

Linkage2care



ENHANCING LINKAGE TO CARE FOR HIV IN SOUTH AFRICA

A Cohort Study In uThukela District

Evaluation Report | First survey 2017-2019

August 2021

SOUTH AFRICAN MEDICAL RESEARCH COUNCIL | BURDEN OF DISEASE RESEARCH UNIT



Suggested Citation

Nicol E, Jama N, Basera W, Olivier J, Cheyip M, Puren A, Kufa-Chakezha T, Lombard C, Pass D, Laubscher R, Raphaely N, Bradshaw D. Enhancing linkage to care for HIV in South Africa: A cohort study in uThukela District. Technical Report. Cape Town: South African Medical Research Council; 2021.

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Acknowledgements

We would like to extend our word of appreciation to the uThukela district manager, Dr. T. Zulu as well as the deputy district manager of monitoring and evaluation, Mr. M. Asvat, for their unending support to the project. We would also like to acknowledge the Health Systems Trust (HST) team in Ladysmith, our collaborating partners, for the advisory role they played in setting up the project as well as throughout the project. We also thank the hospital Chief Executive Officers, clinic managers and counsellors of participating facilities for their support during the fieldwork. And, finally, to all the participants, thank you for participating in this project. This work was supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through the Centers for Disease Control and Prevention, under the terms of Cooperative Agreement Number 1U2GGH001150. A final evaluation report will be posted on a publicly accessible website within 90 days of clearance from relevant authorities.

We also appreciate the co-operation of the staff in the sub-district offices and selected facilities and would like to thank Ms T. Makowa, and the fieldwork team for data collection. We also thank Ms. B. Zani, who contributed to and assisted with editing of the report.

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the funding agencies.

ISBN: 978-1-928340-56-0

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Cover page by Carron Finnan, SAMRC.

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ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome	NDOH	National Department of Health
ART	Antiretroviral Therapy	NHI	National Health Insurance
CAPRISA	Centre for the AIDS Programme of Research in South Africa	NHLS	National Health Laboratory Service
CDC	Centers for Disease Control and Prevention	NICD	National Institute for Communicable Diseases
ComDC	Community Day Centers	PEPFAR	U.S. President's Emergency Plan for AIDS Relief
CDW	Corporate Data Warehouse	PHC	Primary Health Care
CGH	Center for Global Health	PIPV	Physical intimate partner violence
CHC	Community Health Centre	PLHIV	People living with HIV
CHW	Community Health Workers	PMTCT	Prevention of Mother to Child Transmission of HIV
CV	Coefficient of variation	REDCap	Research Electronic Database Capture
DGHT	Division of Global HIV & TB	RIC	National Retention in Care
DM	District Municipality	RMS	Rapid Mortality Survey
DMZ	Demilitarized zone	SA	South Africa
DoH	Department of Health	SAMRC	South African Medical Research Council
HIV	Human Immunodeficiency Virus	SDI	Same-day initiation
HPRN	Health Patient Registry Number	TB	Tuberculosis
HPRS	Health Patient Registration System	THPs	Traditional Health Practitioners
HSRC	Human Sciences Research Council	TIER.Net	Three Interlinked Electronic Registers
HST	Health Systems Trust	UID	Unique patient identification numbers
HTS	HIV testing services	UNAIDS	United Nations Programme for HIV/ AIDS
ICC	Interclass correlation	UTT	Universal Test and Treat
IQR	Interquartile range	WHO	World Health Organization
KZN	KwaZulu-Natal		
LM	Local Municipality		

DEFINITIONS OF TERMS

Gateway clinic: A primary health care (PHC) clinic, located in community health center (CHC) or a hospital, where patients with minor ailments are seen by trained primary health care workers free of charge, before being referred to the CHC or hospital. Every CHC/ hospital has a gateway clinic directly attached to it to serve the people in the immediate vicinity of the CHC.

Linkage to care: The proportion of adult population (18 years and above) per facility per month who have been initiated onto antiretroviral therapy (ART) as evidenced by a TIER.Net record or for whom baseline CD4 results have been captured into their TIER.Net record within 3 months of their HIV-positive test results at enrolment.

Retention in care: The proportion of enrolled HIV-positive adults (18 years and above) retained in care at 12 months after HIV diagnosis per facility per month for whom an entry has been captured into the TrakCare database of the National Health Laboratory Service (NHLS) for confirmed linkage at specified times after their positive HIV test at enrolment.

Umakhwapheni: Is a local Zulu lingual used to refer to a once off or non-regular sexual partner or someone you are having an affair with.

EXECUTIVE SUMMARY

This project sought to evaluate the linkage to and retention in HIV care rates, and the possible barriers and facilitators to HIV care in a single high HIV prevalence rural setting in South Africa. Enhancing linkage to and retention in care is important for the universal test and treat (UTT) strategy to achieve its full potential impact on the epidemic. Furthermore, this study through routine data collection sought to improve district and facility HIV services, offer much-needed epidemiological information at national level to further strengthen the HIV programme, and assist South Africa in reaching the Joint United Nations Programme on HIV/AIDS (UNAIDS) 90-90-90 targets (UNAIDS, 2020).

Aim

The aim of this project was to strengthen district-level capacity to enhance linkage to and retention in HIV care through strategic use of routine programmatic information to support the adult population uptake of UTT in the uThukela district, in KwaZulu-Natal province. The specific objectives were:

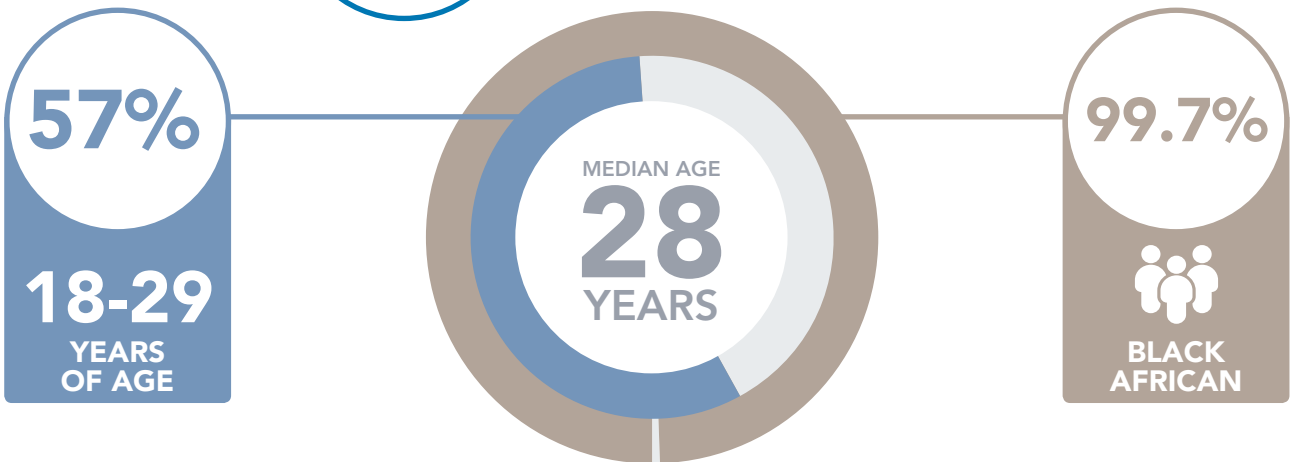
1. To describe the initial experience of adults newly diagnosed with HIV and the socio-demographic characteristics associated with HIV testing among adults who access HIV testing services in the uThukela district, and
2. To review and monitor linkage to and retention in care, the drivers and health impacts thereof, using and comparing routine programmatic data and information collected from patient interviews, in participating primary health care facilities within the uThukela district.

Methods

A quantitative cohort design was undertaken to monitor and evaluate: 1) initial HIV testing experience, 2) impact on linkage, and 3) impact on retention in HIV care for adults newly diagnosed with HIV, in a single high-prevalence rural district over a 12-month period from December 2017 to July 2019 in 18 primary health care facilities in the uThukela district. Patient-level data were collected electronically using Research Electronic Database Capture (REDCap) and triangulated between various data sources, such as TIER.Net, TrakCare (the National Health Laboratory Services (NHLS) database) and the Rapid Mortality Survey (RMS) database from the Department of Home Affairs.

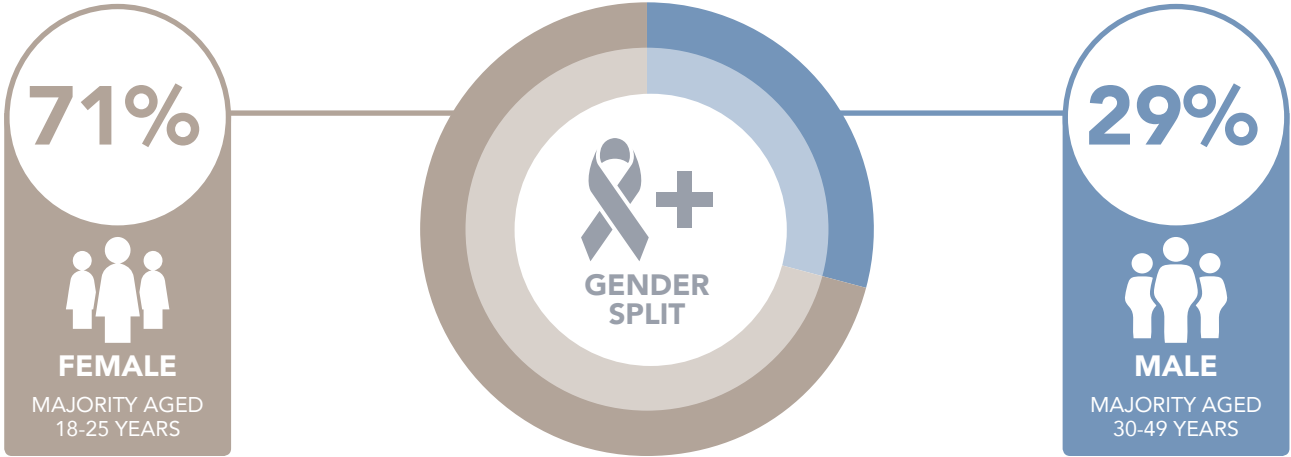


**KEY FINDINGS:
OVERVIEW**





KEY FINDINGS:
CHARACTERISTICS OF HIV POSITIVE COHORT AT BASELINE AND AT 4-MONTHS FOLLOW-UP AT BASELINE



MORE THAN HALF OF ALL PARTICIPANTS REPORTED TO BE IN MONOGAMOUS RELATIONSHIPS

40%
HAVE TWO OR MORE PARTNERS



A THIRD OF PARTICIPANTS REPORTED THAT THEY TESTED BECAUSE THEY FELT ILL

28%
WANTED TO KNOW THEIR STATUS



52% PUBLIC TRANSPORT WHICH WAS THE MOST UTILISED MODE OF TRANSPORT TO CLINIC

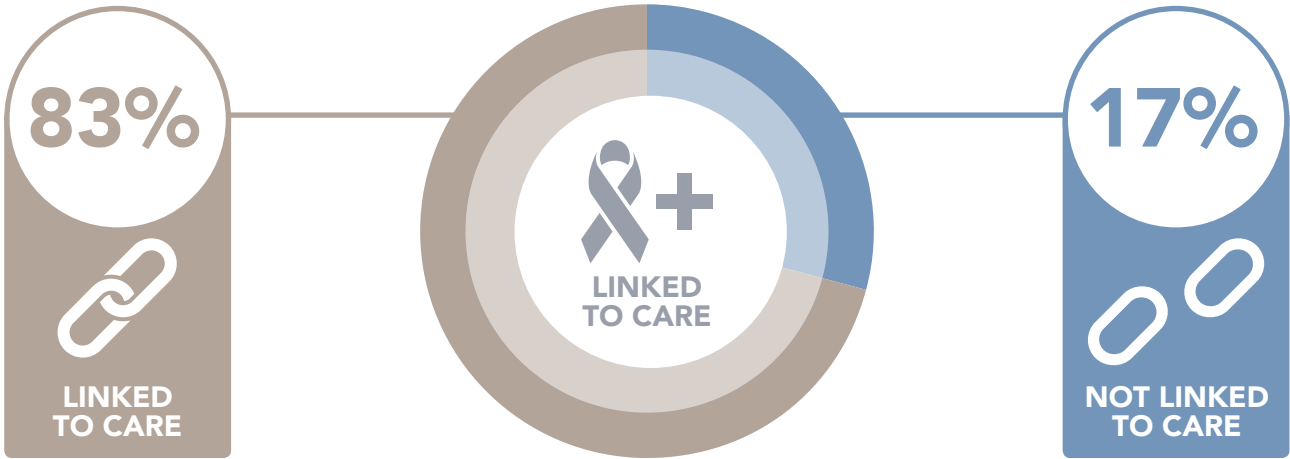


42% WALKED TO HEALTH FACILITIES TO ACCESS HIV TESTING SERVICES

AT 4-MONTHS FOLLOW-UP
OF THE PARTICIPANTS ENROLLED IN THE HIV POSITIVE COHORT:



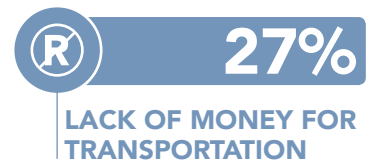
3 KEY FINDINGS:
LINKAGE TO CARE AT 3 MONTHS



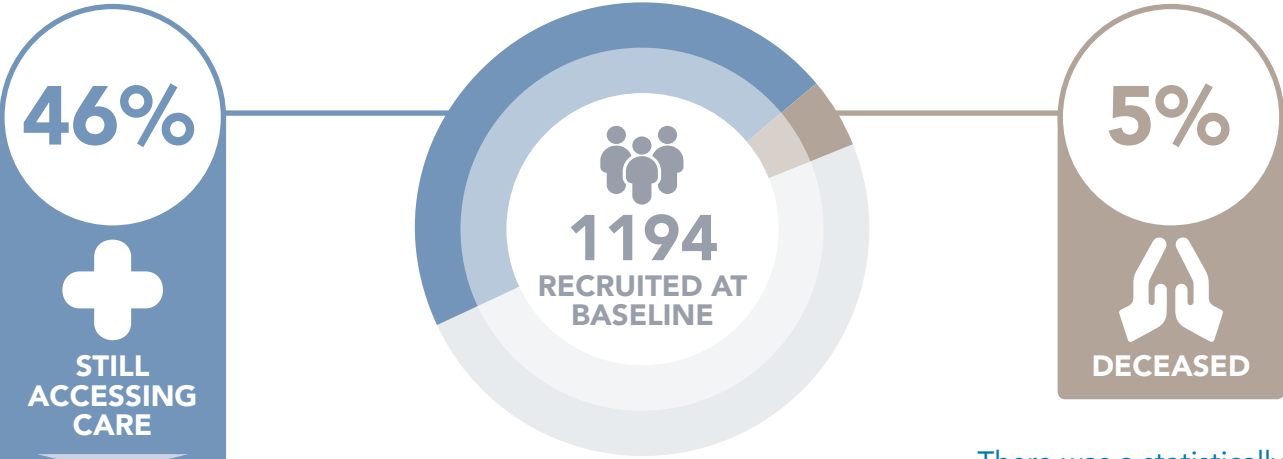
AT 4-MONTHS...



REASONS FOR NOT RETURNING TO HIV CARE



12 KEY FINDINGS: RETENTION IN CARE AT 12 MONTHS



OF WHICH
74%
LINKED TO CARE WITHIN 3 MONTHS POST HIV DIAGNOSIS

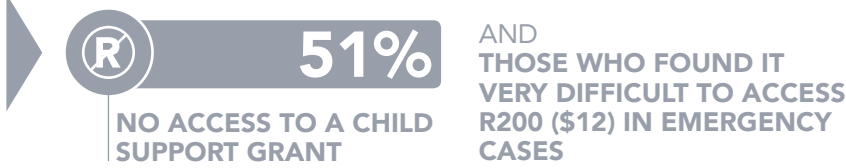
49%
AGED 35-49 YEARS REPRESENTED THE HIGHEST PROPORTION OF THOSE RETAINED IN CARE

There was a statistically significant difference between participants who remained in care at 12 months compared to those who dropped out of care for the following characteristics: **sex, age, education, place of residence, mode of transportation to health facility, alcohol intake and access to cash in an emergency (R200 / \$12) (p<0.050).**

MOST LIKELY TO REMAIN IN CARE AT 12 MONTHS



LEAST LIKELY TO REMAIN IN CARE AT 12 MONTHS



Conclusion

Our study provides data on 5,341 participants who tested for HIV in uThukela district, with 1,194 testing positive. Participants generally accessed HIV testing services in urban areas. This may be due to HIV stigma that is still prevalent in rural communities. We found that young women were more likely to test for HIV compared to young men. This may likely be attributed to the availability of testing opportunities when accessing family planning or antenatal services. For a community that still practices polyamorous relationships, interventions aimed at prevention could be implemented in uThukela. Lastly, the role of “significant others” in enabling linkage to and retention in HIV care could be encouraged for newly diagnosed HIV individuals who are willing to disclose. Whether facilities are ready for this, through provision of comprehensive counselling and support provision, is something that other studies could explore.

BACKGROUND

Over the last decade, linkage to care has been a key weakness in the South African national antiretroviral therapy (ART) programme (Hopkins et al., 2018). In May 2016, following recommendations of the World Health Organization (WHO) (WHO, 2015), the South African government announced the progressive rollout of the universal test and treat (UTT) policy, which focused on key populations and later to adult population with a prioritization on certain clinical categories of eligibility such as clients with a CD4 cell count of ≤ 350 cells/mm³ (DOH, 2016; Pinini, 2016). Early adopters have commenced uptake of UTT, although most adult patients have been slow to take up immediate initiation onto ART. Nevertheless, health care workers expressed caution about offering ART to greater numbers of people until the health system is able to enhance linkage to and retention in HIV care.

Systematic reviews (Rosen & Fox, 2011; Kranzer et al., 2012) and individual South African studies (Kranzer et al., 2010; Clouse et al., 2013) on patient dropout at different points in the HIV treatment pathway have shown that the greatest loss of patients occurs at the early stages before initiation of ART. Literature published in the past nine years has often raised more questions than answers, including inconsistent use of terminology between different authors (Fox et al., 2012) and limitations in the evidence base for interventions attempting to reduce loss from the HIV treatment pathway (Kranzer et al., 2012; Scanlon & Vreeman, 2013).

Definition of linkage to and retention in HIV care in South Africa from 1990-2020

Policy makers, clinicians, and researchers have used the notions of a 'cascade' or 'pathway' to describe the multiple steps within the HIV care and treatment experience. Whilst some steps in the cascade are well defined and easily measured, such as initiating ART or achieving viral suppression, other steps like linkage to and retention in HIV care have less well-defined endpoints and are less easily measured. The period between testing HIV positive and ART initiation is generally referred to as the pre-ART stage of the pathway, but there is variation in characterizing this period, making comparisons across studies difficult (Geng et al., 2010; Fox et al., 2012). The WHO recommended immediate treatment of all people living with HIV (PLHIV), regardless of CD4 cell count or clinical stage and South Africa became one of the first countries to rollout Universal test and treat (UTT) in May 2016. In September 2017, the general UTT policy was updated with a directive to initiate ART on the day of HIV diagnosis; that is same-day initiation (SDI). In many districts, patients do not initiate ART immediately, and having test results is considered successful linkage to care.

Linkage to care has historically been used to capture successful referral, after a positive test, in a patient attending the appropriate service to which they had been referred. However, in the absence of widespread implementation of a unique identifier (UID), "linkage to care" often truly measures linkage to services only within a specific facility, and studies reporting a proportion of patients lost from subsequent stages in the pathway are likely to include some patients in this proportion, who have chosen to access treatment in another facility (Geng et al., 2010) or cycled in and out of treatment in different facilities (Kranzer et al., 2012). A recent study using the NHLS data found that the national retention in care (RIC) was higher in the lab data than clinic data (Fox et al., 2018).

One of the first studies exploring immediate initiation on ART for adults newly diagnosed with HIV found that rapid initiation was possible for most eligible patients, but that post-initiation loss to follow-up and number initiated but not retained were higher in the patients offered rapid initiation (13% and 17%) than in patients offered the previous standard of care for preparation for ART initiation over several appointments, 6% and 8% respectively, (Rosen et al., 2016). As a result of the widespread uptake of UTT by the adult population, it will become increasingly important to understand both linkage to and early retention in HIV care.

Magnitude of loss from HIV care in South Africa

From the individual published studies providing results specifically for CD4 testing (as the first component of linkage to care), the proportion of HIV positive patients undergoing CD4 testing ranged from 55% to 85% (Larson et al., 2010) with a median of 63% (Kranzer et al., 2010). In these studies, there is evidence of considerable variability between the number of those who come to test for CD4 and those who collect their results, with the proportion collecting CD4 results ranging from 35% to 93% (Larson et al., 2010).

There is a consensus in the published literature and recent research that any loss from early stages in the HIV treatment pathway is significant, and that further work is required both to improve the completeness of and strengthen the strategic use of surveillance from routine data, and to add precision to estimates of the magnitude of loss from HIV care in South Africa.

Drivers for and risk factors associated with loss from HIV care in South Africa

The published literature on Sub-Saharan Africa has identified individual, social/environmental and health systems factors affecting linkage to care, some of which are modifiable. Consistent findings point to the role of individual demographics variables such as age, sex, marital status, and ethnicity. Being younger and male is associated with higher levels of attrition (Kranzer et al., 2010; Govindasamy et al., 2011; Clouse et al., 2013). Increased awareness of HIV and knowledge of disease status (CD4 count) and being symptomatic are factors positively associated with linkage to care (Govindasamy et al., 2011). Following home-based testing, individuals who did not believe their positive HIV result were 52% less successfully linked to care (Naik et al., 2015). Disclosure of HIV status is associated with stronger linkage to care, perhaps indicating better social support and individual coping mechanisms, and less stigma (Naik et al., 2018; Sanga et al., 2017). A systematic review and meta-analysis found that a history of intimate partner violence reported by women was found to be associated with lower ART adherence and viral suppression (Hatcher et al., 2015).

In terms of socio-economic factors, some studies point to an association between being employed and being less likely to be linked to care, perhaps due to the difficulties of accessing health care services after working hours (Govindasamy et al., 2011). Some studies point to higher education being associated to better care (Fox et al., 2014). Larger household size and informal housing and neighborhood (rural or informal settings) have also been identified as issues that may be factors in poor linkage to care (Fox et al., 2014).

Less is known about health system factors influencing retention in care. Longer distances (>15 km) from treatment sites have been reported to negatively influence linkage to care, as do transport costs (Lankowski et al., 2014). Initially, patients were expected to collect medication monthly at the facility, but with the implementation of the centralized chronic medicines dispensing and distribution, stable patients are able to collect medications at the facility or pharmacies for up to six months. There is some indication that the size of the facility and staffing levels may be a factor, with larger facilities and better staff-patient ratios being preferable for improved linkage (Lankowski et al., 2014). A study in Durban, South Africa, which used the presence of a CD4 test result at the time of diagnosis as a proxy for being linked to care, concluded that newly diagnosed HIV positive with an immediate blood draw for CD4 count had prompt linkage to care at 4-months compared to those that did not undergo blood draw (Hoffman, 2015).

Health impacts of loss from linkage to and early retention in HIV care

Persistently low baseline CD4 levels at HIV diagnosis in South Africa (Cassim et al., 2016) and other sub-Saharan African settings (Kelly et al., 2016; Wilkinson et al., 2015) have indicated that many patients newly diagnosed with HIV are likely to be ill, which raises concerns about health outcomes when they fail to link or remain in HIV care. From a cohort study in Sierra Leone, 66% were lost from HIV care, of whom 62% were lost prior to initiating ART, and 26% had died. Of those who had died prior to initiating ART, 41% had died after diagnosis but before staging for ART eligibility, 19% died after being deemed ineligible for ART (i.e., having

CD4 cell count result of <350 cells/mm³), and 41% died after being deemed eligible for ART but prior to initiating treatment (Kelly et al., 2016). This study also found that additional outcomes were available for 81% of those remaining alive at 12 months: 54% had stopped accessing HIV care and 46% had self-transferred from the hospital clinic (at which they had been diagnosed) to other facilities, where the study was unable to follow them (Kelly et al., 2016).

A systematic review and meta-analysis of 28 studies in Sub-Saharan African countries found 5-54% (pooled estimate of 19%) of patients lost from care who were traceable had self-transferred (more in the ART cohort), with pooled estimates of 39% patients lost from care who had died, and 29% had stopped taking ART (Wilkinson et al., 2015).

Justification for this study

PEPFAR encourages the use of programmatic data for both programme evaluation and scientific purposes, as it is abundant, accessible, timely, and cost-efficient (CDC DGHT 2016). Nevertheless, capacity constraints in high prevalence ($>20\%$), predominantly rural districts undermine the quality and utility of programmatic data for monitoring and surveillance, at facility, district, and national levels. Routine data are currently underutilized as a resource for monitoring and surveillance, due to historical limitations of capacity (Day & Gray, 2014), staff capability and poor motivation (and concerns about its quality (Cassim et al., 2016; Nicol et al., 2016). This project offered an opportunity both to evaluate proof-of-concept extensions to the use of routine data for monitoring and surveillance, and to validate or improve its quality as necessary.

This project has the potential to make an important contribution in the understanding of barriers to, drivers of and rates of linkage to and retention in care which are very important if the UTT strategy is to achieve its full potential impact on the epidemic in South Africa. Furthermore, programme monitoring through routine data will improve district and facility HIV services, offer much-needed epidemiological information at the national level to further strengthen the HIV programme, and assist South Africa in reaching the UNAIDS 90-90-90 targets to improve the health of the population.

Aim

The aim of this project was to measure the rates of linkage to and retention in care as well as investigate the enablers and barriers to HIV care using questionnaire, interview, and routine programmatic information in the uThukela district, in KwaZulu-Natal (KZN) province.

This report presents findings of the baseline, four months follow-up, linkage to care and 12-month retention in care based on a mixed method evaluation study that was conducted in uThukela District, in KZN during the early stages of the UTT rollout strategy.

Objectives

1. To describe the socio-demographic characteristics of adults who receive HIV testing services in the uThukela district.
2. To report the proportion of HIV positive persons who successfully link to care within 3-months and remain in care at 12 months, and to describe the predictors associated with linkage and retention within uThukela District Municipality (DM).

Outcome definition

The primary outcomes for the positive cohort were linkage to care within 3 months and retention in care at 12 months after HIV diagnosis. The required entry into an enrolled adult's TIER.Net record included a visit to the pre-ART Wellness programme or a CD4 result at 9-12 months post HIV diagnosis or a date for ART initiation or a consultation whilst receiving ART or a viral load result for those 6 or more months after initiating ART.

METHODS

Study Design

This project was undertaken in primary health care facilities in a single, predominantly rural district. Rural districts are important foci of attention due to their relatively greater infrastructure barriers. A quantitative cohort design was undertaken to monitor and evaluate: 1) initial HIV testing experience, 2) rate of linkage, and 3) rate of retention in HIV care for adults newly diagnosed with HIV, in a single high-prevalence rural district over a 12-month period in 18 primary health care facilities in the uThukela district.

Data on the initial experience were collected cross-sectionally, whereas the linkage and retention data were gathered prospectively over 12 months using the cohort identified at baseline (December 2017). Linkage to care i.e., successful linkage to care for enrolled HIV-positive adults, was defined as “the proportion of adults per facility per month for whom baseline CD4 results have been captured into their TIER.Net record within 3 months of their positive HIV test at enrolment.” While retention in care, i.e., proportion of enrolled HIV-positive adults retained in care at 12 months after HIV diagnosis, was defined as: “the proportion of adults per facility per month for whom an entry has been captured into the NHLS database for confirmed linkage between 9-12 months after their positive HIV test at enrolment.” Facility-based programmatic data were linked to TrakCare database results to identify silent transfers which may comprise a substantial proportion of patients thought to be lost from HIV care in the first year after diagnosis. Health impacts of failure to link to or remain in care were followed up through TrakCare results and RMS database.

Data were collected electronically and analyzed using STATA v15 (StataCorp, Texas, USA). This report presents the results from a cohort study including a baseline questionnaire, four-month follow-up to assess the rate of linkage to care for newly tested HIV positive individuals and a 12-month assessment of their retention in care behaviors.

Study site

Following a consultative process between CDC South Africa and SAMRC, the uThukela district, which is a predominantly rural district, with the highest HIV prevalence (22%) when compared to the other district municipalities in KZN (Figure 1), and a 93% medically uninsured population, offered an excellent setting for monitoring the gradual rollout of UTT. During the implementation of this study (October 2017), UTT policy was updated with a directive to commence same-day initiation (SDI) for the general population, which became the standard of care in the district.

The latest District Health Plan showed some improvement in HIV prevalence, and TB client initiated on treatment rate (87%) which was slightly lower than the KZN provincial average (90%) (DOH KZN, 2019). As of 2016, the number of those presumed to be HIV Infected that were diagnosed was reported at 93%, of those diagnosed, 76% had antiretroviral exposure while 87% of those taking antiretrovirals had HIV viral loads below detectable limits (HSRC, 2017).

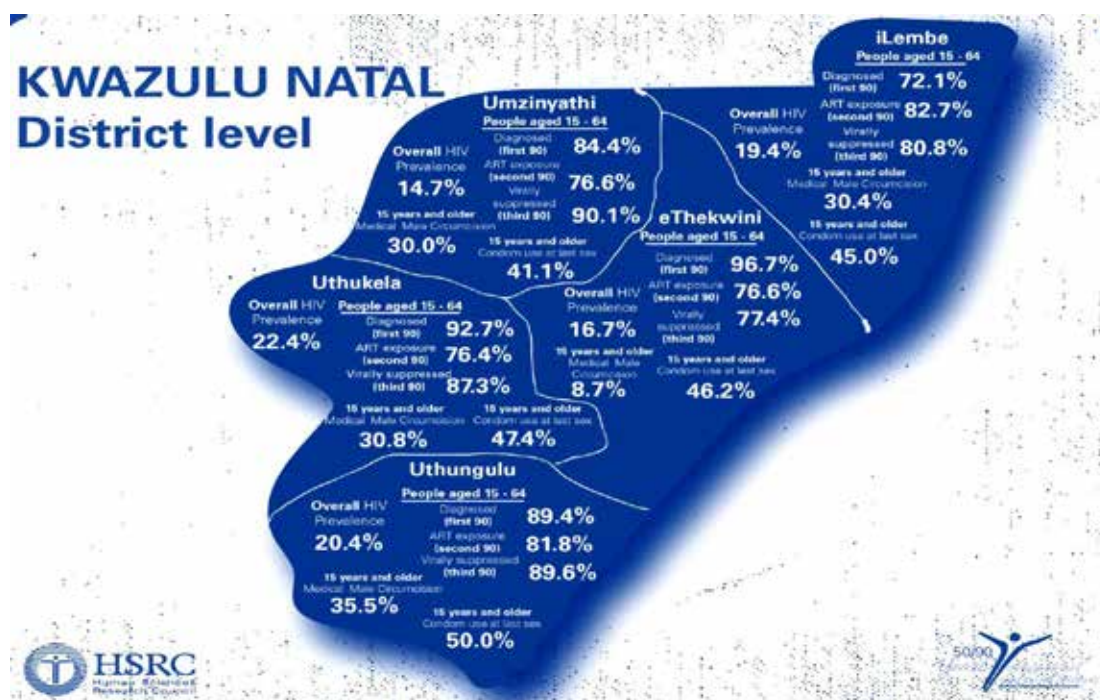


Figure 1: HIV prevalence and associated indicators in KwaZulu-Natal 2017 (HSRC, 2017)
Source: HSRC presentation at the 2018 AIDS conference, Durban

Geographically, the uThukela DM shares its western border with the country of Lesotho. The district is comprised of three local municipalities (LMs) (Figure 2) namely:

- **Alfred Duma LM** - the most populated (51%), with the largest town (Ladysmith) which is the seat of power for both the Alfred Duma LM and the uThukela DM.
- **Inkosi Langalibalele LM** - second most populated (30%), with a sparsely rural and densely urban population.
- **Okhahlamba LM** - the smallest population (19%), with the largest number of service delivery challenges, primarily due to remote mountainous areas, poor road infrastructure, and the lowest ratio of fixed clinics (DOH KZN, 2019).

