



Reaching out to the hard-to-reach populations with HIV self-testing services in South-south Nigeria

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Abstract

Introduction. Despite decades of knowledge and advances in human immunodeficiency virus (HIV) management and treatment, many populations are being left behind and not accessing HIV Testing Services (HTS) to the fullest possible extent. The saliva-using tool OralQuick®, easy to use, non-invasive, with assurances of confidentiality and privacy, could revolutionize HTS.

Objective. The aim of the study was to assess the impact of the total market approach being deployed in Cross River and Akwa Ibom States in South-south Nigeria to enhance the demand for HIV Self-Testing (HIVST), to ensure product equity, accessibility and sustainability.

Materials and method. This study was a retrospective cross-sectional study involving analysis of HIVST records in community pharmacies and community anti-retroviral (ARV) management (CAM) teams in Cross River and Akwa Ibom States Nigeria, from March – December 2020. Different metrics, such as the offer of the HIVST kits, acceptance, reactivity, and linkage to HIV management and prevention services, were assessed and analyzed.

Results. A total of 5,153 eligible clients were offered the HIV testing service, with an acceptance rate of 23.4% (1,207), of which 33.3% (402) clients were assisted and 66.7% (805) were unassisted. Of the 1,207 who accepted the offer of the test, 963 (79.8%) reported their results, and 39 (4%) reported reactive results. On linkage for confirmatory testing and HIV care and treatment, all the 39 clients were initiated, while 586 (71%) who were non-reactive to HIVST accessed HIV prevention services.

Conclusions. The human immunodeficiency virus self-testing model has demonstrated the potential to be a vital tool in expanding the HIV testing services, and linkage to HIV care services to populations who would otherwise not have been tested.

Key words

HIVST, OraQuick, community anti-retroviral management, Nigeria

INTRODUCTION

Despite increased scientific and medical advancement in the understanding and management of human immunodeficiency virus (HIV), a large swathe of infected individuals remain untested and unaware of their sero-status. Krause et. al. (2013), estimated that there are about 60% of the World's HIV burden who falls within this category [1]. In a 2017 *Lancet* editorial, the paper sounded a somber note, that: 'the last big shared challenge remaining is testing. In every region, the number of undiagnosed HIV infections remains a substantial barrier to achieving the Joint United Nations Programme on HIV/AIDS (UNAIDS) targets and ending AIDS by 2030.'

The UNAIDS in its report stated that 'ending the AIDS pandemic by 2030 outlined ambitious targets for HIV management and treatment.' The UNAIDS 2030 goals of 95–95–95: 95% of people living with HIV (PLHIV) knowing their HIV status: 95% of people who know their status on ART

treatment and 95% of people on treatment with suppressed viral loads. The second part of the goals is to reduce the annual number of new HIV infections among adults to 200,000 and achieve zero discrimination [2]. The first 95 of these goals rests solely on how quickly and effectively we can get to ramp-up tests and sustain it across the world, especially in the hard-to-reach populations of the world. Without the success of the first 95, it is likely that the next targets may not be achieved. UNAIDS also estimate that \$24 billion would be saved in future treatment expenses if those targets are met, otherwise, it would be a massive setback for the fight against HIV/AIDS.

It's also imperative to evaluate the previous UNAIDS 2020 90–90–90 targets. The targets have still not been met. At the end of 2019, 81% of PLHIV knew their status, 67% were on anti-retroviral therapy, while 59% have suppressed viral loads. If this trend continues, it is highly unlikely that the 2020 targets of 90–90–90 would have been met. Already there are encumbrances to meeting these goals, not least the COVID-19 pandemic that has served up unprecedented disruptions in health systems. Monthly data reported for January – June 2020 by countries to UNAIDS have not shown

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any substantial declines in the number of people accessing treatments [3]. Preliminary data across Nigeria also show that the various models and strategies built into the health systems have been ameliorative.

