum of three peers recruited by a participant) while collecting data that can be used to adjust for the biases encountered in persons recruiting from their social networks. Seeds refer the initial vulnerable women who start the chains of recruitment among their social networks. Eight vulnerable women seeds were purposely selected in each of the two study sites to reflect the diversity of social networks in the respective two study sites, in order to logistically enable the survey to reach equilibrium within a feasible time period, and also

to ensure diversity across networks. During selection of the initial seeds, preference was given to vulnerable women who were well connected within their networks (among their peers) and well regarded and respected by their peers. A Global Fund sub-recipient NGO working with vulnerable women in Hargeisa and the central laboratory in Hargeisa supported the study through provision of survey space at their premises. These spaces allowed for safety and privacy of participants and the research teams. This also allowed for smooth administration of the behavioural questionnaire and HIV and syphilis testing. To avoid long waiting times among participants, two interviewers and two nurse counsellors conducted HIV and syphilis tests, working concurrently. Due to the sensitivity of the study in Somaliland, posters or signage advertising for the study were not be used.

2.3.2. Time location sampling

TLS was used to recruit respondents among truckers and uniformed personnel. TLS is a probability-based method for enrolling members of a key population at times and places where they congregate. TLS is a procedure in which venues (e.g. truck stops, ports, hotels) and their associated attendance periods are the primary sampling units. A sampling frame comprising of a comprehensive list of venues where the key populations can be found and the days of the week and the hours of the day when they can be found in number was created and agreed upon during a TWG meeting. Additional information on possible sampling units was derived from the mapping and size estimation study conducted from December 2015 to March 2016. Prior to this IBBS survey, fieldwork preparation for TLS was conducted at the locations where the IBBS would be conducted (truck stops, uniformed service bases and police stations).

Appropriate buildings near the truck stops and police/military bases were rented out to create sufficient space for interviewing and administering the biological testing component. The venues were randomly selected from the sampling units created during the formative stage. Each venue, constituting a sampling unit, was assigned a consecutive number. A computer software, Research Randomizer, was then used to generate random numbers.

Appropriate days and time were identified as Sundays through Thursdays from 7 a.m. to 12 p.m. During data collection, all seemingly eligible people who were at the venues within operating hours were consecutively approached and asked to complete a brief eligibility interview. During training, screeners were trained to approach potential participants by identifying themselves, their purpose and to confidentially conduct brief eligibility interviews. However, due to security risks in Somalia, identification badges were not used. Individuals who agreed to participate in the IBBS survey were accompanied to the rented venue located within/next to the truck stops, port or police/military base for interview and subsequent syphilis and HIV testing. In cases where recruitment was extremely slow, members of the target group (in company of a screener) were used to mobilize peers who were at the venue or data collection site for eligibility screening. All eligible individuals were asked to participate. Participants were asked for verbal informed consent for conducting the survey interview and testing for HIV and syphilis. On successful completion of the behavioural and biological components of the interview, each participant was given four US dollars (USD) to compensate for their time to participate in the survey. At each data collection point, the survey team had representation from a Global Fund sub-recipient who worked with that particular key population group.

2.4. Sample size

The sample size generated was based on the surveillance purpose of tracking important changes in the HIV epidemic over time; that is from earlier estimates of HIV prevalence (i.e. IBBS surveys conducted in Hargeisa). Each of the three study sites, and each population group, constituted a separate survey with a sample size needed to track changes at each study site and population group over time. The sample size calculation, using the formula below, took into consideration eight key indicators used in the previous IBBS surveys as shown in Table 1.

$N = Deff [(Z)^2 P(1-P) / W^2]$

Where:

Deff – Design effect of 2.0
N – Desired sample size
Zα – Standard normal deviate at the significance level (α = 0.05, two-sided) corresponding to 1.96
P – Expected proportion with outcome of interest
W – Degree of accuracy, at 0.05

Table 1: Indicators used to determine sample size from IBBS survey

No.	Indicator	Population estimation	Resulting sample size (N)	With design effect (x2)
1	% vulnerable women infected with HIV	4.8%	70	140
2	Condom use at last sex	20.6%	332	663
3	Condom used consistently with clients in past month	13.3%	177	354
4	Ever heard of male condom	72.3%	366	732
5	Less than five clients in past 30 days	35.6%	367	734
6	% vulnerable women who had HIV test in past 12 months and knew result	21.3%	258	516
7	Ever had HIV test	4.0%	320	640
8	% vulnerable women who correctly identified ways of preventing transmissions and rejected major misconceptions	10.4%	143	286

Using a design effect of 2.0, as recommended in both RDS and TLS studies, the resulting sample size ranges between 140 and 734. The indicator on percentage of vulnerable women who correctly identify ways of preventing transmission and reject major misconceptions (GARPR 5.1) was used, as it struck a balance of feasibility and acceptable precision in the Somaliland context. Thus, a sample size of 286 was used per key population group. Consequently, a total of 858 respondents were recruited in Hargeisa, across the three populations.

2.5. Operational definition of key terms and target populations

- Key population – Groups at increased risk of HIV infection or transmission comprising vulnerable women, truckers, police and military personnel
- Truckers – Long-distance and intra-city truck drivers and their assistants in Hargeisa
- Uniformed personnel – Individuals who belong to any uniformed services including military and police in Hargeisa
- Vulnerable women – Women who have engaged in sexual activity with men in exchange for money, favour or goods in the last 12 months in Hargeisa
- Separated – Couples not living together in marriage for six months or more

2.6. Eligibility

Inclusion

- Aged 18 years and above
- Had to be a vulnerable woman, uniformed personnel or trucker (meet the operational definition outlined previously)
- In possession of a valid referral coupon (RDS/ vulnerable women only)
- Approached by study staff in designated venue/time (TLS/client groups only)
- Capable and willing to provide informed consent to participate (see further information on informed consent below)
- Working and/or living in Hargeisa (defined as primary residence/where person lives the majority of time)

Exclusion

- Previous participation in this round of IBBS survey
- Inability to provide informed consent (including persons incapable of providing consent or under the influence of alcohol or drugs)

2.7. Screening for eligibility

Whenever a potential participant is presented to the study site, the screener examined and verified the authenticity of the coupon (vulnerable women only) presented to exclude possibility of double participation, in addition to other eligibility criteria. Eligibility was assessed using a short questionnaire covering the aforementioned criteria. In case the screener still remained unconvinced about potential participant's eligibility, he/she was under instruction to pose additional non-standardized questions to confirm eligibility.

2.8. Study variables

This IBBS survey examined the following biological and behavioural variables:

- HIV prevalence and STI (syphilis) prevalence
- Demographic characteristics: Age, nationality, marital status
- Knowledge on HIV and STI transmission
- Sexual history
- Sexual history: Paying clients
- Sexual history: Non-paying clients
- Condoms: Male and female
- Population size estimation
- HIV testing history
- Sigma and discrimination
- Physical and sexual violence

- Programme coverage
- Alcohol and drug use

2.9. Population size estimation

Estimation of key population sizes when implementing IBBS surveys is currently recommended (GARPR, 2017). This survey included in the questionnaires, questions on size estimation of key populations in Hargeisa. Both the multiplier method and the wisdom of the crowd methods were used.

2.9.1. Health service multiplier

Procedures for a service multiplier entail obtaining programme data from a clinic or other programme servicing the key population on the total number of key population members who accessed that service during a specific period (e.g. number of vulnerable women accessing Voluntary Counselling and Testing (VCT) centre for HIV testing). Existence of this critical information was sought during the zonal stakeholder TWG meeting. Unfortunately, existing programmes in Somaliland have not captured data specific to target population, such as HIV testing data among vulnerable women or any other key population category. During administration of the survey questionnaire, all respondents were asked whether they accessed this service during the specified time period. The number of key population members from the service data count and the proportion reporting having accessed this service in the survey questionnaire provide the parameters for computation of population estimates. To strengthen accuracy, the initial plan was to ensure that service data counts included all the key population members accessing the service, unduplicated (no one counted twice), and that service data were for the appropriate period (for the last 12 months prior to the current IBBS survey). Using these two data sources, the multiplier method provides a population size estimate with the following formula:

$$N = n / p$$

Where *N* is the estimated key population size, *n* is the total number of key population who accessed the health service (e.g. HIV testing), and *p* is the proportion of the key population reporting in the current IBBS survey to have accessed health service (HIV testing).

2.9.2. Successive sampling-population size estimation (SS-PSE)

Successive sampling-population size estimation (SS-PSE), along with network size imputation, allows population size estimates to be made based on theoretical decline in network size over sampling wave in RDS. This new experimental method requires only an RDS survey (though better with additional estimates to compare, inform prior) to be computed within RDS Analyst software. This method provides a promising alternative to other methods commonly used to estimate the size of hard-to-reach populations. SS-PSE relies only on data already collected in an RDS study. Vulnerable women population size estimates are presented in form of mean, median and mode. The results of this estimation should be interpreted with caution.

2.9.3. Wisdom of the crowd

The survey also produced an estimate of the number of each key population in the survey location through the synthesis of survey participant opinions, also called the wisdom of the crowd method. Participants in the IBBS were asked their best estimate of the number of key population members like them in their location. Such an approach produces a measure of the perception of community members of the population size of the key population. The wisdom of the crowd method theorizes that members of the population have specialized information on the population, and that personal

opinion formulated in private was not influenced by others' responses. The estimate was examined as the median, mode and mean responses and compared to the other size estimation methods.

2.10. Data collection

This IBBS survey collected both behavioural and biological data from participants. Data items included indicators needed to track the HIV epidemic and the national response for key populations, conforming to international standards (e.g. GARPR indicators as shown in Table 2 and Somaliland Key Performance Indicators), national programme needs, and comparability with similar surveys in the region. The questionnaire collected data on the following: (a) sociodemographic indicators; (b) sexual behaviours potentially correlated with HIV; (c) self-report STI symptoms; (d) stigma and discrimination; (e) risk perceptions; and (f) knowledge, attitude and practices around HIV and AIDS. The majority of the questions in the previous IBBS surveys in Somalia were included in order to compare trends. The behavioural questionnaire was programmed into a mobile application, mFieldwork, and administered by a trained interviewer in the local language. The behavioural questionnaire was translated into Somali. Biological data was collected on paper, and data entry was done by the site supervisor on password-protected laptops at the end of each day. The site supervisor also stored a back-up copy of the files on a flash drive that was kept in a locked cabinet. The biological participant records were devoid of any participant identifiable information, only unidentifiable unique sequential coupon code, and a unique laboratory code. Pretesting of the questionnaire was conducted at the survey sites prior to the full-scale study to establish effectiveness of the behavioural questions.

Based on lessons learned from previous similar studies in Hargeisa, this study conducted vulnerable women interviews at Global Fund sub-recipient office (CCS) as opposed to private rented premises. Since the Global Fund sub-recipients have been working with vulnerable women, vulnerable women are likely to be more comfortable to access these premises, and this also minimizes suspicion from members of the public on the nature of activities. The study also rented private venues/premises next to truck stops. The Uniformed Services team operated inside military bases/ police stations. The research team sought permission and support from the Ministry of Interior. During the zonal TWG meetings, the research team created a sampling frame of all truck stops and military and police bases. Each of the three study sites had four independent data collection sites for the respective surveys (vulnerable women, truckers and uniformed personnel). The data collection sites operated daily (except Fridays) during data collection with different operation time depending on the population group. The sites were temporarily closed daily during prayer times.

Table 2: GARPR indicators among key populations included in the Somaliland IBBS

3.3	HIV prevalence among key populations
3.4	Knowledge of HIV status among key populations
3.6A	Condom use among sex workers
3.7	Coverage of HIV prevention programmes among key populations
3.8	Safe injecting practices among people who inject drugs
3.11	Active syphilis among sex workers
4.2	Avoidance of HIV services because of stigma and discrimination among key populations
5.1	Young people: knowledge about HIV prevention

Figure 1: Data collection flow procedure/chart among vulnerable women team

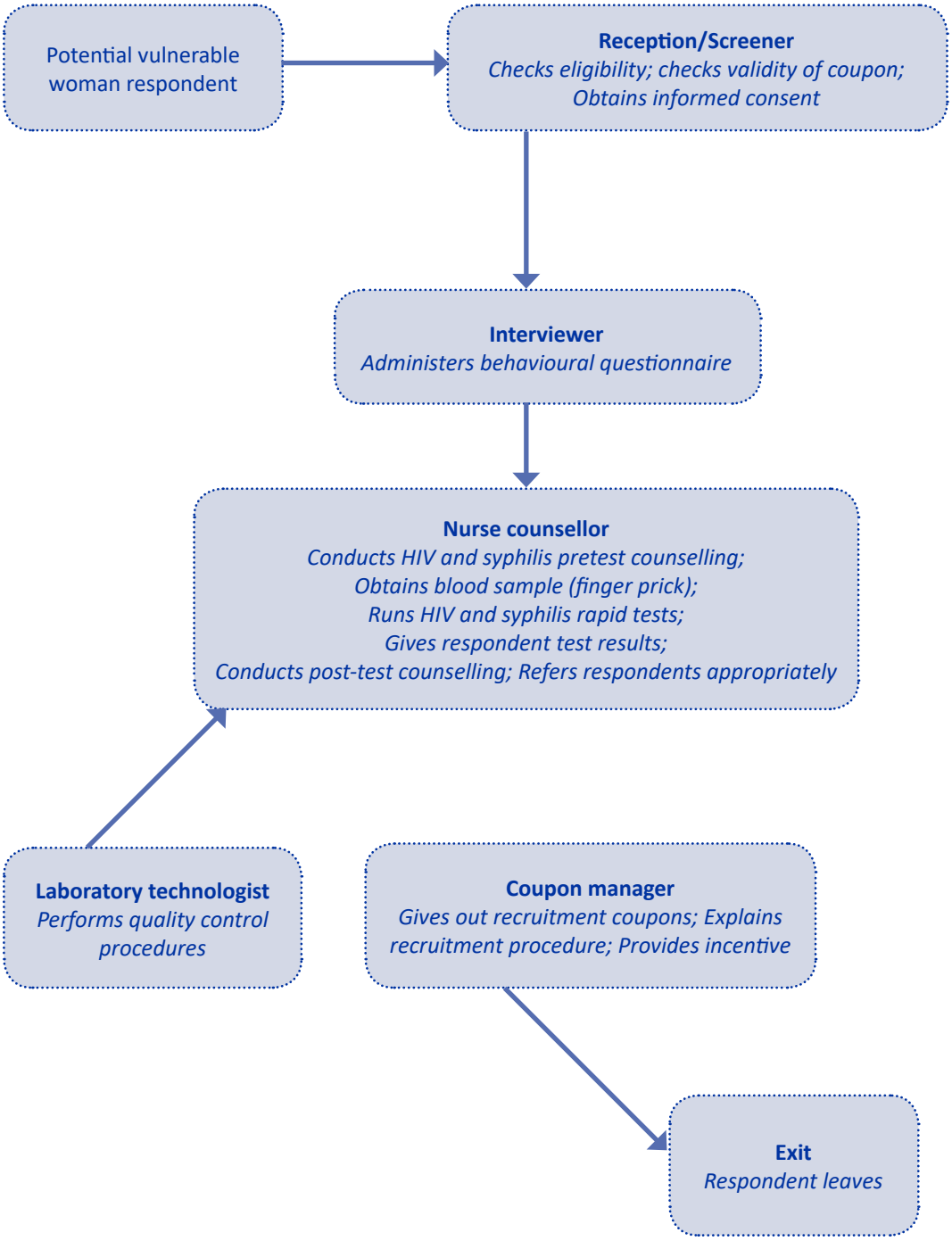
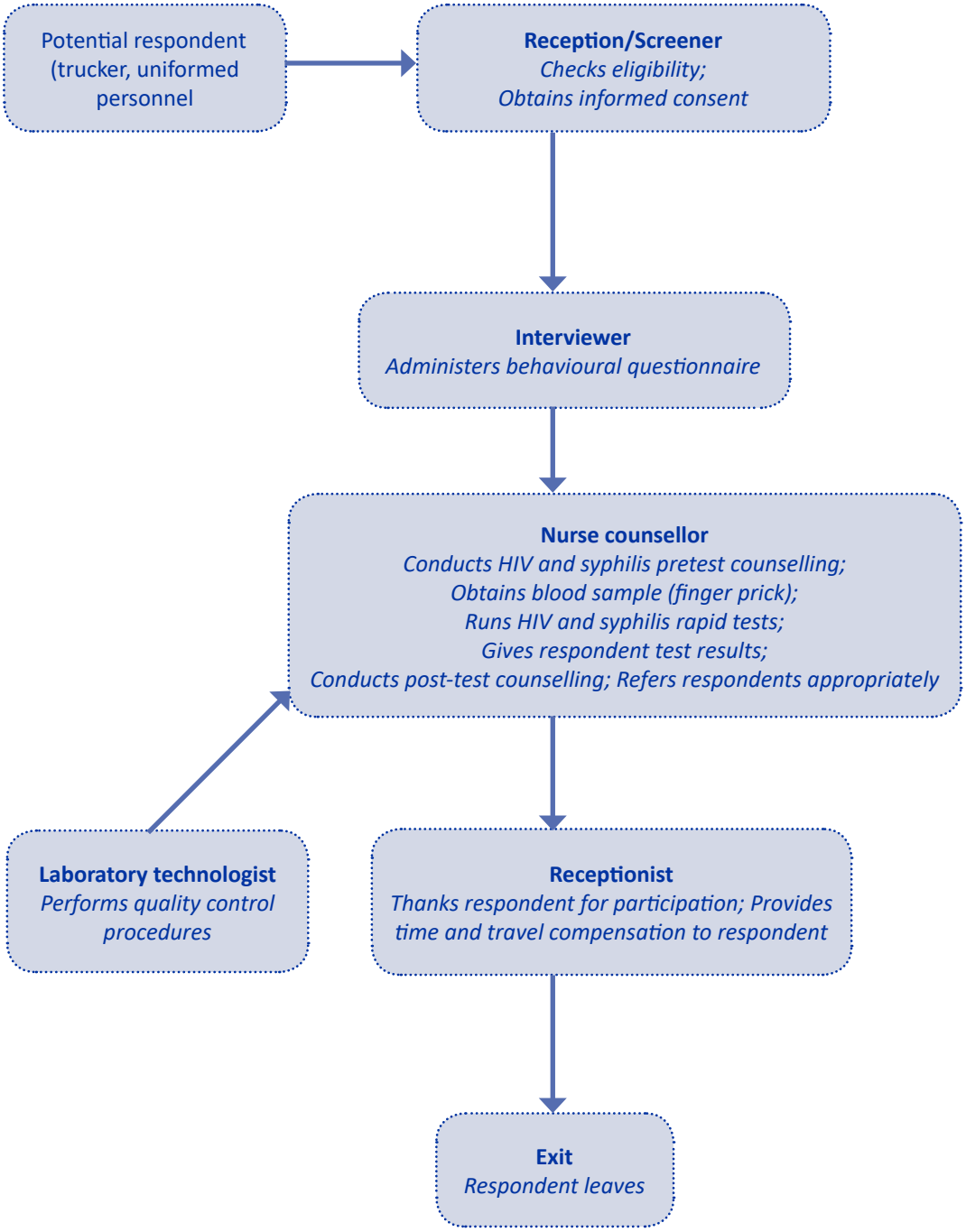


Figure 2: Data collection flow procedure among truckers and uniformed personnel



2.11. Compensation for respondent's travel and time

Successful completion of both behavioural and biological components of the survey consumed a significant amount of time – potentially up to 2.5 hours. All participants were compensated for their time and travel to the safe data collection site. USD 4 was paid upon successful completion of behavioural and biological interview process among uniformed personnel and truckers. Since success of RDS is dependent on referral of peers to data collection site by initial vulnerable women seeds, USD 3 was compensated for every successful referral among vulnerable women team. The research team confirmed the local appropriateness of these incentives during the TWG consultative meetings in Hargeisa. In addition, participants received HIV/STI prevention messages from nurse counsellors and linkage to treatment at Hargeisa Group of Hospitals antiretroviral therapy (ART) centre for HIV positive cases and IOM's Migration Response Centre for syphilis treatment.

