Expanding Assisted Partner Services (APS) to Partners of Index Partners in Western Kenya.

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Abstract

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Objectives: To investigate the uptake, characteristics and outcomes of Assisted Partner Services (APS) when expanded to identify, test and treat female sexual partners of male partners identified through the APS scale up program.

Design: Longitudinal study nested in the APS Scale-up Implementation Study (R01AI134130)

Materials and Methods: We utilized data from 31 health facilities offering APS in Homa Bay and Kisumu Counties in Kenya from November 2018 – March 2020. Male sexual partners of female index participants were traced and tested for HIV. Male partners who tested HIV-positive were provided APS and, asked to provide contact information for their female sexual partners so that they could be offered HIV testing and linkage to care if positive. Based on

the outcome of their HIV test, these female partners of male partners (FPP) were categorized as *Known Positive* (previously aware of their HIV positive status before APS), *New Positive* (new HIV diagnosis), or *Negative*. We evaluated socio-demographic characteristics of FPP by HIV status using chi-squared and fisher's exact tests. We further compared New Positive FPP with index females (enrolled females who tested positive for HIV in the facility and provided contact information for their male sexual partners) in terms of socio-demographic characteristics, linkage to care at 6 weeks, viral suppression outcomes at 12 months, and intimate partner violence (IPV). Univariable and multivariable logistic regression was used to evaluate associations between FPP demographics and new HIV positivity.

Results: Overall 4951 FPP were identified and enrolled. Among these, 291 (5.9%) were new positives, 1745 (35.2%) were known positive, and 2915 (58.9%) were negative.

FPP and female index clients were similar in terms of age, marital status and income. FPP had a 1.72 (1.38-2.14) higher likelihood of having completed secondary school and nearly 6-fold increased likelihood of being self-employed (5.87 (4.20-8.21) compared to female index clients. Similar proportions of FPP living with HIV were in care at 12 months compared to index females (90% vs 89%). Follow-up and HIV viral load outcomes, including report of IPV, were also similar for both populations. No IPV experience was reported in either group.

Conclusion: One in twenty female partners of male partners identified through expanded APS were newly diagnosed with HIV. FPP with HIV had high rates of linkage to HIV care and low IPV outcomes. Expanded APS also identified a large number of negative FPP at risk of HIV infection and link them to prevention interventions.

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DEDICATION

To my parents, Cyprian and Eva Mambo Wambugu, for their endless love, support and encouragement.

Introduction

The fight against HIV over the last 40 years has relied on research dedicated to preventing spread, improving testing, and enhancing treatment. Despite huge investments by governments and the international community, controlling the epidemic in sub-Saharan Africa has proven to be difficult (Maheu-Giroux et al., 2019), with HIV testing and identification of those living with HIV being among the most challenging. In 2020, knowledge of HIV status globally was approximately 65% among persons living with HIV, falling short of the ambitious UNAIDs target of 90 (Avert Global Data, 2018)(Kariithi et al., 2021)). In Kenya, coverage of HIV testing services is insufficient due to several barriers, including costs of rapid test kits which are procured through donor-funding and low yield (De Cock et al., 2019). This results in many people living with HIV (PLWH) presenting for HIV care late in the course of their illness resulting in poor clinical outcomes (Belay et al., 2019). Several testing innovations have been developed to help reconcile the ambitious 95-95-95 targets set by UNAIDS, and counter the low yield of HIV testing and increasingly stagnant funding being faced by lower middle-income countries for HIV programming (De Cock et al., 2019).

Assisted partner services (APS) was recommended by the World Health Organization (WHO) after several clinical trials conducted in four countries, including Kenya, between 2013 and 2015 demonstrated efficacy (WHO, 2016) (Cherutich et al., 2017), (Wamuti et al., 2015)). APS safely increases the uptake of HIV testing services among potentially exposed sexual and injecting partners of newly tested individuals (Wamuti et al., 2015). Traditionally, past APS studies have focused on understanding the characteristics of index participants and their partners and their impact on efficacy. However, there is little program data on expanding

APS to other sexual partners of the male sexual partners of the index, as they have not sought to unearth sexual networks beyond the index and their partners, likely due to resource limitation (human, financial), thus creating missed opportunity to identify other "exposed" individuals. Expanded APS is an opportunity to target the other sexual partners that could be identified and linked to the appropriate services. Therefore, as countries continue to roll out APS, the impact of the expanded APS approach among partners of partners has not attracted studies leading to a substantial knowledge gap.