In 2012, the United States Food and Drug Administration (US FDA) approved the first HIV rapid test kit – OraQuick® HIV Self-kit – for use in the general population and sales to anyone aged 17 and over. OraQuick® is an *in vitro* diagnostic home-use test for HIV-1 and HIV-2 (HIV- $\frac{1}{2}$) in oral fluid. It works by detecting antibodies to the virus in the oral fluid [4]. However, it is a screening test that also requires confirmatory tests for every reactive case, and counseling for reactive and non-reactive cases. It has a high sensitivity of 99.3% and specificity of 99.9% [5]. In 2002, the OraQuick Rapid HIV- $\frac{1}{2}$ antibody had approval for whole blood use, followed by approval for the whole-blood detection of HIV-2, mostly found in West Africa [6]. In 2015, the World Health Organization (WHO) released its consolidated guidelines on HIV testing service (HTS) which highlighted the inherent prospects of HIV self-testing (HIVST) to increase access to HTS, especially in crucial, unreachable populations [7].

Long before the pioneering of the HIV self-kit to improve access to testing, and mitigate some of the drawbacks associated with the conventional provider-led testing in the population, there was home-based counseling and testing (HBT) which involved health workers visiting people at home to administer tests, regardless of the risks to such people. The model had attempted to help reduce stigmatization, improve access to timely testing and ameliorate the psychological burden of people's perceptions of the cause of HIV. But such a model is intrinsically unsustainable because of the enormous human and financial resources needed to consolidate and sustain its gains. However, the gains and principles that it represented are transferable to HIVST in its present form. In a meta-analysis of a study from Africa, Sabapathy et al. (2012), found that HBT remarkably increased the uptake of testing on the part of clients. The study found a ~70% uptake in testing, leading to many people hitherto unwilling to be tested to know their status [8]. The study pooled different studies, cross-sectional surveys, randomized controlled trials, and observational cohort studies to obtain their findings.

Hard-to-reach populations in sub-Saharan Africa come in many forms, people in rural areas, homosexuals, paediatrics, and pregnant women are populations generally disproportionately susceptible to stigmatization and weaknesses. Homosexuality is still a crime in 72 countries worldwide [9], which precludes them from accessing HIV treatment and HTS. These susceptible cohorts are generally considered an afterthought in formulating and designing models of care. It has been conclusively proven that the rate of contracting HIV in this group is much higher than the average population because of the higher incidence of anal sex, use of drugs, and sharing of unsterilized needles. In an era of test and treat, access to tests invariably is access to treatment. It has been demonstrated how the entire cascade of HIV care would be bolstered by increasing testing [10,11].

In a 2010 study, the Center for Disease and Control and Prevention (CDC) found that 68% of PLHIV clients aged between 13–24 did not know their status, the majority of whom were from racial and ethnic majorities in the country [12]. Myers et al. (2006), showed that these populations, when surveyed in a New York population-based telephone survey, showed a high level of interest in a self-test when available

[13]. In this same study, 86% of those who had never been tested for HIV were amenable to the option of a self-test.

The national acquired immunodeficiency diseases (AIDS) and sexually transmitted diseases (STDs) control programme (NASCP) under the federal ministry of health (FMOH), introduced an HIVST kit following the development of operational guidelines for the delivery of HIVST in Nigeria that outlines the modalities and guidance for its use. Cross-sectional surveys have been undertaken to evaluate preferences for the test and analyze potential factors influencing its uptake. The current study is the first to measure the impact of direct implementation on HIVST in Nigeria, and attempted to evaluate the impact of HIVST introduction into the market across different metrics and outcomes, with special interest on the impact of gender and age-range on these metrics.

MATERIALS AND METHOD

Study design and patient population. The study was a retrospective analysis of HIVST clients' data between March – December 2020. The study evaluated the overall impact of HIVST in helping hard-to-reach population access HTS in the Cross River and Akwa Ibom States of Nigeria. The key indicators collected included the total number of clients offered HIVST, total number of HIVST kits distributed after acceptance, total number of individuals reporting HIVST results, total number of persons with reactive HIVST results who receive confirmatory testing, total number of persons who received confirmatory testing and report confirmed HIV positive results, total number of persons with confirmed HIV positive results who are successfully linked with HIV care and treatment, and the total number of persons with non-reactive results who are successfully linked with HIV prevention services.

The Howard University Global Initiative Nigeria (HUGIN) is an implementation partner with Family Health International (FHI360) in the implementation of PEPFAR-funded Strengthening Integrated Delivery of HIV and AIDS Services (SIDHAS) programme in Nigeria. HUGIN is responsible for strengthening pharmacy services in the project.