Figure 3: Front side of the Somaliland IBBS coupon

Coupon for participation in the Somaliland IBBS survey

Come with this coupon on working days (Saturdays to Thursdays) from 7am–5pm.

From _____ To _____

To avoid rushes, please make a phone reservation on xxxxxx on working days from 8am–4pm.
Don't forget to bring the coupon.

Secondary participation compensation coupon

Coupon number

For each participant you refer to this survey (up to 3 persons), you will get a compensation for your time and travel to reach out to your peer.

For more information, call xxxx on working days between 7am–5pm

Venue: _____

Figure 4: Back side of the Somaliland IBBS coupon

Coupon for participation in the Somaliland IBBS survey

Please come with this coupon, and if you fulfil eligibility criteria for participation in research, our female staff will give you:

- Free information about HIV and STIs
- Money compensation of USD 5 for taking time and traveling to the venue to be interviewed and get an anonymous testing on HIV and syphilis from blood.
- Results from all tests and counseling about possible treatments

This coupon won't be accepted if:

- it has expired
- participant has already participated in this survey

For more information, please call xxxxxx

Secondary participation compensation coupon

You will get incentive of USD 3 for each person you direct to the survey if she:

- is eligible to participate in the survey
- hasn't already participated in the survey
- has come before the expiry date of coupon
- has filled out the questionnaire
- has given blood sample for HIV and syphilis tests

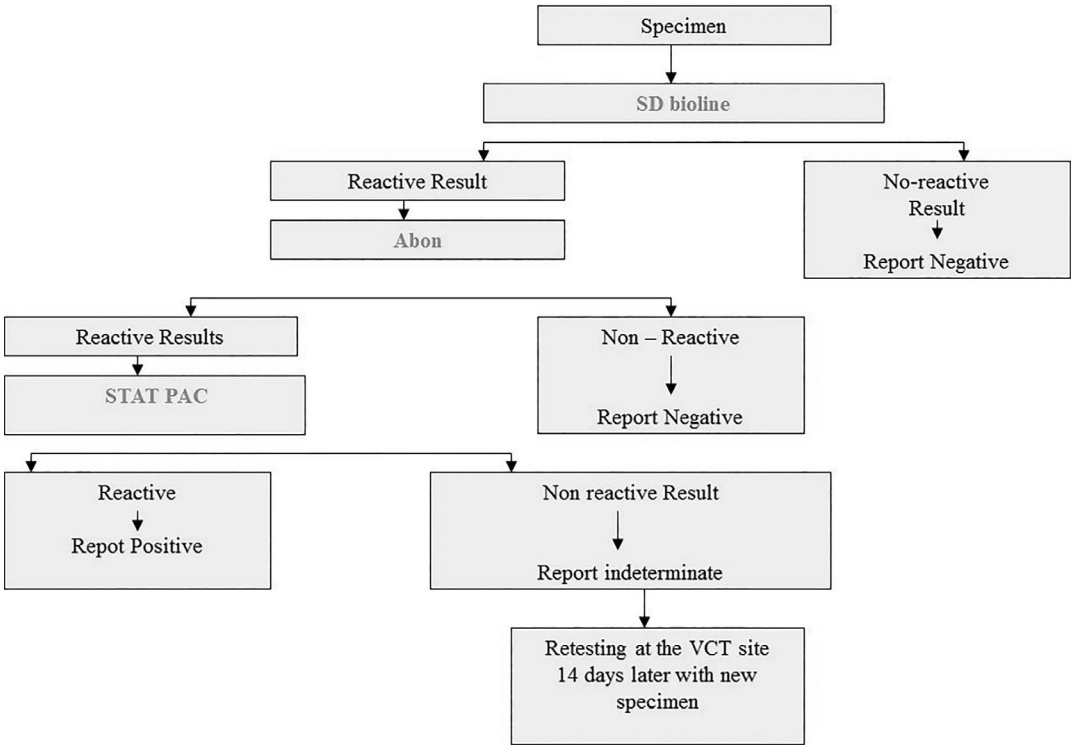
2.12. HIV and syphilis testing

Serological testing for HIV and syphilis followed the World Health Organization (WHO)-approved testing strategy for Somaliland. HIV rapid/point-of-care tests was conducted on site using capillary blood from a finger prick. Due to low prevalence of chlamydia (0.7%) and gonorrhoea (0.4%) (IOM, forthcoming (a)) IBBS coupled with resource constraints, the stakeholders agreed to test for HIV and syphilis only.

2.12.1. HIV testing

HIV rapid testing was conducted at the survey sites after completion of the behavioural questionnaire and pre-test counselling by nurse counsellors. Rapid testing was conducted using a serial testing scheme as outlined in the Somalia national algorithm and WHO-approved rapid test kits. All participants who consented were tested using Standard Diagnostics (SD) Bioline HIV rapid test kits. Non-reactive results were considered negative, and reactive results were confirmed with Abon HIV rapid test. A positive HIV test by Abon HIV test warranted a further test using Stat-Pack HIV test. Non-reactive results from Stat-Pack was considered indeterminate, and the participant was told to re-test after 14 days. However, reactive results on Stat-Pack HIV test was considered positive. All participants received post-test counselling, with specific messages tailored to their test result including HIV prevention messages. Persons with any reactive result, or indeterminate result, were given referral to HIV care and treatment services and further counselling and testing at the VCT centres within Hargeisa Group Hospitals. IBBS survey site supervisors followed up with the referral facility to ensure complete referrals.

Figure 5: Serial HIV rapid testing strategy

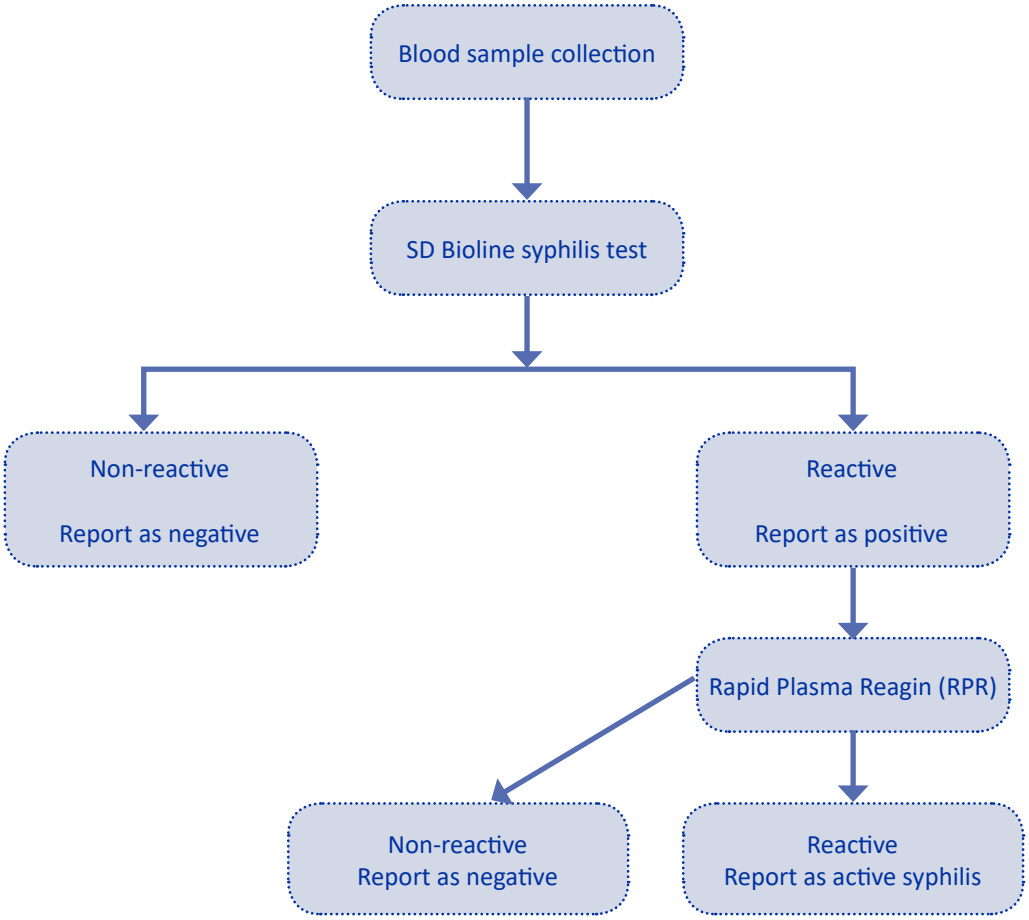


Source: WHO Somalia, 2017.

2.12.2. Syphilis testing

Testing for syphilis adopted the WHO-approved testing strategy for Somaliland. On-site testing of syphilis was done using rapid SD Bioline Syphilis test kits. Non-reactive tests were reported as negative, whereas respondents with reactive results were tested using a second test. For every reactive SD Bioline Syphilis test, a further test with non-treponemal rapid plasma reagin (RPR) was conducted. The specimen for every tenth participant and also every positive rapid SD Bioline syphilis test was transported to Hargeisa Group of Hospitals reference laboratory for quality control purposes.

Figure 6: Syphilis testing strategy



2.13. Testing quality assurance

For every tenth respondent, a venous blood draw of 3 ml of blood, distributed in two tubes: 1–2 ml EDTA tube for performing the on-site rapid HIV/Syphilis tests, and 2 ml serum separator tube. The samples were centrifuged and the serum aliquoted for testing at Hargeisa Group of Hospitals reference laboratory for quality control purposes. All samples sent to the aforementioned laboratories had a laboratory code that was linked to the participants' survey code. The samples sent for quality assessment were sent without test results. After the samples were tested, results were returned to the study site in order to establish the discrepancy rate. On-job supportive supervision and training was provided to the national laboratory and VCT nurses to prevent occurrence of testing errors. However, there was no discordance between the results.

2.14. Training of research field team

The field survey staff, including the screeners, interviewers, nurse counsellors, coupon managers, outreach workers, site team leader, MoH and AIDS Commission focal persons and national consultants, participated in a one-week mandatory training on survey protocol and operational/ implementation approach. The training covered the Somaliland IBBS research protocol, data management, ethics, safety, human subjects and confidentiality. Nurse counsellors were also required to participate in a two-day WHO-led refresher training on the national guidelines for HIV and syphilis counselling, testing and referral services.

2.15. Data analysis

Analysis of RDS data was conducted to produce population prevalence estimates and confidence intervals of variables adjusting for unequal probabilities of inclusion due to varying social network sizes and the similarities in characteristics of persons within their social networks. This was done using RDS Analyst. During data collection, analysis was done at midpoint to test for equilibrium. Specialized analyses within RDS Analyst was used to adjust for social network size and homophily within networks, and was used to produce population point prevalence estimates and 95 per cent confidence intervals of key variables, adjusting for unequal probabilities of inclusion. Data with weights was exported to STATA for analysis. TLS data was analysed using STATA with commands for survey data that incorporate sampling weights and adjustments to standard errors for clustering on daytime sampling events. In both RDS and TLS data, the primary analysis was the adjusted population point estimates of prevalence of HIV infection, use of health care services, and of key risk behaviours (e.g. multiple/concurrent partners, drug/alcohol use), prevalence of condom use and access to health care and prevention programmes. Analysis focused on GARPR indicators. In both RDS and TLS, explanatory variables entered into the models included age, education, typology of key population, study site, sexual behaviours, marital status, knowledge of HIV, number of sexual partners, alcohol and drug use, STI symptoms and exposure to an HIV/AIDS interventions and messaging. Multivariate analyses (logistic regression) using STATA 20.0 was performed to identify correlates of HIV and STI risk behaviours also using sampling weights and adjustment for clustering. Variables in each model with a P value of 0.05 or less was considered statistically significant.

2.16. Ethical considerations

This protocol was reviewed and granted approval from both Somaliland MoH and SOLNAC. Names or other identifying information of participants was not to be used on the survey, survey forms, or on any laboratory specimens. All paper-based survey materials was stored in locked file cabinets, in locked offices. Participants were not asked for identification (such as national ID). Prior to interview, the interviewer read out loud the consent form to the participant and obtain informed verbal consent. The interviewers ensured the respondent had understood every part of the informed consent. Persons incapable of providing consent or under the influence of alcohol or drugs were excluded from the study. All electronic data files were password protected and only accessible to authorized IBBS personnel. RDS participants were compensated for their time and travel to a safe data collection site. All staff participating in this Somalia IBBS were required to sign an employee confidentiality agreement after training. Participants in this IBBS benefited from counselling and testing for HIV and syphilis, referral for HIV/syphilis care and treatment services (those testing positive for syphilis or HIV), and free health promotion and prevention messages delivered by nurse counsellors.

3. Findings

3.1. Vulnerable women

A total of 287 vulnerable women were recruited. Five initial seeds were purposely recruited through contacts with staff working with Global Fund sub-recipient organizations working in Hargeisa. Three additional seeds were introduced along the way, making a total of eight seeds. The seeds were recruited to represent diverse characteristics including varied age and originating from different parts of Hargeisa. However, just after data mid-data collection, it was ascertained that one vulnerable woman participant had disrupted the principals of unbiased peer recruitment, from the initial four seeds. This was discovered a few days after the incident happened; as such, the study team agreed to eliminate participants who participated on the affected two days and their subsequent recruits. This necessitated introduction of two additional seeds, as seed six and their recruits were completely removed.

3.1.1. Response rate and eligibility

Out of 534 coupons distributed, 53.7 per cent were returned by vulnerable women at data collection site. One (1) per cent of vulnerable women refused to accept coupons from the coupon manager, citing fear of being identified as a vulnerable woman in case she went out to recruit other vulnerable women as shown in Table 3.

Table 3: Response rate and eligibility of vulnerable women

Characteristic	Sample proportions	
	n/N	%
Coupons distributed	534	-
Coupons returned	287/534	53.7
Vulnerable women who rejected coupons	3/287	1.0
Reasons for coupon rejection/Refusal to accept coupon (at data collection site)		
Fear of being identified as a vulnerable woman	3/3	100
Participants ineligible	0/287	0.0

3.1.2. Network properties

The recruitment tree for vulnerable women in Hargeisa is illustrated in Figure 7. This tree indicates seven vulnerable women seeds and the accompanying recruitment chains. The maximum number of waves reached from recruitment was seven, as shown in Figures 8 and 9.