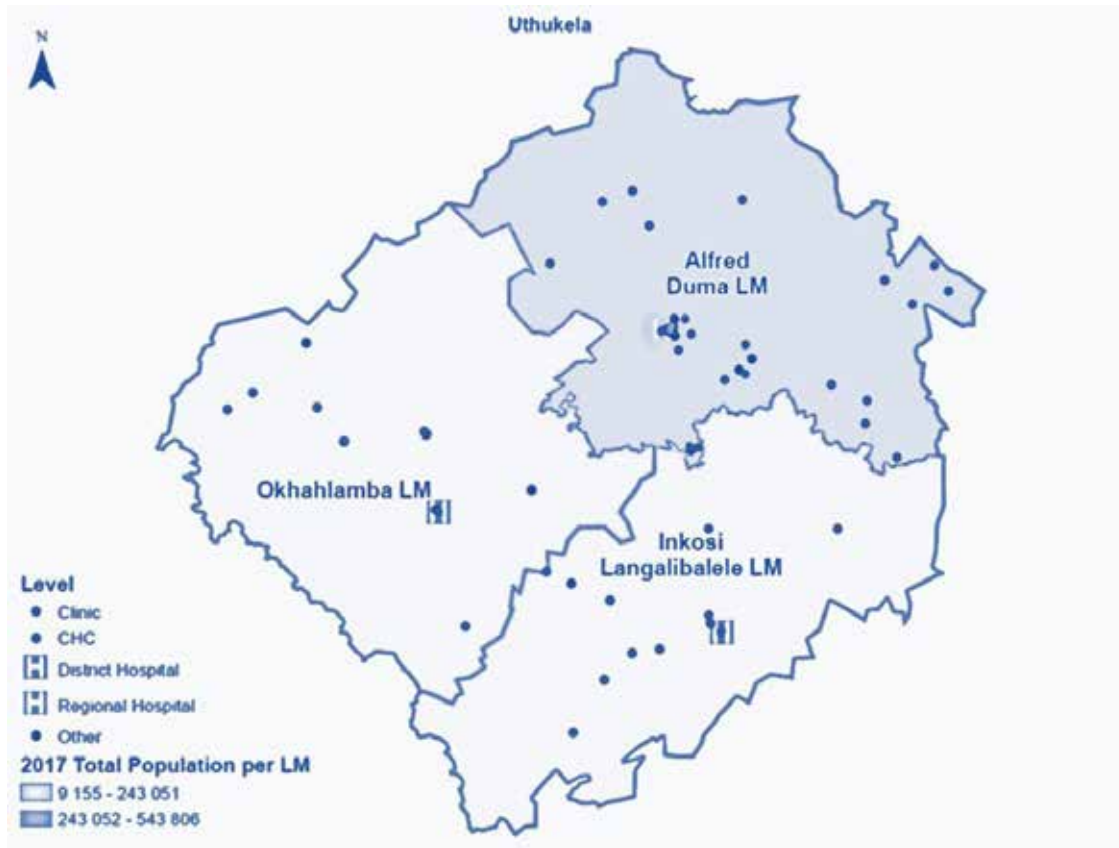


Figure 2: uThukela district map showing the population density for the three local municipalities in 2017
LM: Local municipality; CHC: Community Health Centre

The majority of HIV services are offered to patients through the primary health care setting. Below are the facilities included in the evaluation, and the local municipalities in which they are located. The PHC facilities were selected purposively by simple random sampling based on mean positive HIV test per month, which identified 3 gateway clinics (i.e., a PHC clinic located within a hospital premise and an entry point to the hospital), 8 PHC clinics, 2 community day centers (ComDC) and 3 mobile units in addition to 1 community health center (CHC), and an outpatient department within a hospital (Table 1).

Table 1: Selected facilities included in the Linkage to Care study in uThukela district between December 2017-July 2018

Local Municipality	Name of facility	Type of facility/service
Alfred Duma	1. Ladysmith Gateway Clinic	Gateway Clinic
	2. Limehill Clinic	Clinic
	3. Outer West Mobile 1	Mobile
	4. Sigweje Clinic	Clinic
	5. St Chads CHC	CHC
	6. Walton Clinic	Clinic
	7. Steadville Clinic*	Clinic
	8. Watersmeet Clinic*	Clinic
Okhahlamba	9. Bergville Clinic	Clinic
	10. Bergville Mobile 2	Mobile
	11. Bergville Mobile 3	Mobile
	12. Emmaus Gateway Clinic	Gateway Clinic
	13. Emmaus Hospital*	OPD
Inkosi Langalibalele	14. Connor Street Clinic	Clinic
	15. Estcourt Gateway Clinic	Gateway Clinic
	16. Injisuthi Clinic	Clinic
	17. Ntabamhlophe Clinic	Clinic
	18. Wembezi Clinic	Clinic

*Facilities that were not part of the original sample but added later to replace facilities with low rates of enrolment.
CHC: Community Health center, OPD: Out-patient department

Sampling and recruitment: participant enrolment

Sample size calculation

We undertook a sample size calculation based on the primary outcome i.e., the proportion linked to HIV care. Data on linkage to HIV care rates and the uptake of UTT in uThukela district was unknown at the time of study design. Findings of previous surveillance data from KZN in South Africa, however, demonstrate an average linkage to care of 62% post-HIV testing in the first year (Haber et al., 2017).

We, therefore, proposed a linkage to care rate of 10% higher than 62% based on the possible impact of UTT on HIV care uptake rates. Assuming a null proportion of 62% (i.e. the reported linkage to care rate from previous systematic reviews) and an alternative proportion of 72% (based on the potential UTT influence), a minimum sample size of 996 participants in 12 clusters (cluster size of 83 participants) was required to test the difference between the null proportion and the alternative proportions with 80% power (Table 2). We assumed cluster randomization with an interclass correlation (ICC) (of the clusters in consideration) of 0.02 and significance level of 0.05 (Hayes & Bennett, 1999).

Table 2: Power and sample size calculations using the coefficient of variation between clusters

Matched pairs							
H ₀	H _a	alpha	Beta	Km	M	K	n
0.62	0.72	0.05	0.80	0.08	83	12	996

Where H₀ – null linkage to care proportion; H_a – alternative linkage to care proportion; alpha - z values used for calculating type 1 error; beta - z value used for calculating power; km - coefficient of variation of cluster sizes; M – average cluster size and k - number of clusters. N - sample size for study period allowing for cluster randomization

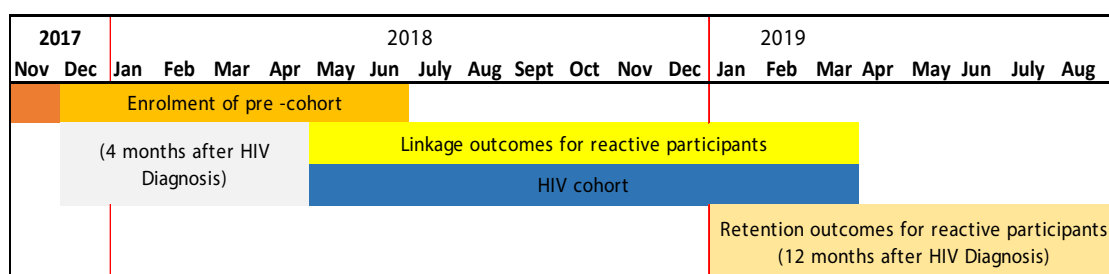
Considering the sampled facilities from Table 1, we assumed a conservative number of 10 people to be enrolled from the 18 facilities per month totaling 60 participants over the six-month study period and yielding a possible 1,080 participants which is more than sufficient relative to the calculated sample size of 996 (Table 2). The study adopted a convenience sampling of participants from the participating facilities until this target was reached and beyond (Table 1 & Figure 3). Trained fieldworkers had a waiting room talk which informed people attending the clinic about the research and invited them to enroll in the study. Prospective participants were given the study information and screened for enrolment eligibility in a private room. Eligible participants were given full study information, provided written consent and were enrolled. The consent process included consenting for checking of HIV test outcomes from the clinic records, accessing records in health care databases and verifying of the vital status.

Eligibility criteria for individual participants to enroll in the study were:

- Adults aged 18 years or older who have tested for HIV in one of the participating primary care facilities during the period December 2017 to July 2018.
- Adults with access to a cell phone and who were willing to provide contact details.

Exclusion criteria at time of enrolment were:

- Under 18 years of age,
- No access to a cell phone or unwilling to provide contact details,
- Access to testing at non-medical sites, through prison health facilities, or through antenatal care.



- Key**
- Baseline questionnaires with adults who enrolled in the study before testing at participating PHC facilities
 - Linkage outcomes for reactive participants
 - 4-Month follow-up questionnaire with reactive participants
 - Retention outcomes for reactive participants (12 months after HIV Diagnosis) from NHLS database
 - Pilot

Figure 3: Schematic overview of the data collection processes for the Linkage to Care study in uThukela district (2017-2019).

Data management and analysis

Software, hardware, and data handling

Data were stored in REDCap (Harris et al., 2009) via self-administered questionnaires, with audio-prompted questions. The customized questionnaire was programmed with audio prompts in isiZulu or English, appropriate skip patterns and key questions requiring a response before the questionnaire could progress. Once the questionnaire was completed the data were sent to SAMRC's secure central REDCap server. Extraction of the data from REDCap was done via Microsoft Excel for data cleaning and query resolution and ultimately to STATA 15 (StataCorp, Texas, USA) for statistical analysis.

The SAMRC hosted REDCap on a secure server located at the SAMRC Head Office in Cape Town. This server is protected by a demilitarized zone (DMZ) and a layer 7 firewall. All login and entry activity were via an SSL certificate. Data was backed-up offsite daily. REDCap data were uploaded daily (identified only with enrolment number), using 3G or Wi-Fi as available, from the field team tablets to the REDCap server, which was password protected. All folders on the SAMRC file servers were additionally password-protected and can only be accessed via SAMRC staff members' logons.

Quantitative data from the questionnaires

On enrolment, data collected included most recent HIV test result, date obtained and the source of the results. Demographic data and potential barriers and enablers of linkage to care information were collected at recruitment and the 4-month follow-up visit. The information collected using the questionnaire included socio-demographic information, reasons for testing, socio-economic position, and intimate partner violence (Appendix 1).

Routine data from district-level TIER.Net and NHLS

District-level data dispatches obtained from TIER.Net from participating facilities within the district, were used to identify individuals linked to care at 3 months and retained in care at 12 months based on patient attendance for ART initiation and continued interaction with the health system for HIV care. The NHLS central data warehouse (CDW) probabilistic linkage algorithm enabled individual patient profiles to be constructed, linking their NHLS testing results over time and across sending facilities. Customized queries were run in the NHLS CDW to search for results of relevant tests on enrolled positive participants at 3 and 12 months after their diagnoses.

The Tier.Net and TrakCare database provided the opportunity to track participants recently diagnosed as positive when they accessed or interacted with the health care system, anywhere in the country, for any reason associated with their HIV diagnosis such as for CD4 and viral load measurements. This helped with the characterization of how the participants linked or were retained in HIV care for the critical time points of 3 and 12 months. Once extracted from the NHLS CDW and TIER.Net, the de-identified data were entered into relevant fields in a Microsoft Excel database and linked to the REDCap quantitative data and exported for analysis in STATA v15.

Death Data (Rapid Mortality Survey)

The SAMRC's RMS contains monthly information about deaths registered by the South African Department of Home Affairs and updates its consolidated database every month (Dorrington et al., 2015). Although it does not provide much detail on cause of death (only natural or unnatural), it includes basic descriptive detail from the front page of death registration paperwork, including place of death (which can be a hospital name or suburb, and province) and office of registration (often where the deceased's family reside, allowing identification of municipality/sub-district and province).

Linkage to mortality data, via the RMS, was done periodically and at the end of the 12 months follow-up (May 2019) to explain their possible non-participation within the health care system in terms of linkage (CD4 count measurements) and retention (viral load measurements) in HIV care. The RMS therefore, was used to confirm that the individual considered as not linked to care or not retained in care was not deceased.

Ethical Consideration

This study was reviewed and approved by the South African Medical Research Council (SAMRC) ethics committee in October 2016 (EC021-7/2016). It was also reviewed in accordance with US Centers for Disease Control and Prevention (CDC) human research protection procedures and was determined to be research, but CDC investigators did not interact with human subjects or have access to identifiable data or specimens for research purposes. Additional approval was received from the Department of Health of the KZN provinces and uThukela district in October 2017. All participants completed a consent form before participating in the study. Confidentiality and privacy were maintained using study codes instead of unique identifiers in all our records.

Data Analysis

Data entered into the REDCap database were extracted and analyzed using STATA v15 (Stata Corp, College Station, Texas). Descriptive statistics were used to summarize the data. Since most of the variables were categorical, proportions and percentages were reported. Data were reported by district (i.e. Okhahlamba, Inkosi Langalibalele and Alfred Duma), stratified by HIV status and the difference between the categories was tested using chi-square test or using the Fisher's exact if the assumption for a large enough sample size was not met. Linkage to care and retention in care were expressed as proportions of the HIV positive cohort. Characteristics of barriers and enablers to linkage to or retention in care were expressed as proportions and stratified by HIV status and tested using the appropriate statistical test (chi-square/Fisher's exact tests). The association between socio-demographic variables and possible barriers and enablers were tested using either the chi-square or fisher's exact tests. Furthermore, univariate analysis was done to determine the possible predictors of retention in care. A p-value of <0.05 was considered statistically significant.

The number of enrolled participants per facility over time and the number for whom 4- and 12-month outcome data was available are presented. Throughout the analysis, characteristics were stratified by HIV status and sex for selected variables. The age variable was categorized as follows for presentation purposes; 18-24 years, 25-29 years, 30-34 years, 35-49 years and 50+ years.

RESULTS

Data completeness

Responses to the questionnaire varied in completeness. Questions related to socio-economic position and demographics were answered by most participants with the proportion of missing data ranging from 0-4%. Less than a third of the respondents answered questions relating to condom use, sexual partners, and sexual experience. Possible reason for the low response rate for these sets of questions could be due to the sensitivity of the questions and that the questions were self-administered, and respondents were not comfortable answering them. A table which demonstrates the responses to the questionnaire is supplied in Appendix 2 and 3.

Source population

A total of 5,637 participants were recruited from December 2017 to July 2018 after screening 6,126 at enrolment for inclusion eligibility. Of these participants, 296 had results-related challenges (265 did not test and 31 had lost their test results (Figure 4). Participants were grouped into two cohorts for analysis: newly diagnosed HIV positive and those who tested HIV negative (Figure 5).

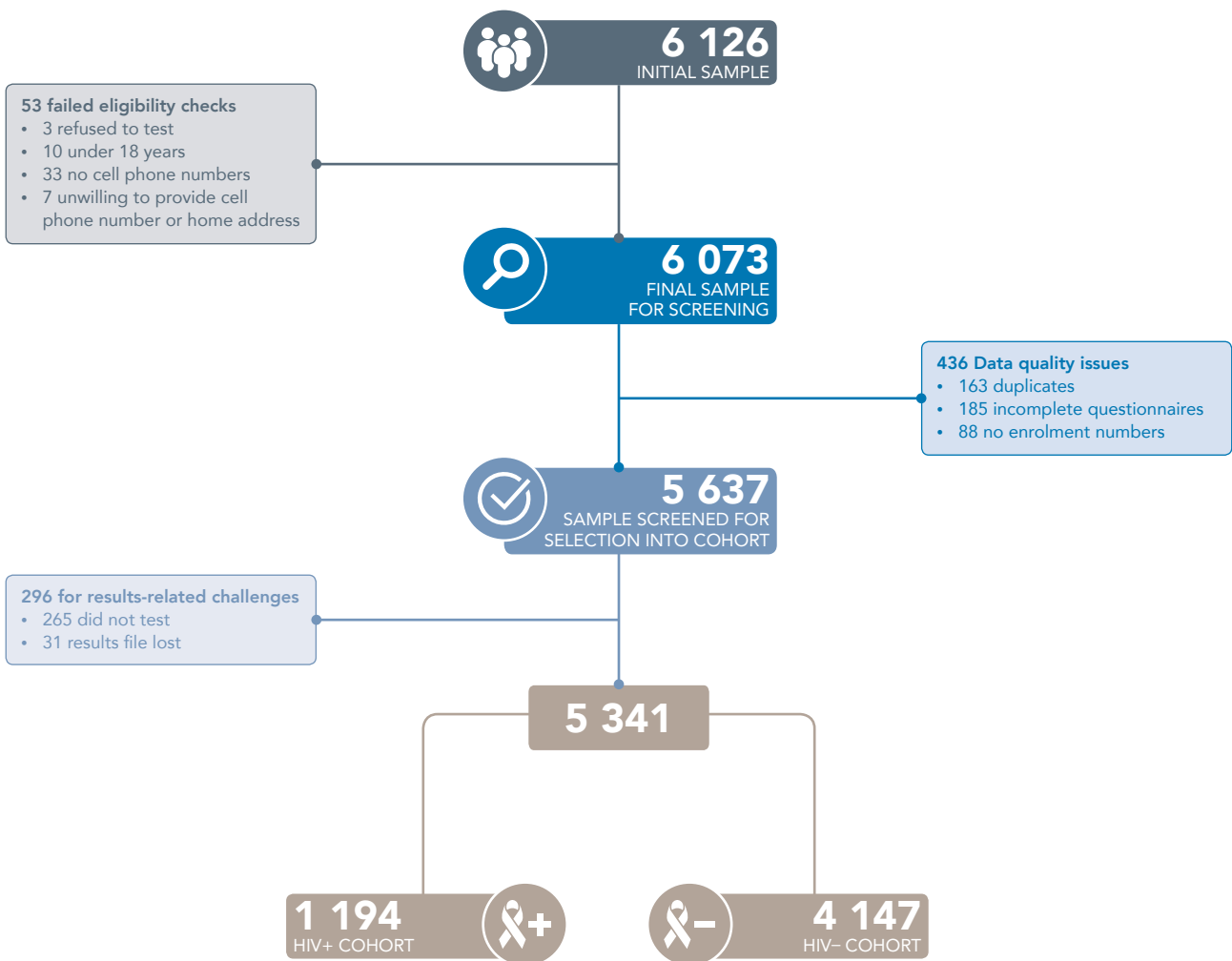


Figure 4: Consort diagram detailing the recruitment of participants into the Linkage to Care study in uThukela district between December 2017-July 2018.

*Those who failed eligibility checks did not meet the inclusion criteria.

The HIV negative cohort comprised 74% (4,147/5,637) of the enrolled study participants, whilst the HIV positive cohort comprised 21% (1,194/5,637) of the enrolled participants. Although the target for the HIV positive cohort was 996 participants (sample size, page 19), the team recruited 1,194, or 198 participants more due to the high HIV prevalence in the study area, giving a response rate of 120%. The remaining 5% (296/5,637) of the participants included those who did not test on the day of recruitment (5%,265/5,637) and those who tested but had their records misplaced or lost at the facility (<1%,31/5,637).

Most of the participants whose test results could not be found accessed HIV testing services in facilities situated in the Okhahlamba LM (Bergville and Emmaus area), which experienced a shortage of testing kits and unavailability of counsellors for testing during the first months of data collection. These participants were excluded from the comparison analysis by HIV status (n=5,341; 1,194 HIV positive and 4,147 HIV negative) unless stated in the denominator which implies the remainder is missing.

The largest proportion of participants (67%, 3,557/5,341) were recruited from PHC clinics, with most participants recruited at Limehill Clinic (n=576) (Figure 5). This was followed by the gateway facilities (16%, 862/5,341), and the remainder were from mobile clinics (12%, 627/5,341).

The selected hospitals did not yield the required 10 participants testing positive per month, and as such the combined study population from St Chads CHC and Emmaus OPD contributed the remaining 5% of the study participants (Figure 5). The majority of HIV positive recruited participants came from Bergville (n=91) and Limehill (n=40) clinics.

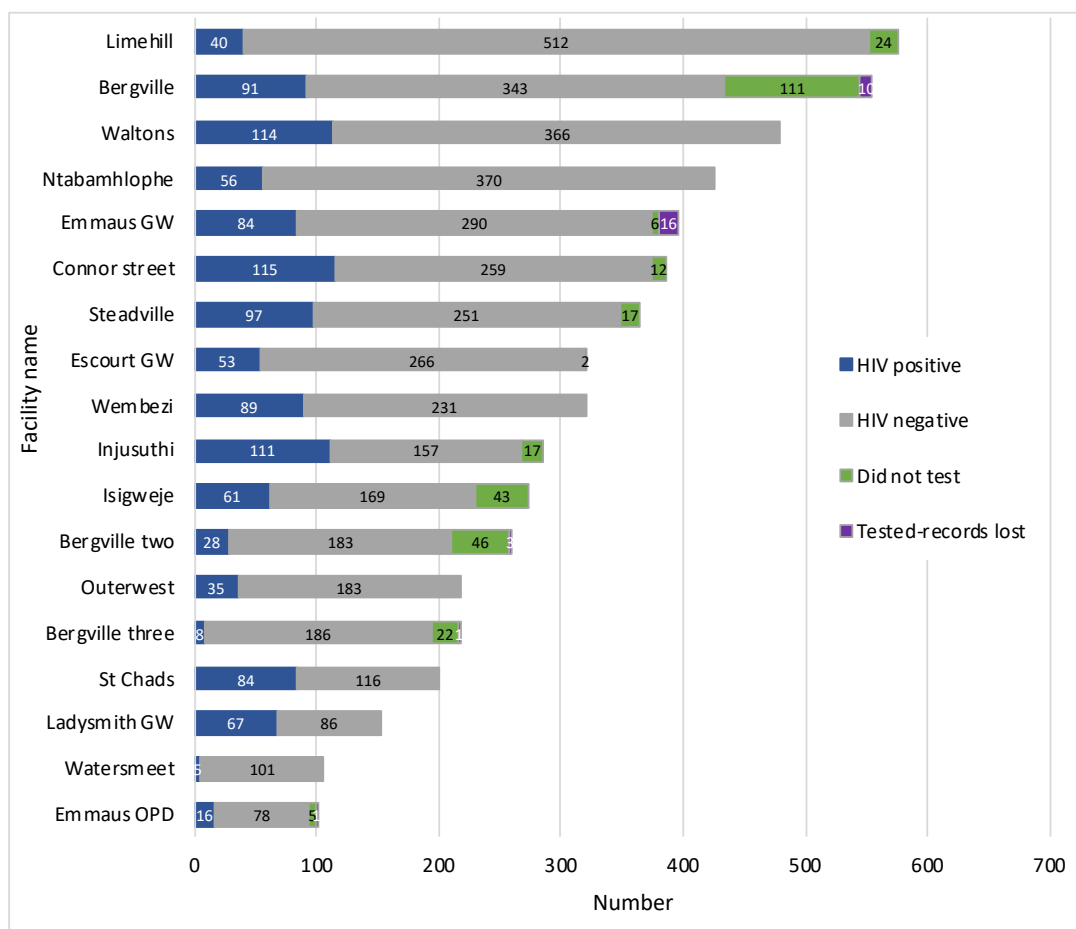


Figure 5: Total participants screened for the Linkage to Care study at each facility in uThukela district between December 2017-July 2018 (N=5,637)

Demographics of participants

Demographic characteristics of the 5,341 participants are presented in Table 3. The participants were almost all Black Africans (99.7%, 5,325/5,341); others include: Colored (<1%, 10/5,341), Indian (<1%, 5/5,341, <1%) and White (<1%, 1/5,341, <1%) (Table 3). With a median age of 28 years (IQR: 23-35), more than half of the participants (57%; 3,068/5,333) were between the ages of 18-29 years old. Overall, most participants had an education at high school level (51%, 2,714/5,278) or post matriculation (42%, 1,727/5,278).

Table 3 shows that most of the participants are in a relationship including those that are married but not living together (66%, 3,471/5,234); however, some (3%, 161/5,234) of them are married. Amongst the male participants, a small number (9%, 146/1,630) are married and living together, while 8% (302/3,629) of the females are married and living together. Almost half of the participants (45%, 2,367/5,220) were employed in the last 12 months while the rest had never worked. However, about one in three (39%, 2,024/5,214) of the participants were employed in the last 3 months before the commencement of the survey. Nearly a third of the participants (31%, 1,632/5,203) received an income from their business or other forms of gaining income such as selling things. Forty-five percent (531/1,169) of the participants relied mostly on a child support grant, with a few (3%, 33/1,162) receiving a disability grant.

Table 3: Demographic characteristics of participants enrolled in the Linkage to Care study in uThukela district between December 2017-July 2018 disaggregated by HIV status

Variable	Total	HIV positive	HIV negative	p-value*
	N=5,341 (%)	N=1,194 (%)	N=4,147 (%)	
Nationality, n/N (%)				
South African citizen	5,280/5,341 (99)	1,181 (99)	4,099 (99)	0.129
Other SADC	48/5,341 (1)	9 (1)	39 (0)	
Other African	7/5,341 (0)	2 (0)	5 (0)	
Other outside Africa	4/5,341 (0)	0	4 (0)	
None	2/5,341 (0)	2 (0)	0	
Sex, n/N (%)				
Male	1,651/5,341 (31)	347 (29)	1,304 (31)	0.116
Female	3,690/5,341 (69)	847 (71)	2,843 (69)	
Ethnicity, n/N (%)				
Black African	5,325/5,341 (100)	1,191 (100)	4,134 (100)	0.953
Colored/Mixed ancestry	10/5,341 (0)	2 (0)	8 (0)	
White	1/5,341 (0)	0	1 (0)	
Indian/Asian	5/5,341 (0)	1 (0)	4 (0)	
Education level, n/N (%)				
No education	102/5,278 (2)	21/1,178 (1.8)	81/4,100 (2)	<0.001
Primary education	316/5,278 (6)	60/1,178 (5.1)	256/4,100 (6)	
High school education	2,714/5,278 (51)	678/1,178 (57.6)	2,036/4,100 (50)	
Post matriculation	1,727/5,278 (42)	419/1,178 (35.6)	1,727/4,100 (42)	
Age, median (IQR)	28 (23-35)	30 (25-37)	27 (22-34)	<0.001
Age categories, n/N (%)				
18-24 years	1,824/5,333 (34)	258/1,193 (2)	1,566/4,140 (38)	<0.001
25-29 years	1,244/5,333 (23)	305/1,193 (26)	939/4,141 (23)	
30-34 years	873/5,333 (16)	250/1,193 (21)	623/4,140 (15)	
35-49 years	983/5,333 (18)	318/1,193 (27)	665/4,140 (16)	
50+ years	409/5,333 (8)	62/1,193 (5)	347/4,140 (8)	
Marital status – males, n/N (%)				
Married (living together)	146/1,605(9)	36/338 (11)	110/1,267 (9)	0.015
Married (living separately)	32/1,605 (2)	5/338 (1)	27/1,267 (2)	
Cohabiting	241/1,605 (15)	69/338 (20)	172/1,267 (14)	
Dating	1,007/1,605 (63)	191/338 (57)	816/1,267 (64)	
Single	179/1,605 (11)	37/338 (11)	142/1,267 (11)	

Table 3: Demographic characteristics of participants enrolled in the Linkage to Care study in uThukela district between December 2017-July 2018 disaggregated by HIV status (continued)

Variable	Total	HIV positive	HIV negative	p-value*
	N=5,341 (%)	N=1,194 (%)	N=4,147 (%)	
Marital status – females, n/N (%)				
Married (living together)	302/3,629 (8)	37/831 (4)	265/2,798 (10)	<0.001
Married (living separately)	129/3,629 (4)	27/831 (3)	102/2,798 (4)	
Cohabiting	446/3,629 (12)	100/831 (12)	346/2,798 (12)	
Dating	2,303/3,629 (63)	536/831 (65)	1,767/2,798 (63)	
Single	449/3,629 (12)	131/831 (16)	318/2,798 (11)	
Ease of finding R200 for an emergency, n/N (%)				
Very/Somewhat difficult	3,240/5,241 (62)	703/1,173 (60)	2,537/4,068 (62)	0.131
Fairly/Very easy	2,001/5,241 (38)	470/1,173 (40)	1,531/4,068 (38)	
Borrowed food in the past month, n/N (%)				
Every day/> once a week/every week	394/5,223 (8)	123/1,168 (11)	271/4,055 (7)	<0.001
1/2 X in the past month/never	4,829/5,223 (92)	1,045/1,168 (89)	3,784/4,055 (93)	
Worked in the past 12 months, n/N (%)				
Each month	1,066/5,220 (20)	293/1,169 (25)	773/4,051 (19)	<0.001
Most months	769/5,220 (15)	214/1,169 (18)	555/4,051 (14)	
Once in a while	532/5,220 (10)	121/1,169 (10)	411/4,051 (10)	
Never worked	2,853/5,220 (55)	541/1,169 (46)	2,312/4,051 (57)	
Earned in the past 3 months, n/N (%)	2,024/5,214 (39)	537/1,159 (46)	1,487/4,055 (37)	<0.001
Other earnings in the past 4 weeks, n/N (%)	1,632/5,203 (31)	439/1,156 (38)	1,193/4,047 (30)	<0.001
Received child support grant, n/N (%)	2,396/5,229 (46)	531/1,169 (45)	1,865/4,060 (46)	0.757
Received disability grant, n/N (%)	158/5,216 (3)	33/1,162 (3)	125/4,054 (3)	0.669
Disability, n/N (%)				
Difficulty seeing	43/5210 (0.8)	8/1165 (0.7)	35/4045 (0.9)	0.553
Difficulty hearing	41/5206 (0.8)	10/1166 (0.9)	31/4040 (0.8)	0.759
Difficulty walking	115/5196 (2.2)	26/1163 (2.4)	89/4033 (2.2)	0.953
Difficulty remembering	24/5199 (0.5)	7/1165 (0.6)	17/4034 (0.4)	0.426
Difficulty speaking	23/5195 (0.4)	1/1168 (0.1)	22/4027 (0.6)	0.037
Area of residence, n/N (%)				
Rural	2,432 /5,341 (46)	441/1,194 (37)	1,991/4,147 (48)	<0.001
Urban	2,909/5,341 (54)	753/1,194 (63)	2,156/4,147 (52)	
Transport mode to testing facility, n/N (%)				
Foot	2,579/5,279 (49)	492/1,179 (42)	2,087/4,100 (51)	<0.001
Public transport	2,351/5,279 (45)	611/1,179 (52)	1,740/4,100 (42)	
Private transport	318/5,279 (6)	70/1,179 (6)	248/4,100 (6)	
Other	31/5,279 (1)	6/1,179 (1)	25/4,100 (1)	
Time to get to the testing facility, n/N (%)				
<30 minutes	3,431/5,252 (65)	705/1,172 (60)	2,726/4,080 (67)	<0.001
30-60 minutes	1,500/5,252 (27)	405/1,172 (35)	1,095/4,080 (27)	
>60 minutes	321/5,252 (6)	62/1,172 (5)	259/4,080 (6)	

p-values derived using Mann Whitney U-test, Chi-squared test and Fishers exact test

Of the 5,341 participants that were recruited, 54% (2,909/5,341) were recruited from facilities based in urban areas and 46% (2,432/5,341) from those in the rural areas (Table 3). Participants from both geographical settings spent relatively the same amount of time to go to testing facilities, with about 65% (3,431/5,252) able to reach the facilities within 30 minutes.

Participants from the rural area (70%, 1,683/2,415) generally had to walk to access the clinic compared to the participants who accessed care in urban areas (31%, 896/2,864). For those who tested in the urban setting, the use of public transport was popular (60%, 1,178/1,978 to 67%, 566/846), both for short and long-distance travels of up to one hour. But for participants in the rural settings, only 10% (17/178) to 33% (239/727) participants used public transport. Noteworthy, 85% (151/178) of participants in rural areas who spent 60 minutes to get to the facilities, walked to those facilities. More HIV positive participants testing in facilities from urban settings at 26% (753/2,909), whereas 18% (441/2,432) tested in rural facilities (Table 3).

HIV Testing

Amongst the recruited population, young people between the ages of 18-24 years (34%, 1,824/5,333) and 25-29 years (23%, 1,244/5,333) accessed the HIV testing service more when compared to the older age groups (Figure 6). Young women (18-24 years) accounted for the highest proportion (38%, 1,404/3,684) of all participants who tested for HIV at the different facilities.