As part of the efforts to enhance HTS and help achieve UNAIDS 2030 95–95–95 targets, especially in case identification, the SIDHAS programme commenced the full introduction of HIVST in the Cross-River and Akwa Ibom States in March 2020, subsequent to the release of operational guidelines for its use by FMOH. The introduction of HIVST makes use of the total market approach (TMA) by incorporating different stakeholders into the project, and relying on social marketing approaches to drive the demand for creation and acceptance of HIVST.

Various validated approaches and appropriate models were used to reach out to the target population: community-based testing undertaken done through targeted community outreaches, in which the community ARV management (CAM) teams are commonly used. The CAM team is akin to a mobile HIV clinic and comprises a clinician, a pharmacist, and medical laboratory scientist. The clinician counsels the client and obtains the necessary information. The medical laboratory scientist initiates the testing which, if is reactive, the client is counselled by the pharmacist and the ARV offered. Where appropriate, the CAM team offers the reactive client HIVST for use by his/her partner(s), and is given free

of charge. The data of the partner is obtained and a referral card is given with the HIVST. Subsequent follow-up is carried out to obtain information from the partners, and fed into the HIVST register.

The other model is secondary distribution through public-private partnership, such as the incorporation of community pharmacies into distribution and the counseling of clients. As part of the implementation, community pharmacies were supplied with the kits in a commercial agreement, which are offered and sold to certain targeted clients using a risk stratification model in which most of the community pharmacies are involved as part of the Differentiated Service Delivery (DSD) model of offering HIV services to the clients. After diagnosis and initiation at a SIDHAS- supported facility, stable clients are devolved to community pharmacies to access their ARVs. The client returns to the parent facility yearly for clinical evaluation. The kits are offered to partners, and sometimes families of PLHIV who are already on the programme. Another model is the category of clients who are not known PLHIV clients, but come into the pharmacy to request certain sexual products, such as condoms, emergency contraceptives, etc. The pharmacist 'upskills' with HIVST.

If the client agrees to the test, the use of the kit is demonstrated to them using training materials – videos and testing instructions already detailed inside the HIVST pack. The client can request assistance to undertake the test (assisted testing), or they can carry out the tests by themselves (unassisted testing). The client's data and the result is then documented in the HIVST register which contains the names, telephone numbers, dates of picking HIVST, and home addresses of the clients.

In unassisted testing cases, the client is called on the phone to obtain the results of the test. In both assisted and unassisted testing, each client is offered a referral card, and each community pharmacy has an HIVST monthly summary form (MSF) that summarizes the monthly intake of HIVST. If the test proves to be non-reactive, the client is counseled accordingly depending on his/her particular case. Those who are at higher risks and eligible for pre-exposure prophylaxis (PreP), are offered counseling. Sex workers and men who have sex with men (MSM) belong to this group. For the others, they are further counselled on safe sex and preventive measures. If the result proves to be reactive, the client is referred to a SIDHAS- supported facility for confirmatory testing or a CAM team. If the test is positive, client is started on treatment. In this situation, further efforts are made through partner notification programmes to reach sexual partners through sexual network tracing and index case testing (ICT).

Data collection and analysis. The study made use of the HIVST register and HIVST MSFs used in the documentation of the patient data. The data is summarized with an Excel sheet. Data were analyzed using descriptive analysis in

Microsoft Excel 2010 version. Discrete values were expressed as percentages.

Ethics Approval. The study was approved by the Cross-River State Ministry of Health Research Ethics Committee (Ref. No. CRSMOH/HRP/HREC/2020/132).