This analysis focuses on female partners of male partners (FPP) who were identified and underwent HIV testing; we sought to characterize the APS and HIV care cascade for them. We hypothesized that FPP who newly tested HIV-positive would differ from female clients who presented to the facility for and tested HIV-positive (index females). There is a need to understand the effectiveness of expanded APS in this cohort, specifically potential differences in linkage and enrolment in care, as well as treatment outcomes including viral suppression at 12 months post enrollment.

Our study objectives were to analyze characteristics of FPP and determine whether there was a difference between demographic characteristics, APS uptake, linkage to HIV care and the treatment cascade for the newly diagnosed FPP compared to female index clients. We also compared the two groups to evaluate if there was an increased risk of IPV among the FPP as compared to index participants.

METHODS

Research Design

Program data was used from the APS scale-up project that was conducted in 31 facilities in both Homa-Bay and Kisumu counties in Western Kenya (Kariithi et al, 2021). All females who tested positive for HIV within the study sites were recruited as female index participants. The recruited female index clients provided contact information on their male sexual partners (>18 years old), who were subsequently contacted, traced, and offered APS. For all partners who provided consent, providers elicited contact information of female sexual partners (FPP). These female sexual partners of male partners were contacted, and offered an HIV test and offered enrollment into the study,

All study participants who were found to be HIV positive and not in care were linked to care and treatment. For follow-up of study participants, linkage to care and retention was measured by performing follow-up phone calls of all HIV positive study participants at 6 weeks and 6 months and was self-reported by the client. At 12 months post-enrollment, the participants had viral load testing performed at a clinical visit to provide information on retention in care. All the female participants were screened for Intimate Partner Violence (IPV) using an IPV screening questionnaire that includes questions about emotional, physical, and sexual violence

Study Sites

Participating public health facilities and DREAMS safe spaces where HTS occurs and APS scale-up study activities are conducted. These facilities are in four Homa Bay County and five Kisumu County wards, encompassing 31 health facilities and nine safe spaces supported by the Afya Ziwani project.

Population

The study began in May and November 2018 in Homa Bay and Kisumu County respectively. As of March 2020, the study sites had recruited 1724 index clients, 3201 male partners, 1585 FPP. For the purposes of this study analysis, we supplemented information of FIPP who had been elicited and subsequently identified after March 2020, and conducted our analysis on 4951 FPP collectively.

***Inclusion criteria*:**

Females aged ≥18 years old or emancipated minors (girls ≥15 years old who were identified as sexual partners of male partners) who gave consent to the study and are willing to participate in the follow-up.

***Exclusion Criteria*:**

Pregnant women and women who reported intimate partner violence (IPV) within the last month.

Data Analysis

We conducted a descriptive analysis by HIV status (known positive, negative and new positive) using counts and percentages for categorical variables such as partner HIV status, education level and marital status. We assessed median and interquartile range [IQR] for continuous variables. Bivariate comparisons were conducted using Chi square tests or fishers' exact tests. Penalized maximum likelihood regression was used to reduce bias in maximum likelihood estimates given the small number of female HIV positive index partners (n=291). Univariable(unadjusted) and adjusted penalized maximum likelihood logistic regression analyses were done to assess for odds of being a HIV-positive Partner compared to HIV Negative Female Partner. Missing data was low (less than 1%) and therefore we

conducted complete case analysis. We used the 5% level of significance (p value <0.05). The analyses were performed using Stata version 15.1

Results

Between May 2018 and March 2020, 1724 index clients, 3201 male partners and 4951 FPP were identified through APS. Of the total FPP, 1745 (35.2%) already knew their HIV status and were therefore considered Known Positive, 2915 (58.9%) tested HIV-negative and 291 (5.9%) tested HIV positive for the first time and were considered New Positives.