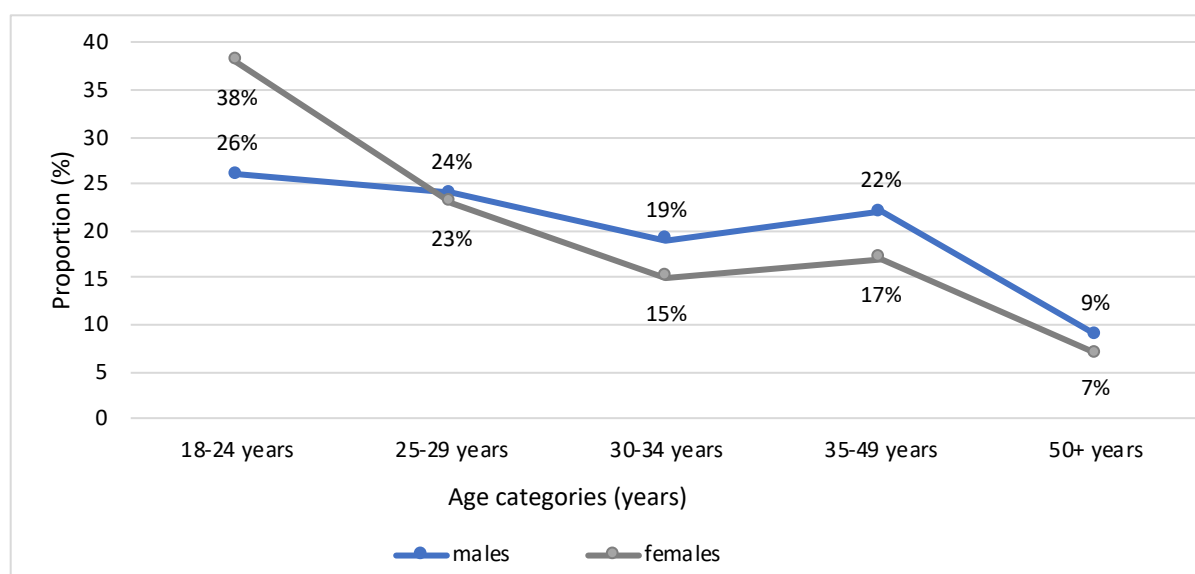


Figure 6: Disaggregation of participants' age categories by sex for the baseline and HIV+ cohorts in uThukela district between December 2017-July 2018 (N=5,333)

The HIV prevalence for the study cohort was 22% (1,194/5,341), with a higher prevalence amongst females (23%, 847/3,690) compared to males (21%, 347/1,651). Individuals in the age group 35-49 years accounted for the highest proportion (32%, 318/983), while the lowest proportion (14%, 258/1,824) was in age group 18-24 years. Of the 1,194 HIV positive cohort, 71% (847) were women and 29% (347) were men. The highest number and proportion of participants who tested HIV positive were between the ages of 25-34 years for both women (46%, 393/847) and men (47%, 162/347).

For participants between the ages of 18-24 years, women testing positive were significantly higher (27%, 228/846) than men (9%, 30/347). The higher proportion of men in the age group 35-49 years were found to be HIV positive (38%, 131/347) compared to women of the same age group (22%, 187/846). Similarly, HIV positive men between the age group 30-34 years contributed 26% (91/347) of the population, whereas 19% (161/846) was attributed to women (Figure 7).

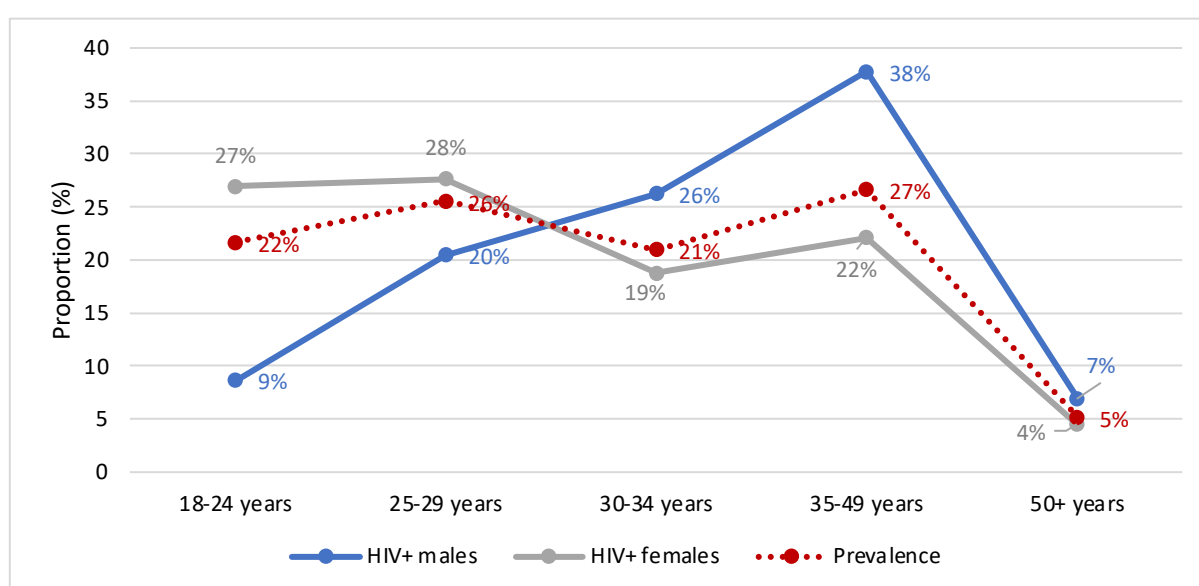


Figure 7: Proportional HIV positivity by age and sex in uThukela district between December 2017-July 2018 (N=5,333)

Comparison of characteristics of HIV positive and HIV negative cohorts (Baseline data)

The HIV positive cohort was significantly older than those who were HIV negative (median age 30 years, IQR: 25-37 vs. 27 years, IQR: 22-34, respectively) ($p < 0.001$). The proportions of males and females were similar in both cohorts (HIV positive: 21% (347/1,651) and 23% (847/3,690); HIV negative: 79% (1,304/1,651) and 77% (2,843/3,690) ($p = 0.117$). The educational level distribution was significantly different ($p < 0.001$) when comparing both cohorts (Table 3). A higher proportion of the HIV positive (58%, 678/1,178) attained high school education while about 50% (2,036/4,100) of those HIV negative attained the same. Post-matriculation was higher in the HIV negative (42%, 1,727/4,100) when compared to the HIV positive cohort (36%, 419/1,178). The remaining 8% (418/5,278) had no qualification or had primary education and were mainly (83%) in the older age groups (35-49 years: 30%, 126/418 and 50+ years: 53%, 223/418).

The majority of participants who tested positive reported to be dating and not living together (62%, 727/1,169), followed by those who were cohabiting, (14%, 169/1,169) and the least proportion was those marriage but not living together, (3%, 32/1,169) (Table 3). However, there was a high proportion of the HIV positive men reported to be cohabiting (20%, 69/338) compared to HIV positive women (12%, 100/831). Likewise, single women not living together with their partners who tested positive (16%, 131/831) were slightly higher than their male counterparts (11%, 37/338).

Reasons for testing

The reasons for testing for HIV varied amongst the participants (Figure 8). A third (34%, 1,729/5,130) of the participants tested because they wanted to know their status. Nineteen percent (965/5,130) tested because they fell ill, while smaller proportions tested for other reasons such as having an opportunity to test at the facility (12%, 623/5,130), suspicion of being infected (8%, 413/5,130), or and HIV testing being a work requirement (<1%, 11/5,130).

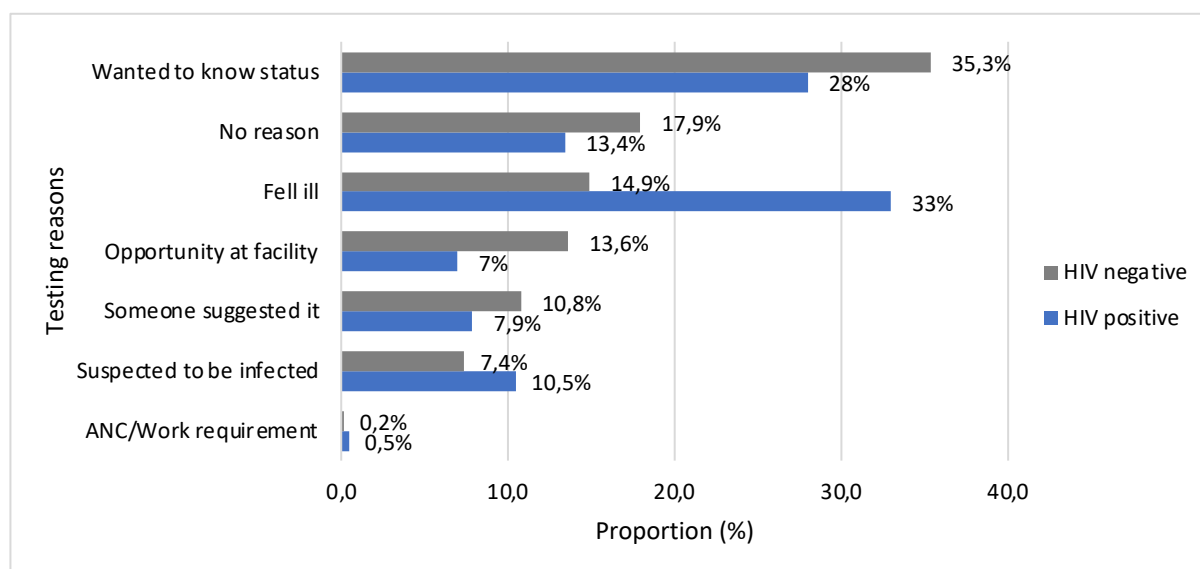


Figure 8: Reasons for testing for HIV by reported status in uThukela district between December 2017-July 2018 (N=5,130)

Socioeconomic status at baseline

Table 3 show that less than half of the participants (45%, 2,367/5,220) were employed in the last 12 months at baseline. Only 25% (293/1,169) of the HIV positive participants and 19% (773/4,051) of the HIV negative participants were employed fulltime at the time of data collection. Only 39% (2,024/5,214) of participants from both cohorts were employed in 3 months from the time of data collection. Over a third of those who tested positive (38%, 439/1,156) and those tested negative (30%, 1,193/4,047) received an income from their jobs, while 46% (2,396/5,229) relied mostly on a child support grant, with a few (3%, 158/5,216) receiving a disability grant.

Sexual behavior

Sexual debut for most of the participants at baseline was between the ages of 16 to 19 years (64%, 857/1,344). Only 2% (27/1,344) of participants reported to have had sex when they were 12 years or younger (Figure 9).

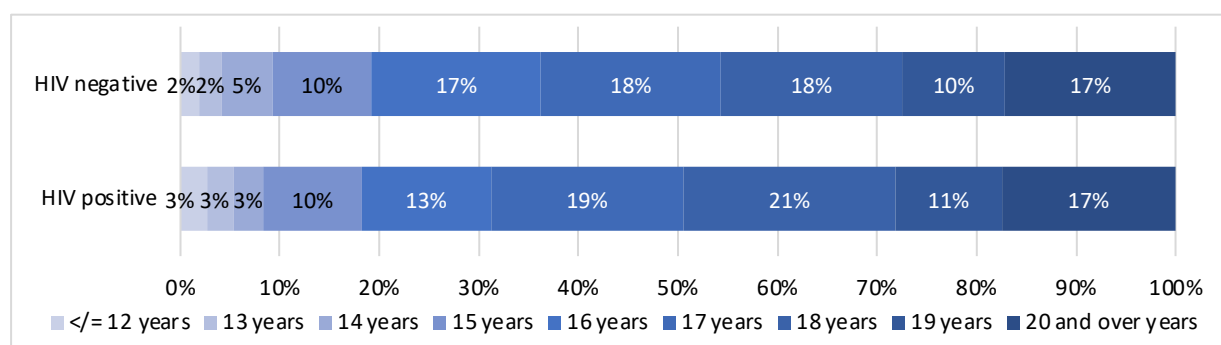


Figure 9: Age of sexual debut of participants in uThukela district between December 2017-July 2018 (N=1,344)

Most of the participants (96%, 1,389/1,447) claimed they were willing to engage in their first sexual encounter while a small proportion (2%, 26/1,447) were persuaded into having sex. Few participants (<1%, 5/1,447) claimed they were either forced (<1%, 3/1,447) or raped (<1%, 2/1,447), and 42 participants (3%, 42/1,447) reported that they had never had sex.

Fifty-three (727/1,361) and 54% (178/329) of HIV negative and HIV positive participants respectively reported to be in monogamous sexual relationships, while the remaining 39% (664/1,690) in both cohorts had two or more partners, with about 10% (176/1,690) reporting to have four or more partners in the past 12 months.

Participants who were in relationships reported inconsistent condom use during sex in both cohorts (61%, 203/335) HIV positive and 50% (686/1,361) HIV negative. Figure 10 shows that twenty-two percent of the participants (73/335) in the HIV positive cohort reported non-use of condoms; while a cumulative 69% (230/335) of HIV positive participants and 66% (895/1,361) of HIV negative participants reported inconsistent use of condoms (sometimes, or often used condoms).

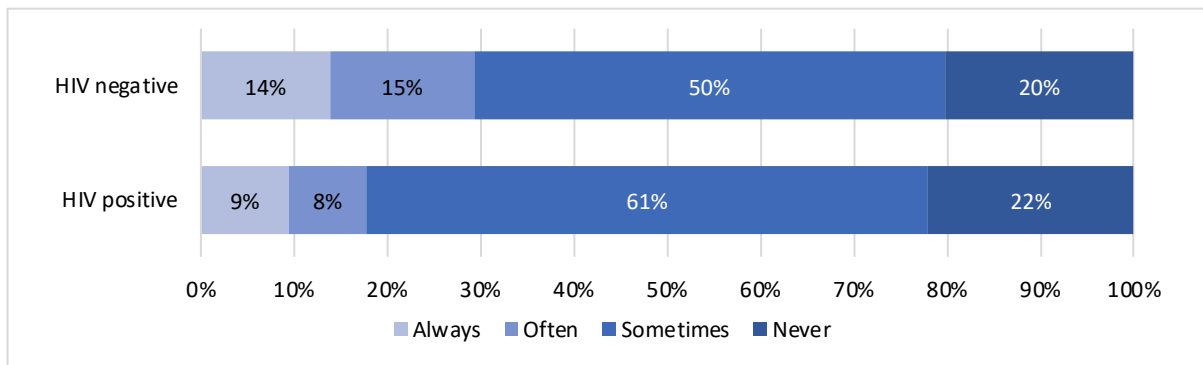


Figure 10: Frequency of condom use in the last 12 months for all participants in uThukela district between December 2017-July 2018 (N=1,696)

Alcohol and drug use

Seventy-three percent (73%, 2,932/4,038) and 66% (766/1,161) of the negative and positive cohorts, respectively reported that they have never used alcohol. A further 15% (612/4,038) HIV negative and 17% (204/1,161) HIV positive reported drinking on a month basis (Figure 11). The use of drugs was low, 11% (454/4,027) HIV negative and 14% (164/1,161) HIV positive reported having used drugs once or more times (Figure 12).

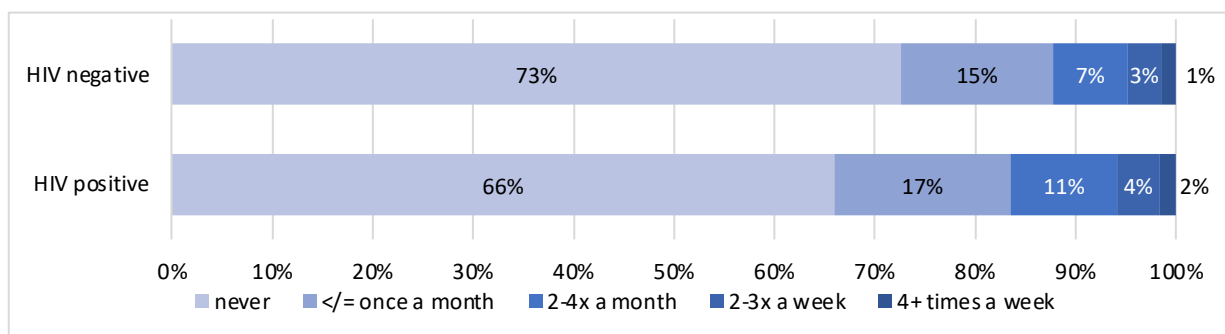


Figure 11: Alcohol use in uThukela district between December 2017-July 2018 (N=5,199)

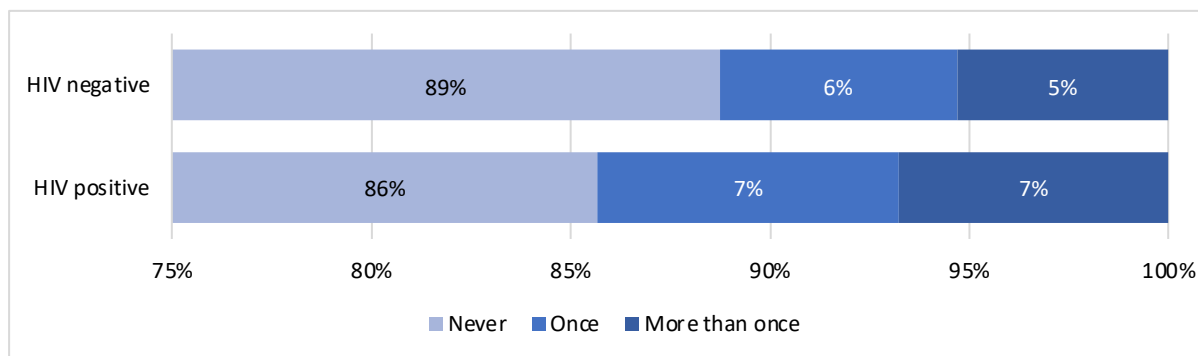
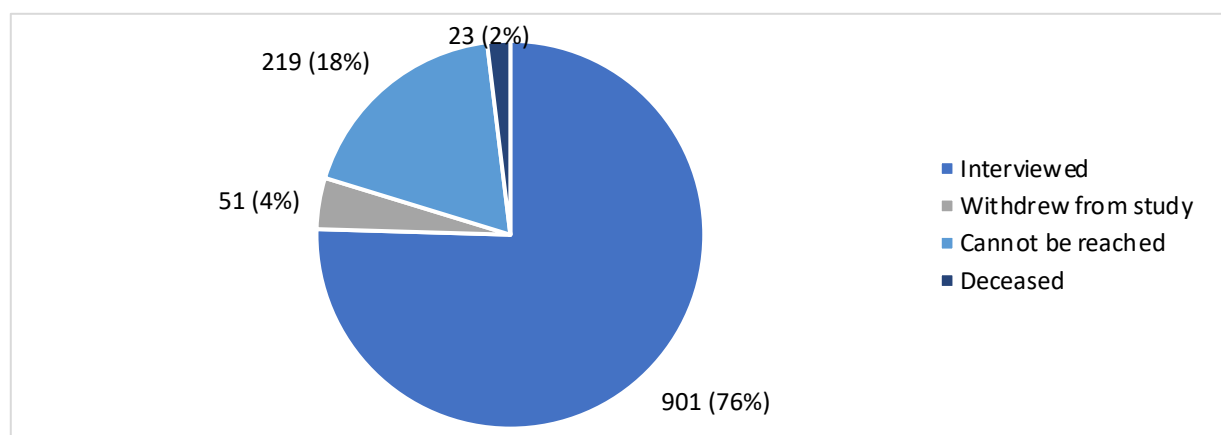


Figure 12: Drug use in uThukela district between December 2017-July 2018 (N=5,188)

Linkage to care (HIV positive cohort at four months follow-up)

Response rate

Figure 13 shows that 76% (901/1,194) of recruited participants were interviewed at four months post HIV+ diagnosis, 18% (219/1,194) could not be reached, 4% (51/1,194) withdrew from the study and 2% (23/1,194) had died. The next section will describe the HIV positive cohort that responded and were interviewed at four months, and describe their experience linking to care.



Linked to care

Figure 14 shows the linkage to care at three months for the HIV positive cohort. Of the participants diagnosed HIV positive at baseline, 83% (987/1,194) were linked to care within three months and could be tracked in the TIER.Net database, while 17% (207/1,194) were identified as not having linked to care at the time.

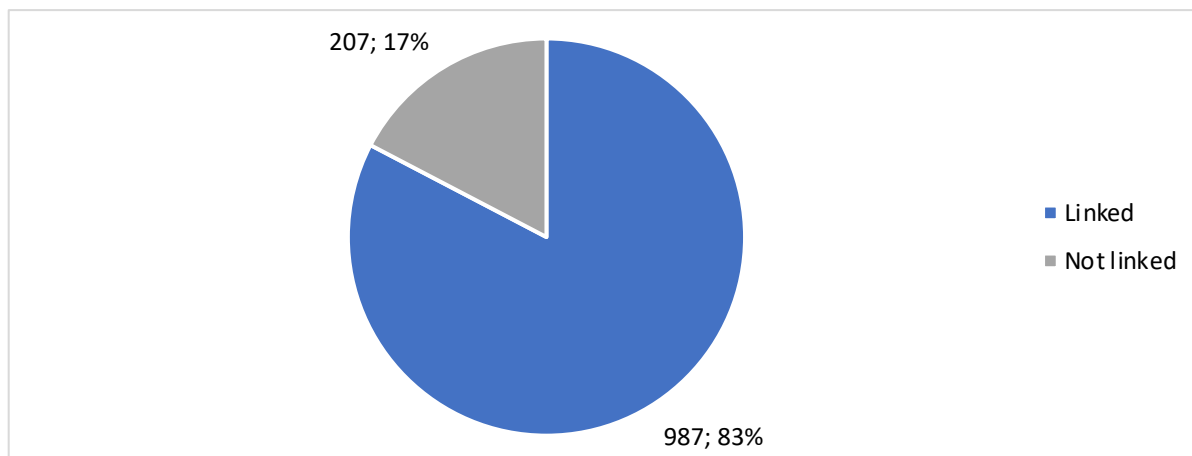


Figure 14: Linkage to care at 3 months for those diagnosed HIV positive at baseline in uThukela district 2018 (N=1,194)

Participants' experience of HIV care at the clinic

A high proportion (99%, 893/901) of the four-month follow-up participants provided self-reported information on their experiences while seeking HIV care at the facilities (Table 4). At the time of the four-month follow-up interview, 87% (783/901) of the participants were reported as linked to care via Tier.Net. Of the 901 respondents, 93% (840/901) had expressed readiness to immediately initiate ART. Around 95% (853/901) returned to the clinic, with most (93%, 790/853) returning on their given appointment dates. This explains the high linkage rate highlighted in Figure 14. Most interviewees (93%, 840/901) had blood drawn, however, about 79% (663/840) knew that the blood was being drawn for CD4 count testing and for the majority of those (99%, 655/663) this was done within 3 months of the HIV positive status diagnosis. A small proportion (13%, 88/663) of those that knew that their blood was going for CD4 count test had received their result by the time of the four-month interview.

Table 4 shows that even though, participants returned to access ART, 38% (250/661) expressed they would return for treatment classes and about two-thirds (68%, 445/658) of those who were linked to care, responded they would return to the facility for CD4 count at 3 months compared to those who were not linked to care (83%, 74/89). A similar trend was observed when asked if they would return to the facility for a CD4 count at 6 months (linked to care: 60%, 336/563 versus not linked in care: 72%, 63/88). Furthermore, about 10% (89/884) accessed an HIV support group outside of the facility.

There was no difference between participants who linked to care at 3 months and those who did not link to care with respect to return to the facility for HIV care. Overall, 4% (39/892) of the participants did not return to the clinic after getting their HIV results. Ninety-eight percent (646/660) of all participants were given written appointment dates. Among participants not linked in care, 7% (8/116) did not return to the clinic after testing.

Reasons given for delaying the return or not returning to the clinic for HIV care during the four months follow-up period included a lack of money for transportation (27%, 236/889), not being able to take time off work (29%, 254/879), or inconvenient appointment date (20%, 174/888). Also reported were issues with accessing the facilities as they were too far (29%, 259/889). Noteworthy, a small proportion of the participants (5%, 42/889) reported their preference of utilizing traditional health services for HIV care.

Clinic visits during testing were recorded as mostly positive by participants. A high proportion (90%, 800/885) felt they were guided, understood (79%, 701/886), provided with necessary information (91%, 804/886) and generally treated well by clinic staff. Furthermore, about 77% (684/888) of the participants felt the clinic personnel had time for them, the other 23% (204/888) felt otherwise.

Table 4: Patients' experiences during 4-month follow-up and linkage to care in uThukela district (2018)

Variable	Total	Linked to care	Not linked to care	p-value
	N=901 (%)	N=783 (%)	N=118 (%)	
Age in years, median (IQR)	30 (25-37)	30 (25-37)	31 (26-37)	0.781
Mode of transport, n/N (%)				0.282
On foot	267/591 (45)	230/506 (45)	37/85 (44)	
Public transport	303/591 (51)	257/506 (51)	46/85 (55)	
Private transport	20/591 (3)	19/506 (4)	1/85 (1)	
Partner reaction to status, n/N (%)				0.731
Didn't disclose	211/888 (24)	186/773 (24)	25/115 (22)	
Discriminatory	28/888 (3)	25/773 (3)	3/115 (3)	
No different	56/888 (6)	51/773 (7)	5/115 (4)	
Supportive	593/888 (67)	511/773 (66)	82/115 (71)	
Adult family member reaction, n/N (%)				0.650
Didn't disclose	190/891 (21)	163/776 (21)	27/115 (23)	
Discriminatory	9/891 (1)	9/776 (1)	0	
No different	28/891 (3)	26/776 (3)	2/115 (2)	
Supportive	664/891 (75)	578/776 (74)	86/115 (75)	
Child reaction to status, n/N (%)				0.649
Didn't disclose	519/890 (58)	453/774 (59)	66/116 (57)	
Discriminatory	6/890 (1)	5/774 (1)	1/116 (1)	
No different	38/890 (4)	35/774 (5)	3/116 (2)	
Supportive	327/890 (37)	281/774 (36)	46/116 (40)	
Friends reaction to status, n/N (%)				0.568
Didn't disclose	566/889 (64)	496/773 (64)	70/116 (60)	
Discriminatory	5/889 (1)	5/773 (1)	0	
No different	34/889 (4)	31/773 (4)	3/116 (3)	
Supportive	284/889 (32)	241/773 (31)	43/116 (37)	
Co-worker reaction to status, n/N (%)				0.384
Didn't disclose	730/867 (84)	628/753 (83)	102/114 (89)	
Discriminatory	1/730 (0)	1/753 (0)	0	
No different	23/867 (3)	21/753 (3)	2/114 (2)	
Supportive	113/867 (13)	103/753 (14)	10/114 (9)	
Did you return to clinic after result? n/N (%)				0.555
On time	790/892 (89)	691/776 (89)	99/116 (85)	
Up to 2 weeks	35/892 (4)	30/776 (4)	5/116 (4)	
Up to 4 weeks	21/892 (2)	18/776 (2)	3/116 (3)	
In 2-3 months	7/892 (1)	6/776 (1)	1/116 (1)	
Didn't return	39/892 (4)	31/776 (4)	8/116 (7)	
Ease of getting time off work, n/N (%)				0.143
Disagree	605/879 (69)	517/764 (68)	88/115 (77)	
Neither	20/879 (2)	19/764 (2)	1/115 (1)	
Agree	254/879 (29)	228/764 (30)	26/115 (23)	
Clinic too far from where I stay, n/N (%)				0.713
Disagree	621/889 (70)	540/773 (70)	81/116 (70)	
Neither	9/889 (1)	9/773 (1)	0	
Agree	259/889 (29)	224/773 (30)	35/116 (30)	
No money for transport, n/N (%)				0.103
Disagree	629/889 (71)	547/773 (71)	82/116 (71)	
Neither	24/889 (3)	24/773 (3)	0	
Agree	236/889 (27)	202/773 (26)	34/116 (29)	
Someone to take care of at home, n/N (%)				0.781
Disagree	772/888 (87)	673/773 (87)	99/115 (86)	
Neither	13/888 (1)	12/773 (2)	1/115 (1)	
Agree	103/888 (12)	88/773 (11)	15/115 (13)	

Table 4: Patients' experiences during 4-month follow-up and linkage to care in uThukela district (2018) (continued)

Variable	Total	Linked to care	Not linked to care	p-value
	N=901 (%)	N=783 (%)	N=118 (%)	
Time they gave me is inconvenient, n/N (%)				
Disagree	679/888 (76)	586/772 (76)	93/116 (80)	0.033
Neither	35/888 (4)	35/772 (5)	0	
Agree	174/888 (20)	151/772 (20)	23/116 (20)	
Prefer a traditional/spiritual healer, n/N (%)				
Disagree	825/889 (93)	717/773 (93)	108/116 (93)	0.972
Neither	22/889 (2)	19/773 (2)	3/116 (3)	
Agree	42/889 (5)	37/773 (5)	5/116 (4)	
Don't want to tell about status, n/N (%)				
Disagree	729/889 (82)	627/773 (81)	102/116 (88)	0.213
Neither	29/889 (3)	26/773 (3)	3/116 (3)	
Agree	131/889 (15)	120/773 (16)	11/116 (9)	
No need to return as not much can be done, n/N (%)				
Disagree	817/889 (92)	711/774 (92)	106/115 (92)	1.000
Neither	8/889 (1)	7/774 (1)	1/115 (1)	
Agree	64/889 (7)	56/774 (7)	8/115 (7)	
Feel good about returning when told to, n/N (%)				
Disagree	113/890 (13)	94/774 (12)	19/116 (16)	0.322
Neither	19/890 (2)	18/774 (2)	1/116 (1)	
Agree	758/890 (85)	662/774 (86)	96/116 (83)	
Return for treatment education class, n/N (%)	250/661 (38)	210/572 (37)	40/89 (45)	0.136
Return for CD4 in 3 months, n/N (%)	445/658 (68)	371/569 (65)	74/89 (83)	0.001
Return for CD4 in 6 months, n/N (%)	399/651 (61)	336/563 (60)	63/88 (72)	0.034
Commerce preparation for ART initiation, n/N (%)	596/660 (90)	514/571 (90)	82/89 (92)	0.700
Give you a letter for next appointment, n/N (%)	646/660 (98)	559/571 (98)	87/89 (98)	0.929
Have a written return date, n/N (%)	637/658 (97)	552/571 (97)	85/87 (98)	0.611
How sure are you that you will return? n/N (%)	564/601 (94)	488/521 (94)	76/80 (95)	0.644
Have you joined a HIV support group? n/N (%)	89/884 (10)	75/771 (10)	14/113 (12)	0.380
Clinic visit experience				
No time for me, n/N (%)				
Disagree	684/888 (77)	589/773 (76)	95/115 (83)	0.276
Neither	7/888 (1)	7/773 (1)	0	
Agree	197/888 (22)	177/773 (23)	20/115 (17)	
Criticized you, n/N (%)				
Disagree	859/888 (97)	746/773 (97)	113/115 (98)	0.622
Agree	29/888 (3)	27/773 (3)	2/115 (2)	
Guided you on what to do next, n/N (%)				
Disagree	72/885 (8)	67/770 (9)	5/115 (4)	0.236
Neither	13/885 (2)	11/770 (1)	2/115 (2)	
Agree	800/885 (90)	692/770 (90)	108/115 (94)	
Did not understand your situation, n/N (%)				
Disagree	701/886 (79)	602/771 (78)	99/115 (86)	0.042
Neither	16/886 (2)	13/771 (2)	3/115 (3)	
Agree	169/886 (19)	156/771 (20)	13/115 (11)	
Gave helpful information, n/N (%)				
Disagree	69/886 (8)	64/771 (8)	5/115 (4)	0.191
Neither	13/886 (1)	10/771 (1)	3/115 (3)	
Agree	804/886 (91)	697/771 (90)	107/115 (93)	
Patient with me, n/N (%)				
Disagree	63/886 (7)	58/771 (8)	5/115 (4)	0.270
Neither	14/886 (2)	11/771 (1)	3/115 (3)	
Agree	809/886 (91)	702/771 (91)	107/115 (93)	
Humiliated you, n/N (%)				
Disagree	852/884 (96)	741/769 (96)	111/115 (96)	0.569
Neither	4/884 (1)	3/769 (1)	1/115 (1)	
Agree	28/884 (3)	25/769 (3)	3/115 (3)	

p-values derived using Mann Whitney U-test, Chi-squared test and Fishers exact test
variation in the denominators for the column labelled Total are as a result of non-response from the participants

Disclosure of HIV status at four months follow-up visit

A high proportion of participants (96%, 850/890) who were interviewed at 4-months disclosed their status upon receiving their HIV results. However, disclosure was mostly to their “significant others” and not the community at large, which might give insight to the external stigma that participants experienced. Distribution of disclosure was as follows; adult family members (79%, 701/891), husband/wife/partner (76%, 677/888), children in family (42%, 371/890), friends/neighbors (36%, 323/889), co-workers (16%, 137/867) and others (13%, 116/888). Women (94%, 571/605) and men (94%, 249/264) reported high proportions of disclosure. Of those who disclosed their HIV status to adult family members, support was high, with females reporting they received more support (79%, 500/634) than males (64%, 161/251). More males (21%, 51/246) than females (14%, 86/615) disclosed their HIV status to colleagues at work. In the proportion who disclosed, more men (17%, 43/246) compared to women (11%, 70/615) reported that their co-workers were supportive/very supportive.

About 58% (516/890) of the participants did not disclose to their children, with more men (69%, 175/255) not disclosing compared to women (55%, 347/635). Of the men and women who disclosed, 25% (65/255) and 40% (256/635) reported receiving support from their children respectively, whereas 5% (13/255) and 4% (24/635) reported no difference in attitude, respectively.

Eighty-four percent (724/861) of the participants did not disclose their HIV status to colleagues at work. The proportions were high for both men (79%, 195/246) and women (86%, 529/615); however, of the proportion who disclosed, more men (18%, 43/246) reported that their co-workers were very supportive compared to the women (11%, 70/615).