RESULTS

Offers and acceptance of the test. During the period March – December 2020, a total of 2,108 eligible clients were offered HIVST in the Cross River State across all supported community pharmacies. Of this number, 929 (44%) were females, while 1,179 (56%) were males (Tab. 1). On acceptance of the test, a total of 569 (27%) clients from the initial 2,108 accepted the offer of the test. The acceptance rate in the females gender was 222 (39%), while for males – 347 (61%) (Tab. 1). The age group 30–39 years had the highest acceptance rate – 157 (45.2%) for males, followed by age group 20–29 years – 152 (43.8%) (Tab. 2). For females, the age group 20–29 years had the highest – 121 (54.5%), followed by age group 30–39 years with 80 (36%) (Tab. 3). Of the 1,179 eligible male clients, age group 20–29 years, accounted for 622 (52.7%), followed by age group 30–39 years with 370 (31.1%), and the least from the eligible males – 13 (1.1%) (Tab. 2). The highest in the category of eligible females was the age group 30–39 years, with 409 (44%) clients, followed by age group 20–29 years with 396 (42.6%). The least from the female clients were the age group ≥ 50 years (1.1%) (Tab. 3).

From Akwa Ibom State, a total of 3,045 eligible clients were offered HIVST. Of these, 1,415 (46.5%) were females, while 1,630 (53.5%) were males (Tab. 1). On acceptance of the test, a total of 638 (21%) clients from the initial 3,045 accepted the offer of the test. The acceptance rate across gender for females was 289 (45.3%), while for males – 349 (54.7%).

The age group 30–39 years have the highest acceptance rate – 192 (55%) for males, followed by age group 20–29 years with 84 (24%) (Tab. 4). For females, the age group 30–39 years had the highest with 132 (45.7%), followed by age group 20–29 years with 113 (39.1%) (Tab. 5). Of the 1,630 eligible males, the age group 30–39 years had the highest – 697 (42.7%), followed by age group 20–29 years, which accounted for 538 (33%). The age groups 10–19 years and ≥ 50 years has 3 each (Tab. 4). From the eligible females, the age group 30–39 years was the highest – 665 (45%), followed by age group 20–29 years – 558 (39.4%) (Tab. 5), and showed the distribution of eligible female clients based on their gender and age distribution from Akwa Ibom State.

Assisted vs unassisted testing model. Table 6 shows the summary of assisted and unassisted testing by gender for Cross River and Akwa Ibom States.

Table 1. Kits offers and acceptance by gender in Cross River and Akwa Ibom States

Description	Cross River State			Akwa Ibom State		
	Gender		Total (%)	Gender		Total (%)
	Male (%)	Female (%)		Male (%)	Female (%)	
Offered HIVST	1,179 (56)	929 (44)	2108 (100)	1,630 (53.5)	1,415 (46.5)	3,045 (100)
Taking HIVST Kits	347 (61)	222 (39)	569 (100)	349 (54.7)	289 (45.3)	638 (100)

Table 2. Offers and acceptances by age range for males in Cross River State

HIVST Metrics	Age range					Total
	10–19 yrs. (%)	20–29 yrs. (%)	30–39 yrs. (%)	40–49 yrs. (%)	≥ 50 yrs. (%)	
Total number of HIVST kits distributed	0	152(43.8)	157(45.2)	33(9.5)	5(1.4)	347
Assisted	2(1.4)	84(58.3)	48(33.3)	11(7.6)	1(0.7)	144
Unassisted	0	68(33.5)	109(53.7)	22(10.8)	4(2.0)	203
Individuals offered HIVST	13(1.1)	622(52.8)	370(31.4)	136(11.5)	38(3.2)	1179
Individuals taking HIVST kit	0	152(43.8)	157(45.2)	33(9.5)	5(1.4)	347
Persons reporting HIVST results	0	124(45.4)	119(43.6)	25(9.2)	5(1.8)	273
Persons reporting non-reactive HIVST results	0	1(25.0)	1(25.0)	2(50.0)	0	4
Persons who receive confirmatory testing and report confirmed HIV positive results	0	0	1(33.3)	2(66.7)	0	3
Persons with confirmed HIV positive results successfully linked to HIV care and treatment	0	0	1(33.3)	2(66.7)	0	3
Persons reporting non-reactive HIVST results who accessed HIV prevention services	0	123(45.7)	118(43.9)	23(8.6)	5(1.9)	269