Table 1. Participant Demographics of FPP by HIV status (Known Positive, Negative, New Positive)

Columns by: HIV Status n (%)	Known Positive (KP) 1745 (35.2)	Negative 2915 (58.9)	Positive 291 (5.9)	Total 4951 (100.0)
Age category, n (%)				
15-19, n (%)	23 (1.3)	84 (2.9)	13 (4.5)	120 (2.4)
20-24, n (%)	166 (9.5)	427 (14.6)	62 (21.3)	655 (13.2)
25 Plus, n (%)	1556 (89.2)	2404 (82.5)	216 (74.2)	4176 (84.3)
Age (years), median (IQI)	30.00 (27.00; 35.00)	29.00 (26.00; 32.00)	29.00 (24.00; 33.00)	30.00 (26.00; 33.00)
Marital Status, n (%)				
Single/never married, n (%)	139 (8.0)	457 (15.7)	61 (21.0)	657 (13.3)
Married monogamous/cohabiting, n (%)	1301 (74.6)	2070 (71)	176 (60.5)	3547 (71.6)
Married polygamous, n (%)	140 (8.0)	186 (6.4)	15 (5.2)	341 (6.9)
Divorced/separated, n (%)	75 (4.3)	130 (4.5)	21 (7.2)	226 (4.6)
Widowed, n (%)	90 (5.2)	72 (2.5)	18 (6.2)	180 (3.6)
Highest Education Completed, n (%)				
Completed primary or below, n (%)	706 (40.5)	1106 (37.9)	114 (39.2)	1926 (38.9)
Secondary or above, n (%)	1039 (59.5)	1809 (62.1)	177 (60.8)	3025 (61.1)
Occupation, n (%)				
Employed, n (%)	165 (9.5)	323 (11.1)	40 (13.7)	528 (10.7)
Self-employed, n (%)	1133 (64.9)	1735 (59.5)	154 (52.9)	3022 (61.0)
Unemployed, n (%)	406 (23.3)	712 (24.4)	80 (27.5)	1198 (24.2)
Student, n (%)	41 (2.3)	145 (5.0)	17 (5.8)	203 (4.1)
Income, n (%)				
0 to 10,000 KSh, n (%)	1401 (80.3)	2363 (81.1)	228 (78.4)	3992 (80.6)
10,000 to 50,000 KSh, n (%)	340 (19.5)	541 (18.6)	63 (21.6)	944 (19.1)

Columns by: HIV Status n (%)	Known Positive (KP) 1745 (35.2)	Negative 2915 (58.9)	Positive 291 (5.9)	Total 4951 (100.0)
50,000 to 100,000 KSh, n (%)	4 (0.2)	11 (0.4)	0 (0.0)	15 (0.3)
Ever had HIV test, n (%)				
no, n (%)	32 (1.8)	205 (7.0)	21 (7.2)	258 (5.2)
yes, n (%)	1713 (98.2)	2710 (93.0)	270 (92.8)	4693 (94.8)
Result of last test, n (%)				
negative, n (%)	14 (0.8)	2692 (92.3)	269 (92.4)	2975 (60.1)
positive, n (%)	1699 (97.4)	8 (0.3)	1 (0.3)	1708 (34.5)
don't know/NA, n (%)	32 (1.8)	215 (7.3)	21 (7.2)	268 (5.5)
Self-tested in the last 12 months, n (%)				
no, n (%)	1692 (97.0)	2219 (76.1)	244 (83.8)	4155 (83.9)
yes, n (%)	53 (3.0)	696 (23.9)	47 (16.2)	796 (16.1)
Risk behaviours last 12 months, n (%)				
Reported risky behaviour	n/a	2876 (98.3)	285 (97.9)	3161 (63.8)
None, n (%)	1745 (100.0)	39 (1.3)	6 (2.1)	1790 (36.2)
Intimate Partner Violence (IPV) Risk category, n (%)				
low, n (%)	1670 (99.9)	9 (100.0)	288 (100.0)	1967 (99.9)
moderate, n (%)	1 (0.1)	0 (0.0)	0 (0.0)	1 (0.1)
Tested as a couple, n (%)				
Individual, n (%)	0 (0.0)	2895 (99.3)	287 (98.6)	3182 (64.3)
Couple, n (%)	0 (0.0)	20 (0.7)	4 (1.4)	24 (0.5)
NA, n (%)	1745 (100.0)	0 (0.0)	0 (0.0)	1745 (35.2)
Testing strategy, n (%)				
Non-facility based, n (%)	1745 (100.0)	1467 (50.3)	228 (78.4)	3440 (69.5)
Facility based, n (%)	0 (0.0)	1448 (49.7)	63 (21.6)	1511 (30.5)
Number of sexual partners, median (IQI)	1.00 (1.00; 1.00)	1.00 (1.00; 2.00)	1.00 (1.00; 1.00)	1.00 (1.00; 1.00)
County, n (%)				
Homa Bay, n (%)	1405 (80.5)	2246 (77.0)	222 (76.3)	3873 (78.2)
Kisumu, n (%)	340 (19.5)	669 (23.0)	69 (23.7)	1078 (21.8)