Violent behavior

Figure 15 and 16 illustrates involvement of participants in physical intimate partner violence (PIPV) perpetrated by the male partner during the four months follow-up. Almost a quarter (22%, 116/539) of women who participated in the study reported being subjected to PIPV either once or more than once while 31% (72/233) of men reported perpetrating PIPV either once or more than once. Similar proportions were observed regardless of linkage to HIV care however, slightly more participants linked to care (15%, 89/589) reported exposure to PIPV compared to those not linked to care (11%, 12/110).

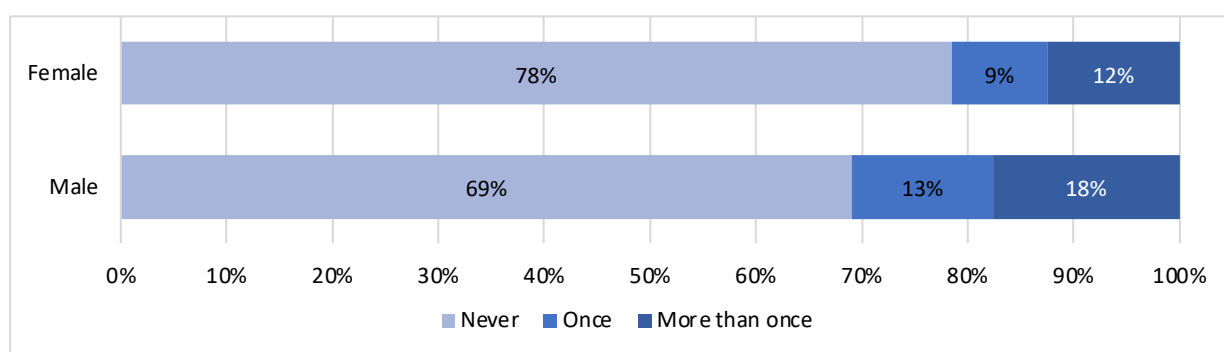


Figure 15: Involved in fight disaggregated by sex categories in uThukela district in 2018 (N=772)

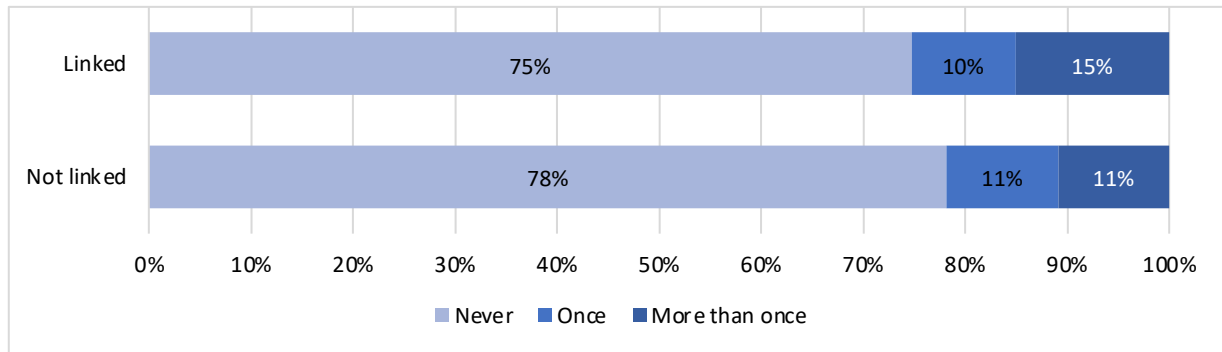


Figure 16: involved in a fight disaggregated by linkage to care at 3 months in uThukela district - 2018 (N=699)

Retention in care at 12 months follow-up

The proportion of HIV positive cohort retained in care post diagnosis is shown in Figure 17. Of the HIV positive cohort recruited at baseline, about 46% (551/1,194) accessed care in a facility 12 months after being diagnosed HIV positive, 4% (51/1,194) withdrew from the study by the 4-month follow up and 5% (62/1,194) were deceased. A high proportion of the participants (45%, 530/1,194) were not retained in care after 12 months of being diagnosed HIV positive.

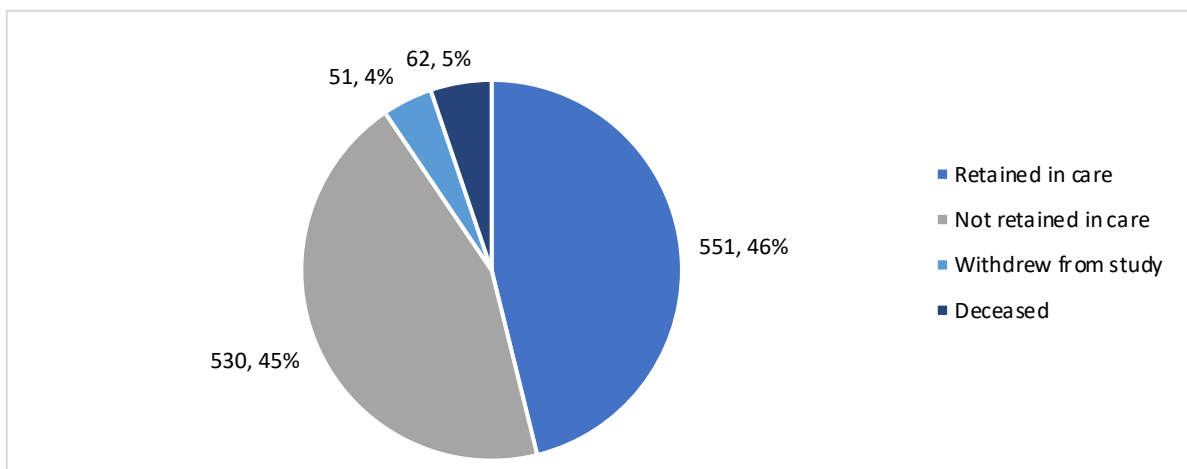


Figure 17: Proportion of HIV+ cohort retained in care at 12 months post diagnosis in uThukela district - 2018 (N=1,194)

Figure 18 present the linkage status of the HIV positive cohort retained in care after 12 months of being diagnosed. Almost three quarters (74%, 408/551) of participants retained in care at 12 months were identified to have linked to care within 3 months post HIV diagnosis while only 26% (143/551) of those retained in HIV care at 12 months were linked after three months, thus considered not initially linked.

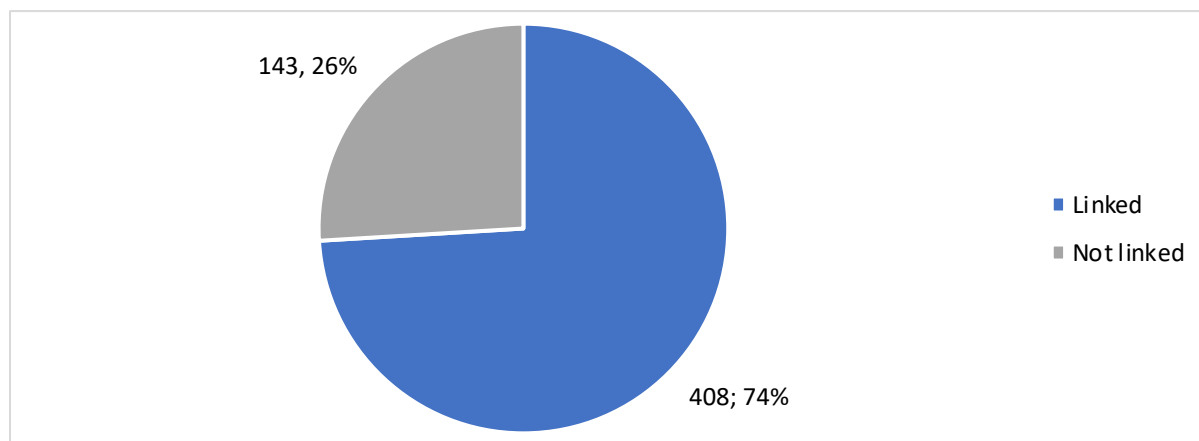


Figure 18: Status of those retained in care at the 3-month mark of linkage in care in uThukela district - 2019 (N=551)

A high proportion (91%, 499/551) of the participants retained in care at 12 months were seeking HIV care in health facilities situated within the uThukela district. However, about 2% (9/551) accessed HIV care at different facilities within KZN, and the remaining 8% (43/551) are seeking care in other provinces (Figure 19).

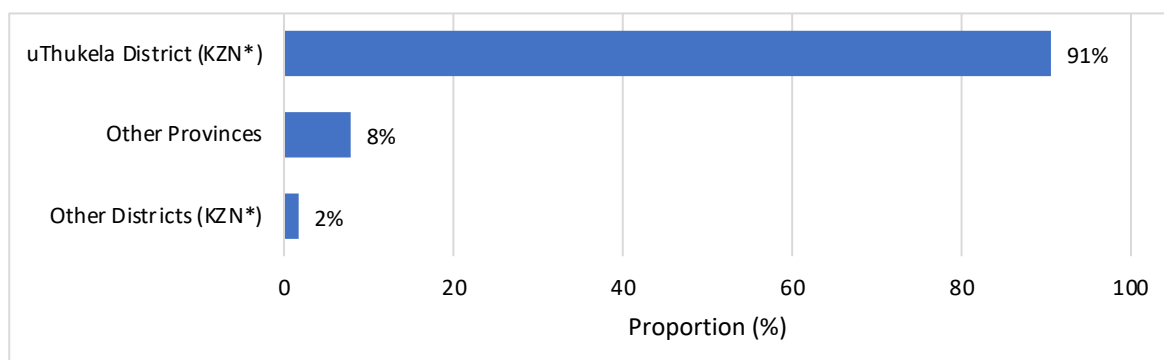


Figure 19: District location of the follow-up viral load measurements done by the HIV+ cohort retained in care at 12-months in uThukela district - 2019 (N=551) - KZN * – KwaZulu Natal province

Sixty-three percent of the participants (348/551) were still seeking HIV care in the facilities where they tested and recruited into the study (Figure 20), while 37% (203/551) sought HIV care in facilities other than where they were initially recruited (Table 5). A high proportion of these were within the same district, (79%, 160/203) and the rest sought HIV care in a different province (21%, 43/203).

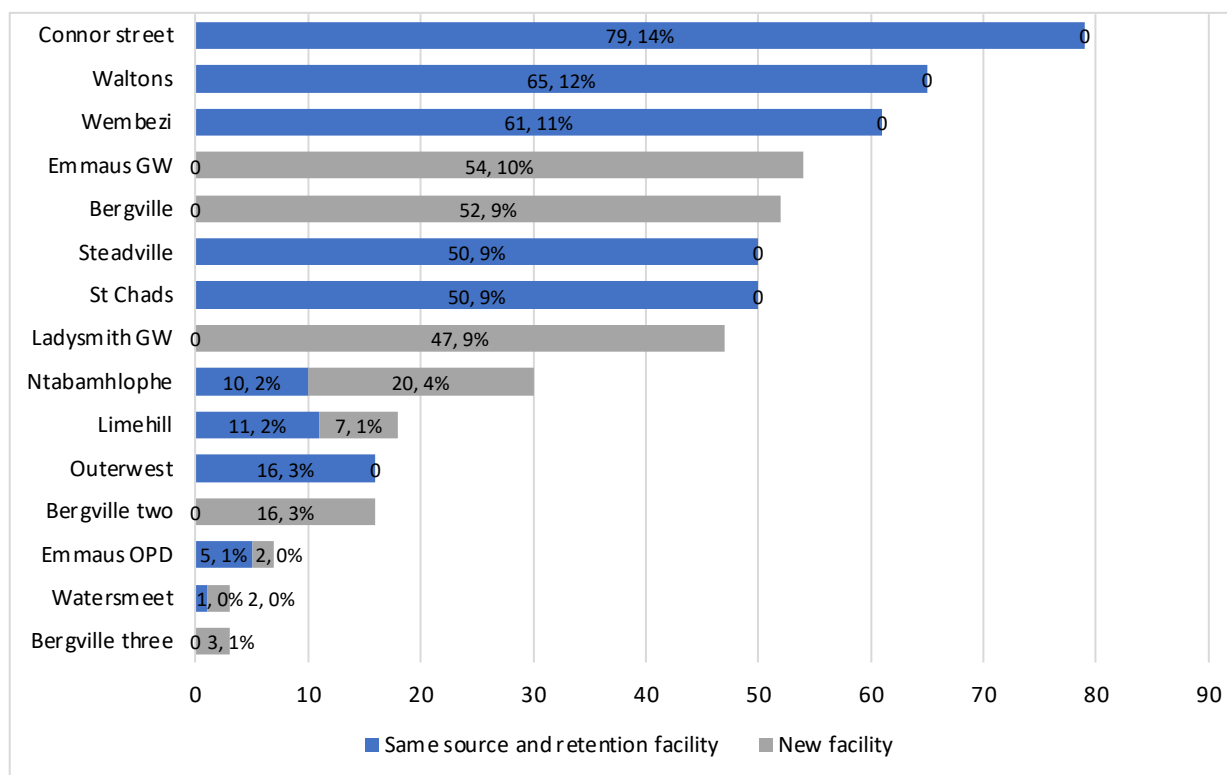


Figure 20: Source facility of participants at baseline and after 12 months follow-up of those retained in care in uThukela district - 2017 - 2019 (N=551)

* Blue bars represent facilities where participants were recruited from and retained and the grey color represents the proportion who moved to be retained in new facilities.

Table 5: Source facilities and the new facilities where participants are retained in care at 12 months follow-up in uThukela district between 2017 - 2019 (N=551)

Source facilities	New facilities	Location	N=551 (%)
Emmaus GW/Emmaus OPD	Emmaus retirement home	Other province	31 (6%)
	Emmaus hospital	Same district	25 (5%)
Bergville/Bergville two/ Bergville three	Bergville clinic	Same district	20 (4%)
	Bergville prison	Same district	32 (6%)
	Bergville PHC	Same district	19 (3%)
Ladysmith GW	Ladysmith health center	Same district	23 (4%)
	Ladysmith hospital	Same district	19 (3%)
	Ladysmith prison	Same district	5 (1%)
Ntabamhlophe	Ntaba ka ndoda clinic	Other province	11 (2%)
	Ntababomvu clinic	Same district	9 (2%)
Limehill	Limehill mobile clinic	Same district	7 (1%)
Watersmeet	Waterval prison	Same district	1 (<1,%)
	Water-boven mobile clinic	Other province	1 (<1,%)

Table 6 shows the distribution of the participants' socio-demographic characteristics at baseline and linkage to care at 3 months. There was no difference between those who linked and those who did not link on except for socio-demographic variables testing facility type with most participants coming from clinics (65%, 637/987).

Table 6: Socio-demographic characteristics at baseline and linkage to care at 4 months follow-up in uThukela district - 2018

Variable	Total	Linked to care	Not linked to care	p-value
	N=1,194 (%)	N=987 (%)	N=207 (%)	
Age, median (IQR)	30 (25-37)	30 (25-37)	31 (25-38)	0.743
Age categories, n/N (%)				0.921
18-24 years	269 (23)	220 (22)	49 (24)	
25-29 years	293 (25)	243 (25)	50 (24)	
30-34 years	251 (21)	210 (21)	41 (20)	
35-49 years	317 (27)	259 (26)	58 (28)	
50+ years	63 (5)	54 (5)	9 (4)	
Sex, n/N (%)				0.154
Female	851 (71)	695 (70)	156 (75)	
Male	343 (29)	292 (30)	51 (25)	
Facility type, n/N (%)				0.001
Clinic	793 (66)	637 (65)	156 (75)	
Gateway	229 (19)	190 (19)	39 (19)	
Hospital	105 (9)	100 (10)	5 (2)	
Mobile clinic	67 (6)	60 (6)	7 (3)	
Marital status, n/N (%)				0.624
Married (living together)	68/1,168 (6)	55/968 (6)	13/200 (7)	
Married (living separately)	29/1,168 (2)	25/968 (3)	4/200 (2)	
Cohabiting	178/1,168 (15)	150/968 (16)	28/200 (14)	
Dating	725/1,168 (62)	593/968 (61)	132/200 (66)	
Single	168/1,168 (14)	145/968 (15)	23/200 (12)	
Received child support grant, n/N (%)				0.856
Yes	527/1,169 (45)	438/969 (45)	89/200 (45)	
No	642/1,169 (55)	531/969 (55)	111/200 (55)	
Highest education attained, n/N (%)				0.678
No education	21/1,177 (2)	18/973 (2)	3/204 (1)	
Primary education	57/1,177 (5)	50/973 (5)	7/204 (3)	
High school education	665/1,177 (57)	552/973 (57)	113/204 (55)	
Post matriculation	434/1,177 (37)	353/973 (36)	81/204 (40)	
Ease of finding R200 for an emergency, n/N (%)				0.778
Very/Somewhat difficult	714/1,171 (61)	595/973 (61)	119/198 (60)	
Fairly/Very easy	457/1,171 (39)	378/973 (39)	79/198 (40)	
Alcohol use, n/N (%)				0.364
Never	770/1,158 (66)	641/966 (66)	129/192 (67)	
< once a month	201/1,158 (17)	174/966 (18)	27/192 (14)	
2-4x times a month	120/1,158 (10)	100/966 (10)	20/192 (10)	
2-3 times a week	49/1,158 (4)	37/966 (4)	12/192 (6)	
4+ times a week	18/1,158 (2)	14/966 (1)	4/192 (2)	
Drug use, n/N (%)				0.056
Never	986/1,157 (85)	832/966 (86)	154/191 (81)	
Once	85/1,157 (7)	70/966 (7)	15/191 (8)	
>Once	86/1,157 (7)	64/966 (7)	22/191 (12)	
Area of residence, n/N (%)				0.948
Rural	406 (34)	336 (34)	70 (34)	
Urban	788 (66)	651 (66)	137 (66)	
Mode of transport, n/N (%)				0.114
Foot	486/1,177 (41)	391/976 (40)	95/201 (47)	
Public transport	613/1,177 (52)	523/976 (54)	90/201 (45)	
Private transport	70/1,177 (6)	56/976 (6)	14/201 (7)	
Other	8/1,177 (1)	6/976 (1)	2/201 (1)	
Time to get to facility, n/N (%)				0.167
<30 minutes	719/1,173 (61)	584/971 (60)	135/202 (67)	
30-60 minutes	392/1,173 (33)	332/971 (34)	60/202 (30)	
>60 minutes	62/1,173 (5)	55/971 (6)	7/202 (3)	

p-values derived using Mann Whitney U-test, Chi-squared test and Fishers exact test

Table 7 shows the distribution of the participants' socio-demographics at baseline and retention in care at 12 months for the HIV positive cohort. Participants' sex and age were different amongst those who remained in HIV care and those who dropped out of HIV care. The proportion of women (76%, 419/551) that remained in care at 12 months was significantly higher than men (24%, 132/551) ($p < 0.001$). The 35-49 years age group had the highest proportion of those retained in care at 12 months (28%, 156/551). The proportion was significantly higher than the 18-24 years age group (20%, 112/551) ($p = 0.002$).

Education level was also significantly associated with participants' willingness to stay in care after 12 months post diagnosis ($p = 0.022$); a higher proportion of these participants had attained a high school education (55%, 303/548). Similarly, place of residence (urban or rural) was also a determining factor for retention in care. Those seeking care in urban areas were more likely to remain in care than those in the rural areas ($p < 0.001$). In addition, participants who use public transport to health facilities were more likely to be in care than those who access health facilities by foot ($p = 0.012$). Access to money, such as child support grant ($p = 0.019$), access to R200 (\$12) in emergency cases ($p = 0.014$), and alcohol abstinence ($p = 0.001$), were significantly associated with retention in care.

Table 7: Socio-demographic variables at baseline and retention in care at 12 months in uThukela district - 2019 (N=1,194)

Variable	Total	Retained in care	Not retained in care	p-value
	N=1,194 (%)	N=551 (%)	N=643 (%)	
Age, median (IQR)	30 (25-37)	30 (25-37)	30 (26-37)	0.129
Age categories, n/N (%)				0.543
18-24 years	258 (21)	112 (20)	146 (23)	
25-29 years	305 (26)	136 (25)	169 (26)	
30-34 years	250 (21)	121 (22)	129 (20)	
35-49 years	318 (27)	156 (28)	162 (25)	
50+ years	62 (5)	26 (5)	36 (6)	
Sex, n/N (%)				<0.001
Female	847 (71)	419 (76)	428 (67)	
Male	347 (29)	132 (24)	215 (33)	
Facility type, n/N (%)				0.178
Clinic	798 (67)	358 (65)	440 (68)	
Gateway	220 (18)	101 (18)	119 (19)	
Hospital	101 (8)	57 (10)	44 (7)	
Mobile clinic	75 (6)	35 (6)	40 (6)	
Marital status, n/N (%)				0.119
Married (living together)	73/1,169 (6)	27/545 (5)	46/624 (7)	
Married (living separately)	32/1,169 (3)	11/545 (2)	21/624 (3)	
Cohabiting	169/1,169 (14)	83/545 (15)	86/624 (14)	
Dating	727/1,169 (62)	336/545 (62)	391/624 (63)	
Single	168/1,169 (14)	88/545 (16)	80/624 (13)	
Received child support grant, n/N (%)				0.019
Yes	531/1,169 (45)	269/548 (49)	262/531 (42)	
No	638/1,169 (55)	279/548 (51)	359/531 (58)	
Highest education attained, n/N (%)				0.022
No education	21/1,178 (2)	5/548 (1)	16/630 (3)	
Primary education	60/1,178 (5)	25/548 (5)	35/630 (6)	
High school education	678/1,178 (58)	303/548 (55)	375/630 (60)	
Post matriculation	419/1,178 (36)	215/548 (39)	204/630 (32)	
Ease of finding R200 for an emergency, n/N (%)	703/1,173 (60)			0.014
Very/Somewhat difficult	470/1,173 (40)	348/546 (64)	355/627 (57)	
Fairly/Very easy		198/546 (36)	272/627 (43)	
Alcohol use, n/N (%)				0.001
Never	766/1,161 (66)	381/540 (71)	385/621 (62)	
< once a month	204/1,161 (18)	67/540 (12)	137/621 (22)	
2-4x times a month	123/1,161 (11)	59/540 (11)	64/621 (10)	
2-3 times a week	49/1,161 (4)	24/540 (4)	25/621 (4)	
4+ times a week	19/1,161 (2)	9/540 (2)	10/621 (2)	
Drug use, n/N (%)				0.033
Never	997/1,161 (86)	461/543 (85)	536/618 (87)	
Once	86/1,161 (7)	35/543 (6)	51/618 (8)	
>Once	78/1,161 (7)	47/543 (9)	31/618 (5)	
Area of residence, n/N (%)				<0.001
Rural	441 (37)	144 (26)	297 (46)	
Urban	753 (63)	407 (74)	346 (54)	
Mode of transport, n/N (%)				0.032
Foot	492/1,179 (42)	206/548 (38)	286/631 (45)	
Public transport	611/1,179 (52)	309/548 (56)	302/631 (48)	
Private transport	70/1,179 (6)	30/548 (5)	40/631 (6)	
Other	6/1,179 (1)	3/548 (1)	3/631 (1)	
Time to get to facility, n/N (%)				<0.001
<30 minutes	705/1,172 (60)	366/547 (67)	339/625 (54)	
30-60 minutes	405/1,172 (35)	159/547 (29)	246/625 (39)	
>60 minutes	62/1,172 (5)	22/547 (4)	40/625 (6)	

p-values derived using Mann Whitney U-test, Chi-squared test and Fishers exact test

DISCUSSION

Key findings

This report presents the initial experience of participants from the enrolment period of the study for both HIV positive and negative cohorts, as well as the 4-month and 12-month outcomes of the HIV positive cohort. These cohort data provide insights to the sampled population in the 18 health facilities within the three local municipalities in the uThukela DM. The data collected through questionnaires at the PHC sites illustrate the importance of the PHC services and the essential role they could play in ensuring communities have ready and rapid access to frequent HIV testing services. It is reassuring to see that over 5,600 people came to test for HIV during the study period and over half of the HIV positive and negative cohorts tested because they wanted to know their status, this was 78% and 55% of the negative and positive cohort, respectively.

HIV prevalence in our sample was 22%, higher than the overall prevalence of 13% in South Africa in 2019, and that of 19% in adults 15-49 years old (Statistics South Africa, 2019). HIV prevalence in KZN, the province housing the district was 27% in 2018 (Avert, 2020). Consistent with current literature (Kranzer et al., 2010; Govindasamy et al., 2011; Clouse et al., 2013), young girls and women accounted for the highest proportion of individuals who accessed HIV testing services, and were HIV positive in uThukela DM. The data also demonstrated a slightly older population of men were testing positive, compared to the women population. This demonstrates the importance of developing interventions aimed at linkage to and retention in care that should be tailored to accommodate younger women and older men.

Our study reported a linkage to care rate of 83% in the first three months after testing HIV positive, with most (93%) returning on their given appointment dates; this is higher than findings from other studies. Johnson et al. (2017) reported a national linkage rate of 57% and 62% for KZN. However, the HSRC study reported a linkage rate of 76% for the uThukela DM (HSRC, 2017). There is scarcity of reports on the progress made on both linkage to care and ART initiation since the implementation of UTT and same-day initiation. Variations in the definitions and time points for measurements from HIV positive diagnosis to ART initiation also make it difficult to contrast between studies. A study conducted in South Africa to assess the impact of a health app for Android smartphones providing HIV-related laboratory results, information, support, and appointment reminders to engage and link patients to care indicated that before the intervention only 47% (162/345) of the study participants were linked to care between two weeks and eight months (Venter et al., 2019). This was before UTT was adopted in South Africa in September of 2016, which could explain the lower linkage-to-care rates compared to our study findings obtained from data collected in 2017. Factors that enhanced early and timely initiation to ART as per the new UTT guidelines (WHO, 2015), and retention in care, as well as enablers and barriers to early linkage were identified. These include availability of treatment, guidance from clinic personnel, educational level, income level, place of residence, distance to health facilities and support from significant others. Other factors that may have contributed to the high linkage rate found in our study could be the influence our field team had in providing educational materials about linkages and support to participants.

In terms of retention in HIV care, our study showed a 46% retention rate at 12 months post diagnosis of the HIV positive cohort. This is slightly higher than findings from a similarly study (Clouse et al., 2013) that reported a cumulative retention rate from diagnosis to 12 months on ART of 37% in that setting. Our finding implies that efforts towards improving viral load suppression among PLHIV are important and maybe achieved through the adoption of differentiated service delivery models such as FastTrack Treatment Initiation Counselling (Pascoe et al., 2019). Although our study did not indicate any gains in retention in care in the era of UTT, gains of UTT on early linkage to care is confirmed in another study conducted in Malawi (Alhaj et al., 2019). Alhaj and

colleagues (2019) found that PLHIV initiated under the UTT era showed increased early retention in care 83% behaviors compared to those initiated before UTT (76%).

We found in our study that more men linked to care compared to women at 90 days. This contradicts some studies that show that being younger and male is associated with higher levels of attrition (Kranzer et al., 2010; Govindasamy et al., 2011; Clouse et al., 2013). Another study conducted in Gauteng and Limpopo provinces also showed comparative linkage to care rates for men and women up to 90 days but became lower in men during the 90 – 365 days after testing (Dorwald et al., 2017). While we found that more men were becoming aware of their HIV status and linking to care compared to women, women demonstrated better retention in care behaviors. Several studies across the sub-Saharan continent have confirmed that women have better retention in care behaviors (Johnson et al., 2017; Schneider et al., 2012). For instance, a multi-center study conducted in South Africa showed that men were more likely to be lost to follow up compared to women (Cornell et al., 2012). The reason for the gender differences has been attributed to masculinity – a set of local beliefs and practices that capture what it means to be a man in a particular context (Calvin, 2019). In South Africa, gender-transformative interventions such as “One Man Can”, a rights-based gender equality and health program intervention, has shown success in reducing masculinity-related barriers to engaging in HIV services (Fleming et al., 2016). A recent study conducted in South Africa revealed that these differentiated service delivery models have the potential to increase the retention care and adherence to medication among men (Fox et al., 2019). These models achieve this by helping men refashion ART-friendly masculinities – a set of attributes, behaviors and roles associated with boys and men that favor the uptake and use of ART (Mukumbang, 2020).

Our study found a statistically significant difference between participants who remained in care at 12 months and those who dropped out of care for the following characteristics: sex, age, education, place of residence, mode of transportation to health facility, alcohol intake and access to cash in an emergency. Participants’ sex and age played a major role in determining whether they remained in care. The proportion of women that remained in care at 12 months was significantly higher than men. Individuals in the 35-49 years age group had the highest proportion of those retained in care at 12 months. It was identified that the age distribution between women and men demonstrated higher rates of positivity in the earlier age categories for women and higher rates of positivity in the slightly older age categories for men. This was consistent with the current research done in KZN through the Centre for the AIDS Programme of Research in South Africa (CAPRISA).

Considering the geographic distance for participants accessing HIV testing services in facilities located in the rural areas, and the cost of public transport for the majority who used facilities in urban areas, it was not surprising to find issues of lack of transport to health facilities emerging as a barrier to retention in care in this context. Our study found that participants who used public transport to health facilities were more likely to be in care after 12 months than those who access health facilities by foot. Similar findings on access to health facilities have been noted in other low- and middle- income countries (Lankowski et al., 2014; Bogart et al., 2013). Unlike studies conducted in urban settings, our study demonstrated that HIV patients in uThukela DM do not often change health facilities. Although participants remained in their testing facilities and reported feeling that they were provided with necessary information and generally treated well by clinic staff, some felt that clinical personnel did not have enough time for them when they visited the health facilities. This might have also contributed to the reasons for not remaining in care. Lankowski et al., (2014), identified the size of the facility and staffing-patient ratio as factors that may improve linkage and retention in care. This calls for recruitment of more HIV counsellors and linkage officers in uThukela health facilities.

Other reasons for non-retention in care included inability to take time off work or inconvenient appointment dates. Our findings corroborate the study by Govindasamy et al. (2011), which showed an association between

being employed and being less likely to be linked to care, perhaps due to the difficulties of accessing health care services after working hours. In addition, access to money, such as child support grant and access to R200 (\$12) in emergency cases, were significantly associated with retention in care. Our findings show that participants who had no access to a child support grant and those who found it very difficult to access R200 (\$12) in emergency cases were less likely to be retained in care at 12 months post HIV diagnosis. This corroborates findings from a similar study (Shamu et al., 2019) where personnel responsible for linking clients to care had to provide transport for clients who did not have money to go to health facility.

Education was also showed in our study to be significantly associated with participants' ability to stay in care after 12 months post diagnosis. This is consistent with another study that pointed to higher education being associated to better care (Fox et al., 2014). Place of residence (urban or rural) may also be a determining factor for participants to stay in care. Those seeking care in urban areas were more likely to remain in care after 12 months than those in the rural areas. This confirms the study by Fox et al., (2014) that identified informal housing and neighborhood (rural or informal settings) as issues that may be factors in poor linkage to care.

The promotion of regular HIV testing, a role played by the health services, is important, as it ensures individuals know their status and thus enables them to continue to make informed decisions. This is especially important when data are viewed alongside alcohol and drug use. The proportion of participants who drank alcohol, regardless of frequency was lower in those retained in care compared to the proportion of those who drank alcohol not retained in care. Whilst analysis presented does not demonstrate a linkage between condom use and drug and alcohol use, the literature does show a link between inconsistent condom use when inhibitions are lowered by alcohol or drugs (Ehrenstein et al., 2004; Fairbairn et al., 2016).

The role of community health workers (CHWs) with increased scope of practice is also vital for patients who were unable to afford regular clinic visits due to lack of finance, resulting from the high unemployment rate reported in this study. Preference of traditional health practitioners (THPs) was also reported in about 6% of the study participants. While a lot has been achieved with engaging THPs, particularly in KZN (Zuma et al., 2017), for a province with dominant cultural values and respect for tradition, this engagement may need to be maintained in the district and province in order to achieve the 90-90-90 goals.

Study limitations

This study was structured around a pre- and post- evaluation of two sets of interventions aiming to enhance linkage to HIV care in the uThukela Health District in KZN. However, due to limited funding, we could not proceed with the implementation of the planned interventions. While we recruited 6,126 patients, 13% (785/6,126) were not enrolled due to incomplete data, failed eligibility checks and unavailability of HIV test results. We used self-administered questionnaires to ensure the privacy and comfort of participants while responding to the questions, however, this might have increased the number of missing responses. During baseline data collection, over 60% of the participants did not provide responses to sexual debut-related questions, as well as questions on condom use and number of sexual partners (Appendix 3). During the 4-month follow-up interview about a third of the participants did not provide responses for women marital status and whether they would return to the facilities for further HIV care (Appendix 4).