Figure 7: Hargeisa vulnerable women recruitment tree

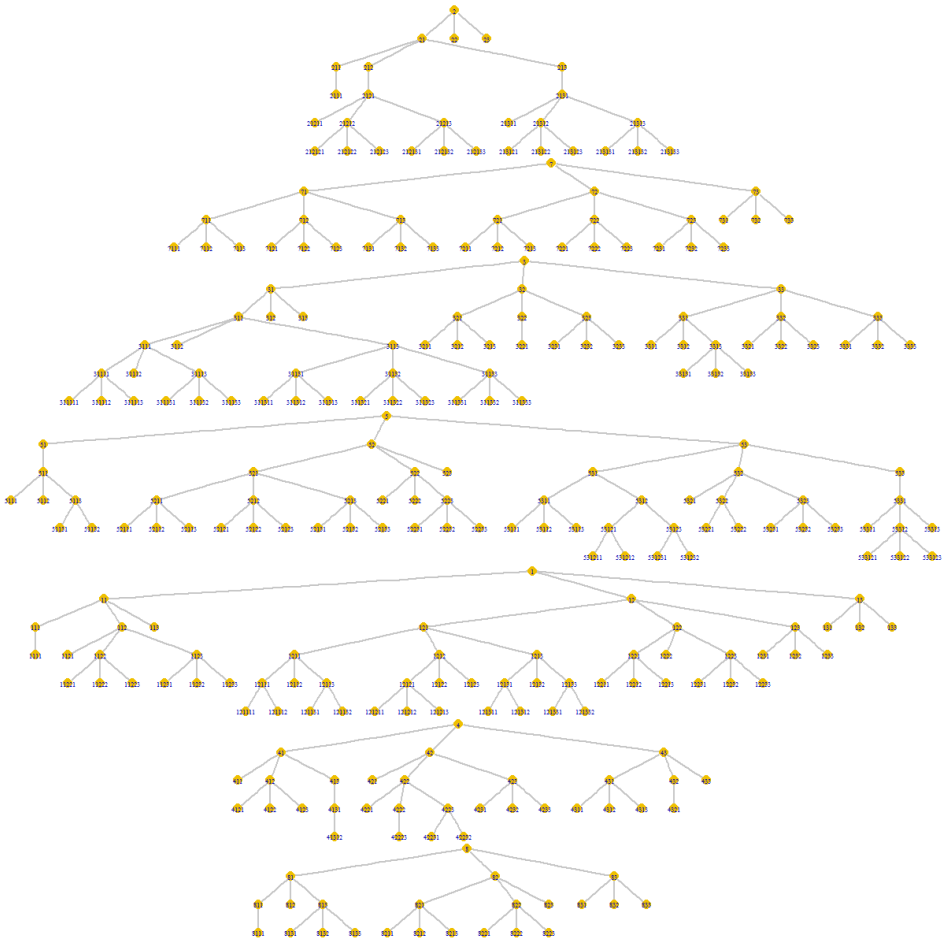


Figure 8: Vulnerable women recruits per seed

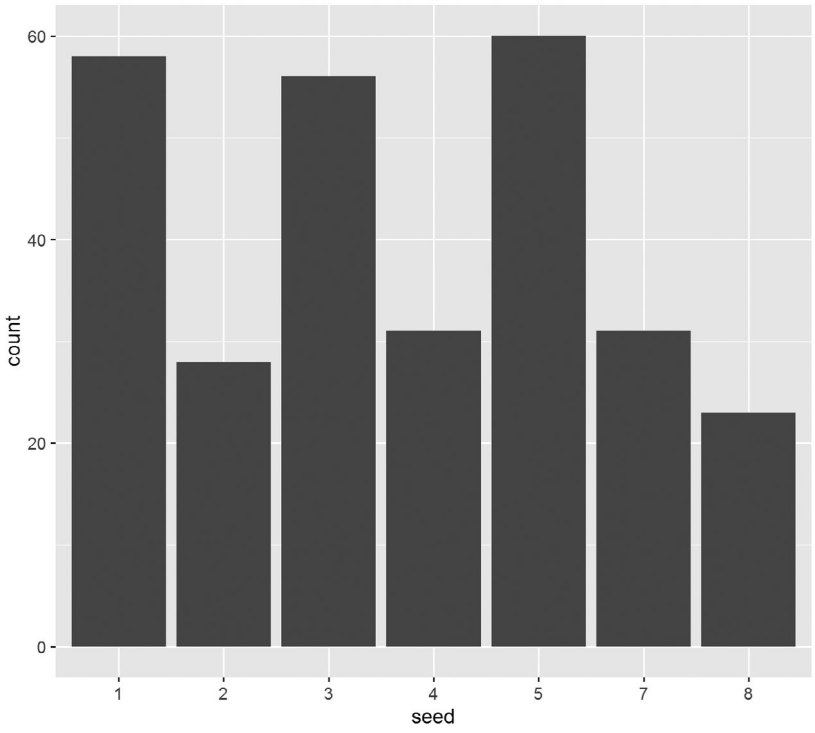
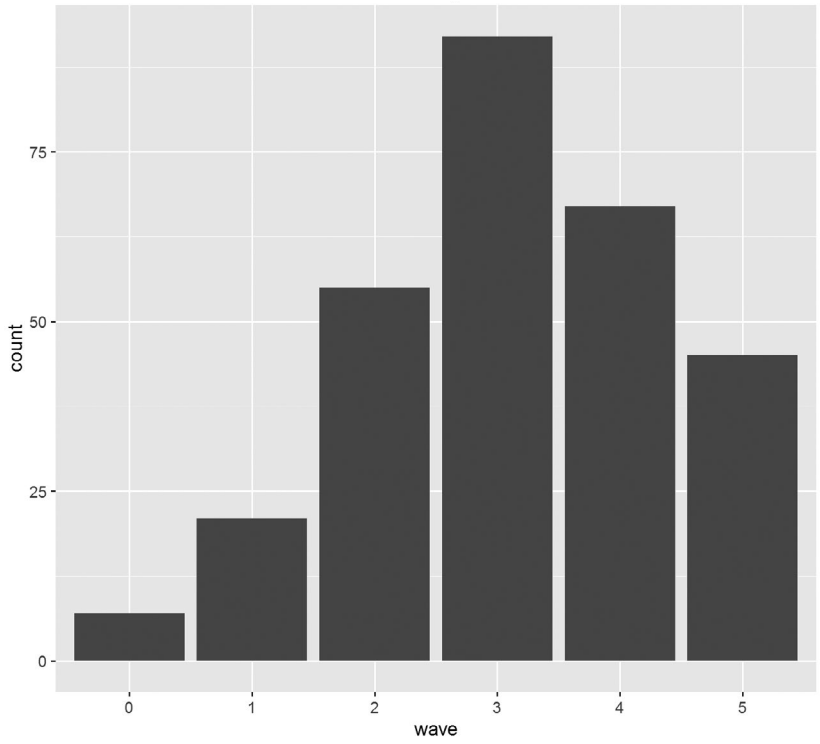


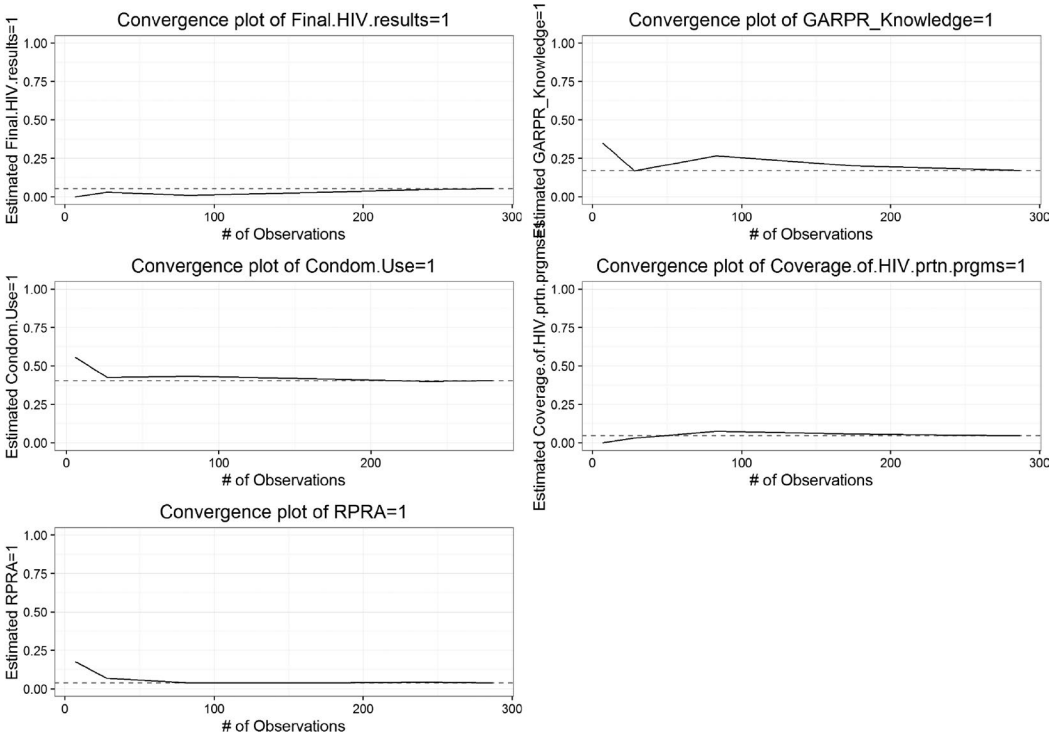
Figure 9: Vulnerable women recruits per wave



3.1.3. Convergence

Convergence was reached on all five key indicators as shown in Figure 10. The five key GARPR indicators tested to establish convergence comprised of the following: (a) HIV prevalence; (b) syphilis prevalence; (c) knowledge on HIV; (d) condom use at last transactional sexual intercourse; and (e) coverage of HIV prevention programmes.

Figure 10: Hargeisa convergence plots on key indicators



3.1.4. Sociodemographic characteristics

The average age of vulnerable women in Hargeisa is 30.4 years, and most of them are between 18 and 34 years of age (60.1%). Most (97.6%) vulnerable women were of Somaliland nationality. The majority of vulnerable women (61.7%) have no education, and most are either divorced (25.2%), separated (31.7%) or single (29.1%) and are living with their children or their parents. Besides sex work, 68.2 per cent of vulnerable women also earn money doing other work, especially tea selling (27.6%) and domestic work (27%). Slightly less than half of the vulnerable women (48.1%) earn more than USD 100 per month. Almost all vulnerable women (98.2%) are circumcised, as shown below in Table 4.

Table 4: Sociodemographic characteristics of vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Age	Range	18–65				
	Mean ± SD	30.6 ± 9.7		30.4 ± 9.7		
	Median	30.0		30.0		
	<25 years	93/287	32.4	30.2	24.9	35.6
	25+ years	194/287	67.6	69.8	64.4	75.2
	18–24	93/287	32.4	30.2	24.9	35.5
	25–34	87/287	30.3	29.9	24.6	35.2
	35–44	75/287	26.1	28.5	22.6	34.4
	45 or more	32/287	11.1	11.4	7.7	15.0
Level of education	None	176/287	61.3	61.7	55.9	67.5
	Primary	73/287	25.4	23.6	18.8	28.3
	Secondary	34/287	11.8	12.6	8.2	17.0
	University/College	4/287	1.4	2.1	0	4.2
Nationality	Ethiopia	4/287	1.4	1.6	0	3.2
	Somalia	3/287	1.0	0.7	0	1.6
	Somaliland	280/287	97.6	97.6	95.8	99.4
Country of birth	Ethiopia	4/287	1.4	1.6	0	3.2
	Somaliland	282/287	98.3	98.1	96.5	99.8
	South Central	1/287	0.3	0.2	0	0.5
Length of stay in Hargeisa	2–3 months	1/287	0.3	0.2	0	0.6
	4–6 months	2/287	0.7	0.4	0	0.9
	7–11 months	1/287	0.3	0.2	0	0.5
	1–2 years	3/287	1.0	0.8	0	1.7
	More than 2 years	280/287	97.6	98.2	97.2	99.2
Marital status	Divorced	74/287	25.8	25.2	20.3	30.0
	Married	17/287	5.9	5.0	2.9	7.0
	Separated	93/287	32.4	31.7	26.5	36.9
	Single	75/287	26.1	29.1	23.4	34.9
	Widowed	28/287	9.8	9.0	5.9	12.2
Proportion of married vulnerable women whose spouse/partner has another wife or wives		7/17	41.2	50.3	27.2	76.3
Person the vulnerable women is currently living with		91/287	31.7	30.9	25.6	36.1
		2/287	0.7	0.5	0	1.1
		63/287	22.0	21.5	17.0	26.1
		5/287	1.7	2.8	0.2	5.5
		36/287	12.5	11.3	8.0	14.7
		90/287	31.4	32.8	27.4	38.3
Proportion of vulnerable women who currently earn money doing work other than sex work		190/285	66.7	68.3	64.1	72.6

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Type of other work currently done (multiple answers possible)	Khat seller	31/190	16.3	15.3	9.4	21.0
	Tea seller	47/190	21.6	27.6	21.0	34.5
	Hotel worker	33/190	17.4	17.2	11.5	22.9
	Cleaning shops	3/190	1.6	1.4	0.5	2.4
	Domestic worker	53/190	27.9	27.0	20.4	33.5
	Trader	20/190	10.5	9.8	5.2	14.3
	Other	6/190	3.2	3.1	0.4	5.8
Overall monthly household income (USD)	Range	15–650				
	Mean±SD	132.4 ± 86.1		133.1 ± 84.7		
	Median	100		100		
	=<100	151/287	52.6	51.8	46.2	57.6
	>100	136/287	47.4	48.1	42.5	53.8
Number of people currently supported by vulnerable women	Range	0–16				
	Mean ± SD	5.0 ± 3.3				
	Median	5.0				
	0	29/287	10.1	9.5	6.1	12.8
	1–5	141/287	49.1	50.0	44.1	56.0
	6–10	102/287	35.5	35.5	29.8	41.2
	>10	15/287	5.2	5.0	2.4	7.6
Undergone circumcision		282/287	98.3	98.2	96.6	99.8

3.1.5. HIV and syphilis prevalence

The overall prevalence of HIV among vulnerable women in Hargeisa is 3.6 per cent, whereas syphilis prevalence is 5.2 per cent (ever infected). Prevalence of active syphilis is slightly lower, at 3.3 per cent, as shown in Table 5.

Table 5: HIV and syphilis prevalence among vulnerable women in Hargeisa

Characteristic	Sample proportions		Population estimates	
	n/N	%	%	95% confidence interval
HIV	14/287	4.9	3.6	2.0–5.2
Syphilis – Ever infected	14/287	4.9	5.2	2.4–8.0
Syphilis – Active syphilis	10/287	3.5	3.3	1.1–5.5
HIV and syphilis co-morbidity	1/287	0.3	0.2	0–0.5

3.1.6. Patterns of STI care and treatment seeking behaviour

Almost all vulnerable women (99%) have heard of HIV and AIDS, whereas 74.4 per cent have heard about other infections that can be transmitted through sex. Among those who have, 83 per cent can correctly identify at least one symptom of STIs. About one fifth of vulnerable women (23.8%) had received an STI test in the past three months, and 22.7 per cent had been diagnosed to have an STI in the 12 months prior to this study. In addition, 18.2 per cent of vulnerable women have experienced an abnormal discharge from their vagina in the 12 months preceding this study, with more than half (57.9%) of them seeking STI treatment. Similarly, of the 14.2 per cent of vulnerable women who have had a sore or ulcer in the genital area in the 12 months prior to this survey, about two thirds (66.5%) sought treatment, as presented in Table 6.

Table 6: Patterns of STI care and treatment seeking behaviour among vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Vulnerable women who have ever heard of HIV/AIDS		283/287	98.6	99.0	98.3	99.6
Vulnerable women who have heard about other infections that can be transmitted through sex		207/287	72.1	74.4	69.4	79.4
Vulnerable women who know at least one symptom of an STI (among those who know of STIs)		173/205	84.4	83.0	77.5	88.5
Vulnerable women tested for STIs in the past three months		63/287	22.0	23.8	18.7	28.9
Vulnerable women diagnosed by a doctor or medical professional to have had an STI in the past 12 months		67/286	23.4	22.7	15.0	30.5
Vulnerable women who have had an abnormal discharge from the vagina in the past 12 months		52/287	18.1	18.2	13.6	22.8
Vulnerable women who had an abnormal discharge from the vagina in the past 12 months and sought treatment		32/52	61.5	57.9	45.0	69.6
Type of treatment received for abnormal discharge in the past 12 months among vulnerable women who sought treatment (multiple answers possible)	Injection Tablets Cream	10/32 26/32 4/32	31.2 81.2 12.5	31.1 85.4 16.5	15.1 77.0 16.5	47.1 94.9 17.3
Reasons for not seeking treatment for abnormal discharge in the past 12 months among vulnerable women who did not seek treatment (multiple answers possible)	Didn't know where to go Embarrassed Could not afford	7/20 10/20 3/20	35.0 50.0 15.0	26.9 54.2 18.9	10.9 26.7 1.2	39.5 84.0 37.6
Vulnerable women who have had a sore or ulcer in the genital area in the past 12 months		45/287	15.7	14.2	10.5	18.0
Vulnerable women who had a sore or ulcer in the genital area in the past 12 months and sought treatment		30/45	66.7	66.5	53.9	79.1
Type of treatment received for sore or ulcer in the genital area in the past 12 months among vulnerable women who sought treatment (multiple answers possible)	Tablets Injection Cream	24/30 5/30 4/30	80.0 16.7 13.3	83.7 12.9 16.5	71.3 2.4 0	97.2 22.4 35.0
Reasons for not seeking treatment for sore or ulcer in the genital area in the past 12 months among vulnerable women who did not seek treatment (multiple answers possible)	Didn't think I needed it Didn't know where to go Couldn't afford treatment Embarrassed	1/14 4/14 2/14 7/14	7.1 28.6 14.3 50.0	6.6 20.9 11.9 60.6	0.3 0 4.0 23.7	12.5 56.4 19.2 61.6

3.1.7. Knowledge on transmission of HIV and STI

There is varied knowledge among vulnerable women participants regarding knowledge on HIV prevention and transmission. For instance, the majority of vulnerable women (94.2%) know that a healthy-looking person can have HIV and AIDS, whereas 70.9 per cent of them know that one cannot get HIV from mosquito bites. More than three quarters (78.2%) of vulnerable women know that one can reduce their chance of getting HIV and STI by using a condom every time they have sex. Although most of the vulnerable women (93.6%) know HIV can be transmitted from mother to her baby by breastfeeding, only 82.7 per cent know that antiretroviral therapy (ART) during pregnancy can reduce the risk of HIV transmission from mother to the child. The overall composite

knowledge among vulnerable women who can correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission is somewhat low, at 48.9 per cent, as shown in Table 7.

Table 7: Knowledge on transmission of HIV and STI among vulnerable women in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Risk of HIV transmission can be reduced by having sex with only one uninfected partner who has no other partners.	Yes	235/286	82.2	83.7	80.6	71.2
People can reduce their chance of getting HIV and STI by using a condom every time they have sex.	Yes	228/287	79.4	78.2	73.3	83.0
It is possible for a healthy-looking person to have HIV/AIDS.	Yes	270/287	94.1	94.2	91.6	96.8
People can get HIV from mosquito bites.	No	210/287	73.2	70.9	65.0	76.7
People can get HIV by sharing food with a person who has HIV/AIDS.	No	235/287	81.9	82.4	77.9	86.8
Have heard about special antiretroviral drugs that people infected with HIV/AIDS can get from a doctor or nurse to help them live longer.	Yes	229/287	79.8	80.5	76.1	84.9
HIV can be transmitted from mother to her baby during pregnancy.	Yes	235/287	81.9	83.9	79.8	80.0
HIV can be transmitted from mother to her baby during delivery.	Yes	262/287	91.3	92.7	90.3	95.2
HIV can be transmitted from mother to her baby by breastfeeding.	Yes	266/287	92.7	93.6	91.0	96.1
There are special drugs that a doctor or nurse can give to a woman infected with HIV to reduce the risk of HIV transmission to the baby.	Yes	241/287	84.0	82.7	78.1	87.4
GARPR 5.1: Both correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission.	Yes	141/286	49.3	48.9	42.8	55.1

3.1.8. General sexual history

The average age at which vaginal sexual debut among vulnerable women in Hargeisa is 19.8 years. Very few vulnerable women have had anal sex (10.4%). The average age at which most of the vulnerable women first received money, a gift (like khat) or favour in exchange of sexual intercourse is 21.7 years. Most of the vulnerable women meet their new transactional clients and engage in sex at the vulnerable women's homes. Few (16.5%) vulnerable women work through pimps, and the majority of those who do share one third (64.6%) of the money they receive for selling sex with the pimp, as shown in Table 8.