Table 3. Offers and acceptance by age range for female in Cross River State

HIVST Metrics	Age range					Total
	10–19 yrs. (%)	20–29 yrs. (%)	30–39 yrs. (%)	40–49 yrs. (%)	≥ 50 yrs. (%)	
Total number of HIVST kits distributed	8(3.6)	121(54.5)	80(36.0)	11(4.9)	2(0.9)	222
Assisted	5(5.2)	54(56.3)	34(35.4)	3(3.1)	0	96
Unassisted	3(2.4)	68(54.0)	45(35.7)	8(6.3)	2(1.6)	126
Individual offered HIVST	58(6.2)	396(42.6)	409(44.0)	55(6.0)	11(1.2)	929
Individuals taking HIVST kit	8(3.6)	121(54.5)	80(36.0)	11(4.9)	2(0.9)	222
Persons reporting HIVST results	8(4.3)	106(57.3)	60(32.4)	10(5.4)	1(0.5)	185
Persons reporting non-reactive HIVST results	0	5(45.5)	5(45.5)	1(9.0)	0	11
Persons who receive confirmatory testing and report confirmed HIV positive results	0	5(50.0)	4(40.0)	1(10.0)	0	10
Persons with confirmed HIV positive results successfully linked to HIV care and treatment	0	5(50.0)	4(40.0)	1(10.0)	0	10
Persons reporting non-reactive HIVST results who accessed HIV prevention services	8(4.6)	101(58.0)	55(31.6)	9(5.2)	1(0.6)	174

Table 4. Offers and acceptance by age range for males in Akwa Ibom State

HIVST Metrics	Age range					Total
	10 – 19 yrs. (%)	20 – 29 yrs. (%)	30 – 39 yrs. (%)	40 – 49 yrs. (%)	≥ 50 yrs. (%)	
Total number of HIVST kits distributed	1(0.3)	84(24.1)	192(55.0)	69(19.8)	3(0.9)	349
Assisted	0	21(27.0)	37(47.4)	18(23.1)	2(2.6)	78
Unassisted	1(0.4)	63(23.2)	155(57.2)	51(18.8)	1(0.4)	271
Individual offered HIVST	3(0.2)	538(33.0)	697(42.8)	389(23.9)	3(0.2)	1630
Individuals taking HIVST kit	1(0.3)	84(24.1)	192(55.0)	69(19.8)	3(0.9)	349
Persons reporting HIVST results	0	63(23.6)	146(54.7)	55(20.6)	3(1.1)	267
Persons reporting non-reactive HIVST results	0	1(12.5)	4(50.0)	3(37.5)	0	8
Persons who receive confirmatory testing and report confirmed HIV positive results	0	0	4(80.0)	1(20.0)	0	5
Persons with confirmed HIV positive results successfully linked to HIV care and treatment	0	0	4(80.0)	1(20.0)	0	5
Persons reporting non-reactive HIVST results who accessed HIV prevention services	0	19(20.2)	57(60.6)	17(18.1)	1(1.1)	94

In Cross River State, of the 569 who reported results, 240 (42.2%) were assisted in undertaking the tests, while 329 (57.8%) carried out the tests unassisted. Of the 240 who were assisted, 96 (40%) were females, while 144 (60%) were males. For the unassisted, there were 203 (61.7%) male and 126 (38.3%) (Tab. 3). Further disaggregation showed that for the assisted testing of the 240 clients, males aged 20–29 years constituted 84 (35%), followed by females aged 20–29 years accounting for 54 (22.5%). Third on the log were 30–39

years males with 48 (20%). For the unassisted (329), male aged 30–39 years constituted 109 (33.1%), followed by male aged 20–29 years which accounted for 68 (20.7%). The same number was found in the female category for age 20–29 years with 68 (20.7%) (See Table 2 and 3).

For Akwa Ibom State, of 638 who took the test, 162(25.4%) were assisted, while 476 (74.6%) were unassisted. Of the 162 assisted, 84 (51.9%) were females, while 78 (48.1%) were males (Tab. 4 and 5). For the unassisted, 57% were males (271),