Our study was observational; while we have shown improvement in linkage to care compared to the regional average of 62% for KZN and 72% from the recent HSRC study, we did not collect details of interventions that are being implemented in our study sites to show which interventions enhanced linkage to care. We ascertained linkage to care status using the presence of CD4 results captured into their TIER.Net record within three months of a positive HIV test at enrolment. This relied on the accuracy of patient details such as names, ID numbers and contact numbers. This can therefore be subject to some errors. While linkage to care is a

strong indicator of ART initiation, we did not intend to collect data on whether participants testing HIV positive initiated ART or not. This is critical in the era of universal test-and-treat and same day initiation. Also, the presence of the CD4 count would indicate that the individual is successfully linked to care. A final limitation is that we did not investigate the number of PLHIV who initiated ART.

Study strengths

The use of the availability of CD4 count results to determine linkage to care was found most appropriate compared to ART initiation as this indicates that the individual has contacted the health system for the CD4 count to be available. In some instances, after receiving counseling blood samples drawn at a treatment facility, the individual might indicate that they are not ready to initiate treatment.

Our determination of retention in care was confirmed via the presence of viral load measurements and the confirmation of deceased status with the Department of Home Affairs. Identifying viral loads after one year of linkage to care through the NHLS is superior to other methods reported in retention in care over approaches such as pharmacy refills and clinic attendance records because viral load measurements capture PLHIV who had transferred out from one facility to another.

We used simple random sampling to select 18 facilities for inclusion in the study. While we targeted 996 participants for inclusion, aiming to show 72% linkage to care, our HIV positive cohort exceeded that number, with 1194 participants enrolled in that cohort and showing 83% linkage to care at three months.

This cohort study has provided an overview of the demographics and context of the participants, and it shows a high linkage rate among the HIV positive cohort, which could have been influenced by our field team, who provided educational materials about linkages and support to the participants. This is important to inform the investigations and the analysis of barriers and enablers of linkage to and retention in care experience of the HIV positive cohort.

The findings of this study will provide insights to guide decision makers, especially the National Department of Health (NDoH) to strengthen strategies geared towards improving linkage to and retention in HIV care. The study is of great relevance within the context of the South African health priorities, and the findings will help improve HIV treatment and care. Although the study focused on one district with a high HIV prevalence, most of the findings are applicable to other settings.

CONCLUSION

This study has shown high HIV prevalence in the district as well as improved rates of linkage to care compared to regional estimates, but less than 50% of the participants remained in care at 12 months, pointing to challenges with access to chronic care. We have also described socio-demographic characteristics, drivers and health impacts of accessing care. However, details of interventions that are being implemented in our study sites to show which interventions enhanced linkage to care were not documented.

Patients generally access HIV testing services that are situated in towns (urban areas). This may be due to HIV stigma that is still pervading rural communities as opposed to towns, or it may be too limited staff at the rural facilities and the time taken to be seen. Young women test more for HIV compared to young men. This may be attributed to the fact that they have more opportunities for testing when accessing family planning or antenatal services. While integrated family planning or antenatal services may have improved testing for women of reproductive age, there may be a need to improve testing for older women and younger men. Fewer married individuals tested for HIV. Studies aimed at perceived risk of infection for this group are required.

HIV positive participants were shown to have riskier sexual behaviors as shown by inconsistent condom use prior to HIV testing compared to HIV negative participants. For a community that still practices polyamorous relationships, interventions aimed at HIV prevention could benefit the uThukela DM. The role of “significant others” in enabling linkage to and retention in HIV care could also be encouraged by HIV counsellors for newly diagnosed HIV individuals who are willing to disclose. Whether facilities are ready for this, through provision of comprehensive counselling and support provision, is something that other studies could explore. Institutional capacity to support and encourage linkage to care is needed; such support could be the use of linkage officers and lay counsellors to provide health promotions and support around HIV treatment and care.

Lastly, this study found a statistically significant difference between participants who remained in care at 12 and those who dropped out of care for the following characteristics: sex, age, education, place of residence, mode of transportation to health facility, alcohol intake and access to cash in an emergency (R200, \$12). Participants’ sex and age played a major role in determining whether they remained in care. The proportion of women that remained in care at 12 months was significantly higher than men. Individuals in the age group 35-49 years had the highest proportion of those retained in care at 12 months. Our findings suggest that interventions could target women aged 18–34 years; more research is needed to understand barriers to care linkage and retention for men.

COMPETING INTEREST

The authors of this study have no potential conflicts of interest.

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APPENDICES

*N.B p-values in the appendix derived by Chi-square tests and Fishers exact test.
A p-value <0.05 was considered to be statistically significant*

Appendix 1: Original English questionnaires for participating patients

(Adapted from Hoffman et.al, 2015; PLHIV Stigma index International partnership;
DFID What Works program; Stepping Stones & Creating Futures Study)

NB This questionnaire will be programmed into tablets,
to be self-administered by the enrolled participant with audio prompts.

Enhancing linkage to care for HIV in South Africa	
(ENGLISH)	
PARTICIPATING PATIENT QUESTIONNAIRE	
SCREENING, BASELINE & FOLLOW-UP PARTICIPANT QUESTIONNAIRE	
COVER	
Enrolment ID number:	
Facility number:	
Date of screening interview:	

1.2.1.1 Original English: Baseline Questionnaire for participating patients

A: Screening interview at baseline

Screening interview:

Hello, my name is [] and I work for the South African Medical Research Council.
Thank you for coming to talk with me briefly today.
First, I'd like to ask some basic information and then I will check if you are happy to continue answering more questions.

Screening interview: SECTION A1: CHECK ELIGIBILITY

ENTER ENROLMENT ID WHEN OPENING NEW ELECTRONIC PROFILE IN REDCAP FOR THIS ENROLLEE

#	Question	Answer	Coding	Coding Value	Skip?
1	Are you having an HIV test at the clinic today?	Yes/No Discuss to verify before assigning 0	Yes No	1 0	If = 1 → 2 If = 0 → 5
2	Your age	Years	18 or over Under 18	1 0	If = 1 → 3 If = 0 → 5
3	Do you have access to a cell phone?		Yes No	1 0	If = 1 → 4 If = 0 → 5
4	Are you happy to give me your cellphone number and address?		Yes No	1 0	If = 1 → 5 If = 0 → 5
5	Enrolment ID	Assign the enrolment number for which the next set of 3 stickers is available.			Thank you. Go to paper demographic sheet if eligible.
6	Thank you.				END. Not eligible to participate.

If eligible and willing, go to information sheet and informed consent.

Complete 2 copies: Keep 1 copy, give 1 copy to the newly enrolled participant.

Proceed to paper demographic sheet* if consent is complete.

*** PLEASE FILE PAPER COPY OF DEMOGRAPHIC SHEET IN SECURE LOCATION.**

APPENDIX 1

Original English questionnaires for participating patients

Screening interview: SECTION A2: TRACKING*					
ADD STICKER WITH ENROLMENT NUMBER ON BACK OF THIS SHEET OF PAPER					
#	Question	Answer	Coding	Coding Value	Skip?
1	First Name				
2	Surname				
4	Gender		Male Female	1 2	
5a	What is your Date of Birth?	DD-MM-YYYY			If not known → 5b
5b	Age in years if date of birth not known	Years			
Screening interview: SECTION A3: Contact details					
#	Question	Answer	Coding	Coding Value	Skip?
6	What is your primary cell phone number?	Number			
7	Do you have an alternative cell phone number? What is that cell phone's number?	Number			
8	What is your residential address?	Physical address			
9	What is your National ID number?	Number			
10	Is this a South African ID or from another country?	Nationality	SA Other SADC Other African Other outside Africa None	1 2 3 4 5	
11	Which clinic do you usually go to for health problems?	Name of clinic usually accesses			
12	Data entry only	Clarify type of facility usually accesses	Mobile PHC Clinic PHC CHC Gateway	1 2 3 4	
13	Data entry only	Is this a different facility from where being recruited today	Yes No	1 2	
14	Data entry only	Clarify type of facility in which participant was enrolled	Mobile PHC Clinic PHC CHC Gateway	1 2 3 4	
15	Data entry only	Interviewer Initials: first name - last name			
16	Data entry only	Screening interview date: DD-MM-YYYY			
17	Has the participant signed the informed consent form?		Yes No	1 0	
18	Thank you.	END IF NOT HAPPY TO SIGN CONSENT	END.		END.
IF PARTICIPANT IS ELIGIBLE AND CONSENTED, SET THEM UP TO SELF-COMPLETE QUESTIONNAIRE IN REDCAP ON TABLET					

RE-ENTER THEIR ENROLMENT NUMBER AND CHECK THEY CAN HEAR AUDIO PROMPTS, ENTER RESPONSES
BASELINE QUESTIONNAIRE: PARTICIPANT TO SELF-COMplete QUESTIONNAIRE IN REDCAP ON TABLET

SECTION C: BACKGROUND

The first questions are about yourself, your home and your work situation.

Please try and relax, there are no right or wrong answers. Remember that everything you answer will be kept secret.

#	Question	Answer	Coding	Coding Value	Skip?
101	How old are you?	Years			
102	What is your gender?	PARTICIPANT'S GENDER	Male Female	1 2	
103	Which race group do you consider yourself?		Black/African Colored White Indian/Asian Other	1 2 3 4 5	
104	What is the highest grade you have completed at school?		GRADE 1 GRADE 2 GRADE 3 GRADE 4 GRADE 5 GRADE 6 GRADE 7 GRADE 8 GRADE 9 GRADE 10 GRADE 11 GRADE 12	1 2 3 4 5 6 7 8 9 10 11 12	If = 12 → 105 OTHER- WISE → 106
105	Did you pass matric?		Yes No	2 1	
106	Are you currently studying?		Yes No	2 1	
107	Are you a member of any clubs or groups or societies?		Yes No	2 1	
108	Would you describe yourself as active in your church?		Yes No	2 1	
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 109 If = 2 → 110
09	Are you currently married or living with a woman or do you have a girlfriend?		CURRENTLY MARRIED, LIVING TOGETHER CURRENTLY MARRIED, NOT LIVING TOGETHER LIVING TOGETHER NOT MARRIED GIRLFRIEND, NOT LIVING TOGETHER NO CURRENT RELATIONSHIP	1 2 3 4 5	→ 111
110	Are you currently married or living with a man or do you have a boyfriend?		CURRENTLY MARRIED, LIVING TOGETHER CURRENTLY MARRIED, NOT LIVING TOGETHER LIVING TOGETHER NOT MARRIED BOYFRIEND, NOT LIVING TOGETHER NO CURRENT RELATIONSHIP	1 2 3 4 5	
111	How often do you and your partner quarrel?		RARELY SOMETIMES OFTEN	1 2 3	

APPENDIX 1

Original English questionnaires for participating patients

SECTION C: BACKGROUND					
#	Question	Answer	Coding	Coding Value	Skip?
603	How did you get to the clinic today?		On foot Public transport (bus/ van/ kombi) Private transport (own /someone else's vehicle) Other	1 2 3 4	
604	How long did it take you to get there?		Less than 30 minutes 30 – 60 minutes More than 1 hour	1 2 3	
618	Will today be the first time you have had an HIV test?		Yes No	1 0	If = 1 → 605
619	How many times have you been tested for HIV before today?				
605	What led you to be tested for HIV today?				
The next questions are about how confidential you think the medical records are in this clinic. How much do you agree with the following statements?					
613	I am sure that my medical records will be kept completely confidential		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
614	I don't know if my medical records are confidential		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
615	It is clear to me that my medical records are not being kept confidential		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
The next questions are about how about antiretrovirals, or ARVs, which are drugs that are used to treat HIV/AIDS. These are statements that people have different opinions about. For each statement, some people agree and some disagree. I would like to know what YOU, yourself, think					
665	ARVs help most HIV+ people feel stronger.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
666	ARVs are not safe for HIV+ people.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
667	ARVs help most HIV+ people to live longer.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
668	ARVs harm you more than they help you. For example, if you have HIV but are not sick from it, taking ARVs will make you sick.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
669	It's easy to take ARV drugs.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
670	You do not want to take ARVs because it might change your body shape.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	

SECTION D: WORK & MONEY

The first questions are about yourself, your home and your work situation.

Please try and relax, there are no right or wrong answers. Remember that everything you answer will be kept secret.

#	Question	Answer	Coding	Coding Value	Skip?
201	In the past 4 weeks, how often was there was no food to eat of any kind in your house because of a lack of money?		Often Sometimes Rarely Never	4 3 2 1	
202	In the past 4 weeks how often did you or any member of your household go to sleep hungry because of lack of food?		Often Sometimes Rarely Never	4 3 2 1	
203	In the past 4 weeks how often did you or any of your household go a whole day and night without eating because of lack of food?		Often Sometimes Rarely Never	4 3 2 1	
204	If you had an emergency at home and needed R200, how easy would you say it would be to find the money?		Very difficult Somewhat difficult Fairly easy Very Easy	1 2 3 4	
205	How often in the past 4 weeks have you had to borrow food or money because you did not have enough?		Every day More than once a week Almost every week Once or twice in the last 4 weeks Never	5 4 3 2 1	
206	In the past 12 months how often did you work?		Each month Most months Once in a while Never worked	4 3 2 1	
207	Have you worked or earned money in the last 3 months?		Yes No	2 1	
208	Considering all the money you earned from jobs or selling things, how much did you earn in the last 4 weeks (not including grants)?	R Number	Any earnings No earnings	1 0	
209	In the last 4 weeks did you receive a child support grant?		Yes No	2 1	
210	In the last 4 weeks did you receive a disability grant?		Yes No	2 1	

APPENDIX 1

Original English questionnaires for participating patients

The following series of statements are about how you see your life now:					
#	Question	Answer	Coding	Coding Value	Skip?
211	In most ways my life is close to my ideal		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
212	The conditions of my life are excellent		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
213	I am satisfied with my life		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
214	So far I have gotten the important things I want in life		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 215 If = 2 → 216
215	Now we would like to ask you to think about yourself as a man and to think about what is important for a man of your age to be respected and successful. Please assess how successful you are on a scale between 1 and 4. Please choose 1 or a number nearer 1 if you think you are not successful and 5 or a number nearer 4 if you feel you are very successful.		Not successful Somewhat successful Fairly successful Very successful	1 2 3 4	→ 302
216	Now we would like to ask you to think about yourself as a woman and to think about what is important for a woman of your age to be respected and successful. Please assess how successful you are on a scale between 1 and 4. Please choose 1 or a number nearer 1 if you think you are not successful and 5 or a number nearer 4 if you feel you are very successful.		Not successful Somewhat successful Fairly successful Very successful	1 2 3 4	

SECTION E: SEXUAL BEHAVIOUR

The next questions are about your relationships. I know that these questions can be embarrassing. Please remember that all your answers will be kept secret and your name will not appear anywhere on the questionnaire. We are asking everyone in the study the same questions, and we know that women and men have a wide range of experiences.

#	Question	Answer	Coding	Coding Value	Skip?
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 302 If = 2 → 301
301	Which of the following statements most closely describes your experiences the first time you had sex?		I was willing I was persuaded I was forced I was raped Never had sex	1 2 3 4 5	If = 5 → 401
302	At what age did you first have sex?		12 and younger 13 14 15 16 17 18 19 20 and over Never had sex	1 2 3 4 5 6 7 8 9 10	If = 10 → 401
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 303 If = 2 → 304
303	How would you describe your sexual relationship with your main partner?		VERY SATISFYING SATISFYING UNSATISFYING VERY UNSATISFYING N/A – NO MAIN PARTNER	1 2 3 4 5	
304	The last time you had sex was it with a main partner, another partner (khwapeni) or one off partner or ex-partner?		MAIN PARTNER KHWAPENI ONE OFF EX-PARTNER	1 2 3 4	
305	The last time you had sex did you use a condom?		Yes No	2 1	
306	The last time you had sex with a khwapeni, or one-off partner did you use a condom?		Yes No	2 1	
307	How often have you used condoms in the last 12 months? Would you say you used them always, often or sometimes?		Always Often Sometimes Never	1 2 3 4	
308	How many main partners have you had sex with in the last 12 months?	Number	None	0	
309	How many khwapeni have you had sex with during the past 12 months?	Number	None	0	
310	How many men or women have you had sex with just once during the 12 months?	Number	None	0	
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 316 If = 2 → 311
311	In the past 12 months have you started or stayed in a relationship with a main partner so that you could receive any of the following?				
312	Cash or money to be looked after?		Yes No	2 1	

APPENDIX 1

Original English questionnaires for participating patients

SECTION E: SEXUAL BEHAVIOUR (continued)					
#	Question	Answer	Coding	Coding Value	Skip?
313	Somewhere to stay?		Yes No	2 1	
314	Support or money for your children or family?		Yes No	2 1	
315	Drugs, food, cosmetics, clothes, a cell phone, airtime, transportation or anything else you couldn't afford by yourself?		Yes No	2 1	→ 325
316	In the past 12 months, please think about any woman you had sex with just once or any casual partner or khwapheni. Do you think any of them may have become involved with you because they expected you to give or you gave them any of the following:				
317	Cash or money to be looked after?		Yes No	2 1	
318	Somewhere to stay?		Yes No	2 1	
319	Support or money for their children or family?		Yes No	2 1	
320	Drugs, food, cosmetics, clothes, a cell phone, airtime, transportation or anything else they could not afford?		Yes No	2 1	
321	Somewhere to sleep for the night, bills or school fees?		Yes No	2 1	
322	In the last 12 months have you had sex with a sex worker?		Yes No	2 1	
Children and contraception					
323	Do you have any biological children?		Yes No	2 1	If = 1 → 401
324	How many biological children?	Number			→ 401
325	Have you ever been pregnant?		Yes No	2 1	If = 1 → 401
326	How many children have you given birth to?	Number	None	0	If = 0 → 401
327	How old were you when you had your first child?		14 or Younger 15 16 17 18 19 20 or over	1 2 3 4 5 6 7	

SECTION D1: EMOTIONAL VIOLENCE

In any relationship, there are good times and bad times, I now want to ask you about some of the bad times and what has happened. Remember there are no right or wrong answers.

#	Question	Answer	Coding	Coding Value	Skip?
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 410 If = 2 → 401
401	In the last 12 months how many times has your current or ex-boyfriend, partner or husband belittled or humiliated you?		Never Once Few Many	1 2 3 4	
402	In the last 12 months how many times has your current or ex-boyfriend, partner or husband done things to scare or intimidate you on purpose for example by the way he looked at you, by yelling and smashing things?		Never Once Few Many	1 2 3 4	
403	In the last 12 months how many times has your current or ex-boyfriend, partner or husband threatened to hurt you?		Never Once Few Many	1 2 3 4	
404	In the last 12 months how many times has your current or ex-boyfriend, partner or husband brought home girlfriends?		Never Once Few Many	1 2 3 4	

SECTION D2: PHYSICAL INTIMATE PARTNER VIOLENCE

Men and women often fight and these can get physical.

Some women find these questions hard to answer, others easy. Remember everything you share here will only be used for research purposes and will be kept secret. We are interested now in your relationships with boyfriends or husbands, either your current boyfriend or husband, or ANY other previous boyfriend or husband, from any time in your life.

#	Question	Answer	Coding	Coding Value	Skip?
405	How many times has a current or previous husband or boyfriend ever slapped you or thrown something at you which could hurt you?		Never Once Few Many	1 2 3 4	
406	How many times has a current or previous husband or boyfriend ever pushed or shoved you?		Never Once Few Many	1 2 3 4	
407	How many times has a current or previous husband or boyfriend ever hit you with a fist or with something else which could hurt you?		Never Once Few Many	1 2 3 4	
408	How many times has a current or previous husband or boyfriend ever kicked, dragged, beaten, choked or burnt you?		Never Once Few Many	1 2 3 4	
409	How many times has a current or previous husband or boyfriend ever threatened to use or actually used a gun, knife or other weapon against you?		Never Once Few Many	1 2 3 4	→ 418
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 410 If = 2 → 418

SECTION D2: PHYSICAL INTIMATE PARTNER VIOLENCE

We are interested now in your relationships with girlfriends or wives.
In the whole of your life, including when you were a boy.

#	Question	Answer	Coding	Coding Value	Skip?
410	How many times have you ever slapped your current or previous <u>girlfriend or wife</u> or thrown something at her which could hurt her?			Never 1 Once 2 Few 3 Many 4	
411	How many times have you ever pushed or shoved your current or previous <u>girlfriend or wife</u> ?			Never 1 Once 2 Few 3 Many 4	
412	How many times have you ever hit your current or previous <u>girlfriend or wife</u> with a fist or with something else which could hurt her?			Never 1 Once 2 Few 3 Many 4	
413	How many times have you ever kicked, dragged, beaten, choked or burnt your current or previous <u>girlfriend or wife</u> ?			Never 1 Once 2 Few 3 Many 4	
414	How many times have you ever threatened to use or actually used a gun, knife or other weapon against your current or previous <u>girlfriend or wife</u> ?			Never 1 Once 2 Few 3 Many 4	
415	Have you done any of these things to your wife or a girlfriend in the last year?			Never 1 Once 2 Few 3 Many 4	

SECTION D3: SEXUAL INTIMATE PARTNER VIOLENCE

We are still asking questions about the whole of your life, including when you were a boy.

#	Question	Answer	Coding	Coding Value	Skip?
416	How many times have you ever physically forced your current or previous <u>girlfriend or wife</u> to have sex with you when she did not want to?			Never 1 Once 2 Few 3 Many 4	
417	How many times have you ever used threats or intimidation to get a girlfriend, partner or wife to have sex when she did not want to?			Never 1 Once 2 Few 3 Many 4	→ 501

SECTION D3: SEXUAL INTIMATE PARTNER VIOLENCE

The next few questions are about things you may have experienced with men in the whole of your life.

#	Question	Answer	Coding	Coding Value	Skip?
418	How many times has a current or previous husband or boyfriend ever physically forced you to have sex when you did not want to?			Never 1 Once 2 Few 3 Many 4	
419	How many times has a current or previous boyfriend, husband or partner ever used threats or intimidation to get you to have sex when you did not want to?			Never 1 Once 2 Few 3 Many 4	→ 501

SECTION E: HEALTH AND WELLBEING

We would now like to ask you some questions about your health and well-being.

E1: CES-D Scale.

The next questions we would like to ask are about how you have been feeling in the past week.

Each question is a statement; please answer how many days you have had particular feelings or ideas, or whether you have not had them at all.

There are four options: rarely or never, some or a little of the time, a moderate amount of time, or most or all of the time.

#	Question	Answer	Coding	Coding Value	Skip?
501	During the past week I was bothered by things that usually don't bother me	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
502	During the past week I did not feel like eating, my appetite was poor	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
503	During the past week I felt I could not cheer myself up even with the help of family and friends	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
504	During the past week I felt I was just as good as other people	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
505	During the past week I had trouble keeping my mind on what I was doing	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
506	During the past week I felt depressed	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
507	During the past week I felt that everything I did was an effort	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
508	During the past week I felt hopeful about the future	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
509	During the past week I thought my life had been a failure	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
510	During the past week I felt fearful	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
511	During the past week my sleep was restless	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
512	During the past week I was happy	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	

APPENDIX 1

Original English questionnaires for participating patients

SECTION E: HEALTH AND WELLBEING (continued)					
#	Question	Answer	Coding	Coding Value	Skip?
513	During the past week I talked less than usual	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
514	During the past week I felt lonely	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
515	During the past week people were unfriendly	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
516	During the past week I enjoyed life	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
517	During the past week I had crying spells	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
518	During the past week I felt sick	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
519	During the past week I felt that people dislike me	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
520	During the past week I could not get 'going'	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
521	Thinking about your whole life experience. Have you ever thought about ending your life?		Yes No	2 1	
522	Have you ever tried to take your life?		Yes No	2 1	
523	In the past <u>four weeks</u> , has the thought of ending your life been in your mind?		Yes No	2 1	

SECTION E2: SUBSTANCE USE

#	Question	Answer	Coding	Coding Value	Skip?
524	How often do you have a drink containing alcohol?		NEVER MONTHLY OR LESS 2-4 TIMES A MONTH 2-3 TIMES A WEEK 4 + TIMES A WEEK	1 2 3 4 5	If = 1 → 527
525	How many drinks containing alcohol do you have on a typical day when you are drinking?		1 OR 2 3 OR 4 5 OR 6 7 TO 9 10 OR MORE	1 2 3 4 5	
526	How often do you have six or more drinks on one occasion?		NEVER LESS THAN MONTHLY MONTHLY WEEKLY DAILY OR ALMOST DAILY	1 2 3 4 5	
527	In the last 12 months how many times have you used drugs to make you high or have a good time?		NEVER ONCE MORE THAN ONCE	1 2 3	

SECTION E3: PARTICIPATION IN CRIME SCALE

Please remember that everything you say is being kept secret.

In answering the questions we would like you to think back over the past 12 months.

#	Question	Answer	Coding	Coding Value	Skip?
528	How many times in the last 12 months have you been involved in a fight?		NEVER ONCE MORE THAN ONCE	1 2 3	
529	Have you ever been a member of a gang?		Yes No	2 1	

SECTION E4: DISABILITY

The next questions ask about difficulties you may have doing certain activities because of a HEALTH PROBLEM.

#	Question	Answer	Coding	Coding Value	Skip?
531	Do you have difficulty seeing, even if wearing glasses?		No - No difficulty Yes - some difficulty Yes - a lot of difficulty Cannot do at all	1 2 3 4	
532	Do you have difficulty hearing, even if using a hearing aid?		No - No difficulty Yes - some difficulty Yes - a lot of difficulty Cannot do at all	1 2 3 4	
533	Do you have difficulty walking or climbing steps?		No - No difficulty Yes - some difficulty Yes - a lot of difficulty Cannot do at all	1 2 3 4	
534	Do you have difficulty remembering or concentrating?		No - No difficulty Yes - some difficulty Yes - a lot of difficulty Cannot do at all	1 2 3 4	
535	Do you have difficulty speaking?		No - No difficulty Yes - some difficulty Yes - a lot of difficulty Cannot do at all	1 2 3 4	

SECTION E5: HOPE

These are the final questions we want you to answer about your own health.

#	Question	Answer	Coding	Coding Value	Skip?
536	I can think of many ways to get out of a difficult situation		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
537	I put lots of energy into pursuing my goals		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
538	There are lots of ways around any problem		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
539	I can think of many ways to get the things in life that are important to me		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
540	Even when others get discouraged, I know I can find a way to solve the problem		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
541	I meet the goals that I set for myself		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
					END.

1.2.1.2 Original English: Follow-up Questionnaire for participating patients (4 & 12 months)

CONFIRM AGE, GENDER, HIGHEST EDUCATION LEVEL ATTAINED ARE CORRECT FOR ENROLMENT NUMBER					
FOLLOW-UP QUESTIONNAIRE					
SECTION C: BACKGROUND					
The first questions are about yourself, your home and your work situation. Please try and relax, there are no right or wrong answers. Remember that everything you answer will be kept secret.					
#	Question	Answer	Coding	Coding Value	Skip?
101	How old are you?	Years			
102	What is your gender?	PARTICIPANT'S GENDER	Male Female	1 2	
103	Which race group do you consider yourself?		Black/African Colored White Indian/Asian Other	1 2 3 4 5	
104	What is the highest grade you have completed at school?		GRADE 1 GRADE 2 GRADE 3 GRADE 4 GRADE 5 GRADE 6 GRADE 7 GRADE 8 GRADE 9 GRADE 10 GRADE 11 GRADE 12	1 2 3 4 5 6 7 8 9 10 11 12	If = 12 → 105 OTHER- WISE → 106
105	Did you pass matric?		Yes No	2 1	
106	Are you currently studying?		Yes No	2 1	
107	Are you a member of any clubs or groups or societies?		Yes No	2 1	
108	Would you describe yourself as active in your church?		Yes No	2 1	
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 109 If = 2 → 110
109	Are you currently married or living with a woman or do you have a girlfriend?	CURRENTLY MARRIED, LIVING TOGETHER CURRENTLY MARRIED, NOT LIVING TOGETHER LIVING TOGETHER NOT MARRIED GIRLFRIEND, NOT LIVING TOGETHER NO CURRENT RELATIONSHIP		1 2 3 4 5	→ 111
110	Are you currently married or living with a man or do you have a boyfriend?	CURRENTLY MARRIED, LIVING TOGETHER CURRENTLY MARRIED, NOT LIVING TOGETHER LIVING TOGETHER NOT MARRIED BOYFRIEND, NOT LIVING TOGETHER NO CURRENT RELATIONSHIP		1 2 3 4 5	
111	How often do you and your partner quarrel?		RARELY SOMETIMES OFTEN	1 2 3	

SECTION D: WORK & MONEY

The first questions are about yourself, your home and your work situation.

Please try and relax, there are no right or wrong answers. Remember that everything you answer will be kept secret.

#	Question	Answer	Coding	Coding Value	Skip?
201	In the past 4 weeks, how often was there was no food to eat of any kind in your house because of a lack of money?		Often Sometimes Rarely Never	4 3 2 1	
202	In the past 4 weeks how often did you or any member of your household go to sleep hungry because of lack of food?		Often Sometimes Rarely Never	4 3 2 1	
203	In the past 4 weeks how often did you or any of your household go a whole day and night without eating because of lack of food?		Often Sometimes Rarely Never	4 3 2 1	
204	If you had an emergency at home and needed R200, how easy would you say it would be to find the money?		Very difficult Somewhat difficult Fairly easy Very Easy	1 2 3 4	
205	How often in the past 4 weeks have you had to borrow food or money because you did not have enough?		Every day More than once a week Almost every week Once or twice in the last 4 weeks Never	5 4 3 2 1	
206	In the past 12 months how often did you work?		Each month Most months Once in a while Never worked	4 3 2 1	
207	Have you worked or earned money in the last 3 months?		Yes No	2 1	
208	Considering all the money you earned from jobs or selling things, how much did you earn in the last 4 weeks (not including grants)?	R Number	Any earnings No earnings	1 0	
209	In the last 4 weeks did you receive a child support grant?		Yes No	2 1	
210	In the last 4 weeks did you receive a disability grant?		Yes No	2 1	

SECTION D: WORK & MONEY (continued)

The following series of statements are about how you see your life now:

#	Question	Answer	Coding	Coding Value	Skip?
211	In most ways my life is close to my ideal		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
212	The conditions of my life are excellent		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
213	I am satisfied with my life		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
214	So far I have gotten the important things I want in life		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 215 If = 2 → 216
215	Now we would like to ask you to think about yourself as a man and to think about what is important for a man of your age to be respected and successful. Please assess how successful you are on a scale between 1 and 4. Please choose 1 or a number nearer 1 if you think you are not successful and 5 or a number nearer 4 if you feel you are very successful.		Not successful Somewhat successful Fairly successful Very successful	1 2 3 4	→ 302
216	Now we would like to ask you to think about yourself as a woman and to think about what is important for a woman of your age to be respected and successful. Please assess how successful you are on a scale between 1 and 4. Please choose 1 or a number nearer 1 if you think you are not successful and 5 or a number nearer 4 if you feel you are very successful.		Not successful Somewhat successful Fairly successful Very successful	1 2 3 4	

SECTION E: SEXUAL BEHAVIOUR

The next questions are about your relationships. I know that these questions can be embarrassing. Please remember that all your answers will be kept secret and your name will not appear anywhere on the questionnaire. We are asking everyone in the study the same questions, and we know that women and men have a wide range of experiences.

#	Question	Answer	Coding	Coding Value	Skip?
à	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 302 If = 2 → 301
301	Which of the following statements most closely describes your experiences the first time you had sex?		I was willing I was persuaded I was forced I was raped Never had sex	1 2 3 4 5	If = 5 → 401
302	At what age did you first have sex?		12 and younger 13 14 15 16 17 18 19 20 and over Never had sex	1 2 3 4 5 6 7 8 9 10	If = 10 → 401
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 303 If = 2 → 304
303	How would you describe your sexual relationship with your main partner?		VERY SATISFYING SATISFYING UNSATISFYING VERY UNSATISFYING N/A – NO MAIN PARTNER	1 2 3 4 5	
304	The last time you had sex was it with a main partner, another partner (khwapeni) or one off partner or ex-partner?		MAIN PARTNER KHWAPENI ONE OFF EX-PARTNER	1 2 3 4	
305	The last time you had sex did you use a condom?		Yes No	2 1	
306	The last time you had sex with a khwapeni, or one-off partner did you use a condom?		Yes No	2 1	
307	How often have you used condoms in the last 12 months? Would you say you used them always, often or sometimes?		Always Often Sometimes Never	1 2 3 4	
308	How many main partners have you had sex with in the last 12 months?	Number	None	0	
309	How many khwapeni have you had sex with during the past 12 months?	Number	None	0	
310	How many men or women have you had sex with just once during the 12 months?	Number	None	0	
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 316 If = 2 → 311

SECTION E: SEXUAL BEHAVIOUR (continued)					
#	Question	Answer	Coding	Coding Value	Skip?
311	In the past 12 months have you started or stayed in a relationship with a main partner so that you could receive any of the following?				
312	Cash or money to be looked after?		Yes No	2 1	
313	Somewhere to stay?		Yes No	2 1	
314	Support or money for your children or family?		Yes No	2 1	
315	Drugs, food, cosmetics, clothes, a cell phone, airtime, transportation or anything else you couldn't afford by yourself?		Yes No	2 1	→ 325
316	In the past 12 months, please think about any woman you had sex with just once or any casual partner or khwapheeni. Do you think any of them may have become involved with you because they expected you to give or you gave them any of the following:				
317	Cash or money to be looked after?		Yes No	2 1	
318	Somewhere to stay?		Yes No	2 1	
319	Support or money for their children or family?		Yes No	2 1	
320	Drugs, food, cosmetics, clothes, a cell phone, airtime, transportation or anything else they could not afford?		Yes No	2 1	
321	Somewhere to sleep for the night, bills or school fees?		Yes No	2 1	
322	In the last 12 months have you had sex with a sex worker?		Yes No	2 1	
Children and contraception					
323	Do you have any biological children?		Yes No	2 1	If = 1 → 401
324	How many biological children?	Number			→ 401
325	Have you ever been pregnant?		Yes No	2 1	If = 1 → 401
326	How many children have you given birth to?	Number	None	0	If = 0 → 401
327	How old were you when you had your first child?		14 or Younger 15 16 17 18 19 20 or over	1 2 3 4 5 6 7	

SECTION D1: EMOTIONAL VIOLENCE

In any relationship there are good times and bad times, I now want to ask you about some of the bad times and what has happened. Remember there are no right or wrong answers.