Table 8: General sexual history of vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Age at first vaginal sex	Range	13–30				
	Mean ± SD	19.7 ± 3.9		19.8 ± 3.9		
	Median	19.0		19.0		
	< 18 years	84/287	29.3	29.2	23.8	34.7
	< 25 years	233/287	81.2	80.7	76.3	85.3
	25 or more years	54/287	18.8	19.2	14.7	23.7
Had anal sex		27/287	9.4	10.4	6.6	14.2
Age at first anal sex	Range	14–30				
	Mean ± SD	19.7 ± 4.3				
	Median	19.0				
	<25 years	21/27	77.8	73.5	52.6	93.8
	25 or more years	6/27	22.2	26.5	6.2	47.4
Age at which she first received money, a gift (like khat) or favour in exchange of sexual intercourse	Range	13–40				
	Mean ± SD	21.7 ± 5.2		21.7 ± 5.2		
	Median	20.0		20.0		
	< 18 years	64/287	22.3	22.0	17.2	26.7
	< 25 years	193/287	67.2	67.4	61.8	72.8
	25 or more years	94/287	32.8	32.7	27.2	38.2
Reasons that led to exchange sex for money the first time (multiple answers possible)	Orphan	3/287	1.0	0.7	0	1.4
	Didn't have other job	102/287	35.5	34.4	28.9	39.8
	Grew up around people doing sex work	21/287	7.3	7.2	4.3	10.2
	I like it or for pleasure	3/287	1.0	1.5	0	3.1
	Abandoned by husband	2/287	0.7	0.5	0	1.0
	Abandoned by parents or siblings	3/287	1.0	1.1	0	2.6
	Encouraged by friends	4/287	1.4	1.5	0	3.2
	Pays well	4/287	1.4	1.5	0	3.2
	I needed money	183/287	63.8	63.6	57.7	69.4
	Forced or pressured	2/287	0.7	0.3	0	0.6
	For extra money	7/187	2.4	2.9	0.3	5.5
Total number of different sexual partners who she had sexual intercourse with in the past one month	Range	1–20				
	Mean ± SD	4.1 ± 2.4		4.1 ± 2.3		
	Median	4.0		4.0		
	< 5	168/287	58.5	59.5	53.9	65.1
	5–10	117/287	40.8	39.9	34.4	45.5
	More than 10	2/287	0.7	0.6	0	1.2
Where most new transactional sex clients are met	At client's home	69/287	24.0	24.6	19.8	29.3
	At my home	66/287	23.0	22.8	17.5	28.0
	Khat shop	14/287	4.9	4.9	0.2	7.8
	Tea shop	7/287	2.4	2.0	0.7	3.3
	Hotel or restaurant	11/287	3.8	5.4	1.6	9.2
	They call me	115/287	40.1	38.2	32.2	44.3
	Through pimps or *dalals*	5/287	1.7	2.0	0.2	3.8
Place where vulnerable woman and client engage in transactional sex	At my home I share with my family	55/ 281	19.6	19.3	14.4	24.3
	At my home I share with other women exchanging sex	55/281	19.6	21.4	16.2	26.7
	Car or vehicle	2/281	0.7	0.5	1.2	1.0
	Hotel or restaurant	10/281	3.6	3.4	0	6.8
	Khat shop	3/281	1.1	1.3	0	3.2
	Tea shop	1/281	0.4	0.3	0	0.5
	The client's house	155/281	55.2	53.2	48.4	57.9
Working through a pimp		45/282	16.0	16.5	8.2	24.7
Sharing the money earned from sexual transaction with the pimp	Yes	36/43	83.7	78.4	58.3	96.6
Amount shared/given out to the other person	One third	21/35	60.0	64.6	51.3	79.5
	Half	10/35 4/35	28.6	24.6	10.8	37.5
	Two thirds		11.4	10.7	1.3	19.6

3.1.9. Sexual history with paying clients

The proportion of vulnerable women who used a male condom at last transactional sexual intercourse is 37.9 per cent, and in most cases, it was the vulnerable woman (46.2%) who suggested condom use. Half of the vulnerable women (49.6%), however, in the last 30 days never used condoms with paying clients. Among those who did not use a condom at last sexual intercourse with a client, the most common reason for not using a condom was lack of condoms. On the last day they worked, vulnerable women on average sold sex to two clients, receiving an average of USD 19.5 for the last sexual intercourse with a client, as shown in Table 9.

Table 9: Sexual history with paying clients of vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
GARPR 3.6A: Proportion who used a condom at last sexual intercourse with a client		105/280	37.5	37.9	32.8	43.1
Type of condom used	Male condom	103/103	100	100	-	-
Person who suggested condom use at last sexual intercourse	Joint decision My partner Myself	21/105 40/105 44/105	20.0 38.1 41.9	17.8 36.1 46.2	9.6 26.4 36.8	25.5 45.3 56.4
Reason for not using a condom at last sexual intercourse (multiple answers possible)	Used other contraceptive We didn't have I don't like them Client objected Didn't think it was necessary Didn't think of it Don't know where to buy Too expensive Don't know	1/157 93/157 23/157 10/157 3/157 4/157 9/157 6/157 10/157	0.6 59.2 14.6 6.4 1.9 2.5 5.7 3.8 6.4	0.6 60.2 14.3 7.7 1.4 2.1 5.1 3.5 3.5	0 51.8 7.9 3.1 0 0.4 0.8 0.9 1.3	1.3 68.9 20.6 12.6 3.9 3.8 9.2 6.0 5.7
Consistent condom use with clients during the last 30 days (1 month)	Never Sometimes Almost every time Every time Don't know	143/269 13/269 61/269 43/269 9/269	53.2 4.8 22.7 16.0 3.3	49.6 4.8 24.1 18.0 3.5	44.5 1.6 18.7 13.0 1.2	54.6 8.0 29.6 23.1 5.8
Number of clients on the last day worked	Range = 0–6 Mean ± SD = 1.8 ± 1.0 Median = 2.0 0 1 2 3 4 or more	 2/287 141/287 93/287 36/287 15/287	 0.7 49.1 32.4 12.5 5.2	 1.8±1.0 2.0 0.4 47.4 34.3 13.3 4.6	 0 41.2 28.3 9.3 2.2	 1.0 53.7 40.4 17.2 6.9
Amount of money received for last sexual intercourse with a client (in USD)	Range = 0–110 Mean ± SD = 20.5 ± 21.9 Median = 10.0 0–5 6–10 11–20 21 or more	 88/287 59/287 65/287 75/287	 30.7 20.6 22.6 26.1	 19.5±19.8 10.0 28.9 21.1 23.6 26.5	 23.7 16.2 18.6 21.1	 34.0 25.9 28.5 31.9

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Typical occupations of clients (multiple answers possible)	Businessman	64/281	22.8	23.1	18.3	28.0
	Truck driver	80/281	28.5	29.5	23.7	35.2
	Government worker	31/281	11.0	10.1	6.7	13.5
	Police	40/281	14.2	14.7	10.6	18.8
	Port worker	3/281	1.1	1.2	0	2.5
	Tea client	13/281	4.6	5.4	2.6	8.3
	Khat client	27/281	9.6	10.2	5.9	14.5
	Unemployed	10/281	3.6	3.3	1.4	5.3
	Khat seller	55/281	19.6	21.4	16.2	26.5
	Humanitarian worker	4/281	1.4	1.2	0.1	2.3
	Military	28/281	10.0	8.7	5.8	11.5
	Don't know	11/281	3.9	3.9	1.9	5.9
Most common occupation among clients	Businessman	55/280	19.6	21.0	16.1	26.0
	Government worker	26/280	9.3	7.8	5.0	10.6
	Humanitarian aid worker	3/280	1.1	1.0	0	2.1
	Khat client	12/280	4.3	5.4	1.9	9.1
	Khat seller	45/280	16.1	16.0	11.5	20.4
	Police	30/280	10.7	11.0	7.7	14.3
	Port worker	1/280	0.4	0.2	0.1	0.3
	Tea client	7/280	2.5	1.8	0.8	2.8
	Truck driver	71/280	25.4	24.8	20.9	28.8
	Unemployed	5/280	1.8	2.3	0	5.0
	Don't know	11/280	3.9	4.0	1.8	6.2

3.1.10. Sexual history with non-paying partners

Almost all vulnerable women have had a non-paying sexual partner in the 30 days preceding the study (96.9%). Compared to condom used with transactional clients (37.9%), almost a similar proportion (38.2%) of vulnerable women used a condom at last sex with their last non-transactional partner. The average number of times a vulnerable women had sexual intercourse with non-paying partners over the last 30 days is three times, with vulnerable women in most cases (42.1%) suggesting condom use during last non-transactional sex, as shown in Table 10.

Table 10: Sexual history with non-paying partners of vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Had sexual intercourse with a non-paying partner over the last 30 days (1 month)		276/287	96.2	96.9	95.0–98.7	
Number of sexual intercourses with non-paying partners over the last 30 days (1 month) (among those who had a non-paying partner in the last 30 days)	Mean ± SD = 2.9 ± 3.4 Median = 2.0			2.9 ± 3.5 2.0		
	1–5	245/276	88.8	88.2	84.1	92.3
	6–10	25/276	9.1	9.5	5.7	13.3
	More than 10	6/276	2.2	2.3	0.4	4.2
Condom use during last non-paying/ non-transactional sexual intercourse with partner (among those who had a non-paying partner in the last 30 days)		104/276	37.7	38.2	33.3	43.2
Person who suggested condom use during last non-paying/ non-transactional sexual intercourse with partner (among those who had a non-paying partner in the last 30 days)	Joint decision	23/103	22.3	20.0	12.7	27.3
	My partner	40/103	38.8	37.9	28.5	47.3
	Myself	40/103	38.8	42.1	32.2	52.0

3.1.11. Availability and use of male condoms

Although the majority of vulnerable women (73.8%) in Hargeisa have heard of or seen a male condom, 54.8 per cent had ever used it. Pharmacy is the most preferred (61.1%) ideal place to obtain male condoms. Close to a third of vulnerable women had received counselling on condom use and/or condoms (e.g. through an outreach service, hospital, VCT centre, tuberculosis (TB) centres, NGO, pharmacy, family planning (FP) clinic, maternal and child health (MCH)) in the period of three months prior to this survey (28.9% and 29.2% respectively). Most vulnerable women (68.2%) perceive male condoms to be affordable or somewhat affordable, as shown in Table 11.

Table 11: Availability and use of male condoms among vulnerable women in Hargeisa

Characteristic		Sample proportions			Population estimates	
		n/N	%	%	95% confidence Interval	
Ever heard of a male condom before today	Yes	214/287	74.6	73.8	68.7	79.0
Ever used a male condom	Yes	113/214	52.8	54.8	48.0	61.8
Knows place or person where to obtain male condoms	Yes	116/214	54.2	55.6	49.0	62.2
Places or persons do you know where she can obtain male condoms (multiple answers possible)	Pharmacy	100/214	46.7	48.7	42.0	55.5
	Private hospital or clinic	54/214	25.2	26.3	19.8	32.9
	Public hospital	9/214	4.2	3.2	1.3	5.0
	MCH centre	14/214	6.5	7.3	3.4	11.2
	Friend	26/214	12.1	14.3	8.6	20.1
	Clients	26/214	12.1	13.5	8.6	18.6
	Local NGO	2/214	0.9	1.0	0	2.5
	Other vulnerable women	5/214	2.3	1.9	0.4	3.4
	Other	2/214	0.9	0.8	0	1.6
Ideal place to obtain male condoms	Client	8/182	4.4	4.8	1.4	8.2
	Friend	4/182	2.2	2.6	0	5.7
	MCH centre	12/182	6.6	5.8	1.8	9.8
	Other vulnerable women	1/182	0.5	0.4	0.2	0.6
	Pharmacy	107/182	58.8	61.1	54.2	68.4
	Private hospital or clinic	36/182	19.8	17.4	11.0	23.5
	Public hospital	14/182	7.7	7.8	2.4	13.3
Usually carry condoms with her		61/214	28.5	31.8	25.2	38.6
Received condoms (e.g. through an outreach service, hospital, VCT centre, TB centres, NGO, pharmacy, FP clinic, MCH) in the past three months		61/213	28.6	29.2	22.6	35.9
Received counselling on condom use and safe sex in the past three months		61/213	28.6	28.9	22.8	35.1
Person who usually supplies the condoms	Client	80/174	46.0	43.9	34.5	53.1
	I never use a condom	62/174	35.6	34.6	25.9	43.3
	Myself	32/174	18.4	21.5	14.2	29.2

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence Interval	
Affordability of male condoms	Affordable	68/200	34.0	35.7	28.5	43.1
	Somewhat affordable	69/200	34.5	32.5	26.7	38.0
	Not affordable	19/200	9.5	8.8	3.6	14.0
	Don't know	44/200	22.0	23.0	17.4	28.8

3.1.12. Availability and use of female condoms

Generally, very few vulnerable women in Hargeisa have ever seen, heard or used a female condom compared to the male condom. Among those who have (10%), more than half (62%) had ever used it and about half (53.9%) know where they can obtain female condoms, as shown in Table 12.

Table 12: Availability and use of female condoms among vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates	
		n/N	%	%	95% confidence interval
Ever heard of a female condom before today		20/287	7.0	10.0	6.0–14.2
Ever used a female condom		13/20	65.0	62.0	43.4–80.0
Knows place or person where to obtain female condoms		11/20	55.0	53.9	36.3–71.7
Places or persons do you know where she can obtain female condoms	Friend	1/11	9.1	14.1	0–35.7
	MCH centre	1/11	9.1	14.1	14.1–14.6
	Pharmacy	8/11	72.7	66.5	44.8–86.9
	Private hospital	1/11	9.1	5.3	4.9–5.3

3.1.13. Population size estimation

Using SS-PSE method, the network size information of individual vulnerable women participants was entered into RDS Analyst to generate measures of central tendency to represent population size estimates. Therefore, the mean, median and mode vulnerable women population estimate in Hargeisa is 1,500, 1,346 and 995 respectively. This closely approximates population size estimates generated in 2016, indicating 1,126 as the average vulnerable women estimate in Hargeisa (IOM, forthcoming (c)). However, when using wisdom of the crowd method, much lower estimates were generated. The mean vulnerable women estimate in Hargeisa using wisdom of the crowd method is 101.2 with a standard deviation of 200.2 while ranging from 6 to 2,000 vulnerable women. When asked regarding their vulnerable women network size, the average number of vulnerable women they knew by name and knew them to have had sex in the last 12 months in exchange for money, gifts or favour was 4.5 vulnerable women, while the minimum was 1 and maximum was 15 vulnerable women.

3.1.14. HIV testing history and avoidance of HIV services

Even though close to half (47.2%) of vulnerable women in Hargeisa know where to go for an HIV test, only 36.6 per cent know their HIV status from an HIV test. Fear of or concern about stigma by staff or neighbours and lack of awareness on where to go for an HIV test were cited by the majority of vulnerable women as the main reasons for having never sought an HIV test. Overall, 30.7 per cent of vulnerable women in Hargeisa avoid HIV services because of stigma and discrimination, as shown in Table 13.

Table 13: HIV testing history and avoidance of HIV services among vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates	
		n/N	%	%	95% confidence interval
Knows where to go for a confidential HIV test		132/287	46.0	47.2	42.5–51.9
Known places where one can get tested for HIV (multiple answers possible)	Government hospital MCH centre Pharmacy Government TB centre Government VCT Mobile counselling Private facility	127/132 10/132 9/132 20/132 23/132 45/132 59/132	96.2 7.6 6.8 15.2 17.4 34.1 44.7	96.5 8.3 10.1 17.5 15.8 31.4 40.6	92.8–96.5 3.8–13.0 3.9–16.9 10.7–24.6 10.1–21.3 22.9–39.7 30.4–50.1
Knows her HIV status from an HIV test		109/287	38.0	36.6	30.7–42.4
Last tested for HIV	Less than 6 months 6–12 months More than 12 months	41/109 41/109 27/109	37.6 37.6 24.8	41.3 33.9 24.8	32.6–50.7 24.4–42.6 16.6–33.1
HIV test result at last HIV test	Positive Negative	5/109 105/109	4.6 95.4	5.2 94.8	0–13.2 86.8–94.8
Voluntarily had the HIV test, or was required to have the test	Required Voluntary	20/109 89/109	18.3 81.7	19.5 80.6	10.1–28.9 71.1–89.9
Proportion who revealed to the health provider that they sell sex during their most recent HIV counselling/testing		8/108	7.4	7.2	0–14.9
Reasons for having never sought for an HIV test	Fear/concern about violence Fear/concern about stigma I don't know where to go for HIV test Fear/concern about police harassment I feel I am healthy I am busy I believe God will protect me I don't believe I am vulnerable I don't know	23/165 57/165 58/165 8/165 2/165 1/165 1/165 1/165 14/165	13.9 34.5 35.2 4.8 1.2 0.6 0.6 0.6 8.5	12.0 36.8 33.9 5.4 0.9 0.4 1.4 0.5 8.6	6.8–16.9 28.5–45.4 26.0–41.5 1.4–9.5 0–2.1 0–1.1 0–5.1 0.3–0.7 3.9–13.4
GARPR 4.2: Avoidance of HIV services because of stigma and discrimination among key populations		88/274	32.1	30.7	24.5–36.9

3.1.15. Stigma and discrimination related to sex work

Few vulnerable women in Hargeisa have experienced stigma and discrimination related to sex work in the previous 12 months. Some of them (4.7%) have experienced verbal insults directed at them because someone believed they sell sex to men. In addition, 4.2 per cent and 4.4 per cent of vulnerable women in Hargeisa have been refused employment and housing, respectively because someone believed they sold sex, as shown in Table 14.

Table 14: Stigma and discrimination related to sex work among vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates	
		n/N	%	%	95% confidence interval
Have been refused health care in the past 12 months because someone believed they sell sex to men	Yes	8/281	2.8	4.1	2.9–5.3
Have been refused employment in the past 12 months because someone believed they sell sex to men	Yes	9/280	3.2	4.2	3.0–5.5
Have been refused to attend prayers at the mosque in the past 12 months because someone believed they sell sex to men	Yes	7/282	2.5	3.3	2.3–4.3
Have been refused housing in the past 12 months because someone believed they sell sex to men	Yes	11/280	3.9	4.4	3.2–5.7
Have been refused police assistance in the past 12 months because someone believed they sell sex to men	Yes	8/279	2.9	3.3	2.3–4.2
Have had verbal insults directed at her in the past 12 months because someone believed she sell sex to men	Yes	12/287	4.3	4.7	3.5–5.9
Person who last directed a verbal insult at her	Client	2/12	16.7	13.9	0–29.4
	Didn't know the person	1/12	8.3	6.3	0–17.3
	Family or relative	4/12	33.3	28.4	0–55.8
	Other vulnerable woman	1/12	8.3	6.3	0–32.4
	Police	4/12	33.3	45.0	10.3–84.4

3.1.16. Physical and sexual violence

In the past 12 months, few vulnerable women (3.2%) in Hargeisa have been hit, kicked or beaten because someone believed they sell sex to men, and few were forced to have a sexual intercourse against their will (5.3%). Among those who were forced to have a sexual intercourse against their will, only about half (58.5%) have sought treatment, and even fewer (39.1%) reported the case to the police. In addition, vulnerable women have been slapped or something was thrown at them that could hurt them (4.3%), pushed or shoved by a client or partner (4.8%), hit by a client or partner with a fist or something else that could hurt them (2.7%), kicked, dragged or beaten up by a client or partner (1.8%), choked or burned by a client or partner (3.4%), threatened by a client or partner using a gun, knife or other weapon (4.9%), forced by client or to do something sexual they found degrading or humiliating (4.5%), or made afraid of what would happen if they did not have sexual intercourse (4.7%), as shown in Table 15.