The median age for FPP was 30 (IQR 26.00, 33.00), with older FPP (IQR 27.00-35.00) belonging to the known positive group.

Majority of the FPP were married monogamous or cohabiting (71.6%) compared to only 13.3% who identified as single/never married, 6.9% in polygamous marriages, 4.6% divorced or separated and 3.6% widowed.

Most of FPP (61%) were self-employed, and 80.6% reported an income of (0-10,000 Ksh). Overall, 94.8% of FPP reported having a previous HIV test.

Both Negative and New Positive groups reported low intimate partners violence (IPV) within the 12 months of follow-up, with 0.1% of the Known Positives reported moderate IPV during initial evaluation.

Table 2: Participant Demographics of Newly identified HIV Positive FPP compared to Index Partners

Columns by: Client Type n (%)	FIPP (NP) 291 (14.4)	Index Female 1724 (85.6)	Unadjusted Risk Ratio (95% CI)	P value
Age category, n (%)				
15-19, n (%)	13 (4.5)	174 (10.1)	Reference	
20-24, n (%)	62 (21.3)	416 (24.1)	1.87 (1.05-3.31)	0.033
25 Plus, n (%)	216 (74.2)	1133 (65.8)	2.30 (1.34-3.95)	0.002
Age (years), median (IQI)	29.00 (24.00; 33.00)	28.00 (23.00; 33.00)		
Marital Status, n (%)				
Married monogamous/Cohabiting, n (%)	176 (60.5)	1027 (59.6)	Reference	
Single/never married, n (%)	61 (21.0)	315 (18.3)	1.11 (0.85-1.45)	0.448
Married polygamous, n (%)	15 (5.2)	118 (6.8)	0.77 (0.47-1.27)	0.304
Divorced/separated, n (%)	21 (7.2)	134 (7.8)	0.93 (0.61-1.41)	0.720
Widowed, n (%)	18 (6.2)	130 (7.5)	0.83 (0.53-1.31)	0.425
Highest Education Completed, n (%)				
Completed primary or below, n (%)	114 (39.2)	944 (54.8)	Reference	
Secondary or above, n (%)	177 (60.8)	780 (45.2)	1.72 (1.38-2.14)	<0.001
Occupation, n (%)				
Employed, n (%)	40 (13.7)	1105 (64.1)	Reference	
Self-employed, n (%)	154 (52.9)	597 (34.6)	5.87 (4.20-8.21)	<0.001
Unemployed, n (%)	80 (27.5)	0 (0.0)	1	
Student, n (%)	17 (5.8)	22 (1.3)	12.48 (7.80-19.95)	<0.001
Income Category, n (%)				
>10,000 KSh, n (%)	63 (21.6)	322 (18.7)	0.85 (0.66-1.10)	0.230
0 to 10,000 KSh, n (%)	228 (78.4)	1402 (81.3)	Reference	
Ever had HIV test, n (%)				
no, n (%)	21 (7.2)	285 (16.5)	Reference	
yes, n (%)	270 (92.8)	1439 (83.5)	2.30 (1.50-3.53)	<0.001
Self-tested in the last 12 months, n (%)				
no, n (%)	244 (83.8)	1644 (95.4)	Reference	
yes, n (%)	47 (16.2)	80 (4.6)	2.86 (2.22-3.70)	<0.001
Risk behavior category, n (%)				
Risky Behavior, n (%)	285 (97.9)	866 (50.2)	Reference	