#	Question	Answer	Coding	Coding Value	Skip?
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 410 If = 2 → 401
401	In the last 12 months how many times has your current or ex-boyfriend, partner or husband belittled or humiliated you?		Never Once Few Many	1 2 3 4	
402	In the last 12 months how many times has your current or ex-boyfriend, partner or husband done things to scare or intimidate you on purpose for example by the way he looked at you, by yelling and smashing things?		Never Once Few Many	1 2 3 4	
403	In the last 12 months how many times has your current or ex-boyfriend, partner or husband threatened to hurt you?		Never Once Few Many	1 2 3 4	
404	In the last 12 months how many times has your current or ex-boyfriend, partner or husband brought home girlfriends?		Never Once Few Many	1 2 3 4	

SECTION D2: PHYSICAL INTIMATE PARTNER VIOLENCE

Men and women often fight and these can get physical.

Some women find these questions hard to answer, others easy. Remember everything you share here will only be used for research purposes and will be kept secret. We are interested now in your relationships with boyfriends or husbands, either your current boyfriend or husband, or ANY other previous boyfriend or husband, from any time in your life.

#	Question	Answer	Coding	Coding Value	Skip?
405	How many times has a current or previous husband or boyfriend ever slapped you or thrown something at you which could hurt you?		Never Once Few Many	1 2 3 4	
406	How many times has a current or previous husband or boyfriend ever pushed or shoved you?		Never Once Few Many	1 2 3 4	
407	How many times has a current or previous husband or boyfriend ever hit you with a fist or with something else which could hurt you?		Never Once Few Many	1 2 3 4	
408	How many times has a current or previous husband or boyfriend ever kicked, dragged, beaten, choked or burnt you?		Never Once Few Many	1 2 3 4	
409	How many times has a current or previous husband or boyfriend ever threatened to use or actually used a gun, knife or other weapon against you?		Never Once Few Many	1 2 3 4	→ 418
→	PARTICIPANT'S GENDER		Male Female	1 2	If = 1 → 410 If = 2 → 418

SECTION D2: PHYSICAL INTIMATE PARTNER VIOLENCE

We are interested now in your relationships with girlfriends or wives.
In the whole of your life, including when you were a boy.

#	Question	Answer	Coding	Coding Value	Skip?
410	How many times have you ever slapped your current or previous <u>girlfriend or wife</u> or thrown something at her which could hurt her?			Never 1 Once 2 Few 3 Many 4	
411	How many times have you ever pushed or shoved your current or previous <u>girlfriend or wife</u> ?			Never 1 Once 2 Few 3 Many 4	
412	How many times have you ever hit your current or previous <u>girlfriend or wife</u> with a fist or with something else which could hurt her?			Never 1 Once 2 Few 3 Many 4	
413	How many times have you ever kicked, dragged, beaten, choked or burnt your current or previous <u>girlfriend or wife</u> ?			Never 1 Once 2 Few 3 Many 4	
414	How many times have you ever threatened to use or actually used a gun, knife or other weapon against your current or previous <u>girlfriend or wife</u> ?			Never 1 Once 2 Few 3 Many 4	
415	Have you done any of these things to your wife or a girlfriend in the last year?			Never 1 Once 2 Few 3 Many 4	

SECTION D3: SEXUAL INTIMATE PARTNER VIOLENCE

We are still asking questions about the whole of your life, including when you were a boy.

#	Question	Answer	Coding	Coding Value	Skip?
416	How many times have you ever physically forced your current or previous <u>girlfriend or wife</u> to have sex with you when she did not want to?			Never 1 Once 2 Few 3 Many 4	
417	How many times have you ever used threats or intimidation to get a girlfriend, partner or wife to have sex when she did not want to?			Never 1 Once 2 Few 3 Many 4	→ 501

SECTION D3: SEXUAL INTIMATE PARTNER VIOLENCE

The next few questions are about things you may have experienced with men in the whole of your life.

#	Question	Answer	Coding	Coding Value	Skip?
418	How many times has a current or previous husband or boyfriend ever physically forced you to have sex when you did not want to?			Never 1 Once 2 Few 3 Many 4	
419	How many times has a current or previous boyfriend, husband or partner ever used threats or intimidation to get you to have sex when you did not want to?			Never 1 Once 2 Few 3 Many 4	→ 501

SECTION E: HEALTH AND WELLBEING

We would now like to ask you some questions about your health and well-being.

E1: CES-D Scale.

The next questions we would like to ask are about how you have been feeling in the past week.

Each question is a statement; please answer how many days you have had particular feelings or ideas, or whether you have not had them at all.

There are four options: rarely or never, some or a little of the time, a moderate amount of time, or most or all of the time.

#	Question	Answer	Coding	Coding Value	Skip?
501	During the past week I was bothered by things that usually don't bother me	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
502	During the past week I did not feel like eating, my appetite was poor	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
503	During the past week I felt I could not cheer myself up even with the help of family and friends	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
504	During the past week I felt I was just as good as other people	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
505	During the past week I had trouble keeping my mind on what I was doing	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
506	During the past week I felt depressed	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
507	During the past week I felt that everything I did was an effort	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
508	During the past week I felt hopeful about the future	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
509	During the past week I thought my life had been a failure	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
510	During the past week I felt fearful	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
511	During the past week my sleep was restless	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
512	During the past week I was happy	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	

SECTION E: HEALTH AND WELLBEING (continued)

We would now like to ask you some questions about your health and well-being.

#	Question	Answer	Coding	Coding Value	Skip?
513	During the past week I talked less than usual	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
514	During the past week I felt lonely	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
515	During the past week people were unfriendly	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
516	During the past week I enjoyed life	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
517	During the past week I had crying spells	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
518	During the past week I felt sick	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
519	During the past week I felt that people dislike me	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
520	During the past week I could not get 'going'	CES-D SCALE	Rarely/ None of the time Some/ a little of the time (1-2 days) Moderate amount of time (3-4 days) Most/ all f the time (5-7 days)	0 1 2 3	
521	Thinking about your whole life experience. Have you ever thought about ending your life?			Yes 2 No 1	
522	Have you ever tried to take your life?			Yes 2 No 1	
523	In the past <u>four weeks</u> , has the thought of ending your life been in your mind?			Yes 2 No 1	

APPENDIX 1

Original English questionnaires for participating patients

SECTION E2: SUBSTANCE USE					
#	Question	Answer	Coding	Coding Value	Skip?
524	How often do you have a drink containing alcohol?		NEVER MONTHLY OR LESS 2-4 TIMES A MONTH 2-3 TIMES A WEEK 4 + TIMES A WEEK	1 2 3 4 5	If = 1 → 527
525	How many drinks containing alcohol do you have on a typical day when you are drinking?		1 OR 2 3 OR 4 5 OR 6 7 TO 9 10 OR MORE	1 2 3 4 5	
526	How often do you have six or more drinks on one occasion?		NEVER LESS THAN MONTHLY MONTHLY WEEKLY DAILY OR ALMOST DAILY	1 2 3 4 5	
527	In the last 12 months how many times have you used drugs to make you high or have a good time?		NEVER ONCE MORE THAN ONCE	1 2 3	

SECTION E3: PARTICIPATION IN CRIME SCALE					
Please remember that everything you say is being kept secret. In answering the questions we would like you to think back over the past 12 months.					
#	Question	Answer	Coding	Coding Value	Skip?
528	How many times in the last 12 months have you been involved in a fight?		NEVER ONCE MORE THAN ONCE	1 2 3	
529	Have you ever been a member of a gang?		Yes No	2 1	

SECTION E4: DISABILITY					
The next questions ask about difficulties you may have doing certain activities because of a HEALTH PROBLEM.					
#	Question	Answer	Coding	Coding Value	Skip?
531	Do you have difficulty seeing, even if wearing glasses?		No - No difficulty Yes - some difficulty Yes - a lot of difficulty Cannot do at all	1 2 3 4	
532	Do you have difficulty hearing, even if using a hearing aid?		No - No difficulty Yes - some difficulty Yes - a lot of difficulty Cannot do at all	1 2 3 4	
533	Do you have difficulty walking or climbing steps?		No - No difficulty Yes - some difficulty Yes - a lot of difficulty Cannot do at all	1 2 3 4	
534	Do you have difficulty remembering or concentrating?		No - No difficulty Yes - some difficulty Yes - a lot of difficulty Cannot do at all	1 2 3 4	
535	Do you have difficulty speaking?		No - No difficulty Yes - some difficulty Yes - a lot of difficulty Cannot do at all	1 2 3 4	

SECTION E5: HOPE

These are the final questions we want you to answer about your own health.

#	Question	Answer	Coding	Coding Value	Skip?
536	I can think of many ways to get out of a difficult situation		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
537	I put lots of energy into pursuing my goals		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
538	There are lots of ways around any problem		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
539	I can think of many ways to get the things in life that are important to me		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
540	Even when others get discouraged, I know I can find a way to solve the problem		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
541	I meet the goals that I set for myself		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	

SECTION F1: EXPERIENCE & UTILISATION OF HEALTH SERVICES

As I explained, we are talking today to people who have recently tested for HIV and who have come back to be part of our study that looks at people's experiences after testing for HIV.

In this interview, I am going to ask you some questions about your experiences. If any these questions make you feel uncomfortable, please let me know and we can skip them or stop the interview altogether.

#	Question	Answer	Coding	Coding Value	Skip?
601	What was the date you had your most recent HIV test?	DD-MM-YYYY	Same test as led to enrolment into study More recent test since test initiating enrolment	2 1	
	My records say you were tested on DATE OF TESTING AS NOTED ABOVE Does that sound right?		Yes No	2 1	
602	Where did you have your HIV test?	Name of HCT site	Same facility as led to enrolment into study If had a more recent test, had it at a different facility	2 1	
603	How did you get there on the day you had your HIV test?		On foot Public transport (bus/ van/ kombi) Private transport (own /someone else's vehicle) Other	1 2 3 4	
604	How long did it take you to get there?		Less than 30 minutes 30 – 60 minutes More than 1 hour	1 2 3	

APPENDIX 1

Original English questionnaires for participating patients

SECTION F2: REASON FOR TESTING, DISCLOSURE & CONFIDENTIALITY					
#	Question	Answer	Coding	Coding Value	Skip?
605	When you first found out that you were HIV+, what had led you to get tested?		Felt ill Someone suggested it Thought I might be HIV +ve Opportunity was presented when attending health facility No specific reason	1 2 3 4 5	
606	How would you describe the reactions of these people (in general) when they first knew about your HIV status?				
607	Your husband/ wife/ partner		Very discriminatory Discriminatory No different Supportive Very supportive	1 2 3 4 5	
608	Other adult family members		Very discriminatory Discriminatory No different Supportive Very supportive	1 2 3 4 5	
609	Children in your family		Very discriminatory Discriminatory No different Supportive Very supportive	1 2 3 4 5	
610	Your friends/ neighbours		Very discriminatory Discriminatory No different Supportive Very supportive	1 2 3 4 5	
611	People you work with (your co-workers)		Very discriminatory Discriminatory No different Supportive Very supportive	1 2 3 4 5	
612	The next questions are about how confidential you think the medical records relating to your HIV status are. How much do you agree with the following statements?				
613	I am sure that my medical records will be kept completely confidential		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
614	I don't know if my medical records are confidential		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	
615	It is clear to me that my medical records are not being kept confidential		Definitely false Mostly false Mostly true Definitely true	1 2 3 4	

SECTION F3: ENROLLING IN CARE – BARRIERS, EXPECTED OUTCOMES AND PERCEIVED NORMS

These next questions ask about your thoughts about coming back to the clinic.

#	Question	Answer	Coding	Coding Value	Skip?
616	When you first learned you were HIV+ did you return to the clinic when the counsellor told you to do so, or did you wait awhile before returning to the clinic?		Returned on time Returned up to 2 weeks late Returned up to 4 weeks late Returned in 2-3 months Did not return within 3 months	1 2 3 4 5	
617	Since you first learned you were HIV+, have you been saying to yourself "this isn't real"?		Not at all Once or twice Several times Most of the time	0 1 2 3	
Now I have some questions about any tests you've had since you learned you were HIV positive					
618	Was this your first HIV test?		Yes No	2 1	If = 2 → 621
619	How many times have you previously tested?	Number	None	0	
620	How many times have you previously had a positive HIV result from a test?	Number	None	0	
622	have you had your blood taken for a CD4 test?		Yes No	2 1	If = 2 → 623 If = 1 → 625
623a	If so, where was that?	Clinic name	PHC clinic PHC CHC PHC Gateway District or regional hospital	1 2 3 4	
623b	Data entry only		Same sub-district as HCT Different sub-district, same district Different district Different province	1 2 3 4	
624	When did it happen?		Within 1 month Within 3 months Within 12 months	1 2 3	→ 626
625	Can you tell me why you have not had your blood taken for a CD4 count?				
a	Did not believe s/he was HIV+		Yes No	2 1	
b	Was afraid to learn the CD4 test results		Yes No	2 1	
c	Did not have time to stay for CD4 test on the day s/he was HIV tested		Yes No	2 1	
d	Did not have money for transport		Yes No	2 1	
e	Was unable to take time off from work		Yes No	2 1	
f	Did not have someone to care for people at home		Yes No	2 1	
g	Health workers at clinic did not offer		Yes No	2 1	→ 631
Confirmation of whether participant received CD4 results					
626	Have you been given the results of your CD4 test?		Did not get CD4 count results Did get CD4 count results	0 1	If = 0 → 631
627	How easy or hard was it to get the CD4 test result?		Very easy Easy Hard Very hard	4 3 2 1	
628	What made it (easy/hard)?	Up to 20 words	Code later		
629	Can you tell me your CD4 count?		No/ not sure Yes	0 1	If = 0 → 631
630	What was your CD4 count?	Number			

SECTION F4: DETERMINATION OF NEXT HIV-RELATED STEP

After people should get their CD4 count, most people are told what their next step in HIV care is.

#	Question	Answer	Coding	Coding Value	Skip?
631	Were you told the next thing you should do was:				
632	Return for a treatment education class?		Yes No	2 1	
633	Return in 3 months for a CD4 test?		Yes No	2 1	
634	Return in 6 month for a CD4 test?		Yes No	2 1	
635	Get a pap smear?		Yes No	2 1	
636	Get a TB test/ TB treatment?		Yes No	2 1	
637	Commence preparation for ART initiation?		Yes No	2 1	
638	Did they give you a letter or appointment card for your next appointment?		Yes No	2 1	
639	Did it have a written return date?		Yes No	2 1	
640	How sure or unsure are you that you will be able to return to the clinic for that next visit when they told you to return?		Very sure Somewhat sure Fairly unsure Very unsure	4 3 2 1	
641	Since you found out were HIV+, have you attended a support group for HIV+ people?		Yes No	2 1	If = 1 → 643
642	Where was that?	Name of group's meeting place	Public sector clinic Public sector hospital Mobile NGO/ CBO/ FBO Somebody's home Other community setting	1 2 3 4 5 6	
643	In the past year, have you been hospitalized overnight?		Yes No	2 1	

SECTION F5: BARRIERS TO CARE AND SELF-EFFICACY

There are many reasons why it may be difficult for people to go to a clinic for HIV care.

The following statements are reasons some people give for why they delay returning to the clinic for their next visit.

#	Question	Answer	Coding	Coding Value	Skip?
644	It is difficult for you to take time away from your work.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
645	The clinic is too far away from where you stay.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
646	You do not have money for transport.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
647	You do not have someone to take care of a child or adult at home.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
648	The times or days that they gave you are not convenient for you.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
649	You don't feel really sick so you think it is okay to wait awhile before returning.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
650	Your partner does not want you to go to the clinic.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
651	You feel too sick to go to the clinic.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
652	You prefer to go to a traditional healer instead.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
653	You are concerned you'd have to stop smoking and/or drinking.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
654	You don't want to tell anyone about your HIV status, which you have to do before you get ARVs.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	

APPENDIX 1

Original English questionnaires for participating patients

SECTION F5: BARRIERS TO CARE AND SELF-EFFICACY (continued)					
#	Question	Answer	Coding	Coding Value	Skip?
655	You don't see any reason to return to the clinic as there is not much that can be done anyway.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
	Thinking about the things you just said might make it difficult for you to return to the clinic, how do you feel about returning to the clinic?				
656	It would be very hard to return to the clinic when the counsellor/ nurse told you to		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
657	You would feel good about returning to the clinic when the counsellor/ nurse told you to return		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	

SECTION F6: SATISFACTION WITH CARE

Please think about your visit to the clinic when you received your HIV positive test result.
I'd like to know how you felt about the way you were treated at that visit by the counsellor (or nurse) who saw you.
When you visited the clinic to get tested for HIV, the counsellor/nurse who saw you.....

#	Question	Answer	Coding	Coding Value	Skip?
658	Did not have time for you.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
659	Criticized you.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
660	Guided you as to what you must do next.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
661	Did not understand your situation.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
662	Gave you helpful information.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
663	Was patient with you.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
664	Humiliated you.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	

SECTION F7: ATTITUDES TOWARDS ARVS AND OTHER TREATMENTS

I will read some statements about antiretrovirals, or ARVs, which are drugs that are used to treat HIV/AIDS. These are statements that people have different opinions about. For each statement, some people agree and some disagree. I would like to know what YOU, yourself, think.

#	Question	Answer	Coding	Coding Value	Skip?
665	ARVs help most HIV+ people feel stronger.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
666	ARVs are not safe for HIV+ people.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
667	ARVs help most HIV+ people to live longer.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
668	ARVs harm you more than they help you. For example, if you have HIV but are not sick from it, taking ARVs will make you sick.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
669	It's easy to take ARV drugs.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	
670	You do not want to take ARVs because it might change your body shape.		STRONGLY DISAGREE DISAGREE NEITHER AGREE OR DISAGREE AGREE STRONGLY AGREE	1 2 3 4 5	

SECTION G. EXTERNAL STIGMA					
#	Question	Answer	Coding	Coding Value	Skip?
701	In the last 12 months, how often have you been:				
702	Excluded from social gatherings or activities (like weddings, funerals, parties, clubs) because you have HIV?		Never Once A few times Often	1 2 3 4	
703	Excluded from family activities (like cooking, eating together, sleeping in the same room) because you have HIV?		Never Once A few times Often	1 2 3 4	
704	Harassed or threatened because you have HIV?		Never Once A few times Often	1 2 3 4	
705	Physically assaulted because you have HIV?		Never Once A few times Often	1 2 3 4	
706	Verbally insulted or humiliated in front of others because you have HIV?		Never Once A few times Often	1 2 3 4	
707	Thrown out of your home because you have HIV?		Never Once A few times Often	1 2 3 4	
901	Data entry only	Which questionnaire: Baseline/ 4 month/ 12 month			
902	Data entry only	Uploaded to database by: first name - last name			
903	Data entry only	Questionnaire date: DD-MM-YYYY			
904	Data entry only	Upload confirmed?	Yes No	2 1	END.

Appendix 2:

Missing information from the baseline cohort data (N=5,637)

Variable	N (%)	95% CI
Nationality: South African citizen	0	-
Sex	0	-
Ethnicity	0	-
Education	71 (1.3)	1.0-1.6
Age	10 (0.2)	0.1-0.3
Marital status – males	52 (3.0)	2.3-4.0
Marital status – females	68 (1.7)	1.3-2.2
Active club member	92 (1.6)	1.3-2.0
Active member in church	90 (1.6)	1.3-2.0
Lack of money to buy food in the past 4 weeks /sleeping hungry and went hungry day & night	93 (1.7)	1.3-2.0
Ease of finding R200 for emergency cases	112 (2.0)	1.6-2.4
Worked in the past 12 months	135 (2.4)	2.0-2.8
Worked in the past 3 months	139 (2.5)	2.1-2.9
Earned income in the past 4 weeks from selling things	152 (2.7)	2.3-3.2
Received child support grant	126 (2.2)	1.9-2.7
Received disability grant	139 (2.5)	2.1-2.9
HIV Status	296 (5.3)	4.7-5.9
Alcohol use	158 (2.8)	2.4-3.3
Drug use	167 (3.0)	2.5-3.4
Education level attained	71 (1.3)	1.0-1.6
Reasons for testing for HIV	227 (4.0)	3.5-4.6
First sexual experience	4,136 (73.4)	72.2-74.5
Age at first sexual experience	4,228 (75.0)	73.9-76.1
Condom use with main partner	3,872 (68.7)	67.5-70.0
Condom use with side partner	3,945 (70.0)	68.8-71.2
Frequency of condom use	3,874 (68.7)	67.5-69.9
Number of sexual partners	3,882 (68.9)	67.6-70.1
Number of umakhwapheni (side or once off partner)	3,890 (69.0)	67.8-70.2
Sexual relationship with partner	4,257 (75.5)	74.4-76.6
Mode of transport to the testing facilities	72 (1.3)	1.0-1.6
Time to get to the testing facility	103 (1.8)	1.5-2.2
Alcohol use (frequency)	158 (2.8)	2.4-3.3
Drug use (frequency)	167 (3.0)	2.5-3.4
Difficulty seeing	148 (2.6)	2.2-3.1
Difficulty hearing	151 (2.7)	2.3-3.1
Difficulty walking	162 (2.9)	2.5-3.3
Difficulty remembering	158 (2.8)	2.4-3.3
Difficulty speaking	163 (2.9)	2.5-3.4
Intimate partner violence (males)	98 (5.7)	4.7-6.9
Intimate partner violence (females)	196 (5.0)	4.3-5.7
Emotional partner violence (females)	202 (5.2)	4.5-5.9

Appendix 3:

Missing information from the 4-month cohort data (N=901)

Variable	N (%)	95% CI
Age	41 (4.6)	3.3-6.1
Sex	42 (4.7)	3.4-6.2
Highest education attained	43 (4.8)	3.5-6.4
Lack of money to buy food in the past 4 weeks /sleeping hungry and went hungry day & night	8 (0.9)	0.4-1.7
Ease of finding R200 for emergency cases	8 (0.9)	0.4-1.7
Worked in the past 12 months	9 (1.0)	0.5-1.9
Worked in the past 3 months	11 (1.2)	0.6-2.2
Earned income in the past 4 weeks from selling things	8 (0.9)	0.4-1.7
Received child support grant	8 (0.9)	0.4-1.7
Received disability grant	8 (0.9)	0.4-1.7
Family member reaction to status	51 (5.7)	4.2-7.4
Children reaction to status	52 (5.8)	4.3-7.5
Co-worker reaction to status	75 (8.3)	6.6-10.3
Mode of transport to the testing facilities	51 (5.7)	4.2-7.4
Time to get to the testing facility	310 (34.4)	31.3-37.6
Marital status (males)	5 (2.0)	0.6-4.5
Marital status (females)	201 (33.2)	29.5-37.1
Did you return to clinic after result?	9 (1.0)	0.5-1.9
Have you been saying it's not real?	11 (1.2)	0.6-2.2
Ease of getting time off work	22 (2.4)	1.5-3.7
Clinic too far from where I stay	12 (1.3)	0.7-2.3
No money for transport	12 (1.3)	0.7-2.3
Someone to take care of at home	13 (1.4)	0.8-2.5
Time they gave me is inconvenient	13 (1.4)	0.8-2.5
No need to return since I am not sick	10 (1.1)	0.5-2.0
Partner doesn't allow clinic visits	14 (1.6)	0.9-2.6
Fell too sick to go to the clinic	11 (1.2)	0.6-2.2
Prefer a traditional/spiritual healer	12 (1.3)	0.7-2.3
Don't want to tell about status	12 (1.3)	0.7-2.3
No need to return as not much can be done	12 (1.3)	0.7-2.3
Hard to return to clinic if nurse told you to	13 (1.4)	0.8-2.5
Feel good about returning when told to	11 (1.2)	0.6-2.2
Return for treatment education class	240 (26.6)	23.8-29.7
Return for CD4 in 3 months	243 (27.0)	24.1-30.0
Return for CD4 in 6 months	250 (27.7)	24.8-30.8
Commerce preparation for ART initiation	241 (26.7)	23.9-29.8
Give you a letter for next appointment	241 (26.7)	23.9-29.8
Have a written return date	243 (27.0)	24.1-30.0
How sure are you that you will return	300 (33.3)	30.2-36.5
Have you joined a HIV support group	17 (1.9)	1.1-3.0
Hospitalised overnight in the past year	15 (1.7)	0.9-2.7
No time for me	13 (1.4)	0.8-2.5
Criticized you	13 (1.4)	0.8-2.5
Guided you on what to do next	16 (1.8)	1.0-2.9
Did not understand your situation	15 (1.7)	0.9-2.7
Gave helpful information	15 (1.7)	0.9-2.7
Patient with me	15 (1.7)	0.9-2.7
Humiliated you	17 (1.9)	1.1-3.0
Excluded from gatherings like weddings/clubs	15 (1.7)	0.9-2.7
Excluded from family gatherings like cooking	15 (1.7)	0.9-2.7
Harassed or threatened	17 (1.9)	1.1-3.0
Physically assaulted	18 (2.0)	1.2-3.1
Verbally insulted or humiliated	18 (2.0)	1.2-3.1
Thrown out of your home	17 (1.9)	1.1-3.0

Appendix 4:

Baseline characteristics of participants with 95% Confidence Interval and disaggregated by HIV status and sub-district (N=5,637)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Nationality: South African citizen								
Total	2,823/2,867	98.5	1,025/1,032	99.3	1,724/1,738	99.2	5,572/5,637	98.9
HIV status								
HIV positive	615/624	98.6	139/141	98.6	427/429	99.5	1,181/1,194	99.2
HIV negative	2,120/2,152	98.5	708/712	99.4	1,271/1,283	99.1	4,099/4,147	99.6
p-value		0.94		0.27		0.35		0.84
Missing information, %	88/91	96.7 (91-99)	178/179	99.4 (97-100)	26/26	100 (87-100)	292/296	98.7 (97-100)
Sex reported as female								
Total	1,963/2,867	68.5	834/1,032	80.8	1,124/1,738	64.7	3,921/5,637	69.6
HIV status								
HIV positive	437/624	70.0	114/141	80.9	296/429	69.0	847/1194	70.9
HIV negative	1462/2152	67.9	570/712	80.1	811/1283	63.2	2843/4147	68.6
p-value		0.32		0.83		0.03		0.12
Missing information	64/91	70.3 (60-79)	150/179	83.8 (78-89)	17/26	65.4 (44-83)	231/296	78.0 (73-83)
Ethnicity reported as Black African								
Total	2,855/2,867	99.6	1,030/1,032	100	1,734/1,738	99.8	5,619/5,637	99.7
HIV status								
HIV positive	622/624	99.7	141/141	100	428/429	99.8	1191/1194	99.8
HIV negative	2142/2152	99.5	712/712	100	1280/1283	99.8	4134/4147	99.7
p-value		0.63	-			1.00		0.73
Missing information	91/91	100 (96-100)	177/179	98.9 (96-100)	26/26	100 (87-100)	294/296	99.3 (98-100)
No education								
Total	53/2,867	1.9	28/1032	2.7	26/1,738	1.5	107/5,637	1.9
HIV status								
HIV positive	11/624	1.8	1/141	0.7	9/429	2.1	21/1194	1.8
HIV negative	42/2152	2.0	22/712	3.1	17/1283	1.3	81/4147	2.0
p-value		0.76		0.11		0.26		0.67
Missing information	0/91	0 (0-4)	5/179	2.8 (1-6)	0/26	0 (0-13)	5/296	1.7 (1-4)
Primary education								
Total	162/2,867	5.7	86/1032	8.3	88/1,738	5.1	336/5,637	6.0
HIV status								
HIV positive	32/624	5.1	10/141	7.1	18/429	4.2	60/1194	5.0
HIV negative	128/2152	6.0	61/712	8.6	67/1283	5.2	256/4147	6.2
p-value		0.44		0.56		0.40		0.14
Missing information	2/91	2.2 (0-8)	15/179	8.4 (5-13)	3/26	11.5 (2-30)	20/296	6.8 (4-10)

Appendix 4:

Baseline characteristics of participants with 95% Confidence Interval and disaggregated by HIV status and sub-district (N=5,637) (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
High School education								
Total	1,477/2,867	51.5	528/1032	51.2	861/1,738	49.5	2866/5,637	50.8
HIV status								
HIV positive	359/624	57.5	75/141	53.2	244/429	56.9	678/1194	56.8
HIV negative	1071/2152	49.8	357/712	50.1	608/1283	47.4	2036/4147	49.1
p-value		0.001		0.51		0.001		<0.001
Missing information	47/91	51.7 (41-62)	96/179	53.6 (46-61)	9/26	34.6 (17-56)	152/296	51.4 (45-57)
Post matriculation								
Total	1,158/2867	40.4	357/1032	34.6	742/1738	42.7	2,257/5637	40.0
HIV status								
HIV positive	219/624	35.1	49/141	34.8	151/429	35.2	419/1194	35.1
HIV negative	897/2152	41.7	253/712	35.5	577/1283	45.0	1727/4147	41.6
p-value		0.003		0.86		<0.001		<0.001
Missing information	42/91	46.2 (36-57)	55/179	30.7 (24-38)	14/26	53.8 (33-73)	111/296	37.5 (32-43)
Age category – 18-24 years								
Total	1025/2867	35.8	337/1032	32.7	581/1738	33.4	1943/5637	34.5
HIV status								
HIV positive	130/624	20.8	32/141	22.7	96/429	22.4	258/1194	21.6
HIV negative	851/2152	39.5	241/712	33.9	474/1283	36.9	1566/4147	37.8
p-value		<0.001		0.01		<0.001		<0.001
Missing information	44/91	48.4 (38-59)	64/179	35.8 (29-43)	11/26	42.3 (23-63)	119/296	40.2 (35-46)
Age category – 25-29 years								
Total	665/2863	23.2	239/1032	23.2	406/1738	23.4	1310/5637	23.3
HIV status								
HIV positive	155/624	24.8	49/141	34.8	101/429	23.5	305/1194	25.5
HIV negative	485/2152	22.5	152/712	21.4	302/1283	23.5	939/4147	22.6
p-value		0.23		0.001		1.00		0.04
Missing information	25/91	27.5 (19-38)	38/179	21.2 (15-28)	3/26	11.5 (2-30)	66/296	22.3 (18-27)
Age category – 30-34 years								
Total	462/2863	16.1	160/1032	15.5	294/1738	16.9	916/5637	16.3
HIV status								
HIV positive	131/624	21.0	24/141	17.0	95/429	22.1	250/1194	20.9
HIV negative	321/2152	14.9	106/712	14.9	196/1283	15.3	623/4147	15.0
p-value		<0.001		0.52		0.001		<0.001
Missing information	10/91	11.0 (5-19)	30/179	16.8 (12-23)	3/26	11.5 (2-30)	43/296	14.5 (11-19)

APPENDIX 4

Baseline characteristics of participants with 95% Confidence Interval and disaggregated by HIV status and sub-district (N=5,637)

Appendix 4:

Baseline characteristics of participants with 95% Confidence Interval and disaggregated by HIV status and sub-district (N=5,637) (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Age category – 35-49 years								
Total	502/2867	17.5	204/1032	19.8	323/1738	18.6	1029/5637	18.3
HIV status								
HIV positive	168/624	26.9	32/141	22.7	118/429	27.5	318/1194	26.6
HIV negative	325/2152	15.1	140/712	19.7	200/1283	15.6	665/4147	16.0
p-value		<0.001		0.41		<0.001		<0.001
Missing information	9/91	9.9 (5-18)	32/179	17.9 (13-24)	5/26	19.2 (7-39)	46/296	15.5 (12-20)
Age category – 50+ years								
Total	209/2867	7.3	92/1032	8.9	128/1738	7.4	429/5637	7.6
HIV status								
HIV positive	39/624	6.3	4/141	2.8	19/429	4.4	62/1194	5.2
HIV negative	167/2152	7.8	73/712	10.3	107/1283	8.3	347/4147	8.4
p-value		0.21		0.01		0.01		<0.001
Missing information	3/91	3.3 (1-9)	15/179	8.4 (5-13)	2/26	7.7 (1-25)	20/296	6.8 (4-10)
Marital status in males – single								
Total	110/904	12.2	15/198	7.6	62/614	10.1	187/1716	10.9
HIV status								
HIV positive	21/187	11.2	2/27	7.4	14/133	10.5	37/347	10.7
HIV negative	83/690	12.0	12/142	8.5	47/472	10.0	142/1304	10.9
p-value		0.76		0.86		0.85		0.90
Missing information	6/27	22.2 (9-42)	1/29	3.5 (0-18)	1/9	11.1 (0-48)	8/65	12.3 (5-23)
Marital status in females – single								
Total	295/1,963	15.0	71/834	8.5	108/1,124	9.6	474/3,921	12.1
HIV status								
HIV positive	83/437	19.0	12/114	10.5	36/296	12.2	131/847	15.5
HIV negative	201/1462	13.8	45/570	7.9	72/811	8.9	318/2843	11.2
p-value		0.01		0.35		0.10		0.001
Missing information	11/64	17.2 (9-29)	14/150	9.3 (5-15)	0/17	0 (0-20)	25/231	10.8 (7-16)
Marital status in males – dating								
Total	570/904	63.1	103/198	52.0	372/614	60.6	1045/1716	60.9
HIV status								
HIV positive	105/187	56.2	11/27	40.7	75/133	56.4	191/347	55.0
HIV negative	448/690	64.9	75/142	52.8	293/472	62.1	816/1304	62.6
p-value		0.03		0.25		0.24		0.01
Missing information	17/27	63.0 (42-81)	17/29	58.6 (40-76)	4/9	44.4 (14-79)	38/65	58.5 (46-71)

Appendix 4:

Baseline characteristics of participants with 95% Confidence Interval and disaggregated by HIV status and sub-district (N=5,637) (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Marital status in females – dating								
Total	1236/1963	63.0	435/834	52.2	763/1124	67.9	2434/3921	62.1
HIV status								
HIV positive	263/437	60.2	71/114	62.3	202/296	68.2	536/847	63.3
HIV negative	931/1462	63.7	287/570	50.4	547/811	67.5	1765/2843	62.1
p-value		0.18		0.02		0.80		0.53
Missing information	42/64	65.6 (53-77)	77/150	51.3 (43-60)	14/17	82.4 (57-96)	133/231	57.6 (51-64)
Marital status in males – cohabiting								
Total	120/904	13.3	35/198	17.7	92/614	15.0	247/1716	14.4
HIV status								
HIV positive	40/187	21.4	11/27	40.7	18/133	13.5	69/347	19.9
HIV negative	79/690	11.5	21/142	14.8	72/472	15.3	172/1304	13.2
p-value		<0.001		0.002		0.62		0.002
Missing information	1/27	3.7 (0-19)	3/29	10.3 (2-27)	2/9	22.2 (3-60)	6/65	9.2 (3-19)
Marital status in females – cohabiting								
Total	241/1,963	12.3	157/834	18.8	79/1124	7.0	477/3921	12.2
HIV status								
HIV positive	57/437	13.0	17/114	14.9	26/296	8.8	100/847	11.8
HIV negative	177/1462	12.1	116/570	20.4	53/811	6.5	346/2843	12.2
p-value		0.60		0.18		0.20		0.78
Missing information	7/64	10.9 (5-21)	24/150	16.0 (11-23)	0/17	0 (0-20)	31/231	13.4 (9-19)
Marital status in males – married (living separately)								
Total	16/904	1.8	2/198	1.0	15/614	2.4	33/1716	1.9
HIV status								
HIV positive	1/187	0.5	0/27	-	4/133	3.0	5/347	1.4
HIV negative	15/690	2.2	2/142	1.4	10/472	2.1	27/1304	2.1
p-value		0.14		0.54		0.55		0.45
Missing information	0/27	0 (0-13)	0/29	0 (0-12)	1/9	11.1 (0-48)	1/65	1.5 (0-8)
Marital status in females - married (living separately)								
Total	51/1963	2.6	49/834	5.9	45/1124	4.0	145/3921	3.7
HIV status								
HIV positive	12/437	2.8	7/114	6.1	8/296	2.7	27/847	3.2
HIV negative	37/1462	2.5	30/570	5.3	35/811	4.3	102/2843	3.6
p-value		0.80		0.71		0.22		0.58
Missing information	2/64	3.1 (0-11)	12/150	8.0 (4-14)	2/17	11.8 (1-36)	16/231	6.9 (4-11)

APPENDIX 4

Baseline characteristics of participants with 95% Confidence Interval and disaggregated by HIV status and sub-district (N=5,637)

Appendix 4:

Baseline characteristics of participants with 95% Confidence Interval and disaggregated by HIV status and sub-district (N=5,637) (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Marital status in males – married (living together)								
Total	73/904	8.1	19/198	9.6	60/614	9.8	152/1716	8.9
HIV status								
HIV positive	16/187	8.6	1/27	3.7	19/133	14.3	36/347	10.4
HIV negative	54/690	7.8	16/142	11.3	40/472	8.5	110/1304	8.4
p-value		0.74		0.23		0.05		0.26
Missing information	3/27	11.1 (2-29)	2/29	6.9 (1-23)	1/9	11.1 (0-48)	6/65	9.2 (3-19)
Marital status in females – married (living together)								
Total	116/1963	5.9	100/834	12.0	107/1,124	9.5	323/3921	8.2
HIV status								
HIV positive	16/437	3.7	3/114	2.6	18/296	6.1	37/847	4.4
HIV negative	99/1462	6.8	77/570	13.5	89/811	11.0	265/2843	9.3
p-value		0.02		0.001		0.01		<0.001
Missing information	1/64	1.6 (0-8)	20/150	13.3 (8-20)	0/17	0 (0-20)	21/231	9.1 (6-14)
Active club member								
Total	529/2,867	18.5	147/1032	14.2	269/1738	15.5	945/5637	16.8
HIV status								
HIV positive	133/624	21.3	14/141	9.9	74/429	17.3	221/1194	18.5
HIV negative	380/2152	17.7	107/712	15.0	193/1283	15.0	680/4147	16.4
p-value		0.04		0.11		0.28		0.09
Missing information	16/91	17.6 (10-27)	26/179	14.5 (10-21)	2/26	7.7 (1-25)	44/296	14.9 (11-19)
Active member in church								
Total	1,594/2,867	55.6	507/1032	49.1	947/1,738	54.5	3,048/5,637	54.1
HIV status								
HIV positive	330/624	52.9	72/141	51.1	203/429	47.3	605/1194	50.7
HIV negative	1218/2152	56.6	347/712	48.7	730/1283	56.9	2295/4147	55.3
p-value		0.10		0.61		<0.001		0.004
Missing information	46/91	50.6 (40-61)	88/179	49.2 (42-57)	14/26	53.9 (33-73)	148/296	50.0 (44-56)
Lack of money to buy food in the past 4 weeks /sleeping hungry and went hungry day & night - often / sometimes								
Total	348/2,867	12.1	90/1032	8.7	158/1,738	9.1	596/5,637	10.6
HIV status								
HIV positive	73/624	11.7	16/141	11.4	35/429	8.2	124/1194	10.4
HIV negative	265/2152	12.3	64/712	9.0	118/1283	9.2	447/4147	10.8
p-value		0.68		0.38		0.51		0.70
Missing information	10/91	11.0 (5-19)	10/179	5.6 (3-10)	5/26	19.2 (7-39)	25/296	8.5 (6-12)

Appendix 4:

Baseline characteristics of participants with 95% Confidence Interval and disaggregated by HIV status and sub-district (N=5,637) (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Ease of finding R200 for emergency cases – very difficult or somewhat difficult								
Total	1,806/2,867	63.0	700/1032	67.8	906/1,738	53.3	3,412/5,637	60.5
HIV status								
HIV positive	409/624	65.5	89/141	63.1	205/429	47.8	703/1194	58.9
HIV negative	1341/2152	62.3	509/712	71.5	687/1283	53.6	2537/4147	61.2
p-value		0.14		0.05		0.04		0.15
Missing information	56/91	61.5 (51-72)	102/179	57.0 (49-64)	14/26	53.9 (33-73)	172/296	58.1 (52-64)
Worked in the past 12 months – each month, most months or once in a while								
Total	1454/2867	50.7	279/1032	27.0	727/1738	41.8	2460/5637	43.6
HIV status								
HIV positive	380/624	60.9	47/141	33.3	201/429	46.9	628/1194	52.6
HIV negative	1038/2152	48.2	183/712	25.7	518/1283	40.4	1739/4147	41.9
p-value		<0.001		0.06		0.02		<0.001
Missing information	36/91	39.6 (29-50)	49/179	27.4 (21-35)	8/26	30.8 (14-52)	93/296	31.4 (26-37)
Work or earned in the past 3 months – yes								
Total	1129/2867	39.4	306/1032	29.7	690/1738	39.7	2125/5637	37.7
HIV status								
HIV positive	306/624	49.0	44/141	31.2	187/429	43.6	537/1194	45.0
HIV negative	796/2152	37.0	199/712	28.0	492/1283	38.4	1487/4147	35.9
p-value		<0.001		0.43		0.05		<0.001
Missing information	27/91	29.7 (21-40)	63/179	35.2 (28-43)	11/26	42.3 (23-63)	101/296	34.1 (29-40)
Earned income in the past 4 weeks from selling things – yes								
Total	914/2867	31.9	223/1032	21.6	577/1738	33.2	1714/5637	30.4
HIV status								
HIV positive	251/624	40.2	34/141	24.1	154/429	35.9	439/1194	36.8
HIV negative	638/2152	29.7	143/712	20.1	412/1283	32.1	1193/4147	28.8
p-value		<0.001		0.28		0.15		<0.001
Missing information	25/91	27.5 (19-38)	46/179	25.7 (19-33)	11/26	42.3 (23-63)	82/296	27.7 (23-33)
Received child support grant - yes								
Total	1200/2867	41.9	595/1032	57.7	742/1738	42.7	2537/5637	45.0
HIV status								
HIV positive	272/624	43.6	70/141	49.7	189/429	44.1	531/1194	44.5
HIV negative	901/2152	41.9	414/712	58.2	550/1283	42.9	1865/4147	45.0
p-value		0.44		0.06		0.67		0.76
Missing information	27/91	29.7 (21-40)	111/179	62.0 (54-69)	3/26	11.5 (2-30)	141/296	47.6 (42-53)

APPENDIX 4

Baseline characteristics of participants with 95% Confidence Interval and disaggregated by HIV status and sub-district (N=5,637)

Appendix 4:

Baseline characteristics of participants with 95% Confidence Interval and disaggregated by HIV status and sub-district (N=5,637) (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Received disability grant - yes								
Total	66/2867	2.3	27/1032	2.6	70/1738	4.0	163/5637	2.9
HIV status								
HIV positive	16/624	2.6	2/141	1.4	15/429	3.5	33/1194	2.8
HIV negative	50/2152	2.3	22/712	3.1	53/1283	4.1	125/4147	3.0
p-value		0.73		0.27		0.56		0.65
Missing information	0/91	0 (0-4)	3/179	1.7 (0-5)	2/26	7.7 (1-25)	5/296	1.7 (1-4)

Appendix 5:

Characteristics of the participants disaggregated by sub-district, sex and HIV Status (N=5,637)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
No education								
Total	1.8	0.01-2.43	2.8	1.87-4.03	1.5	1.0-2.2	1.9	1.6-2.3
Sex								
Female	1.7	0.01-2.36	2.8	1.79-4.18	1.2	0.62-1.99	1.8	1.4-2.2
Male	2.2	1.37-3.43	2.8	0.91-6.36	2.2	1.15-3.65	2.3	1.6-3.1
HIV status								
Positive	1.8	0.89-3.15	0.7	0.02-4.06	2.1	1.0-4.0	1.8	1.1-2.7
Negative	2.0	1.42-2.65	3.2	2.0-4.8	1.3	0.78-2.14	2.0	1.6-2.4
Primary school and high school education								
Total	47.0	45.1-48.8	50.8	47.6-53.9	39.9	37.6-42.3	45.6	44.1-46.8
Sex								
Female	45.0	42.7-47.2	51.7	48.2-55.1	36.9	34.0-39.8	44.1	42.5-45.6
Male	51.3	48.0-54.6	46.7	39.2-54.2	45.5	41.4-49.5	48.7	46.3-51.1
HIV status								
Positive	49.0	45.0-53.0	51.1	42.4-59.8	45.0	40.2-49.9	47.8	44.9-50.7
Negative	46.5	44.3-48.6	50.2	46.4-54.0	38.5	35.8-41.2	44.6	43.1-46.1
Matriculated								
Total	51.2	49.3-53.0	46.5	43.3-49.6	58.6	56.2-60.9	52.6	51.3-53.9
Sex								
Female	53.4	51.1-55.6	45.5	42.1-49.0	62.0	59.0-64.8	54.2	52.6-55.7
Male	46.5	43.2-49.8	50.6	43.0-58.1	52.4	48.3-56.4	49.1	46.6-51.5
HIV status								
Positive	49.3	45.3-53.3	48.2	39.5-56.9	52.8	48.0-57.7	50.4	47.5-53.3
Negative	51.6	49.4-53.7	46.6	42.8-50.4	60.2	57.5-62.9	53.4	51.9-55.0
Male marital status - single								
Total	8.3	6.6-10.3	10.9	6.7-16.5	10.3	8.0-12.9	9.3	7.9-10.8
HIV status								
HIV positive	8.6	5.0-13.6	4.0	0.1-20.4	14.5	9.0-21.7	10.5	7.5-14.3
HIV negative	8.1	6.2-10.4	12.7	7.4-19.8	9.1	6.6-12.0	8.9	7.4-10.6
Male marital status – Dating								
Total	1.9	1.1-3.0	1.2	0.1-4.1	2.6	1.5-4.2	2.1	1.4-2.9
HIV status								
HIV positive	0.5	0.01-3.0	0	0-13.7	3.1	0.8-7.6	1.5	0.5-3.4
HIV negative	2.3	1.3-3.7	1.6	0.2-5.6	2.3	1.2-4.1	2.3	1.5-3.2
Male marital status – Cohabiting								
Total	13.4	11.3-15.8	20.1	14.4-26.8	15.3	12.6-18.4	14.8	13.1-16.6
HIV status								
HIV positive	21.5	15.8-28.1	44.0	24.4-65.1	13.7	8.4-20.8	20.2	16.1-24.8
HIV negative	11.6	9.3-14.2	16.7	10.6-24.3	15.6	12.5-19.2	13.6	11.8-15.6

Appendix 5:

Characteristics of the participants disaggregated by sub-district, sex and HIV status (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Male marital status – married (living separately)								
Total	63.5	60.3-66.7	59.2	51.5-66.6	61.6	57.6-65.4	62.4	60.0-64.7
HIV status								
HIV positive	56.5	49.0-63.7	44.0	24.4-65.1	57.3	48.3-65.9	55.9	50.4-61.2
HIV negative	65.5	61.8-69.0	59.5	50.4-68.2	63.1	58.6-67.4	64.0	61.3-66.6
Male marital status – married (living together)								
Total	12.9	10.7-15.2	8.6	4.9-13.8	10.3	8.0-12.9	11.5	10.0-13.1
HIV status								
HIV positive	12.9	8.4-18.6	8.0	1.0-26.0	11.5	6.6-18.2	12.0	8.7-15.9
HIV negative	12.5	10.1-15.2	9.5	5.0-16.0	9.9	7.4-13.0	11.3	9.6-13.1
Female marital status - single								
Total	6.0	5.0-7.1	12.3	10.1-14.8	9.7	8.0-11.6	8.4	7.5-9.3
HIV status								
HIV positive	3.7	2.1-6.0	2.7	0.6-7.8	6.2	3.7-9.6	4.5	3.2-6.1
HIV negative	6.9	5.6-8.3	13.9	11.1-17.0	11.2	9.1-13.6	9.5	8.4-10.6
Female marital status – dating								
Total	2.6	2.0-3.4	6.0	4.5-7.9	4.1	3.0-5.4	3.8	3.2-4.4
HIV status								
HIV positive	2.8	1.4-4.8	6.4	2.6-12.7	2.8	1.2-5.4	3.3	2.2-4.7
HIV negative	2.6	1.8-3.5	5.4	3.7-7.6	4.4	3.1-6.1	3.7	3.0-4.4
Female marital status – cohabiting								
Total	12.4	11.0-14.0	19.3	16.7-22.2	7.2	5.7-8.9	12.4	11.4-13.5
HIV status								
HIV positive	13.2	10.2-16.8	15.5	9.3-23.6	9.0	5.9-12.9	12.0	9.9-14.4
HIV negative	12.3	10.6-14.1	20.9	17.6-24.5	6.7	5.0-8.6	12.4	11.2-13.7
Female marital status – married (living separately)								
Total	63.7	61.6-65.9	53.6	50.1-57.0	69.2	66.4-72.0	63.2	61.6-64.7
HIV status								
HIV positive	61.0	56.2-65.7	64.6	54.9-73.4	69.7	64.0-74.9	64.5	61.1-67.8
HIV negative	64.4	61.9-66.9	51.7	47.5-55.9	68.7	65.4-71.9	63.1	61.3-64.9
Female marital status – married (living together)								
Total	15.2	13.6-16.9	8.7	6.9-10.9	9.8	8.1-11.7	12.3	11.3-13.4
HIV status								
HIV positive	19.3	15.6-23.3	10.9	5.8-18.3	12.4	8.8-16.8	15.8	13.4-18.4
HIV negative	13.9	12.2-15.8	8.1	6.0-10.7	9.1	7.1-11.3	11.4	10.2-12.6
Lack of money to buy food in the past 4 weeks /sleeping hungry and went hungry day & night - often / sometimes								
Total	12.2	11.0-13.5	9.1	7.4-11.1	9.3	7.9-10.7	10.8	9.9-11.6
Sex								
Female	12.3	10.9-13.8	9.5	7.6-11.7	9.3	7.7-11.2	10.9	9.9-11.9
Male	12.1	10.0-14.4	7.3	3.9-12.1	9.1	6.9-11.7	10.5	9.1-12.1
HIV status								
HIV positive	11.8	9.3-14.6	11.9	6.9-18.5	8.3	5.9-11.4	10.6	8.9-12.5
HIV negative	12.4	11.0-13.9	9.3	7.3-11.8	9.4	7.8-11.1	11.0	10.0-11.9
Ease of finding R200 for emergency cases – very difficult or somewhat difficult								
Total	36.3	34.5-38.1	29.2	26.4-32.2	46.7	44.3-49.1	38.2	37.0-39.5
Sex								
Female	32.7	30.6-34.9	25.0	22.1-28.2	45.1	42.1-48.1	34.6	33.1-36.2
Male	44.2	40.9-47.5	48.3	40.8-55.9	49.7	45.6-53.7	46.6	44.2-49.0
HIV status								
HIV positive	33.7	30.0-37.6	34.6	26.6-43.2	51.2	46.3-56.1	40.1	37.2-42.9
HIV negative	37.0	35.0-39.1	25.6	22.4-29.0	45.2	42.4-48.0	37.6	36.1-39.1

Appendix 5: Characteristics of the participants disaggregated by sub-district, sex and HIV status (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Borrow money because of not enough funds – daily or >once a week or every week								
Total	6.9	6.0-7.9	10.3	8.4-12.3	7.5	6.3-8.9	7.7	7.0-8.4
Sex								
Female	7.3	6.2-8.5	9.6	7.6-11.8	7.1	5.7-8.8	7.7	6.9-8.6
Male	6.1	4.6-7.9	13.6	8.9-19.5	8.2	6.1-10.7	7.7	6.4-9.0
HIV status								
HIV positive	10.4	8.1-13.1	19.6	13.2-27.3	7.9	5.5-10.9	10.5	8.8-12.4
HIV negative	5.8	5.0-6.8	8.4	6.4-10.7	7.4	6.0-8.9	6.7	5.9-7.5
Worked in the past 12 months – each month/ most months/ once in a while								
Total	51.4	49.6-53.3	28.4	25.6-31.3	42.9	40.6-45.3	44.7	43.4-46.0
Sex								
Female	42.7	40.5-44.9	22.1	19.3-25.1	32.1	29.4-35.0	35.4	33.8-36.9
Male	70.6	67.5-73.6	57.1	49.4-64.5	62.8	58.8-66.7	66.4	64.0-68.6
HIV status								
HIV positive	61.9	57.9-65.7	34.8	26.8-43.5	47.9	43.0-52.8	53.7	50.8-56.6
HIV negative	48.9	46.7-51.0	27.0	23.6-30.5	41.5	38.8-44.3	42.9	41.4-44.5
Worked or earned money in the last 3 months - yes								
Total	40.0	38.2-41.8	31.1	28.2-34.1	40.8	38.4-43.2	38.7	37.4-40.0
Sex								
Female	33.5	31.4-35.7	26.9	23.9-30.1	31.2	28.5-34.0	31.5	30.0-33.0
Male	54.1	50.8-57.4	50.3	38.4-57.9	58.4	54.3-62.3	55.2	52.8-57.6
HIV status								
HIV positive	50.3	46.2-54.3	32.6	24.8-41.2	45.1	40.2-50.0	46.3	43.4
HIV negative	37.5	35.4-39.6	29.3	25.9-32.8	39.4	36.6-42.1	36.7	49.3
Gained money in the last 4 weeks from business – yes								
Total	32.5	30.7-34.2	22.8	20.2-25.6	34.1	31.9-36.4	31.3	30.0-32.5
Sex								
Female	26.6	24.6-28.6	18.7	16.0-21.6	27.8	25.1-30.5	25.3	23.9-26.7
Male	45.3	41.9-48.6	42.0	34.5-49.7	45.8	41.8-49.9	45.1	42.7-47.5
HIV status								
HIV positive	41.2	37.2-45.2	25.6	18.4-33.8	37.3	32.6-42.2	38.0	35.2-40.8
HIV negative	30.1	28.2-32.1	21.2	18.1-24.4	32.9	30.3-35.6	29.5	28.1-30.9
Received child support grant – yes								
Total	42.3	40.5-44.1	60.5	57.4-63.6	43.9	41.5-46.3	46.0	44.7-47.4
Sex								
Female	59.3	57.1-61.5	72.5	69.2-75.5	62.1	59.2	62.9	61.3-64.4
Male	5.2	3.8-6.8	6.2	3.1-10.8	10.3	7.9-13.0	7.1	5.9-8.4
HIV status								
HIV positive	44.1	40.1-48.1	51.9	43.1-60.5	45.3	40.5-50.2	45.4	42.5-48.3
HIV negative	42.3	40.2-44.4	60.9	57.1-64.6	44.0	41.3-46.8	45.9	44.4-47.5
Received disability grant – yes								
Total	2.3	1.8-3.0	2.8	1.8-4.0	4.1	3.2-5.2	3.0	2.5-3.4
Sex								
Female	2.4	1.8-3.2	2.7	1.7-4.1	3.6	2.5-4.8	2.8	2.3-3.4
Male	2.1	1.3-3.3	2.9	0.9-6.5	5.2	3.6-7.3	3.3	2.5-4.3
HIV status								
HIV positive	2.6	1.5-4.2	1.5	0.2-5.3	3.6	2.0-5.8	2.8	2.0-4.0
HIV negative	2.4	1.7-3.1	3.3	2.1-4.9	4.2	3.2-5.5	3.1	2.6-3.7

Appendix 5: Characteristics of the participants disaggregated by sub-district, sex and HIV status (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Reason for HIV testing – wanted to know my status								
Total	23.8	22.2-25.4	39.9	36.9-43.1	45.1	42.7-47.5	33.5	32.2-34.7
Sex								
Female	24.6	22.7-26.6	39.5	36.1-42.9	49.8	46.8-52.8	35.2	33.7-36.7
Male	21.9	19.2-24.8	42.1	34.8-49.7	36.2	32.4-40.2	29.4	29.2-31.7
HIV status								
HIV positive	20.1	16.9-23.6	34.3	26.3-43.0	36.5	31.9-41.3	28.0	25.3-30.7
HIV negative	25.4	23.5-27.4	41.6	37.9-45.4	48.0	45.2-50.8	35.3	33.8-36.8
Reason for HIV testing – Fell ill								
Total	17.2	15.8-18.7	22.0	19.5-24.8	19.8	17.9-21.7	18.9	17.9-20.0
Sex								
Female	14.8	13.2-16.5	19.0	16.3-21.9	16.3	14.2-18.6	16.1	15.0-17.3
Male	22.6	19.8-25.6	36.0	28.9-43.5	26.2	22.7-29.9	25.4	23.3-27.6
HIV status								
HIV positive	31.8	27.9-35.8	38.8	30.5-47.6	32.7	28.2-37.4	33.0	30.2-35.8
HIV negative	13.5	12.1-15.1	18.1	15.3-21.2	15.3	13.4-17.4	14.9	13.8-16.0
Reason for HIV testing – Someone suggested it								
Total	11.7	10.5-13.5	4.8	3.5-6.3	10.3	8.9-11.9	10.0	9.2-10.8
Sex								
Female	11.9	10.5-13.5	5.1	3.7-6.8	8.3	6.7-10.1	9.4	8.5-10.4
Male	11.3	9.3-13.6	3.4	1.2-7.2	14.2	11.5-17.2	11.5	10.0-13.2
HIV status								
HIV positive	8.1	6.0-10.7	3.7	1.2-8.5	8.8	6.3-12.0	7.9	6.3-9.6
HIV negative	12.5	11.1-14.0	5.1	3.6-7.0	11.0	9.3-12.8	10.8	9.8-11.8
Reason for HIV testing – Suspected to be infected								
Total	10.1	9.0-11.3	3.8	2.7-5.2	6.8	5.7-8.1	7.9	7.2-8.7
Sex								
Female	9.2	8.0-10.7	4.3	3.0-6.0	6.2	4.9-7.8	7.3	6.5-8.2
Male	12.0	9.9-14.4	1.7	0.3-4.8	8.0	6.0-10.5	9.4	8.0-10.9
HIV status								
HIV positive	13.1	10.4-16.1	7.5	3.6-13.3	7.9	5.5-10.9	10.5	8.7-12.4
HIV negative	9.2	8.0-10.6	3.2	2.0-4.8	6.6	5.3-8.1	7.4	6.6-8.2
Reason for HIV testing – Opportunity at the facility								
Total	14.4	13.1-15.8	20.7	18.2-23.4	5.4	4.4-6.6	12.7	11.8-13.6
Sex								
Female	15.4	13.8	22.4	19.6-25.5	6.2	4.9-7.8	14.2	13.1-15.3
Male	12.3	10.1-14.6	12.9	8.4-18.8	4.0	2.6-5.9	9.3	7.9-10.8
HIV status								
HIV positive	9.0	6.8-11.7	9.7	5.3-16.0	3.3	1.8-5.5	7.0	5.5-8.6
HIV negative	15.2	13.7-16.8	22.8	19.7-26.1	6.0	4.8-7.5	13.6	12.5-14.7
Reason for HIV testing – No reason								
Total	22.7	21.1-24.3	8.7	7.0-10.6	12.1	10.6-13.7	16.8	15.8-17.8
Sex								
Female	24.0	22.1-26.0	9.7	7.8-12.0	12.9	10.9-15.0	17.7	16.5-18.9
Male	19.7	17.0-22.5	3.9	1.6-7.9	10.7	8.3-13.4	14.6	13.0-16.4
HIV status								
HIV positive	17.8	14.7-21.2	6.0	2.6-11.4	9.8	7.1-13.0	13.4	11.5-15.5
HIV negative	24.1	22.1-26.0	9.2	7.1-11.6	12.7	10.9-14.7	17.9	16.8-19.2

Appendix 5: Characteristics of the participants disaggregated by sub-district, sex and HIV status (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Reason for HIV testing – Work/ANC requirement								
Total	0.1	0.02-0.3	-	-	0.5	0.2-0.9	0.2	0.1-0.4
Sex								
Female	0.05	0.001-0.3	-	-	0.4	0.1-0.9	0.1	0.04-0.3
Male	0.2	0.03-0.8	-	-	0.7	0.2-1.7	0.4	0.1-0.8
HIV status								
HIV positive	0.2	0.004-1.0	-	-	1.0	0.3-2.4	0.5	0.1-1.0
HIV negative	0.1	0.01-0.4	-	-	0.3	0.09-0.8	0.2	0.05-0.3
Age at sexual debut – 12 years and younger								
Total	2.4	1.5-3.7	1.8	0.4-5.1	1.7	0.7-3.5	2.1	1.4-3.0
Sex								
Female	0	0-97.5	-	-	-	-	0	0-97.5
Male	2.4	1.5-3.7	1.8	0.4-5.1	1.7	0.7-3.5	2.1	1.4-3.0
HIV status								
HIV positive	2.9	0.9-6.6	0	0-14.2	3.0	0.4-10.5	2.7	1.1-5.4
HIV negative	2.1	1.1-3.5	1.6	0.2-5.7	1.5	0.5-3.4	1.8	1.1-2.8
Age at sexual debut – 13 – 17 years								
Total	55.0	51.5-58.4	48.2	40.5-56.0	46.3	41.4-51.3	51.7	49.0-54.3
Sex								
Female	0	0-97.5	-	-	-	-	0	0-97.5
Male	55.1	51.6-58.5	48.2	40.5-56.0	46.3	41.4-51.3	51.7	49.0-54.3
HIV status								
HIV positive	51.5	43.7-59.1	37.5	18.8-59.4	42.4	30.3-55.2	47.9	41.7-54.1
HIV negative	55.4	51.4-59.3	47.6	38.5-56.7	46.9	41.5-52.4	51.9	48.9-54.9
Age at sexual debut – 18 years and older								
Total	41.5	38.1-44.9	49.4	41.7-57.2	51.0	46.0-55.9	45.2	42.6-47.9
Sex								
Female	100	2.5-100	-	-	-	-	100	0.25-100
Male	41.4	38.0-44.9	49.4	41.7-57.2	51.0	46.0-55.9	45.2	42.6-47.9
HIV status								
HIV positive	45.7	38.1-53.4	62.5	40.6-81.2	54.6	41.8-66.9	49.4	43.2-55.6
HIV negative	41.3	37.4-45.2	50.0	40.9-59.1	50.7	45.3-56.2	45.2	42.2-48.2
First sexual experience – never had sex								
Total	2.0	1.2-3.1	0.6	0.01-3.1	2.4	1.2-4.2	1.9	1.3-2.8
Sex								
Female	-	-	-	-	-	-	-	-
Male	2.0	1.2-3.1	0.6	0.01-3.1	2.4	1.2-4.2	1.9	1.3-2.8
HIV status								
HIV positive	0	0-2.0	0	0-13.7	0	0-4.5	0	0-1.3
HIV negative	2.3	1.3-3.7	0.8	0.02-4.3	2.4	1.1-4.4	2.2	1.4-3.2
First sexual experience – I was willing								
Total	95.9	94.4-97.1	98.9	96.0-99.9	94.6	92.2-96.5	95.9	94.7-96.8
Sex								
Female	-	-	-	-	-	-	-	-
Male	95.9	94.4-97.1	98.9	96.0-99.9	94.6	92.2-96.5	95.9	94.7-96.8
HIV status								
HIV positive	98.0	95.2-99.7	100	86.3-100	98.0	93.2-100	98.3	95.5-99.2
HIV negative	95.7	93.9-97.1	98.4	94.5-99.8	94.2	91.4-96.3	95.5	94.2-96.6

Appendix 5:

Characteristics of the participants disaggregated by sub-district, sex and HIV status (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
First sexual experience – I was persuaded								
Total	1.5	0.8-2.6	0.6	0.01-3.1	2.8	1.5-4.7	1.8	1.2-2.6
Sex								
Female	-	-	-	-	-	-	-	-
Male	1.5	0.8-2.6	0.6	0.01-3.1	2.8	1.5-4.7	1.8	1.2-2.6
HIV status								
HIV positive	1.1	0.1-4.0	0	0-13.7	1.3	0.03-6.8	1.1	0.2-3.1
HIV negative	1.5	0.7-2.8	0.8	0.02-4.3	3.2	1.6-5.5	2.0	1.3-3.0
First sexual experience – I was forced/raped								
Total	0.6	0.01-3.1	-	-	0.2	0.01-1.2	0.4	0.1-0.9
Sex								
Female	-	-	-	-	-	-	-	-
Male	0.6	0.01-3.1	-	-	0.2	0.01-1.2	0.4	0.1-0.9
HIV status								
HIV positive	0.6	0.01-3.1	-	-	0	0-4.5	0.4	0.01-1.9
HIV negative	0.5	0.1-1.3	-	-	0.3	0.01-1.5	0.4	0.1-0.9
Frequency of condom use in the past 12 months – always/ mostly								
Total	27.5	24.7-30.4	22.2	16.4-28.8	27.8	24.3-31.5	27.1	25.0-29.2
Sex								
Female	25.3	17.1-35.0	26.7	7.8-55.1	25.8	18.3-34.6	25.6	20.2-31.7
Male	27.8	24.8-30.9	21.8	15.8-28.7	28.3	24.4-32.5	27.3	25.1-29.6
HIV status								
HIV positive	18.5	13.4-24.4	20.0	6.8-40.7	15.4	9.1-23.8	17.6	13.7-22.1
HIV negative	29.9	26.6-33.4	21.7	14.9-29.8	30.4	26.5-34.6	29.3	26.9-31.8
Frequency of condom use in the past 12 months – sometimes/never								
Total	72.5	69.6-75.3	77.8	71.2-83.6	72.2	68.5-75.7	72.9	70.8-75.0
Sex								
Female	74.8	65.0-82.9	73.3	44.9-92.2	74.2	65.4-81.7	74.4	68.3-79.8
Male	72.2	69.1-75.2	78.2	71.3-84.2	71.7	67.5-75.6	72.7	70.4-74.9
HIV status								
HIV positive	81.6	75.6-86.6	80.0	59.3-93.2	84.6	76.2-90.9	82.4	77.9-86.3
HIV negative	70.1	66.6-73.4	78.3	70.2-85.1	69.6	65.4-73.5	70.7	68.2-73.1
The last time you had sex who did you have it with – main partner								
Total	67.3	64.0-70.6	85.4	79.0-90.5	63.3	58.4-68.1	68.3	65.7-70.7
Sex								
Female	100	25.0-100	-	-	-	-	100	25-100
Male	67.3	63.9-70.6	85.4	79.0-90.5	63.3	58.4-68.1	68.3	65.7-70.7
HIV status								
HIV positive	64.1	56.3-71.3	87.0	66.4-97.2	62.5	49.5-74.3	65.8	59.6-71.6
HIV negative	68.3	64.4-72.0	86.1	78.4-91.8	63.3	57.9-68.5	68.7	65.8-71.6
The last time you had sex who did you have it with – omakhwapheni (non-regular partner)								
Total	20.2	17.5-23.2	11.4	6.9-17.4	21.1	17.2-25.4	19.5	17.4-21.7
Sex								
Female	0	0-97.5	-	-	-	-	0	0-97.5
Male	20.3	17.5-23.2	11.4	6.9-17.4	21.1	17.2-25.4	19.5	17.4-21.7
HIV status								
HIV positive	21.6	15.6-28.6	13.0	2.8-33.6	25.0	15.0-37.4	21.7	16.7-27.2
HIV negative	20.0	16.9-23.4	10.4	5.5-17.5	20.3	16.1-25.1	19.0	16.7-21.5

Appendix 5: Characteristics of the participants disaggregated by sub-district, sex and HIV status (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
The last time you had sex who did you have it with – once off partner								
Total	5.2	3.7-6.9	2.5	0.7-6.4	6.3	4.1-9.1	5.2	4.1-6.5
Sex								
Female	0	0-97.5	-	-	-	-	0	0-97.5
Male	5.2	3.7-6.9	2.5	0.7-6.4	6.3	4.1-9.1	5.2	4.1-6.5
HIV status								
HIV positive	3.6	1.3-7.7	0	0-14.8	7.8	2.6-17.3	4.3	2.2-7.6
HIV negative	5.6	3.9-7.8	3.5	1.0-8.7	6.1	3.7-9.2	5.5	4.2-7.1
The last time you had sex who did you have it with – ex-partner								
Total	7.3	5.6-9.3	0.6	0.02-3.5	9.3	6.6-12.6	7.1	5.8-8.6
Sex								
Female	0	0-97.5	-	-	-	-	-	-
Male	7.3	5.6-9.3	0.6	0.02-3.5	9.3	6.6-12.6	7.1	5.8-8.6
HIV status								
HIV positive	10.8	6.5-16.5	0	0-14.8	4.7	1.0-13.1	8.3	5.2-12.4
HIV negative	6.1	4.3-8.3	0	0-3.2	10.3	7.2-14.1	6.8	5.3-8.4
Number of sexual partners in the past 12 months - none								
Total	7.0	5.5-8.8	8.6	5.0-13.6	7.1	5.1-9.4	7.2	6.0-8.5
Sex								
Female	6.1	2.3-12.7	31.3	11.0-58.7	7.6	3.5-13.9	8.6	5.3-12.9
Male	7.1	5.5-9.0	6.5	3.3-11.3	6.9	4.8-9.5	7.0	5.7-8.4
HIV status								
HIV positive	7.4	4.2-11.8	8.0	1.0-26.0	4.0	1.1-9.9	6.4	4.0-9.6
HIV negative	6.7	5.0-8.8	9.9	5.4-16.4	7.6	5.4-10.2	7.4	6.0-8.9
Number of sexual partners in the past 12 months – one								
Total	54.7	51.5-57.9	53.8	46.3-61.1	52.1	48.1-56.2	53.7	51.4-56.1
Sex								
Female	75.8	66.1-83.8	68.8	41.3-89.0	75.6	66.9-83.0	75.2	69.2-80.6
Male	52.3	48.9-55.7	52.4	44.6-60.1	46.4	42.0-51.0	50.4	47.9-53.0
HIV status								
HIV positive	57.8	50.7-64.7	52.0	31.3-72.2	47.0	36.9-57.2	54.1	48.6-59.6
HIV negative	53.9	50.2-57.6	51.9	43.0-60.7	53.1	48.6-57.5	53.4	50.7-56.1
Number of sexual partners in the past 12 months - ≥2 partners								
Total	38.3	35.2-41.2	37.6	30.7-45.0	40.8	36.9-44.8	39.1	36.8-41.4
Sex								
Female	18.2	11.1-27.2	0	0-20.6	16.8	10.6-24.8	16.2	11.8-21.6
Male	40.6	37.3-43.9	41.2	33.7-49.0	46.6	42.2-51.2	42.6	40.1-45.1
HIV status								
HIV positive	34.8	28.3-41.8	40.0	21.1-61.3	49.0	38.9-59.2	39.5	34.2-45.0
HIV negative	39.3	35.8-43.0	38.2	29.8-47.1	39.4	35.1-43.8	39.2	36.6-41.9
Number of omakwapheni (non-regular partner) in the past 12 months – none								
Total	39.7	36.6-42.9	37.4	30.3-44.8	37.7	33.8-41.7	38.8	36.5-41.1
Sex								
Female	54.6	44.2-64.6	62.5	35.4-84.8	70.6	61.5-78.6	63.3	56.7-69.4
Male	38.0	34.7-41.3	34.9	27.7-42.7	29.7	25.6-33.9	35.0	32.6-37.4
HIV status								
HIV positive	40.8	34.0-47.8	47.8	26.8-69.4	31.3	22.4-41.4	38.4	33.1-43.9
HIV negative	39.8	36.2-43.4	35.9	27.7-44.9	38.5	34.2-42.9	38.9	36.3-41.6

Appendix 5:

Characteristics of the participants disaggregated by sub-district, sex and HIV status (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Number of omakhwapheni (non-regular partner) in the past 12 months - one								
Total	25.5	22.8-28.4	33.0	26.2-40.3	21.9	18.7-25.4	25.0	23.0-27.1
Sex								
Female	39.4	29.7-49.7	37.5	15.2-64.6	21.9	14.8-30.4	30.3	24.5-36.7
Male	23.9	21.1-26.9	32.5	25.5-40.2	21.9	18.3-25.8	24.2	22.1-26.4
HIV status								
HIV positive	25.7	19.9-32.3	34.8	16.4-57.3	19.2	12.0-28.3	24.4	19.9-29.4
HIV negative	25.4	22.3-28.8	34.4	26.2-43.3	22.7	19.1-26.6	25.3	23.0-27.7
Number of omakhwapheni (non-regular partner) in the past 12 months - ≥2 partners								
Total	34.8	31.8-37.9	29.7	23.1-36.9	40.5	36.5	36.2	34.0-38.5
Sex								
Female	6.1	2.3-12.7	0	0-20.6	7.6	3.5-13.9	6.4	3.6-10.4
Male	38.1	34.8-41.5	32.5	25.5-40.2	48.5	44.0-53.0	40.9	38.4-43.4
HIV status								
HIV positive	33.5	27.1-40.4	17.4	5.0-38.8	49.5	39.3-59.7	37.2	31.9-42.7
HIV negative	34.8	31.3-38.4	29.7	21.9-38.4	38.8	34.6-43.3	35.8	33.3-38.4
Frequency of alcohol containing drinks - never								
Total	68.8	67.0-70.5	84.2	81.7-86.4	68.5	66.2-70.7	71.4	70.2-72.6
Sex								
Female	79.0	77.1-80.8	90.5	88.3-92.5	80.9	78.4-83.2	82.0	80.7-83.2
Male	46.6	43.2-49.9	55.1	47.4-62.6	46.0	42.0-50.1	47.3	44.8-49.7
HIV status								
HIV positive	65.4	61.5-69.2	75.2	67.0-82.3	63.9	59.1-68.5	66.0	63.2-68.7
HIV negative	69.8	67.8-71.8	85.7	82.8-88.2	70.3	67.6-72.8	72.6	71.2-74.0
Frequency of alcohol containing drinks – monthly or less								
Total	18.1	16.6-19.5	6.8	5.3-8.5	16.2	14.5-18.0	15.5	14.5-16.4
Sex								
Female	13.8	12.3-15.5	4.2	3.0-5.9	10.7	8.9-12.7	10.9	9.9-12.0
Male	27.2	24.3-30.3	18.2	12.8-24.7	26.2	22.7-29.9	25.9	23.8-28.1
HIV status								
HIV positive	18.4	15.4-21.7	12.8	7.6-19.7	17.9	14.4-22.0	17.6	15.4-19.9
HIV negative	18.1	16.4-19.8	5.5	3.9-7.5	15.5	13.5-17.6	15.2	14.1-16.3
Frequency of alcohol containing drinks – 2-3 times per week								
Total	3.5	2.8-4.2	4.0	2.9-5.4	3.7	2.8-4.7	3.6	3.1-4.1
Sex								
Female	1.6	1.1-2.3	2.1	1.2-3.4	1.2	0.6-2.0	1.6	1.2-2.0
Male	7.5	5.8-9.4	12.5	8.0-18.3	8.2	6.1-10.7	8.3	7.0-9.7
HIV status								
HIV positive	4.1	2.7-6.0	7.5	3.7-13.4	3.4	1.8-5.6	4.2	3.1-5.5
HIV negative	3.2	2.5-4.0	3.4	2.2-5.1	3.8	2.8-5.0	3.4	2.9-4.0
Frequency of alcohol containing drinks – 4 + times weekly								
Total	1.9	1.4-2.4	0.9	0.4-1.7	1.3	0.8-2.0	1.5	1.2-1.9
Sex								
Female	0.8	0.5-1.3	0.5	0.1-1.3	0.5	0.1-1.1	0.7	0.4-1.0
Male	4.1	2.9-5.6	2.8	0.9-6.5	2.8	1.7-4.5	3.5	2.7-4.5
HIV status								
HIV positive	2.5	1.4-4.0	0.8	0.02-4.1	0.7	0.1-2.1	1.6	1.0-2.5
HIV negative	1.7	1.2-2.4	0.7	0.2-1.7	1.4	0.9-2.3	1.5	1.1-1.9

Appendix 5: Characteristics of the participants disaggregated by sub-district, sex and HIV status (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Frequency of alcohol containing drinks – 2-4 times monthly								
Total	7.9	6.9-8.9	4.2	3.0-5.6	10.3	8.9-11.9	8.0	7.3-8.7
Sex								
Female	4.7	3.8-5.8	2.6	1.6-4.0	6.8	5.4-8.4	4.9	4.2-5.6
Male	14.7	12.4-17.2	11.4	7.1-17.0	16.8	13.9-20.1	15.1	13.4-16.9
HIV status								
HIV positive	9.7	7.4-12.3	3.8	1.2-8.6	14.1	10.9-17.8	10.6	8.9-12.5
HIV negative	7.3	6.2-8.4	4.7	3.3-6.6	9.0	7.5-10.8	7.4	6.6-8.2
Use of drugs to be high or have a good time - never								
Total	91.2	90.1-92.3	87.6	85.3-89.6	82.9	81.0-84.7	88.0	87.1-88.9
Sex								
Female	93.7	92.5-94.8	92.3	90.2-94.0	89.8	87.9-91.6	92.3	91.4-93.1
Male	85.8	83.3-88.1	65.9	58.3-72.9	70.2	66.3-73.9	78.1	76.0-80.0
HIV status								
HIV positive	92.1	89.7-94.2	81.2	73.5-87.5	78.2	73.9-82.0	85.9	83.7-87.8
HIV negative	91.1	89.9-92.3	88.5	85.9-90.8	84.7	82.6-86.7	88.7	87.7-89.7
Use of drugs to be high or have a good time – once								
Total	5.1	4.3-6.0	9.3	7.6-11.3	6.8	5.7-8.1	6.4	5.7-7.1
Sex								
Female	4.0	3.2-5.0	6.0	4.5-7.9	5.0	3.8-6.5	4.7	4.1-5.4
Male	7.5	5.8-9.4	24.9	18.6-32.0	10.1	7.8-12.8	10.3	8.8-11.8
HIV status								
HIV positive	4.6	3.1-6.6	12.0	7.0-18.8	10.1	7.4-13.4	7.4	6.0-9.1
HIV negative	5.2	4.3-6.2	9.1	7.0-11.5	5.5	4.3-7.0	6.0	5.2-6.7
Use of drugs to be high or have a good time – more than once								
Total	3.7	3.0-4.4	3.1	2.1-4.4	10.3	8.8-11.8	5.6	5.0-6.2
Sex								
Female	2.3	1.7-3.1	1.8	1.0-2.9	5.1	3.9-6.6	3.0	2.5-3.6
Male	6.7	5.1-8.5	9.3	5.4-14.6	19.7	16.6-23.1	11.6	10.1-13.3
HIV status								
HIV positive	3.3	2.0-5.0	6.8	3.1-12.5	11.8	8.8-15.2	6.7	5.3-8.3
HIV negative	3.7	2.9-4.5	2.4	1.4-3.8	9.7	8.1-11.5	5.3	4.6-6.1

Appendix 6:

Characteristics of the HIV+ cohort at 4 months follow-up disaggregated by sex and sub-district (N=901)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Family member reaction - did not disclose								
Total	99/449	22.1	16/78	20.5	63/264	23.9	190/901	21.1
Sex								
Female	60/310	19.4	6/59	10.2	32/152	21.1	104/605	17.2
Male	38/136	27.9	10/17	58.8	27/80	33.8	81/254	31.9
p-value		0.04		<0.001		0.03		<0.001
Missing information	1/3	33.3 (1-9)	0/2	0 (0-84)	4/32	12.5 (4-29)	5/42	11.9 (4-26)
Family member reaction – discriminatory/very discriminatory								
Total	7/449	1.6	-	-	1/264	0.4	9/901	1.0
Sex								
Female	3/310	1.0	-	-	1/152	0.7	5/605	0.8
Male	4/136	2.9	-	-	0/80	0	4/254	1.6
p-value		0.12				0.47		0.33
Missing information	0/3	0 (0-71)	-	-	0/32	0 (0-11)	0/42	0 (0-8)
Family member reaction – In-different								
Total	11/449	2.5	1/78	1.3	13/264	4.9	28/901	3.1
Sex								
Female	9/310	2.9	1/59	1.7	4/152	2.6	17/605	2.8
Male	2/136	1.5	0/17	0	8/80	10	10/254	3.9
p-value		0.37		0.59		0.02		0.39
Missing information	0/3	0 (0-71)	0/2	0 (0-84)	1/32	3.1 (0-16)	1/42	2.4 (0-13)
Family member reaction – supportive/very supportive								
Total	328/499	73.1	61/78	78.2	182/264	68.9	664/901	73.7
Sex								
Female	234/310	75.5	52/59	88.1	113/152	74.3	473/605	78.2
Male	92/136	67.7	7/17	41.2	43/80	53.8	156/254	61.4
p-value		0.09		<0.001		0.002		<0.001
Missing information	2/3	66.7 (9-99)	2/2	100 (16-100)	26/32	81.3 (64-93)	35/42	83.3 (69-93)
Ever worked in the past 3 months – every month/most months/once in a while								
Total	259/449	57.7	36/78	46.2	130/264	49.2	470/901	52.2
Sex								
Female	159/310	51.3	23/59	39.0	63/152	41.5	275/605	45.5
Male	98/136	72.1	12/17	70.6	57/80	71.3	178/254	70.1
p-value		<0.001		0.02		<0.001		<0.001
Missing information	2/3	66.7 (9-99)	1/2	50 (1-99)	10/32	31.3 (16-50)	17/42	40.5 (26-57)
Ever worked in the past 3 months – never worked								
Total	186/449	41.4	41/78	52.6	131/264	49.6	422/901	46.8
Sex								
Female	147/310	47.4	35/59	59.3	87/152	57.2	323/605	53.4
Male	38/136	27.9	5/17	29.4	23/80	28.8	75/254	29.5
p-value		<0.001		0.03		<0.001		<0.001
Missing information	1/3	33.3 (1-91)	1/2	50.0 (1-99)	21/32	65.6 (47-81)	24/42	57.1 (41-72)

Appendix 6:

Characteristics of the HIV+ cohort at 4 months follow-up disaggregated by sex and sub-districts (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Travelled to the facility – on foot								
Total	117/449	26.1	10/78	12.8	64/264	24.2	267/901	29.6
Sex								
Female	83/310	26.8	8/59	13.6	33/152	21.7	187/605	30.9
Male	33/136	24.3	1/17	5.9	18/80	22.5	63/254	24.8
p-value		0.58		0.39		0.89		0.07
Missing information	1/3	33.3 (1-91)	1/2	50.0 (1-91)	13/32	40.6 (24-59)	17/42	40.5 (26-57)
Travelled to the facility – public transport (bus/van/kombi)								
Total	158/449	35.2	44/78	56.4	83/264	31.4	302/901	33.5
Sex								
Female	116/310	37.4	37/59	62.7	41/152	27.0	207/605	34.2
Male	42/136	30.9	7/17	41.2	25/80	31.3	75/254	29.5
p-value		0.18		0.11		0.49		0.18
Missing information	0/3	0 (0-71)	0/2	0 (0-84)	17/32	53.1 (35-71)	20/42	47.6 (32-64)
Travelled to the facility – private transport (own/someone else)								
Total	14/449	3.1	-	-	6/264	2.3	20/901	2.2
Sex								
Female	9/310	2.9	-	-	4/152	2.6	13/605	2.2
Male	4/136	2.9	-	-	1/80	1.3	5/254	2.0
p-value		0.98						
Missing information	1/3	33.3 (1-91)	-	-	1/32	3.1 (0-16)	2/42	4.8 (1-16)
Travelled to the facility – other								
Total	1/449	0.2	-	-	-	-	2/901	0.2
Sex								
Female	1/310	0.3	-	-	-	-	1/605	0.2
Male	0/136	0	-	-	-	-	1/254	0.4
p-value								
Missing information	0/3	0 (0-71)	-	-	-	-	0/42	0 (0-8)
Time to get to facility – < 30 minutes								
Total	264/449	58.8	54/78	69.2	167/264	63.3	551/901	61.2
Sex								
Female	179/310	57.7	39/59	66.1	93/152	61.2	358/605	59.2
Male	82/136	60.3	14/17	82.4	43/80	53.8	154/254	60.6
p-value		0.61		0.20		0.27		0.69
Missing information	3/3	100 (29-100)	1/2	50.0 (1-99)	31/32	96.9 (84-100)	39/42	92.9 (81-99)
Time to get to facility – 30-60 minutes								
Total	129/449	28.7	19/78	24.4	79/264	29.9	263/901	29.2
Sex								
Female	91/310	29.4	16/59	27.1	47/152	30.9	185/605	30.6
Male	38/136	27.9	2/17	11.8	32/80	40.0	76/254	29.9
p-value		0.76		0.19		0.17		0.85
Missing information	0/3	0 (0-71)	1/2	50.0 (1-99)	0/32	0 (0-11)	2/42	4.8 (1-16)

APPENDIX 6

Characteristics of the HIV+ cohort at 4 months follow-up disaggregated by sex and subdistrict

Appendix 6:

Characteristics of the HIV+ cohort at 4 months follow-up disaggregated by sex and sub-districts (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Time to get to facility – >60 minutes								
Total	51/449	11.4	4/78	5.1	14/264	5.3	76/901	8.4
Sex								
Female	35/310	11.3	4/59	6.8	10/152	6.6	55/605	9.1
Male	16/136	11.8	0/17	0	4/80	5.0	21/254	8.3
p-value		0.88		0.27		0.63		0.70
Missing information	0/3	0 (0-71)	0/2	0 (0-84)	0/32	0 (0-11)	0/42	0 (0-8)
Slept hungry – often/sometimes								
Total	89/449	19.8	40/78	51.3	46/264	17.4	190/901	21.1
Sex								
Female	54/310	17.4	32/59	54.2	25/152	16.5	120/605	19.8
Male	34/136	25.0	7/17	41.2	15/80	18.8	60/254	23.6
p-value		0.06		0.34		0.66		0.21
Missing information	1/3	33.3 (1-91)	1/2	50.0 (1-99)	6/32	18.8 (7-36)	10/42	23.8 (12-39)
Slept hungry – rarely/never								
Total	356/449	79.3	38/78	48.7	215/264	81.4	703/901	78.0
Sex								
Female	252/310	81.3	27/59	45.8	125/152	82.2	479/605	79.2
Male	102/136	75.0	10/17	58.8	65/80	81.3	193/254	76.0
p-value		0.13		0.34		0.85		0.30
Missing information	2/3	66.7 (9-99)	1/2	50.0 (1-99)	25/32	78.1 (60-91)	31/42	73.8 (60-91)
Borrowed food – everyday/more than once a week								
Total	24/449	5.4	30/78	38.5	23/264	8.7	83/901	9.2
Sex								
Female	19/310	6.1	24/59	40.7	13/152	8.6	60/605	9.9
Male	4/136	2.9	6/17	35.3	9/80	11.3	21/254	8.3
p-value		0.16		0.69		0.51		0.45
Missing information	1/3	33.3 (1-91)	0/2	0 (0-84)	1/32	3.1 (0-16)	2/42	4.8 (1-16)
Borrowed food – almost every week								
Total	18/449	4.0	7/78	9.0	11/264	4.2	39/901	4.3
Sex								
Female	13/310	4.2	5/59	8.5	4/152	2.6	24/605	4.0
Male	5/136	3.7	2/17	11.8	5/80	6.3	13/254	5.1
p-value		0.80		0.68		0.17		0.45
Missing information	0/3	0 (0-71)	0/2	0 (0-84)	2/32	6.3 (1-21)	2/42	4.8 (1-16)
Borrowed food – once or twice in the last 4 weeks or never								
Total	403/449	89.8	41/78	52.6	227/264	86.0	771/901	85.6
Sex								
Female	274/310	88.4	30/59	50.9	133/152	87.5	515/605	85.1
Male	127/136	93.4	9/17	52.9	66/80	82.5	219/254	86.2
p-value		0.11		0.88		0.30		0.68
Missing information	2/3	66.7 (9-99)	2/2	100 (16-100)	28/32	87.5 (71-96)	37/42	88.1 (74-96)

Appendix 6:

Characteristics of the HIV+ cohort at 4 months follow-up disaggregated by sex and sub-districts (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Time to get to facility – >60 minutes								
Total	51/449	11.4	4/78	5.1	14/264	5.3	76/901	8.4
Sex								
Female	35/310	11.3	4/59	6.8	10/152	6.6	55/605	9.1
Male	16/136	11.8	0/17	0	4/80	5.0	21/254	8.3
p-value		0.88		0.27		0.63		0.70
Missing information	0/3	0 (0-71)	0/2	0 (0-84)	0/32	0 (0-11)	0/42	0 (0-8)
Slept hungry – often/sometimes								
Total	89/449	19.8	40/78	51.3	46/264	17.4	190/901	21.1
Sex								
Female	54/310	17.4	32/59	54.2	25/152	16.5	120/605	19.8
Male	34/136	25.0	7/17	41.2	15/80	18.8	60/254	23.6
p-value		0.06		0.34		0.66		0.21
Missing information	1/3	33.3 (1-91)	1/2	50.0 (1-99)	6/32	18.8 (7-36)	10/42	23.8 (12-39)
Slept hungry – rarely/never								
Total	356/449	79.3	38/78	48.7	215/264	81.4	703/901	78.0
Sex								
Female	252/310	81.3	27/59	45.8	125/152	82.2	479/605	79.2
Male	102/136	75.0	10/17	58.8	65/80	81.3	193/254	76.0
p-value		0.13		0.34		0.85		0.30
Missing information	2/3	66.7 (9-99)	1/2	50.0 (1-99)	25/32	78.1 (60-91)	31/42	73.8 (60-91)
Borrowed food – everyday/more than once a week								
Total	24/449	5.4	30/78	38.5	23/264	8.7	83/901	9.2
Sex								
Female	19/310	6.1	24/59	40.7	13/152	8.6	60/605	9.9
Male	4/136	2.9	6/17	35.3	9/80	11.3	21/254	8.3
p-value		0.16		0.69		0.51		0.45
Missing information	1/3	33.3 (1-91)	0/2	0 (0-84)	1/32	3.1 (0-16)	2/42	4.8 (1-16)
Borrowed food – almost every week								
Total	18/449	4.0	7/78	9.0	11/264	4.2	39/901	4.3
Sex								
Female	13/310	4.2	5/59	8.5	4/152	2.6	24/605	4.0
Male	5/136	3.7	2/17	11.8	5/80	6.3	13/254	5.1
p-value		0.80		0.68		0.17		0.45
Missing information	0/3	0 (0-71)	0/2	0 (0-84)	2/32	6.3 (1-21)	2/42	4.8 (1-16)
Borrowed food – once or twice in the last 4 weeks or never								
Total	403/449	89.8	41/78	52.6	227/264	86.0	771/901	85.6
Sex								
Female	274/310	88.4	30/59	50.9	133/152	87.5	515/605	85.1
Male	127/136	93.4	9/17	52.9	66/80	82.5	219/254	86.2
p-value		0.11		0.88		0.30		0.68
Missing information	2/3	66.7 (9-99)	2/2	100 (16-100)	28/32	87.5 (71-96)	37/42	88.1 (74-96)

APPENDIX 6

Characteristics of the HIV+ cohort at 4 months follow-up disaggregated by sex and subdistrict

Appendix 6:

Characteristics of the HIV+ cohort at 4 months follow-up disaggregated by sex and sub-districts (continued)

Variable	Alfred Duma		Okhahlamba		Inkosi Langalibalele		Total	
	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI	Freq/N	%/95% CI
Child in family reaction to disclosure – Indifferent								
Total	13/449	2.9	-	-	16/264	6.1	38/901	4.2
Sex								
Female	7/310	2.3	-	-	8/152	5.3	22/605	3.6
Male	6/136	4.4	-	-	6/80	7.5	14/254	5.5
p-value		0.21				0.50		0.21
Missing information	0/3	0 (0-71)	-	-	2/32	6.3 (1-21)	2/42	4.8 (1-16)
Child in family reaction to disclosure – supportive/very supportive								
Total	144/449	32.1	45/78	57.7	106/264	40.2	327/901	36.3
Sex								
Female	112/310	36.1	39/59	66.1	64/152	42.1	240/605	39.7
Male	31/136	22.8	5/17	29.4	23/80	28.8	62/254	24.4
p-value		0.01		0.01		0.05		<0.001
Missing information	1/3	33.3 (1-91)	1/2	50.0 (1-99)	19/32	59.4 (41-76)	25/42	59.5 (43-74)
Co-worker reaction to disclosure – did not disclose								
Total	365/449	81.3	59/78	75.6	210/264	79.6	730/901	81.0
Sex								
Female	257/310	82.9	45/59	76.3	126/152	82.9	502/605	83.0
Male	106/136	77.9	12/17	70.6	62/80	77.5	197/254	77.6
p-value		0.22		0.63		0.32		0.06
Missing information	2/3	66.7 (9-99)	2/2	100 (16-100)	22/32	68.8 (50-84)	31/42	73.8 (58-86)
Co-worker reaction to disclosure – discriminatory/very discriminatory								
Total	1/449	0.2	-	-	-	-	1/901	0.1
Sex								
Female	0/310	0	-	-	-	-	0/605	0
Male	1/136	0.7	-	-	-	-	1/254	0.4
p-value		0.13						0.12
Missing information	0/3	0 (0-71)	-	-	-	-	0/42	0 (0-8)
Co-worker reaction to disclosure – indifferent								
Total	3/449	0.7	-	-	13/264	4.9	23/901	2.6
Sex								
Female	0/310	0	-	-	5/152	3.3	10/605	1.7
Male	3/136	2.2	-	-	2/80	2.5	7/254	2.8
p-value		0.01				0.74		0.29
Missing information	0/3	0 (0-71)	-	-	6/32	18.8 (7-36)	6/42	14.3 (5-29)
Co-worker reaction to disclosure – supportive/very supportive								
Total	52/449	11.6	19/78	24.4	36/264	13.6	113/901	12.5
Sex								
Female	30/310	9.7	14/59	23.7	19/152	12.5	68/605	11.2
Male	21/136	15.4	5/17	29.4	14/80	17.5	41/254	16.1
p-value		0.08		0.63		0.30		0.05
Missing information	1/3 (1-91)	33.3	0/2	0 (0-84)	3/32	9.4 (2-25)	4/42	9.5 (3-23)

Appendix 7:

Univariate analysis for the association between socio-demographic characteristics and retention in care at 12 months

Variable	OR (95% CI)	p-value
Age in years	1.01 (0.99-1.02)	0.28
Age categories		
18-24 years	Ref	
25-29 years	1.04 (0.73-1.51)	0.78
30-34 years	1.22 (0.78-1.92)	0.35
35-49 years	1.26 (0.88-1.78)	0.19
50+ years	0.94 (0.46-1.92)	0.86
Sex		
Female	Ref	
Male	0.63 (0.44-0.89)	0.01
Facility type		
Hospital	Ref	
Clinic	0.63 (0.41-0.95)	0.03
Gateway	0.66 (0.41-1.05)	0.08
Mobile clinic	0.68 (0.37-1.23)	0.20
Active church member		
No	Ref	0.59
Yes	1.07 (0.85-1.34)	
Active club member		
No	Ref	
Yes	1.13 (0.84-1.51)	0.43
Marital status (males)		
Separated/single	Ref	
Living together/cohabiting	1.32 (0.82-2.10)	0.25
Marital status (females)		
Separated/single	Ref	0.50
Living together/cohabiting	0.88 (0.61-1.27)	
Worked in the past 12 months		
Never	Ref	
Each month/most months/Once in a while	0.98 (0.78-1.24)	0.88
Worked in the past 3 months		
No	Ref	
Yes	1.12 (0.89-1.41)	0.35
Earned money from business in the past 4 weeks		
No	Ref	
Yes	1.16 (0.92-1.48)	0.21
Received child support grant		
No	Ref	
Yes	1.32 (1.05-1.66)	0.02
Received disability support grant		
No	Ref	
Yes	0.84 (0.41-1.68)	0.62
Highest education attained		
No education	Ref	
Primary education	2.29 (0.74-7.06)	0.15
High school education	2.59 (0.94-7.14)	0.07
Post matriculation	3.37 (1.21-9.37)	0.02
Lack of money to buy food in the past 4 weeks		
Rarely/Never	Ref	
Often/Sometimes	1.16 (0.80-1.68)	0.44
Ease of finding R200 for an emergency		
Fairly/Very easy	Ref	
Very/Somewhat difficult	1.35 (1.06-1.70)	0.01

APPENDIX 7

Univariate analysis for the association between socio-demographic characteristics and retention in care at 12 months

Appendix 7:**Univariate analysis for the association between socio-demographic characteristics and retention in care at 12 months (continued)**

Variable	OR (95% CI)	p-value
Borrowed food in the past month		
Every day/> once a week/every week	Ref	
1/2 X in the past month/never	1.32 (0.90-1.93)	0.15
Alcohol use		
4+ times a week	Ref	
2-3 times a week	1.07 (0.37-3.08)	0.91
2-4x times a month	1.02 (0.39-2.70)	0.96
<once a month	0.54 (0.21-1.40)	0.21
Never	1.10 (0.44-2.73)	0.84
Drug use, n (%)		
Never	Ref	
Once	0.80 (0.51-1.25)	0.32
> Once	1.76 (1.10-2.82)	0.02

*p-value of <0.05 was considered statistically significant

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