Table 15: Physical and sexual violence among vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates	
		n/N	%	%	95% confidence interval
Have been hit, kicked or beaten in the past 12 months because someone believed they sell sex to men		7/279	2.5	3.2	2.1–4.2
Person who last hit, kicked or beat her	Client Family or relative Don't know the person Police	2/7 2/7 1/7 2/7	28.6 28.6 14.3 28.6	11.6 49.9 25.0 13.6	0–31.3 1.0–53.8 24.0–26.4 0–53.2
A client or partner physically forced her to have sexual intercourse against her will in the past 12 months		14/285	4.9	5.3	4.0–6.6
Person who physically forced her to have sexual intercourse against her will	Client Don't know the person Family or relative Social acquaintance	6/14 3/14 2/14 3/14	42.9 21.4 14.3 21.4	42.2 24.5 19.1 14.2	16.0–68.4 1.6–47.9 0–42.9 0–39.0
Proportion who sought medical treatment after being physically forced to have sexual intercourse against her will		6/14	42.9	58.5	28.7–91.4
Proportion who reported this incident to the police		4/14	28.6	39.1	13.5–67.6
Reasons for not reporting this incident to the police	Embarrassing to report I am a vulnerable woman	3/10 7/10	30.0 70.0	21.6 78.4	0–50.6 49.4–80.4
In the past 12 months, a client or partner slapped her or threw something that could hurt her		12/283	4.2	4.3	3.3–5.5
Proportion pushed or shoved by a client or partner in the past 12 months		12/283	4.2	4.8	3.6–5.9
In the past 12 months, a client or partner hit her with a fist or something else that could hurt her		7/284	2.5	2.7	2.0–3.5
Proportion kicked, dragged or beat up by a client or partner in the past 12 months		5/282	1.8	2.4	1.5–3.3
Proportion choked or burned by a client or partner in the past 12 months		8/282	2.8	3.4	2.3–4.4
Proportion whose client or partner threatened or used a gun, knife or other weapon against them in the past 12 months		11/282	3.9	4.9	3.7–6.1
Proportion forced by client or partner in the past 12 months to do something sexual she found degrading or humiliating		8/283	2.8	4.5	3.2–5.7
Proportion whose client or partner in the past 12 months made them afraid of what would happen if they did not have sexual intercourse		9/282	3.2	4.7	3.4–6.0

3.1.17. Programme coverage

Overall, the coverage of HIV prevention programmes among vulnerable women in Hargeisa is low (23.1%). Few vulnerable women (21.4%) in Hargeisa are aware of local NGOs that deliver non-medical assistance or advice to vulnerable women, and only 22.4 per cent of vulnerable women have attended meeting(s) to discuss STI or HIV and AIDS, as shown in Table 16.

Table 16: Programme coverage among vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates	
		n/N	%	%	95% confidence interval
Proportion of awareness of local NGO here that deliver non-medical assistance or advice to vulnerable women		57/284	20.1	21.4	15.5–27.3
Attended meetings to discuss STI or HIV/AIDS during the last 12 months		56/265	21.1	22.4	16.9–27.9
Services/items received from an outreach worker in the past 12 months (multiple answers possible)	Condom Pamphlets Referral None	10/260 44/260 73/260 139/260	3.8 16.9 28.1 53.3	5.8 15.4 29.4 51.4	2.3–9.2 11.2–19.7 23.2–35.7 45.1–57.6
Proportion of referred vulnerable women who went to referred site to receive medical care		36/69	52.2	53.3	42.5–64.2
Given condom in the past three months		61/213	28.6	29.2	22.6–35.9
Received counselling on condom use and safe sex in the past three months		61/213	28.6	28.9	22.8–35.1
Tested for STIs in the past three months		63/287	22.0	23.8	18.7–28.9
GARPR 3.7 Coverage of HIV prevention programmes among key populations		57/286	19.9	23.1	17.9–28.3

3.1.18. Alcohol and drug use in the past three months

Very few of the vulnerable women in Hargeisa have in the past three months consumed alcohol (2.7%) or smoked marijuana (2%). Somewhat more, however, have consumed khat in the three months prior to this survey (31.3%), among which almost half have consumed it four or more times a week. None of the vulnerable women have in the past three months injected drugs.

Table 17: Alcohol and drug use among vulnerable women in Hargeisa

Characteristic		Sample proportions		Population estimates	
		n/N	%	%	95% confidence interval
Frequency of having a drink containing alcohol during the past three months	Four or more times a week Two–four times a month Monthly or less Never	1/287 1/287 5/287 280/287	0.3 0.3 1.7 97.6	0.4 0.4 1.9 97.3	0–0.9 0–1.1 0.2–3.6 95.4–99.2
Frequency of chewing khat during the past three months	Four or more times a week Two–three times a week Two–four times a month Monthly or less Never	46/284 13/284 16/284 14/284 195/284	16.2 4.6 5.6 4.9 68.7	15.4 4.2 5.9 5.9 68.7	11.3–19.6 3.1–5.3 2.4–9.4 2.4–9.4 62.8–74.5
Frequency of smoking marijuana or hashish during the past three months	Four or more times a week Monthly or less Never	3/286 2/286 281/286	1.0 0.7 98.3	0.9 1.1 98.0	0.7–1.1 0.7–1.5 97.4–98.6
Frequency of smoking cigarette during the past three months	Four or more times a week Two–three times a week Two–four times a month Monthly or less Never	36/286 20/286 14/286 10/286 206/286	12.6 7.0 4.9 3.5 72.0	12.2 6.7 5.2 3.9 72.0	8.7–15.6 4.1–9.2 1.6–8.9 1.1–6.7 65.6–78.4

Characteristic		Sample proportions		Population estimates	
		n/N	%	%	95% confidence interval
Frequency of smoking shisha during the past three months	Four or more times a week Two–three times a week Two–four times a month Monthly or less Never	75/286 20/286 5/286 7/286 179/286	26.2 7.0 1.7 2.4 62.6	26.7 6.9 1.9 3.3 61.2	21.8–31.6 5.3–8.5 0.1–3.6 0.1–6.5 55.8–66.6
Have had sex with a client in the past three months after having taken a drink containing alcohol, chewed khat or smoked marijuana/hashish or cigarette		28/279	10.0	10.6	6.2–15.1
Frequency of injecting drugs during the past three months	Never	284/284	100	100	-

3.1.19. Sociodemographic correlates of safer HIV-related behaviour among vulnerable women in Hargeisa

Finally, multivariable analyses were used to identify sociodemographic correlates of safer HIV-related behaviour, specifically condom use at last transactional sex, knowledge of HIV status from an HIV test in the past 12 months, HIV composite knowledge and proportion reached with HIV prevention programmes. Only one model provided a statistically significant predictor of safer HIV-related behaviour. Specifically, vulnerable women who have no education in Hargeisa were 2.4 times more likely to have used a condom during last transactional sex than those with some education, as shown in Table 18.

Table 18: Factors associated with condom use at last transactional sex among vulnerable women in Hargeisa

	Condom use at last transactional sex		Adjusted OR (95% CI)	P-value
	n/N	%		
Total	105/280	37.5		
Age				
25+	72/190	37.9	0.6 (0.3–1.1)	0.11
<25	33/90	36.7	1.0	
Level of education				
None	72/172	41.9	2.4 (1.4–4.2)	**0.0019***
Educated	33/108	30.6	1.0	
Overall monthly household income				
< 100	35/90	38.9	1.0	0.62
>=100	70/190	36.8	0.9 (0.5–1.5)	
Marital status				
Single	23/73	31.5	0.7 (0.3–1.3)	0.23
Never married	82/207	39.6	1.0	
Number of people she is currently supporting				
0–5	68/181	37.6	0.9 (0.6–1.7)	0.97
>5	37/99	37.4	1.0	
Length of stay in Hargeisa				
Less than two years	1/6	16.7	1.0	0.13
More than two years	104/274	38.0	3.5 (0.6–18.5)	
Currently earn money doing work other than sex work				
Yes	65/183	35.5	0.6 (0.4–1.0)	0.06
No	38/95	40.0	1.0	

Note: OR – Odds ratio
CI – Confidence interval
***Bold P-value**: Statistically significant*

Table 19: Factors associated with having an HIV test in the past 12 months and knowing the result among vulnerable women in Hargeisa

	HIV test in the past 12 months and knowing the result		Adjusted OR (95% CI)	P-value
	n/N	%		
Total	41/287	14.3		
Age				
25+	26/194	13.4	1.1 (0.9–2.3)	0.88
<25	15/93	16.1	1.0	
Level of education				
None	26/176	14.8	1.5 (0.6–3.0)	0.23
Educated	15/111	13.5	1.0	
Overall monthly household income				
< 100	10/90	15.7	1.0	0.09
>=100	31/197	11.1	1.9 (0.9–4.3)	
Marital status				
Single	12/75	16.0	1.8 (0.4–4.7)	0.18
Ever married	29/212	13.7	1.0	
Number of people she is currently supporting				
0–5	27/185	14.6	1.3 (0.6–2.7)	0.42
>5	14/102	13.7	1.0	
Length of stay in Hargeisa				
Less than two years	0/7	0	1.0	**0.001**
More than two years	41/280	14.6	3.5 (1.6–7.9)	
Currently earn money doing work other than sex work				
Yes	29/190	15.3	1.5 (0.2–3.2)	0.26
No	12/95	12.6	1.0	

***Bold P-value**: Statistically significant*

Table 20: Both correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission among vulnerable women in Hargeisa

	Preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission		Adjusted OR (95% CI)	P-value
	n/N	%		
Total	141/287	49.1		
Age				
25+	101/194	52.1	1.6 (0.8–2.8)	0.48
<25	40/93	43.0	1.0	
Level of education				
None	85/176	48.3	0.8 (0.5–1.4)	0.61
Educated	56/111	50.5	1.0	
Overall monthly household income				
< 100	45/90	50.0	1.0	0.85
>=100	96/197	48.7	0.9 (0.6–1.6)	
Marital status				
Single	32/75	42.7	0.8 (0.4–1.4)	0.58
Ever married	109/212	51.4	1.0	

	Preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission		Adjusted OR (95% CI)	P-value
	n/N	%		
Number of people she is currently supporting				
0–5	99/185	53.5	1.9 (1.6–5.3)	0.2
>5	42/102	41.2	1.0	
Length of stay in Hargeisa				
Less than two years	4/7	57.1	1.0	0.76
More than two years	137/280	48.9	2.1 (1.2–3.4)	
Currently earn money doing work other than sex work				
Yes	95/190	50.0	1.3 (0.8–2.1)	0.31
No	45/95	47.4	1.0	

Table 21: Vulnerable women in Hargeisa reached with HIV prevention programmes

	Reached with HIV prevention programmes		Adjusted OR (95% CI)	P-value
	n/N	%		
Total	10/287	3.5		
Age				
25+	7/194	3.6	5.1 (1.6–5.6)	0.25
<25	3/93	3.2	1.0	
Level of education				
None	9/176	5.1	4.1 (0.8–4.9)	0.07
Educated	1/111	0.9	1.0	
Overall monthly household income				
< 100	8/197	4.1	1.0	0.18
>=100	2/90	2.2	2.7 (0.3–2.8)	
Marital status				
Single	1/75	1.33	6.2 (1.3–6.3)	0.57
Ever married	9/212	4.3	1.0	
Number of people she is currently supporting				
0–5	7/185	3.8	1.2 (0.9–4.8)	0.8
>5	3/102	3.0	1.0	
Length of stay in Hargeisa				
Less than two years	0/7	0	1.0	**0.001**
More than two years	10/280	3.6	2.8 (0.4–3.5)	
Currently earn money doing work other than sex work				
Yes	7/190	3.7	8.3 (1.9–8.6)	0.8
No	3/95	3.2	1.0	

***Bold P-value**: Statistically significant*

3.2. Uniformed personnel

3.2.1. Sociodemographic characteristics

A total of 288 uniformed personnel participated in the study. The average age of uniformed personnel in Hargeisa is 40.2 years, with the majority (33.4%) of respondents aged 45 years and above. Half of the uniformed personnel (50.6%) have no education, and 93.0 per cent have stayed in Hargeisa for more than two years. More than half (55.6%) are married, with an average of 5.5 dependants as shown in Table 22.

Table 22: Sociodemographic characteristics of uniformed personnel in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Age (years)	Mean ± SD	40.2 ± 12.2			38.8	41.6
	Range	19–75				
	< 25 years	24/288	8.3	9.4	6.2	13.9
	25+ years	264/288	91.7	90.6	86.1	93.8
	18–24	24//288	8.3	9.4	6.2	13.9
	25–34	82/288	28.5	29.3	24.0	35.2
	35–44	78/288	27.1	28.0	24.0	35.2
	45 +	104/288	36.1	33.4	28.0	39.2
Category of uniformed personnel	Military personnel	210/288	72.9	67.3	61.0	73.0
	Custodial police	78/288	27.1	32.7	27.0	39.0
Education level	None	149/288	51.7	50.6	44.5	56.7
	Primary	101/288	35.1	35.1	29.5	41.3
	Secondary	33/288	11.5	12.6	8.9	17.4
	University/College	5/288	1.7	1.7	0.7	4.0
Nationality	Somalia	1/288	0.4	0.5	0	3.2
	Somaliland	286/288	99.3	99.1	96.4	99.8
	Ethiopia	1/288	0.4	0.5	0	3.2
Length of stay in Hargeisa	Less than 7 days	2/288	0.7	0.6	0.1	2.2
	7 days–1 month	-	-	-	-	-
	2–3 months	1/288	0.4	0.3	0	2.0
	4–6 months	4/288	1.4	1.3	0	2.0
	7–11 months	4/288	1.4	1.9	0.7	5.1
	1–2 years	8/288	2.8	2.3	1.1	4.6
	More than 2 years	269/288	93.4	93.7	90.1	96.0
Frequency of visiting his family	Daily	97/288	33.7	33.1	27.7	39.1
	Once in a week	82/288	28.5	29.0	23.7	34.9
	>Once in a week	41/288	14.2	14.6	10.8	19.4
	Once in a month	4/288	1.4	1.3	0.5	3.4
	Twice in a month	43/288	14.9	14.7	10.9	19.6
	Two–three months	20/288	6.9	7.1	4.5	10.9
	>Three months	1/288	0.4	0.3	0	1.9
Marital status	Single	91/288	31.6	32.6	27.1	38.6
	Married	162/288	56.3	55.6	49.5	61.6
	Separated	7/288	2.4	2.1	1.0	4.5
	Divorced	24/288	8.3	8.2	5.5	12.2
	Widowed	4/288	1.4	1.4	0.5	3.8
Number of dependants	Mean ± SD	5.5 ± 3.8	-	-	-	-
	Range	0–26	-	-	-	-
Number of wives	1	141/162	87.0	87.7	81.5	92.0
	2	19/162	11.7	11.4	7.3	17.5
	3	1/162	0.6	0.5	0	3.6
	4	1/162	0.6	0.4	0	2.9

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Frequency of visiting neighbouring countries	Never Weekly Monthly Every two–three months After > three months	167/288 67/288 29/288 16/288 9/288	58.0 23.3 10.1 5.6 3.1	57.5 23.5 10.6 5.3 3.2	51.4 18.6 7.3 3.2 1.6	63.4 29.1 15.2 8.6 6.1
Overall monthly income in USD	< 100 100–499 >= 500 Mean ± SD Range	73/288 186/288 29/288 218.3 ± 246.3 50–2,000	25.4 64.6 10.1 -	26.0 64.4 9.6 -	21.0 58.4 6.6 189.7	31.7 70.0 13.8 246.8

3.2.2. HIV and syphilis prevalence

The overall prevalence of HIV and syphilis infection among uniformed personnel in Hargeisa is 0 per cent. None of the uniformed personnel tested turned positive for HIV or syphilis as shown in Table 23.

Table 23: HIV and syphilis prevalence among uniformed personnel in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
HIV	Positive	0/288	0	-	-	-
Syphilis – Ever infected	Positive	0/288	0	-	-	-
Syphilis – Active infection	Positive	0/288	0	-	-	-

3.2.3. Patterns of STI care and treatment seeking behaviour

Although nearly all uniformed personnel (97.5%) have heard of HIV and AIDS, only 65.2 per cent have heard of other STIs. While 25.4 per cent of uniformed personnel had received an STI test in the past three months, only 17.0 per cent have been diagnosed to have an STI 12 months prior to this survey. In contrast, only 3.8 per cent of uniformed personnel have experienced an abnormal discharge from their penis in the past 12 months prior to this study and sought STI treatment. In addition, only 1.0 per cent of uniformed personnel have had a sore or ulcer on or near their penis in the past 12 months prior to this survey and sought treatment as shown in Table 24.

Table 24: Patterns of STI care and treatment seeking behaviour among uniformed personnel in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Ever heard of HIV/AIDS	Yes	281/288	97.6	97.5	94.7	98.9
Heard about other infections that can be transmitted through sex	Yes	184/288	63.9	65.2	59.2	70.7
Tested for STIs in the past three months	Yes	42/184	22.8	25.4	19.1	32.9
Diagnosed by a doctor or medical professional to have had an STI in the past 12 months	Yes	30/183	16.4	17.0	11.9	23.6
Had an abnormal discharge from the penis in the past 12 months	Yes	11/286	3.9	3.8	2.1	7.0
Had an abnormal discharge from the penis in the past 12 months and sought treatment	Yes	6/11	64.6	51.3	19.5	82.1
Type of treatment received	Injection and tablets Tablets	3/6 3/6	50.0 50.0	44.9 55.1	7.3 10.6	89.4 92.7

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Reasons for not seeking treatment for the sore or ulcer on or near penis or anus in the past 12 months	Couldn't afford treatment	1/5	20.0	24.4	1.0	91.6
	Didn't think I needed it	4/5	80.0	75.6	8.4	99.1
Had a sore or ulcer on or near penis or anus in the last 12 months		3/286	1.1	1.0	0.3	2.9
In the last 12 months, had a sore or ulcer on or near penis or anus and sought treatment	Yes	3/3	100	-	-	-
Type of treatment	Injection	1/3	33.3	-	-	-
	Tablets	2/3	66.7	-	-	-

3.2.4. Knowledge on transmission of HIV and STI

There is varied knowledge among uniformed personnel on HIV prevention and transmission from 28.8 per cent (knowledge of the existence of special drugs that a doctor or nurse can give to a woman infected with HIV to reduce the risk of HIV transmission to the baby) as the lowest score to 80.4 per cent (those who know that HIV can be transmitted from mother to baby during breastfeeding) as the highest score. For instance, the majority of uniformed personnel know HIV can be transmitted from mother to baby during pregnancy (77.3%), delivery (79.2%), and 47.9 per cent who know that people cannot get HIV by sharing food with a person who has HIV/AIDS. In addition, 46.0 per cent know that a healthy-looking person can have HIV and AIDS, whereas less than one third (31.8%) of them know that one cannot get HIV from mosquito bites. Only 28.8 per cent of uniformed personnel know that one can reduce their chance of getting HIV and STI by using a condom every time they have sex. The overall composite knowledge among uniformed personnel who correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission is however very low (1.4%) as shown in Table 25.