Columns by: Client Type n (%)	FIPP (NP) 291 (14.4)	Index Female 1724 (85.6)	Unadjusted Risk Ratio (95% CI)	P value
None, n (%)	6 (2.1)	858 (49.8)	0.03 (0.01-0.06)	<0.001
Tested as a couple, n (%)				
Individual, n (%)	287 (98.6)	1635 (94.8)	Reference	
Couple, n (%)	4 (1.4)	89 (5.2)	0.29 (0.11-0.76)	0.011
Testing Strategy, n (%)				
Facility based, n (%)	63 (21.6)	1372 (79.6)	Reference	
Non-facility based, n (%)	228 (78.4)	352 (20.4)	8.95 (6.89-11.63)	<0.001
No of partners, n (%)				
>1, n (%)	64 (22.2)	1372 (79.6)	Reference	
<=1, n (%)	224 (77.8)	352 (20.4)	8.73 (6.73-11.32)	<0.001
County, n (%)				
Kisumu, n (%)	69 (23.7)	950 (55.1)	Reference	
Homabay, n (%)	222 (76.3)	774 (44.9)	3.29 (2.55-4.25)	<0.001

Correlates of being FPP vs Index Female

We compared the 1724 (85.6%) index females and 291 (14.4%) FPP newly identified as HIV positive. The IQR for FPP 29.00 (24.00; 33.00) while that of the index females is 28.00 (23.00; 33.00). In univariate analysis FPP, were more than 2-fold more likely than index females (Risk Ration [RR] 2.30;95% confidence interval [CI] 1.34-3.95) to be in 25 years or older. There was no statistical difference of marital status and income category between the FPP and index female. Overall, 60.5% of female positive were married monogamous and cohabiting category compared to 59.6% of index females. In univariate analysis, FPP were also more likely to be single/never married (RR 1.11; 95% CI 0.85-1.45). The majority of participants in both groups were in the lowest-income bracket (0-10000 Ksh), with 78.4% of the FPP are in this income bracket compared to 81.3% of the index females. Overall 117 (60.8%) of FPP were self-employed as compared to 1105 (64.1%) of Index Partners, with a FPP having higher risk of being self-employed (RR 5.87; 95% CI 4.20-8.21)

Among FPP, 60.8% have attained at least secondary education, while 45.2% of the index females have attained some education level. In the univariate analysis we found that the FPP

had higher risk of having completed secondary school level or higher (RR 1.72; 95% CI 1.38-2.14),

More of FPP had previously tested for HIV: 92.8% compared to 83.5% of index females; 95.4% of the indexes had been offered HIV self-testing as compared to 83.8% of the FPP having a two-time higher likelihood of ever previously testing for HIV (RR 2.30 95% CI 1.50-3.53), and also a two-time more likelihood of ever having had an HIV self-test in the last 12 months(RR 2.86 95% CI 2.22-3.70).

When evaluating risk behaviors associated with HIV acquisition (condom use and sex under the influence), we found that these were also more prevalent among the FPP who reported 97.9% risk, while index partners reported only 50.2% risk behavior within the categories.

Homa Bay County accounted for 76.3% of HIV-positive female partners and 44.9% of index females. and living in Homa-Bay County (RR 3.29 95% CI 2.55-4.25).

Table 3: Linkage to HIV care initiation of ART and viral suppression

12 Month	Female Index	FIPP	P value
Visits			
12-month Visits Expected (N)	1669	311	
12-month Visits Completed (% Done)	1492 (89.4%)	280 (90.0%)	0.736
Viral Loads			
VLs Done (% Done)	1451 (97.3%)	278 (99.3%)	0.053
VL Results Back (% Results Received)	1271 (87.6%)	244 (87.8%)	0.935
Viral Suppression			
VL Suppression <LDL (<=400cpml)	1175 (92.45%)	232 (95.1%)	0.010
Low Level Viremia (401-999 cpml)	51 (4.0%)	12 (4.9%)	
Viremic (>=1000 cpml)	45 (3.5%)	0 (0%)	

Linkage to care rates at 6 weeks were similar for female index compared to FPP who newly tested HIV positive (89.8% vs 87.3%; (p=0.628. ART initiation at 6 weeks for index females was also no different at 98.7% compared to 100% for FPP. However, achieving viral

suppression to (<=400cpml) at 12 months was lower for FPP compared to index. Only t 92.45%, of positive FPP were suppressed compared to 95.1% of index females (p=0.01). None of the participants reported experiencing IPV during follow-up.