Table 25: Knowledge of transmission of HIV and STI among uniformed personnel in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Risk of HIV transmission can be reduced by having sex with only one uninfected partner who has no other partners.	Yes	123/287	42.9	44.4	39.4	50.5
People can reduce their chance of getting HIV and STI by using a condom every time they have sex.	Yes	79/287	27.5	28.8	23.5	34.7
It is possible for a healthy-looking person to have HIV/AIDS.	Yes	128/287	44.6	46.0	40.0	52.1
People can get HIV from mosquito bites.	No	90/287	31.4	31.8	26.3	37.8
People can get HIV by sharing food with a person who has HIV/AIDS.	No	133/286	46.5	47.9	41.8	54.0
Heard about special antiretroviral drugs that people infected with HIV/AIDS can get from a doctor or nurse to help them live longer.	Yes	78/275	28.4	29.0	23.6	35.0
HIV can be transmitted from mother to her baby during pregnancy.	Yes	224/287	78.1	77.3	71.7	82.1
HIV can be transmitted from mother to her baby during delivery.	Yes	228/287	79.4	79.2	73.8	82.1
HIV can be transmitted from mother to her baby by breastfeeding.	Yes	232/287	80.8	80.4	75.0	84.8
There are special drugs that a doctor or nurse can give to a woman infected with HIV to reduce the risk of HIV transmission to the baby.	Yes	81/288	28.1	28.8	23.5	34.6

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
GARPR 5.1: Both correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission	Yes	3/286	1.1	1.4	0.4	4.3

3.2.5. General sexual history

More than three quarters (77.9%) of uniformed personnel have had vaginal sex compared to only 0.3 per cent who have ever had anal sex. The average age at first vaginal sex among uniformed personnel in Hargeisa is 22.2 years. Only 9.6 per cent of uniformed personnel have ever given a woman money, a gift (like khat) or favour in exchange of sexual intercourse. Most uniformed personnel (29.7%) meet their new transactional clients and engage in sex at the vulnerable woman's home as shown in Table 26.

Table 26: General sexual history of uniformed personnel in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Have ever had vaginal sex with a woman	Yes	220/288	76.4	77.9	71.9	81.9
Age at first vaginal sex	Mean ± SD Median Range	22.2 ± 5.3 15–45			21.4	22.9
Ever had anal sex with a woman	Yes	1/257	0.4	0.3	0	2.2
Ever given a woman money, a gift (like khat) or favour in exchange of sexual intercourse	Yes	27/288	9.4	9.6	6.5	13.8
Number of different sexual partners in total that he had sexual intercourse with in the past one month	Mean ± SD Median Range	3.5 ± 3.4 - 1–15	- - -	- - -	2.1 - -	4.8 - -
Where uniformed personnel meet most of their new transactional sex clients	At vulnerable women's home At uniformed personnel's home Through pimps or *dalals* Town streets or highway Khat shop Tea shop They call	7/25 2/25 1/25 4/25 5/25 5/25 1/25	28.0 8.0 4.0 16.0 20.0 20.0 4.0	29.7 6.3 5.0 17.1 17.8 20.3 3.8	13.7 1.4 0.6 0.6 6.8 7.8 0.5	53.0 24.2 31.3 40.6 39.2 43.2 25.3

3.2.6. Sexual history with paying clients

Very few uniformed personnel (9.6%) used a male condom in their last transactional sexual intercourse. In most cases, it is the uniformed officer (69.2%) who suggested condom use. The average amount of money paid by a uniformed officer to a vulnerable woman during last transactional sex is USD 15.3, while the majority (49.2%) of them paid between USD 6 and USD 10 as shown in Table 27.

Table 27: Sexual history with paying clients of uniformed personnel in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Used a condom the last time she had transactional sexual intercourse with a client	Yes	3/27	11.1	9.6	2.8	28.0
Type of condom	Male condom	3/3	100	100	-	
Person who suggested condom use at last transactional sexual intercourse	Vulnerable woman Myself (uniformed personnel)	1/3 2/3	33.3 66.7	30.8 69.2	0 0.4	96.7 99.9
Number of vulnerable women the uniformed officer had sex with on the last day	Mean ± SD Range 1 2	1.4 ± 0.5 1–2 116/27 11/27	- - 59.3 40.7	- - 61.5 38.6	1.2 - 40.5 21.1	1.6 - 78.9 59.5
Amount of money paid during last transactional sex (USD)	0–5 6–10 11–20 >= 21 Mean ± SD Range	5/19 10/19 2/19 2/19 15.3 ± 5.5 0.3–100	26.3 52.6 10.5 10.5	33.3 49.2 8.3 9.3	13.6 25.7 1.8 2.0 3.8	61.2 73.1 31.3 34.4 26.8

3.2.7. Sexual history with non-paying partners

Whereas 9.6 per cent of uniformed personnel reported using a condom during their last sexual intercourse with transactional clients, only 1.9 per cent of uniformed personnel used a condom with their last non-transactional clients. The average number of times a uniformed personnel had sexual intercourse with non-paying clients over the last 30 days is 2.7 times as shown in Table 28.

Table 28: Sexual history of uniformed personnel in Hargeisa with non-paying partners

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Number of times uniformed officer had sexual intercourse with a non-transactional sexual partner over the last 30 days (1 month)	Mean ± SD Median Range	2.7 ± 0.3 0–29			2.1	3.3
Used a condom last time he had sexual intercourse with non-paying/ transactional sexual partner	Yes	2/98	2.0	1.9	0.5	7.3
Person who suggested condom use at last non-transactional sexual intercourse	Joint decision My partner Myself	0/2 1/2 1/2	0.0 50.0 50.0	-	-	-

3.2.8. Availability and use of male condom

Although almost two thirds (61.7%) of uniformed personnel in Hargeisa have ever heard of or seen a male condom and 22.0 per cent know a place or person where to obtain male condoms, only 11.2 per cent have ever used a male condom. Very few uniformed personnel received male condoms (3.2%) or counselling on condom use (4.9%) 12 months prior to this survey, even though 44.0 per cent perceive male condoms to be somewhat affordable as shown in Table 29.

Table 29: Availability and use of male condom among uniformed personnel in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Ever heard of a male condom	Yes	181/288	62.9	61.7	55.6	67.5
Ever used a male condom with a sexual partner	Yes	20/181	11.1	11.2	7.2	17.1
Knows of a place or person where to obtain male condoms	Yes	37/181	20.4	22.0	16.2	29.3
Usually carries condoms	Yes	5/181	2.8	2.8	1.1	6.7
Received condoms in the past three months	Yes	6/181	3.3	3.2	1.4	7.4
Received counselling on condom use and safe sex in the past three months	Yes	8/181	4.4	4.9	2.4	9.8
Person who usually supplies the condoms	Client Never use a condom Myself	2/181 154/160 4/160	1.3 96.3 2.5	1.2 95.8 3.0	0.3 90.7 1.1	4.7 98.2 8.1
Affordability of male condom	Affordable Not affordable Somewhat affordable	21/116 41/116 54/116	18.1 35.3 46.6	20.2 35.8 44.0	13.2 27.1 34.8	29.5 45.6 53.7

3.2.9. Availability and use of female condoms

Unlike male condoms, fewer uniformed personnel in Hargeisa have ever heard (4.6%), used (6.2%) or know where to obtain (26.4%) female condoms as shown in Table 30.

Table 30: Availability and use of female condom among uniformed personnel in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Ever heard of a female condom	Yes	12/288	4.2	4.6	2.5	8.0
Ever used a female condom with a sexual partner	Yes	1/12	8.3	6.2	0.6	4.2
Knows of a place or person where to obtain female condoms	Yes	3/12	25.0	26.4	6.8	63.9
Places where one can obtain female condoms	Pharmacy	3/3	100	100	-	-

3.2.10. HIV testing history and avoidance of HIV services

Few (13.8%) uniformed personnel in Hargeisa know where to go for an HIV test, and subsequently only 11.7 per cent have ever received an HIV test. However, only 4.9 per cent know their HIV status from an HIV test within the past 12 months prior to this study. Lack of awareness on where to go for an HIV test is cited by the majority (81.6%) of uniformed personnel in Hargeisa as the reason for having never sought for an HIV test. Overall, 14.5 per cent of uniformed personnel in Hargeisa avoid HIV services due to stigma and discrimination among vulnerable woman as shown in Table 31.

Table 31: HIV testing history and avoidance of HIV services among uniformed personnel in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Knows where to go if he wishes to receive a confidential HIV test	Yes	36/270	13.3	13.8	9.9	18.8
Knows his HIV status from an HIV test	Have ever been tested	33/288	11.5	11.7	8.3	16.4
Last tested	Less than 6 months 6–12 months More than 12 months	8/33 6/33 19/33	24.2 18.2 57.6	23.2 18.2 58.6	11.1 7.7 39.7	42.2 37.0 75.3
Result of last HIV test	Positive Negative Indeterminate	- 0	- - -	- - -	- - -	- - -
Nature of HIV testing	Voluntary Required	10/33 23/33	30.3 69.7	31.9 68.1	17.0 48.2	51.8 83.1
During most recent HIV counselling/ testing, revealed to the health provider that he is engaged in transactional sex	Yes	0/33	0	-	-	-
Reasons for having never sought an HIV test	Fear of or concern about stigma by staff or neighbours Fear of or concern about or experienced violence Fear of or concern about or experienced police harassment or arrest Didn't know where to go for an HIV test	8/228 9/228 24/228 187/228	3.5 4.0 10.5 82.0	3.5 4.0 10.9 81.6	1.7 2.1 7.3 75.6	7.1 7.8 16.0 86.3
GARPR 3.4: HIV testing and know his HIV status	Yes	14/288	4.9	4.9	2.8	8.2
GARPR 4.2: Avoidance of HIV services because of stigma and discrimination among key populations	Yes	41/288	14.2	14.5	10.7	19.3

3.2.11. Physical and sexual violence

Very few (0.8%) uniformed personnel in Hargeisa have seen or heard of a woman being hit, kicked or beaten because someone believed she sells sex to men as illustrated in Table 32.

Table 32: Physical and sexual violence among uniformed personnel in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Have seen/heard of a woman being hit, kicked or beaten because someone believed she sells sex to men in the past 12 months	Yes	3/288	1.0	0.8	0.3	2.6
Person who last hit, kicked or beat the vulnerable women	Social acquaintance Other vulnerable woman	1/3 2/3	33.3 66.7	27.1 72.9	0 0.4	99.6 99.9
Have seen/heard of a woman being forced to have sex with a man by sexually assaulting or raping her in the past 12 months	Yes	0/283	0	-	-	-

3.2.12. Programme coverage

Overall, the coverage of HIV prevention programmes among uniformed personnel in Hargeisa is very low (3%). Furthermore, only 8.0 per cent and 2.6 per cent of uniformed personnel are aware of any local NGOs that deliver non-medical assistance or advice to members of their group and have attended any meetings to discuss STI or HIV/AIDS during the last 12 months respectively as shown in Table 33.

Table 33: Programme coverage among uniformed personnel in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Aware of any local NGO here that delivers non-medical assistance or advice to members of the group	Yes	20/280	7.1	8.0	5.2	12.3
Have attended any meetings to discuss STI or HIV/AIDS during the last 12 months	Yes	6/285	2.1	2.6	1.1	5.8
Attended the sites to which he was referred	Yes	1/8	12.5	11.4	0.8	66.1
GARPR 3.7 Coverage of HIV prevention programmes among key populations	Yes	8/288	2.8	3.0	1.4	6.1

3.2.13. Alcohol and drug use in the past three months

Few (2.1%) uniformed personnel in Hargeisa consume alcohol compared to 63.2 per cent who consume khat. In addition, 47 per cent of the uniformed personnel smoke cigarettes. Other drugs and substances consumed include marijuana or hashish (1.5%), and shisha smoking (2.5%). Only 11.4 per cent of uniformed personnel reported having had sex with a client in the past three months after having taken a drink containing alcohol, chewed khat or smoked marijuana/hashish or cigarette.

Table 34: Alcohol and drug use among uniformed personnel in Hargeisa in the past three months

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Frequency of having a drink containing alcohol during the past three months	Four or more times a week Monthly or less Never	4/285 3/285 278/285	1.4 1.1 97.5	1.2 0.9 97.9	0.4 0.3 95.6	3.3 2.6 99.0
Frequency of chewing khat during the past three months	Never Monthly or less Two–four times a month Two–three times a week Four or more times a week	105/285 13/285 40/285 19/285 108/285	36.8 4.6 14.0 6.7 37.9	36.8 4.3 15.3 6.6 37.1	31.1 2.4 11.3 4.2 31.3	42.9 7.5 20.5 10.2 43.2
Frequency of smoking marijuana or hashish during the past three months	Never Monthly or less Two–four times a month Four or more times a week	280/285 1/285 0 4/285	98.3 0.4 0 1.4	98.6 0.3 0 1.2	96.4 0 0 0.4	99.4 1.9 0 3.3
Frequency of smoking cigarette during the past three months	Never Monthly or less Two–four times a month Two–three times a week Four or more times a week	146/285 5/285 29/285 10/285 95/285	51.2 1.8 10.2 3.5 33.3	52.4 1.4 11.0 3.3 31.9	46.3 0.6 7.6 1.7 26.5	58.5 3.5 15.7 6.1 37.7
Frequency of smoking shisha during the past three months	Never Monthly or less Two–three times a week Four or more times a week	281/288 3/288 3/288 1/288	97.6 1.0 1.0 0.4	97.5 0.9 1.2 0.4	94.8 0.3 0.4 0	98.9 2.9 3.8 2.5

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Have had sex with a client in the past three months after having taken a drink containing alcohol, chewed khat or smoked marijuana/hashish or cigarette	Yes	36/288	12.5	11.4	8.2	15.7
Frequency of injecting drugs during the past three months	Never	288/288	100	100	-	-

3.3. Truckers

3.3.1. Sociodemographic characteristics

A total of 286 truckers participated in the study. The average age of truckers in Hargeisa is 29.2 years with one third (35%) of the respondents aged 25 to 34 years. Most truckers (46.7%) have no education, and most of them (87.1%) have stayed in Hargeisa for more than two years. More than half (59.5%) are married, with an average of 5.8 dependants with an average monthly income of USD 202.6 as shown in Table 35.

Table 35: Sociodemographic characteristics of truckers in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Age (years)	Mean ± SD Range	29.2 ± 9.2 18–64			28.1	30.3
	< 25 years 25+ years	111/286 175/286	38.8 61.2	40.0 60.0	34.3 54.1	45.9 65.7
	18–24 25–34 35–44 45+	111/286 103/286 52/286 20/286	38.8 36.0 18.2 7.0	40.0 35.0 17.7 7.3	34.3 29.6 13.7 4.7	45.9 40.8 22.6 11.1
Education level	None Primary Secondary University/College	133/286 114/286 31/286 8/286	46.5 39.9 10.8 2.8	46.7 39.5 10.9 2.9	40.9 33.9 7.7 1.4	52.6 45.3 15.2 5.8
Nationality	Somaliland South Central Somalia Puntland	283/285 1/285 1/285	99.3 0.4 0.4	99.3 0.4 0.4	97.1 0 0	99.8 2.6 2.5
Length of stay in Hargeisa	Less than 7 days 7 days–1 month 2–3 months 4–6 months 7–11 months 1–2 years More than 2 years	9/286 2/286 5/286 3/286 6/286 13/286 248/286	3.2 0.7 1.8 1.1 2.1 4.6 86.7	3.3 0.8 1.6 0.9 2.1 4.2 87.1	1.7 0.2 0.7 0.3 0.9 2.4 82.1	6.2 3.3 3.9 3.0 4.6 7.1 90.6
Frequency of visiting his family	Daily Once in a week >Once in a week Once in a month Twice in a month Two–three months >Three months	92/286 72/286 29/286 18/286 27/286 36/286 12/286	32.2 25.2 10.1 6.3 9.4 12.6 4.2	33.3 24.9 9.3 6.5 8.9 12.8 4.4	27.9 20.1 6.4 4.1 6.1 9.3 2.5	39.1 30.3 13.3 10.2 12.8 17.3 7.6
Marital status	Single Married Separated Divorced Widowed	78/286 170/286 5/286 30/286 3/286	27.3 59.4 1.8 10.5 1.1	27.0 59.5 1.8 10.7 1.1	22.1 53.6 0.7 7.6 0.4	32.5 65.1 4.2 15.0 3.3

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Number of wives	1 2 3 >=4	141/170 19/170 6/170 4/170	82.9 11.2 3.5 2.4	82.8 11.5 3.7 2.0	76.2 7.4 1.7 0.	87.9 17.5 8.0 8.5
Number of dependants	Mean ± SD Range	5.8 ± 4.6 0–36			5.2	6.3
Frequency of visiting neighbouring countries	Never Weekly Monthly Every two–three months After > 3 months	189/285 37/285 28/285 13/285 18/285	66.3 13.0 9.8 4.6 6.3	66.5 12.5 9.9 4.7 6.4	60.7 9.1 6.9 2.7 4.0	71.9 16.9 14.1 8.0 10.0
Overall monthly income in USD	< 100 100–499 >= 500 Mean ± SD Range	71/282 188/282 23/282 202.6 ± 301.5 13–4,000	25.2 66.7 8.2	25.5 66.1 8.5	20.6 60.2 5.6 167.5	31.0 71.5 12.5 238.3

3.3.2. HIV and syphilis prevalence

The overall prevalence of HIV and syphilis infection among truckers in Hargeisa is 0 per cent and 1.4 per cent respectively as shown in Table 36.

Table 36: HIV and syphilis prevalence among truckers in Hargeisa

Characteristic	Sample proportions		Population estimates		
	n/N	%	%	95% confidence interval	
HIV	0/286	0	-	-	-
Syphilis – Ever infected	4/286	1.4	1.4	0.5	3.7
Syphilis – Active infection	4/286	1.4	1.4	0.5	3.7

3.3.3. Patterns of STI care and treatment seeking behaviour

Most truckers (98.1%) have heard of HIV and AIDS compared to those who have heard of other STIs (54.1%). While 19.4 per cent of truckers had received an STI test in the past three months, only 17.8 per cent have been diagnosed to have an STI 12 months prior to this survey. Comparatively, 4.5 per cent of truckers have experienced an abnormal discharge from the penis in the past 12 months prior to this study and sought STI treatment. In addition, only 4.2 per cent of truckers have had a sore or ulcer on or near the penis in the past 12 months prior to this survey and sought treatment as shown in Table 37.

Table 37: Patterns of STI care and treatment seeking behaviour among truckers in Hargeisa

Characteristic	Correct response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Ever heard of HIV/AIDS	Yes	280/286	97.9	98.1	95.7	99.1
Heard about other infections that can be transmitted through sex	Yes	158/286	55.2	54.1	48.2	59.9
Tested for STI in the past three months	Yes	32/158	20.3	19.4	13.9	26.4
Diagnosed by a doctor or medical professional to have had an STI in the past 12 months	Yes	28/157	17.8	17.8	12.5	24.8
Had an abnormal discharge from the penis in the past 12 months	Yes	14/282	5.0	4.5	2.7	7.6

Characteristic	Correct response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Had an abnormal discharge from the penis in the past 12 months and sought treatment	Yes	8/14	57.1	61.9	31.8	85.0
Type of treatment received	Injection Injection and cream Tablets	1/8 4/8 3/8	12.5 50.0 37.5	13.9 49.7 36.4	1.1 14.0 8.2	70.7 85.7 78.7
Reasons for not seeking treatment for the sore or ulcer on or near penis or anus	Couldn't afford treatment Didn't think I needed it Embarrassed or afraid to seek treatment	1/6 4/6 1/6	16.7 50.0 16.7	9.7 68.8 21.5	0.5 14.3 1.2	70.4 96.7 86.1
Had a sore or ulcer on or near the penis or anus in the last 12 months	Yes	12/285	4.2	4.2	2.4	7.3
In the last 12 months, had a sore or ulcer on or near the penis or anus and sought treatment	Yes	10/12	83.3	83.5	45.9	96.8
Type of treatment	Didn't know where to go for treatment	1/1	100	100	-	-

3.3.4. Knowledge on transmission of HIV and STI

Truckers generally have low scores on individual knowledge questions with better scores on questions relating to transmission of HIV from mother to baby through pregnancy, delivery and breastfeeding. Few truckers (28.1%) are aware of the existence of special drugs that a doctor or nurse can give to a woman infected with HIV to reduce the risk of HIV transmission to the baby. Similarly, only 29.7 per cent are aware of the availability of ART. The overall composite knowledge among truckers who correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission is however low (3.7%) as shown in Table 38.

Table 38: Knowledge on transmission of HIV and STI among truckers in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Risk of HIV transmission can be reduced by having sex with only one uninfected partner who has no other partners.	Yes	122/286	42.7	42.4	36.7	48.3
People can reduce their chance of getting HIV and STI by using a condom every time they have sex.	Yes	83/286	29.0	28.9	23.8	34.5
It is possible for a healthy-looking person to have HIV/AIDS.	Yes	133/285	46.7	46.0	40.1	51.9
People can get HIV from mosquito bites.	No	104/286	36.4	36.4	31.0	42.3
People can get HIV by sharing food with a person who has HIV/AIDS.	No	147/286	51.4	50.8	44.9	56.6
Heard about special antiretroviral drugs that people infected with HIV/AIDS can get from a doctor or nurse to help them live longer.	Yes	83/275	30.2	29.7	24.5	35.5
HIV can be transmitted from mother to her baby during pregnancy.	Yes	231/284	81.3	81.3	76.3	85.5
HIV can be transmitted from mother to her baby during delivery.	Yes	228/284	80.3	80.6	75.5	84.9
HIV can be transmitted from mother to her baby by breastfeeding.	Yes	234/284	82.4	82.6	77.7	86.7

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
There are special drugs that a doctor or nurse can give to a woman infected with HIV to reduce the risk of HIV transmission to the baby	Yes	82/286	28.7	28.1	23.1	33.7
GARPR 5.1: Knowledge on HIV prevention and misconceptions	Yes	11/286	3.9	3.7	2.0	6.6

3.3.5. General sexual history

Most (77.2%) truckers have had vaginal sex compared to only 1.0 per cent who have ever had anal sex. The average age at first vaginal sex among truckers in Hargeisa is 22.6 years. Just 8.5 per cent of truckers admit to having ever given a woman money, a gift (like khat) or favour in exchange of sexual intercourse while trucker's houses are being used as places to engage in transactional sex. Half (50.7%) of truckers meet their new transactional clients and engage in sex at the vulnerable woman's home as shown in Table 39.

Table 39: General sexual history of truckers in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Have ever had vaginal sex with a woman	Yes	221/285	77.5	77.2	71.8	81.8
Age at first vaginal sex	Mean ± SD Range	22.6 ± 6.2 15–50			21.7	23.4
Ever had anal sex with a woman	Yes	3/258	1.2	1.0	0.3	3.3
Ever given a woman money, a gift (like khat) or favour in exchange of sexual intercourse	Yes	24/284	8.5	8.5	5.7	12.4
Number of different sexual partners in total that he had sexual intercourse with in the past one month	Mean ± SD Range	2.3 ± 1.5 1–5			1.6	2.9
Where truckers meet most of their new transactional sex clients	Client's home At trucker's home Hotel/Restaurant Khat shop Tea shop They call	12/23 2/23 1/23 4/23 2/23 2/23	52.2 8.7 4.4 17.4 8.7 8.7	50.7 8.6 4.1 18.3 9.5 8.9	29.6 1.9 0.5 6.4 21.3 2.0	71.6 31.1 27.0 42.2 33.5 32.0

3.3.6. Sexual history with paying clients

The proportion of truckers who used a male condom in their last transactional sexual intercourse is 10.3 per cent. In most instances, it is a joint decision to use condom between the trucker and the vulnerable woman. The average amount of money paid by a trucker to a vulnerable woman during last transactional sex is 11.3 USD, while the majority (41.9%) of them paid between USD 6 and USD 10 as shown in Table 40.

Table 40: Sexual history of truckers in Hargeisa with paying clients

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Used a condom the last time she had transactional sexual intercourse with a client	Yes	3/24	12.5	10.3	2.9	30.7
Type of condom	Male condom	3/3	100	100	-	-
Person who suggested condom use at last transactional sexual intercourse	Vulnerable woman Myself (trucker) Joint decision	1/3 1/3 1/3	33.3 33.3 33.3	19.2 38.3 42.6	0 0 0.1	99.3 99.3 99.8
Number of vulnerable women trucker had sex with on the last day	Mean ± SD Range	1.6 ± 0.8 1–3			1.3	2.0
Amount of money paid during last transactional sex in USD	0–5 6–10 11–20 >= 21 Mean ± SD Range	6/17 7/17 1/17 3/17 11.3 ± 3.1 2.5–50	35.3 41.2 5.9 17.7	33.4 41.9 6.5 18.2	13.9 19.5 0.7 5.2 4.7	60.9 68.2 39.8 47.4 17.8

3.3.7. Sexual history with non-paying partners

The proportion of truckers who reported using a condom during their last non-transactional client is 3.2 per cent. However, the average number of times a trucker had sexual intercourse with a non-paying client over the last 30 days is 2.8 times, with the female partner being the majority (43.3%) who suggested condom use during last non-transactional sex, as shown in Table 41.

Table 41: Sexual history of truckers in Hargeisa with non-paying partners

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Number of times trucker had sexual intercourse with a non-transactional sexual partner over the last 30 days (1 month)	Mean ± SD Range	2.8 ± 5.4 0–30			2.2	3.4
Used a condom last time he had sexual intercourse with non-paying/ transactional sexual partner	Yes	4/13	3.5	3.2	1.1	8.6
Person who suggested condom use at last non-transactional sexual intercourse	Joint decision My partner Myself	1/4 2/4 1/4	25.0 50.0 25.0	29.9 43.3 26.9	0.6 1.7 0.5	96.9 97.2 96.4

3.3.8. Availability and use of male condom

Even though 62.0 per cent of truckers in Hargeisa have ever heard of or seen a male condom and 22.0 per cent know a place or person where to obtain male condoms, only 9.5 per cent have ever used a male condom. Very few truckers received male condoms (3.8%) or counselling on condom use (5.3%) 12 months prior to this survey, even though 61.9 per cent perceive male condoms to be affordable as shown in Table 42.

Table 42: Availability and use of male condom among truckers in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Ever heard of a male condom	Yes	178/286	62.2	62.0	32.5	44.0
Ever used a male condom with a sexual partner	Yes	17/178	9.6	9.5	5.9	14.9
Knows of a place or person where to obtain male condoms	Yes	39/178	21.9	22.0	16.3	28.8

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Usually carries condoms	Yes	5/177	2.8	2.6	1.0	6.2
Received condoms in the past three months	Yes	7/176	4.0	3.8	1.8	7.8
Received counselling on condom use and safe sex in the past three months	Yes	10/177	5.7	5.3	2.8	9.7
Person who usually supplies the condoms	Client (vulnerable woman) Never used a condom Myself Owner or manager of the place	2/156 150/156 3/156 1/156	1.3 96.2 1.9 0.6	1.0 96.4 1.9 0.7	0.2 92.0 0.6 0	4.3 98.4 5.9 4.7
Affordability of male condom	Affordable Not affordable Somewhat affordable	17/117 27/17 73/117	14.5 23.1 62.4	14.7 23.4 61.9	9.2 16.4 52.6	22.7 32.1 70.5

3.3.9. Availability and use of female condom

In comparison with male condoms, fewer truckers in Hargeisa have ever heard (4.4%), used (15.8%) or know where to obtain (15.8%) female condoms as shown in Table 43.

Table 43: Availability and use of female condom among truckers in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Ever heard of a female condom	Yes	13/286	4.6	4.4	2.6	7.5
Ever used a female condom with a sexual partner	Yes	2/13	15.4	15.8	3.2	51.8
Knows of a place or person where to obtain female condoms	Yes	2/13	15.4	15.8	3.2	51.8
Place or person where to obtain female condoms	Local NGO	2/2	100	100	-	-

3.3.10. HIV testing history and avoidance of HIV services

Alarmingly, only 9.8 per cent truckers in Hargeisa know where to go for an HIV test, although 9.3 per cent have ever received at least one HIV test in their lifetime. However, only 4.7 per cent know their HIV status from an HIV test within the past 12 months prior to this study. Over half (62.9%) of the tests were required as opposed to voluntary testing. Lack of awareness on where to go for an HIV test is cited by the majority (84.4%) of truckers in Hargeisa as the reason for having never sought for an HIV test. Overall, 12.3 per cent of truckers in Hargeisa avoid HIV services due to stigma and discrimination among vulnerable woman as shown in Table 44.

Table 44: HIV testing history and avoidance of HIV services among truckers in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Knows where to go if he wishes to receive a confidential HIV test	Yes	28/272	10.3	9.9	6.9	14.1
Knows his HIV status from an HIV test	Have ever been tested	27/286	9.4	9.3	6.4	13.3
Last tested	Less than 6 months 6–12 months More than 12 months	10/27 4/27 13/27	37.0 14.8 48.2	37.3 13.1 49.6	20.5 4.6 30.4	58.0 32.1 68.9

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Result of last HIV test	Positive Negative Indeterminate	0/27 26/27 1/27	- 96.3 3.7	- 96.1 3.9	- 74.3 0.5	- 99.5 2.6
Nature of HIV testing	Voluntary Required	10/27 17/27	37.0 63.0	37.1 62.9	20.3 42.2	57.8 79.7
During most recent HIV counselling/testing, revealed to the health provider that he is engaged in transactional sex	Yes	1/7	14.3	14.5	1.0	74.7
Reasons for having never sought for an HIV test	Fear of or concern about stigma by staff or neighbours Fear of or concern about or experienced violence Fear of or concern about or experienced police harassment or arrest Didn't know where to go for an HIV test	9/225 21/225 6/225 189/225	4.0 9.3 2.7 84.0	3.9 9.1 2.6 84.4	2.0 5.9 1.2 79.0	7.5 13.6 5.7 88.7
GARPR 3.4: Knows his/her HIV status from an HIV test	Yes	14/286	4.9	4.7	2.8	7.8
GARPR 4.2: Avoidance of HIV services because of stigma and discrimination among key populations	Yes	36/285	12.6	12.3	9.0	16.7

3.3.11. Physical and sexual violence

Only 1 per cent of truckers in Hargeisa have seen or heard of a woman being hit, kicked or beaten because someone believed she sells sex to men. In addition, 0.3 per cent of truckers in Hargeisa have seen or heard of a vulnerable women being physically forced to have sexual intercourse against her will as presented in Table 45.

Table 45: Physical and sexual violence among truckers in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Have seen/heard of a woman being hit, kicked or beaten because someone believed she sells sex to men	Yes	3/283	1.1	1.0	0.3	3.0
Person who last hit, kicked or beat the vulnerable woman	Other vulnerable women Don't know the person Others	1/3 1/3 1/3	33.3 33.3 33.3	37.1 37.1 25.7	0 0 0	99.7 99.7 99.7
Have seen/heard of a woman being forced to have sex with a man by sexually assaulting or raping her or having intercourse against her will in the past 12 months	Yes	1/283	0.4	0.3	0	2.4
Sought medical treatment after being physically forced to have sexual intercourse against her will	Yes	0/1	0.0	0.0	-	-
Reported this incident to the police	Yes	0/1	0.0	0.0	-	-

3.3.12. Programme coverage

Overall, the coverage of HIV prevention programmes among truckers in Hargeisa is low (0.7%). Furthermore, only 7.7 per cent and 1.4 per cent of truckers are aware of any local NGO here that delivers non-medical assistance or advice to members of a group and have attended any meetings to discuss STI or HIV/AIDS during the last 12 months respectively as shown in Table 46.

Table 46: Programme coverage among truckers in Hargeisa

Characteristic	Response	Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Aware of any local NGO that delivers non-medical assistance or advice to members of a group	Yes	22/281	7.8	7.7	5.0	11.4
Have attended any meetings to discuss STI or HIV/AIDS during the last 12 months	Yes	4/284	1.4	1.4	0.5	3.8
Attended the sites he was referred to	Yes	N/A	-	-	-	-
GARPR 3.7 Coverage of HIV prevention programmes among key populations	Yes	2/286	0.7	0.7	0.2	2.9

3.3.13. Alcohol and drug use in the past three months

Only 2.1 per cent of truckers in Hargeisa consume alcohol compared to 62.0 per cent who consume khat. In addition, 48.3 per cent of the truckers smoke cigarette. Other drugs and substances consumed include marijuana or hashish (4.1%), and shisha smoking (4.4%). Only 9.8 per cent of truckers reported having had sex with a client in the past three months after having taken a drink containing alcohol, chewed khat or smoked marijuana/hashish or cigarette.

Table 47: Alcohol and drug use in the past three months among truckers in Hargeisa

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Frequency of having a drink containing alcohol during the past three months	Never Monthly or less Two–four times a month Two–three times a week Four or more times a week	277/284 5/284 1/284 0/284 1/284	97.5 1.8 0.4 0 0.4	97.9 1.4 0.4 - 0.4	95.9 0.6 0 - 0	99.0 3.6 2.5 - 2.6
Frequency of chewing khat during the past three months	Never Monthly or less Two–four times a month Two–three times a week Four or more times a week	274/286 0/286 2/286 2/286 10/286	95.8 0 0.7 0 3.5	95.9 - 0.7 - 3.4	92.9 - 0.2 - 1.8	97.7 - 2.8 - 6.3
Frequency of smoking cigarette during the past three months	Never Monthly or less Two–four times a month Two–three times a week Four or more times a week	149/285 8/285 25/285 9/285 94/285	52.3 2.8 8.8 3.2 33.0	51.7 2.5 8.6 3.4 33.9	45.8 1.1 5.8 1.7 28.5	57.6 5.2 12.5 6.4 39.7
Frequency of smoking shisha during the past three months	Never Monthly or less Two–four times a month Two–three times a week Four or more times a week	274/285 1/286 2/286 3/286 6/286	95.8 0.4 0.7 1.1 2.1	95.6 0.3 0.7 1.1 2.2	92.4 0 0.2 0.4 1.0	97.5 2.3 2.9 3.4 4.9
Have had sex with a client in the past three months after having taken a drink containing alcohol, chewed khat or smoked marijuana/ hashish or cigarette	Yes	27/285	9.5	9.8	6.8	14.0

Characteristic		Sample proportions		Population estimates		
		n/N	%	%	95% confidence interval	
Frequency of injecting drugs during the past three months	Monthly Never	1/285 284/285	0.4 99.7	0.4 99.6	0 97.4	2.6 99.9
Type of drug injected	Speed ball	1/1	100	100	-	-
Used a sterile needle and syringe during last injectable drug use	Yes	1/1	100	100	-	-
Shared a syringe or needle with anyone else when injecting drugs in the last three months	Decline to answer	1/1	100	100	-	-
Received new, clean needles or syringes in the past three months	Decline to answer	1/1	100	100	-	-

4. Discussion

This section examines the various key variables and GARPR indicators and makes intergroup comparisons. Since this is the third IBBS survey round to be implemented in Somaliland, additional comparisons will be made to selected key indicators in the Somaliland vulnerable women IBBS studies in 2008 and 2014. At the same time, uniformed personnel and truckers are key populations though no IBBS in Somaliland had been conducted before targeting these particular groups. Therefore, comparison with Hargeisa IBBS will be limited to vulnerable women only. This study, however, forms a good baseline for truckers and uniformed groups for subsequent IBBS surveys required to track HIV programme performance in Somaliland.

4.1. Sociodemographic characteristics and HIV/syphilis prevalence

The findings of this IBBS indicate relatively similar patterns across the surveys. Most of the vulnerable women participants were youth aged between 18 and 24 years with their mean ages ranging from 29 years to 40.2 years, with either no education or primary education. This finding is similar to those in previous studies indicating the majority of vulnerable women have a mean age of about 28–29 years (IOM, forthcoming (c); IOM, 2014b; Kriitmaa et al., 2010). This is critical to informing HIV programming in Somaliland to tailor information, education and communication materials to the target key population groups. In addition, the majority of participants from truckers and uniformed categories were married, with some having up to four wives. In comparison, many vulnerable women were either separated, divorced or single, which could be a contributing factor to engagement in transactional sex. This could explain in part the findings of this survey showing that majority of transactional sexual activities happen at the client's (vulnerable women) home. Across the three surveys, truckers significantly travel to neighbouring countries with varied duration of stay outside the country before visiting their families.

4.2. Somaliland IBBS key indicator trends

The 2017 IBBS survey shows a steady decline in HIV prevalence in Somaliland from 5.1 per cent in 2008 to 4.8 per cent in 2014 and 3.6 per cent in 2017. On the contrary, prevalence for active syphilis has increased from 2.4 per cent in 2014 to 3.3 per cent in 2017, a similar burden to that recorded in 2008. Condom use with last transactional or non-transactional client has steadily improved since 2008 (25.6%), 2014 (31.5%), and 2017 (37.9%) as illustrated in Table 48. Similarly, the proportion of vulnerable women who know their HIV status from an HIV test 12 months prior to this survey shows an upward trend; 2008 (2.4%), 2014 (21.3%) and 2017 (36.6%). However, over the years, improvement on the indicator measuring proportion of vulnerable women who correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission has also greatly improved. Furthermore, two additional GARPR outcome indicators have been included: (a) avoidance of HIV services because of stigma and discrimination among key populations; and (b) coverage of HIV prevention programmes among key populations as shown in Table 48. Current performance on these two indicators is sub-optimal, and future surveys could consider measuring progress, while interventions should focus on stigma reduction. This study reports an almost similar HIV prevalence among vulnerable women in Bossaso (4.5%) and Mogadishu (2.9%) in the 2017 IBBS survey (IOM, forthcoming (b)).