Discussion

The majority of FPP females tested HIV negative 58.9%, followed by females who were previously aware of their HIV status (known positive) 35.2%, and 5.9% were newly identified as living with HIV. In this study we found that FPP had similar age, marital status, and income, as female index clients. However, education, employment, testing history and county of testing, they bore distinct differences. FPP were more likely to have had a previous HIV test and to have ever having had an HIV self-test in the past 12 months. This demonstrates that FPPs may be well connected to the health system. Given the age of FPPs (median age 30 years) and that most reported to be in stable relationships (71.6% married or cohabiting) that could have resulted in previous ANC visits, as various prevention of mother to child transmission interventions recommends of HIV testing/knowledge of HIV status among women of child bearing age. The finding that 97.4% of FPP were found to be known positive is consistent with previous population-based HIV surveys and programmatic data from Kenya in 2019 which demonstrates high knowledge of HIV status among females of this age category. Women aged 15-49 years who gave birth within the 12 months preceding the 2018 KENPHIA survey and attended ANC, 96.0% knew their HIV status. (National AIDS and STI Control Programme (NASCOP), 2018).

The yield that we found in our study is lower than what has been found in previous APS studies, with early studies conducted in 2015 reporting positivity rates of 35% in Kenya, which was comparatively lower than studies conducted in Malawi among clients attending a sexually transmitted diseases clinic and also among pregnant women had a rate of 64% and 71% respectively (Cherutich et al., 2017). The difference could be attributed to the reduced prevalence of HIV in the country, with the country reporting a national prevalence

of 4.9% ((National AIDS and STI Control Programme (NASCOP), 2018). The country has been implementing increased coverage of ART and high levels of viral suppression on ART have led to significant reductions in HIV mortality and HIV transmission risk. Still undiagnosed infections remain to pose a significant threat to HIV transmission in the country (Kimanga et al., 2014)

For the 58.9% of FPP who were identified as HIV negative, there is an opportunity to review the APS package and allowing for linkage to prevention strategies and avert HIV infections. Prevention of new infections is key in being able to combat the global epidemic and rate of new infections, especially among individuals who are at risk. No one single method has been identified that can stop the epidemic, and the national government advocates for several combined intervention methods, which includes male and female condoms and also the use of Pre-exposure prophylaxis (PrEP) among those with risky behavior (Ronoh et al., 2020)(NASCOP & National ARV treatment Guidelines, 2018). A high proportion of FPP (97.9%) reported risky behaviors (condom less sex, sex under the influence, sex with a known HIV positive partner etc.), and would benefit with linkage to prevention interventions following the recommendations of the national guidelines. There is still an opportunity to advocate for use of prevention strategies even among the 35.2% of FPP who were known positive. Studies conducted in Botswana evaluating recent multiple sexual partners found that multiple sexual partnerships, many of which were concurrent, were not uncommon among sexually active people living with HIV (Kalichman et al., 2007). Within our study, we did not evaluate for risky behavior among women who were known positive, and this was probably a missed opportunity to emphasize the need for sexual risk reduction with people living with HIV as an important prevention strategy.