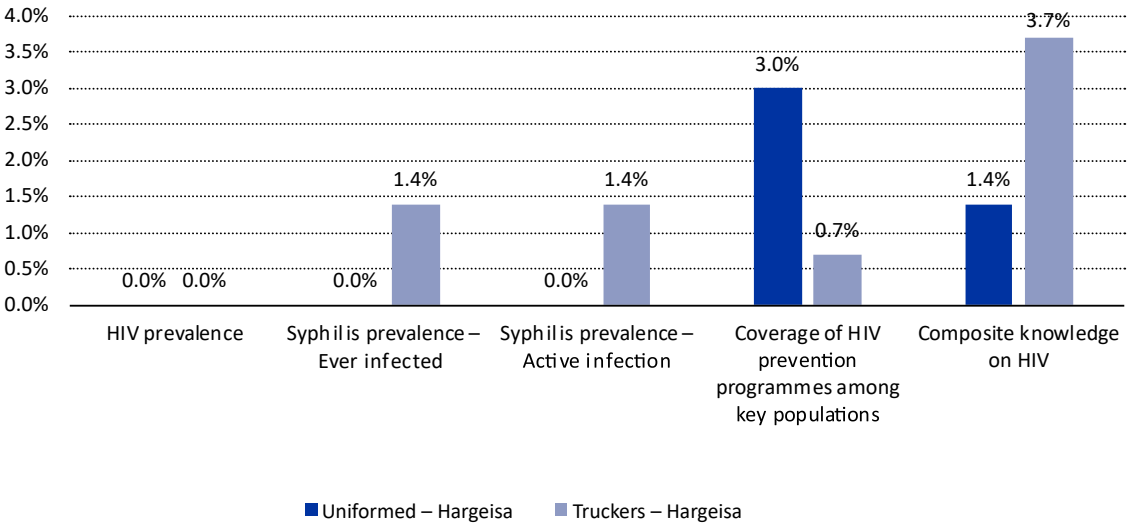
Table 48: Trends in key IBBS indicators in Somaliland

Characteristic	2017				2014				2008			
	Sample proportions		Population estimates		Sample proportions		Population estimates		Sample proportions		Population estimates	
	n/N	%	%	95 % CI	n/N	%	%	95% CI	n/N	%	%	95% CI
Place of birth												
Djibouti	-	-	**1.6**	-	2/95	2.1	**2.3**	0.0–7.4	4/219	1.8	**1.6**	0.2–2.9
Ethiopia	4/287	1.4	**-**	0–3.2	10/95	10.5	**9.5**	**1.9–17.0**	157/219	71.7	**69.2**	**53.5–84.8**
Puntland	-	-	**98.1**	-	3/95	3.2	**2.2**	0.0–5.5	3/219	1.4	**0.9**	0.0–1.7
Somaliland	282/287	98.3	**0.2**	96.5–99.8	78/95	82.1	**84.0**	**74.0–94.0**	42/219	19.2	**20.8**	
South Central Somalia	1/287	0.3		0–0.5	2/95	2.1	**2.0**	0.0–5.3	10/219	4.6	**6.5**	
Other	-				0/95	0.0	**-**	-	3/219	1.4	**1.1**	
Nationality												
Somali	3/287	1.0	**0.7**	0–3.2	7/95	7.4	**9.7**	0.0–23.4	N/A	N/A	**N/A**	N/A
Somaliland	280/287	97.6	**97.6**	0–1.6	78/95	82.1	**80.0**	70.8–89.2	N/A	N/A	**N/A**	N/A
Ethiopia	4/287	1.4	**1.6**	95.8–99.4	7/95	7.4	**7.0**	0.0–19.9	N/A	N/A	**N/A**	N/A
Djibouti	-	-	**-**		2/95	2.1	**2.3**	0.0–6.1	N/A	N/A	**N/A**	N/A
Other	-	-	**-**		1/95	1.1	**1.0**	0.0–2.4	N/A	N/A	**N/A**	N/A
Marital status												
Single	75/287	26.1	**29.1**	23.4–34.9	33/93	35.5	**29.9**	**21.8–38.0**	170/219	**77.6**	76.6	**70.3–82.9**
Married	17/287	5.9	**5.0**	2.9–7.0	0/93	0.0	0.0	-	1/219	0.5	0.4	0.0–1.2
Separated	93/287	32.4	**31.7**	26.5–36.9	1/93	1.1	**0.3**	**0.0–0.8**	9/219	4.1	**3.5**	**1.5–5.6**
Divorced	74/287	25.8	**25.2**	20.3–30.0	45/93	48.4	**49.3**	**31.4–68.4**	27/219	12.3	**13.6**	**8.4–18.8**
Widowed	28/287	9.8	**9.0**	5.9–12.2	6/93	6.5	11.3	0.0–28.5	12/219	5.5	5.9	1.8–9.9
Other	-	-	**-**	-		8.6	8.7	2.8–14.6	0/219	0.0	-	-
Undergone circumcision	282/287	98.3	**98.2**	96.6–99.8	92/93	98.9	**99.7**	99.6–99.8	199/219	90.9	**91.3**	86.9–95.8
GARPR 3.3: HIV prevalence	14/287	4.9	**3.6**	2.0–5.2	5/96	5.2	**4.8**	0.2–9.3	13/237	5.5	**5.1**	2.1–8.1
GARPR 3.11: Syphilis prevalence	10/287	3.5	**3.3**	1.1–5.5	2/96	2.1	**2.4**	0.0–5.6	8/237	3.4	**3.4**	1.1–5.7
Had forced sexual intercourse in the previous 12 months	14/285	4.9	**5.3**	4.0–6.6	23/92	25.0	23.7	11.5–36.0	40/219	18.3	16.8	10.9–22.6
GARPR 3.6. Condom use during last transactional sexual intercourse with partner	105/280	37.5	**37.9**	32.8–43.1	31/92	33.7	**31.5**	19.6–43.3	63/219	28.8	**25.6**	19.2–32.0
Condom use during last non-transactional sexual intercourse with partner	104/276	37.7	**38.2**	33.3–43.2	16/85	18.8	**18.8**	4.5–32.9	7/104	6.7	**4.9**	1.2–8.6
Working through pimp/*dalals*	45/282	16.0	**16.5**	8.2–24.7	22/90	24.4	**18.5**	6.5–30.5	N/A	N/A	**N/A**	N/A
GARPR 5.1: Both correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission	141/286	49.3	**48.9**	9.8–17.5	6/89	6.7	**10.4**	0.0–26.1	13/219	5.9	**6.3**	1.0–11.5
GARPR 3.4: Knows her HIV status from an HIV test taken in the last 12 months	109/287	38.0	**36.6**	30.7–42.4	17/85	20.0	**21.3**	**10.7–31.9**	7/219	3.2	**2.4**	**1.7–3.0**
GARPR 4.2: Avoidance of HIV services because of stigma and discrimination among key populations	88/274	32.1	**30.7**	27.4–39.1	N/A				N/A			
GARPR 3.7: Coverage of HIV prevention programmes among key populations	57/286	19.9	**23.1**	1.3–5.3	N/A				N/A			

4.3. Comparison of key indicators across Hargeisa uniformed personnel and truckers surveys

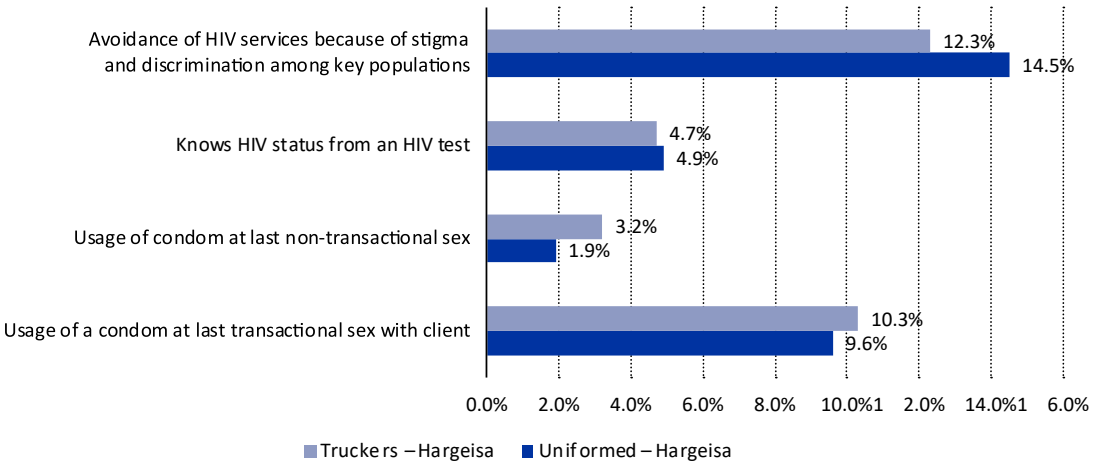
HIV and syphilis prevalence among uniformed personnel and truckers in Hargeisa is zero. The low HIV and syphilis prevalence could be explained in part due to exceptionally high stigma and discrimination towards those living with HIV, and therefore those who engage in higher risk behaviour or who know their positive status intentionally avoid participating in the survey. For example, if a uniformed personnel tests HIV positive and it is known to the police or military administration, he risks losing his job. Both active and non-active syphilis is higher among truckers compared to uniformed personnel. Coverage of HIV prevention programmes is higher among uniformed personnel compared to truckers. However, truckers have higher composite knowledge on HIV compared to uniformed personnel as illustrated in Figure 11.

Figure 11: Comparison of selected indicators among uniformed personnel and truckers, part 1



The findings in Figure 12 indicate a small proportion of uniformed personnel and truckers accessed HIV tests and know their status. In addition, not only is condom use with transactional clients low, it is also inconsistently used between transactional and non-paying clients. These findings highlight an existing gap in access to essential key population services that should be filled.

Figure 12: Comparison of selected indicators among uniformed personnel and truckers, part 2



5. Conclusion

The prevalence of HIV in Hargeisa largely remains below 5 per cent but is higher among vulnerable women compared with truckers and uniformed personnel. The prevalence of HIV among vulnerable women in Hargeisa is 3.6 per cent compared to 0 per cent among truckers and uniformed personnel. Additionally, non-active syphilis among vulnerable women is more prevalent (6.3%) than active syphilis (3.3%). Among uniformed personnel and truckers, syphilis prevalence is zero and 1.4 per cent, active and inactive, respectively.

The proportion of participants who correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission is higher among vulnerable women (48.9%) compared to truckers (3.7%) and uniformed personnel (1.4%). Condom usage during last transactional sex with clients is generally low across the three surveys though higher among vulnerable women (37.9%), in comparison to uniformed personnel (9.6%) and truckers (10.3%). Furthermore, condom use with last non-transactional sex is less than that in transactional sex among truckers and uniformed personnel but similar to transactional sex among vulnerable women.

Few participants knew their HIV status from an HIV test. At least one third of vulnerable women in Hargeisa know their HIV status from an HIV test compared to uniformed personnel (4.9%) and truckers (4.7%). Coverage of HIV prevention programmes among key populations is generally low across the surveys in Hargeisa (23.1% among vulnerable women, 3% among uniformed personnel and 0.7% among truckers). Avoidance of HIV programmes because of stigma and discrimination among key populations is more pronounced among vulnerable women in Hargeisa (30.7%) compared to uniformed personnel (14.5%) and truckers (12.3%).

The fact that zero HIV prevalence was established among two groups widely known to engage in high-risk sexual behaviour is concerning, and was discussed at the TWG/dissemination. For both uniformed personnel and truckers, it is likely that due to exceptionally high stigma, those who knew themselves to be HIV positive self-selected to not participate in the study. The uniformed personnel also informed the TWG that a medical examination is done at the time of recruitment into the military/army, and those who are HIV positive will not be enrolled. For these reasons, there may be bias in the HIV prevalence found in this study, and therefore further investigation should be done.

6. Limitations of the study

In order to meet project timelines, this IBBS survey was implemented within a short period. The duration of the data collection ranged from one month to two months. In order for the survey team, especially the team working with vulnerable women, to build trust with participants, it requires considerably more time to ensure validity of survey subjects, and comfort responding to invasive and personal questions. The IBBS team was able to reassure those who had the courage to come to the survey site and to participate in the interview and obtain an HIV and syphilis test; however, with additional time and outreach/advocacy of the survey, the participants could have been more varied.

This IBBS survey intended to estimate the size of key population as part of good IBBS practices and in line with GARPR recommendations. However, there was no programme data specific to key population groups. This could have allowed for computation using survey data to generate size estimates by the health service multiplier methods.

This IBBS survey was undertaken during a drought and food shortage in Somaliland. The fact that monetary incentives were given to participants to compensate their time and travel, the study risked to recruit participants disguising as vulnerable women, truckers or uniformed personnel. However, each study site had a well-trained screener and site team leader who attempted as much as possible to ensure all participants met inclusion criteria. All the same, during the TWG in Hargeisa, the locally appropriate incentive amount was agreed upon that would not meet the threshold of enticing people to fake eligibility.

The high level of stigma and criminalization of sex work and HIV/AIDS in Somaliland was evident during RDS recruitment of vulnerable women. Some refused to come to the study site fearing they could be arrested by law enforcers. The IBBS site staff constantly reassured the participants of the safety and confidentiality of the whole data collection process.

A few participants during RDS recruitment among vulnerable women were corrupted by one vulnerable woman working at the ART centre, who influenced recruitment of some participants. Just after mid-data collection, this was identified, and data from these respondents were removed from the data set.

At the time of data collection, the IBBS team was not allowed to have access to the Somaliland police. Instead, data collection was conducted among custodial police. The high stigma and discrimination associated with those who test HIV positive among uniformed personnel could have contributed to some personnel who knew their HIV positive status choose not to participate in the IBBS survey, as participation in this survey was entirely voluntary. The uniformed personnel also risk losing their job in the police or military in case their managers discover they are HIV positive.

7. Recommendations

Optimization of HIV testing services among key populations

Findings of this IBBS survey indicate a very low proportion of key populations who know their HIV status. To be precise, the lowest is 4.7 per cent (Hargeisa truckers), whereas the highest is 36.6 per cent (Hargeisa vulnerable women). Multiple HIV testing strategies targeting key populations should be undertaken by all stakeholders, including outreach testing using peer education approaches, and testing within health facility outpatient and inpatient settings (Provider Initiated Counselling and Testing). Voluntary HIV counselling and testing services should be introduced in military bases and police stations where uniformed personnel can access essential HIV services. Since the military hospital in Hargeisa serves all uniformed personnel, it will be useful to set up a VCT centre within this hospital. Mobile outreach HIV counselling and testing services should also be conducted targeting truckers.

Design and prompt implementation of a peer education strategy to increase coverage of HIV prevention programmes among key populations

Coverage of HIV prevention programmes among key populations is very low (less than 5% among uniformed personnel and truckers and at 23.1% among vulnerable women) with high rates of avoidance of HIV services due to stigma and discrimination, especially among vulnerable women (up to 30.7% among vulnerable women in Hargeisa). To ensure essential HIV services reach the target population through recruited and trained key population peer educators, efforts need to be made by all stakeholders in Somaliland to quickly design and roll out a peer education strategy. Such a peer education strategy should be designed in a way to increase referral of peers for HIV counselling and testing services in addition to STI screening and treatment. The findings showing very low knowledge level on HIV and STI among the key populations necessitates the need to conduct HIV awareness-raising sessions targeting these populations. Awareness on available HIV services should be raised as the majority of respondents did not know even where to go for an HIV test.

Increase access to and use of condoms among key populations

Across all three surveys, condom use is low, with inconsistencies in condom use between transactional and non-transactional clients. HIV programmes in Somaliland should consider increasing availability of condoms to target key populations through several strategies, such as the peer education programme, availing condoms at VCT centres, outpatient and family planning clinics.

Additional future IBBS research

While this survey acts as a baseline (truckers and uniformed personnel), future IBBS surveys should be conducted in Somaliland to track progress of performance on key HIV indicators and establish trends in prevalence for HIV and STIs. Such future IBBS surveys will help to measure the success of HIV programmes in Somalia. In future IBBS surveys, it will be ideal to follow up the three groups included in this IBBS survey; however, it is also recommended to consider including other key population groups not included in this, and previous rounds such as port workers, seafarers and youths. Besides Hargeisa, it is recommended that future studies be extended to other needy areas of Somaliland, such as Berbera and Tog Wajale.

References

Ministry of Health, Somalia and UNICEF Somalia

2014 National Strategic Plan for the Somali HIV and AIDS Response 2015–2019 (unpublished).

International Organization for Migration (IOM)

2014 HIV Rapid Assessment among Key Populations in Hargeisa, Somalia. IOM, Nairobi (unpublished).

2018 Integrated Biological and Behavioral Surveillance Survey among Female Sex Workers in Hargeisa, Somaliland (forthcoming).

2018 Integrated HIV and Sexually Transmitted Infections Biological and Behavioural Surveillance Survey among Key Populations in Somalia (forthcoming).

2018 Mapping and Size Estimation of Key Populations in Somalia (forthcoming).

Kriitmaa, K. et al.

2010 HIV prevalence and characteristics of sex work among female sex workers in Hargeisa, Somaliland, Somalia. *AIDS*, 24 Suppl 2:S61-7. doi: 10.1097/01

Puntland AIDS Commission and Ministry of Health, World Health Organization – Somalia

2011 Formative Research: Port Workers, Truck Drivers and Female Sex Workers in the Port City of Bossaso-Puntland. May–June 2011. IOM Somalia, Nairobi.

UNAIDS

2014 Gender Assessment Report on Somali HIV epidemic and response. August 2014 (unpublished).

2015 Progress reports for Somali HIV and AIDS response 2014. Available from www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2015countries/ (accessed 26 February 2017).

2016 Global AIDS Monitoring 2017. Indicators for monitoring the 2016 United Nations Political Declaration on HIV and AIDS. UNAIDS, Geneva.

International Organization for Migration (IOM)
Mission in Somalia, Nairobi Office
Gitanga Groove, off Gitanga Road, Lavington,
Nairobi/Kenya, P.O. Box 1810-00606,
Tel: +254 20 2926000 • +254 708 151656 • +254 708 151643 • +254 733122584
E-mail: iomsomalia@iom.int