It was reported that 82.7% of females between the age of 15 and 45 years who tested positive for HIV knew their status, and 96.6% of the females who knew their status were on ART (National AIDS and STI Control Program (NASCOP), 2018). The finding within our study however is not a national representation, considering the difference in HIV prevalence within the country, as there is a regional variation in distribution of HIV in the country (Kimanga et al., 2014) (National AIDS and STI Control Programme (NASCOP), 2018). The current findings should be interpreted in light of the fact that counties where we conducted our study (Homa-Bay and Kisumu) report an HIV prevalence of 15.3% and 17.5%, and have many donor funded HIV services and thus have had an advantage in rates of implementation of evidence-based intervention. Previous studies on APS implementation have analyzed the technical efficiency of this innovation by comparing the inputs used (human, financial) versus the outputs attained (number and level of services). Within the study we had different rates of APS implementation between the counties, with Homa Bay identifying 76.3% of FPP. This could be attributed to difference in implementation rates, including availability of resources and motivation of the health care worker to probe for other sex networks. A study done between Kenya, Mozambique and Cameroon identified government buy-in, low availability of trainers, low funding for APS, and shortage staff to provide APS as key challenges that need to be addressed(Han et al., 2019). These differences between the two counties need to be further evaluated, and will require a deepening in understanding of the geographical and funding variations experienced in the country, especially when carrying out national APS scale-up.

APS has been shown to significantly and safely increase uptake of HIV testing services among the exposed partners of newly tested individuals (Wamuti et al., 2015). With the observed

HIV positivity (5.1%) among the FPP who were enrolled, we should consider the availability of resources, and technical constraints encountered for eliciting and subsequent identification of the FPP. Considering index female and the FPP have similar demographics and high HIV testing rates, it is likely that they would have been identified eventually through facility HIV testing. However, one of the benefits of APS is earlier identification and therefore earlier linkage to care, as it offers timely linkage to care and treatment, prevention of onward transmission to sexual partners and reduction of risky behaviors (Kariithi et al., 2021). Also, it provides an opportunity for targeted HIV testing which results in a higher yield especially during this time of reduced funding (De Cock et al., 2019). The FPP demonstrated a very impressive rate (100%) of linkage to care and starting ART. Further, at 12 months follow up 95% were virally suppressed with no cases of IPV reported. This clearly shows that APS is effective in ensuring that those who are identified are provided with care, as per the national guidelines.

Study Limitations

Linkage to care and all personal information is self-reported by the clients, and the data might be subject to reporting bias.

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ANNEX

12-month Physical Follow-up	Index	Female Partner	P value
Total Expected	154	80	P value
Follow-up Competed	131 (85.1%)	71 (88.8%)	0.436
Taking ART % on ART (of FU completed)	130 (99.2%)	71 (100.0%)	1.000
Enrolled in care (not on ART)	0	0	
Partners notified	105	56	
Partners received aPS	96	56	
Partners tested	104	28	
Relationship ended	0	0	
Experienced IPV	0	0	

Characteristics associated with being Positive FIP

Outcome: FIPP Positive vs. Negative FIPP	Unadjusted Risk Ratio (95% CI)	P value
Age Category		
15-19	Reference	
20-24	0.95 (0.54-1.65)	0.845
25 Plus	0.62 (0.37-1.04)	0.068
Marital Status		
Married Mongamous	Reference	
Single/never married	1.50 (1.14-1.98)	0.004
Married polygamous	0.95 (0.57-1.58)	0.850
Divorced/separated	1.77 (1.16-2.70)	0.008
Widowed	2.55 (1.65-3.95)	<0.001
Highest Education Completed, n (%)		
Completed primary or below, n (%)	Reference	
Secondary or above, n (%)	0.95 (0.76-1.19)	0.679
Occupation		
Employed	Reference	
Self-employed	0.74 (0.53-1.03)	0.073
Unemployed	0.92 (0.64-1.31)	0.634
Student	0.95 (0.56-1.63)	0.858
Income Category		
0 to 10,000 KSh	0.86 (0.66-1.12)	0.261
>10000 KSh	Reference	
Ever tested		
No	Reference	
Yes	0.98 (0.64-1.49)	0.907
Ever self tested		
No	Reference	
Yes	0.64 (0.47-0.86)	0.004
Risk behavior		
Yes	Reference	
None	1.48 (0.70-3.14)	0.309
Couple testing		

Outcome: FIPP Positive vs. Negative FIPP	Unadjusted Risk Ratio (95% CI)	P value
Individual	Reference	
Couple	1.85 (0.75-4.55)	0.182
Testing strategy		
Facility based	Reference	
Non-facility based	3.23 (2.46-4.23)	<0.001
County		
Kisumu	Reference	
Homabay	0.96 (0.74-1.24)	0.768