Table 5. Offers and acceptance by age range for female in Akwa Ibom State

HIVST Metrics	Age range					Total
	10–19 yrs. (%)	20–29 yrs. (%)	30–39 yrs. (%)	40–49 yrs. (%)	≥ 50 yrs. (%)	
Total number of HIVST kits distributed	1(0.3)	113(39.1)	132(45.7)	41(14.2)	2(0.7)	289
Assisted	0	28(33.3)	36(42.9)	18(21.4)	2(2.4)	84
Unassisted	1(0.4)	85(41.5)	96(46.8)	23(11.3)	0	205
Individual offered HIVST	11(0.8)	558(39.4)	665(47.0)	181(12.8)	0	1415
Individuals taking HIVST kit	1(0.3)	113(39.1)	132(45.7)	41(14.2)	2(0.7)	289
Persons reporting HIVST results	0	95(40.0)	110(46.2)	31(13.0)	2(0.8)	238
Persons reporting non-reactive HIVST results	0	5(31.2)	5(31.2)	5(31.2)	1(6.3)	16
Persons who receive confirmatory testing and report confirmed HIV positive results	0	5(31.2)	5(31.2)	5(31.2)	1(6.3)	16
Persons with confirmed HIV positive results successfully linked with HIV care and treatment	0	5(31.2)	5(31.2)	5(31.2)	1(6.3)	16
Persons reporting non-reactive HIVST results who accessed HIV prevention services	0	18(36.7)	23(47.0)	7(14.3)	1(2.0)	49

Table 6. Assisted and unassisted testing by gender for Cross River and Akwa Ibom States

Description	Cross River State			Akwa Ibom State		
	Gender		Total (%)	Gender		Total (%)
	Male (%)	Female (%)		Male (%)	Female (%)	
Assisted	144 (60)	96 (40)	240 (100)	78 (48.1)	84 (51.9)	162 (100)
Unassisted	203 (61.7)	126 (38.3)	329 (100)	271 (56.9)	205 (43.1)	476 (100)

while 43% (205) were females. Further disaggregation of the assisted clients, 36 (22.1%) were females in the age group 30–39 years, while males aged 30–39 years – 37 (22.8%). For the unassisted, males 30–39 constituted the highest population with 155 (32.6%), followed by females aged 30–39 years with 96 (20.2%) (Tab. 4 and 5).

Results reportage. In Cross-River State, of the 569 who accepted the test, 458 reported their results (80.5%). A total of 185 (40.4%) were females, while 273 (59.6%) were males. Disaggregated further, males, aged 20–29 years had 124 (27.1%), followed by males aged 30–39 years with 119 (26%). Females aged 20–29 years – 106 (23.1%), followed by 30–39 years – 60 (13.1%) (Tab. 2 and 3).

For Akwa Ibom, a total of 505 (79.1%) reported the results of the tests. Of this number, males constituted 267 (52.9%) of the reported results, while females – 238 (47.1%). Disaggregated further, males aged 30–39 years had 28.9% (146), followed by females aged 30–39 years – 21.8% (110). Females in the age group 20–29 years – 95 (18.8%), followed by males aged 20–29 years – 63 (12.5%) (Tab. 4 and 5).

Reactive results and yield. Of the 458 results reported in Cross River State, 15 reported reactive results, representing 3.3% of the total reported. Females accounted for 11 of the reactive results, while 4 were males. Females aged 20–29 and 30–39 years had the highest reactive result – 5 (33.3%) each, followed by males 40–49 years – 2 (13.3%). Females and males 10–19 years and ≥ 50 years posted no reactive HIV result (Tab. 2 and 3).

In Akwa Ibom State, 24 clients reported reactive results, representing 4.7% of the 505 reporting their results. Females accounted for 16, while 8 were males. On further disaggregation, females aged 20–29, 30–39 and 40–49 years had the highest rate of reporting positive reports with 20.9%

each. This was followed by males age 30–39 years with 16.7%. Females and males 10–19 years posted no reactive result (Tab. 4 and 5).

Linkage for confirmatory testing and treatment. In Cross-River State, of the 15 clients who reported reactive results, 93.3% of them (14) were linked to confirmatory testing. Of the 14 confirmed, 13 (91%) received reactive confirmatory testing, and all 13 (100%) were linked to HIV treatment. Of these 13 clients, 10 (77%) were females while 3 (23%) were males. Disaggregated further, females between aged 20–29 years constituted 38.5% (5), followed by 30–39 years with 30.8% (4). Adolescents 10–19 years (females and males combined) recorded zero (Tab. 2 and 3).

In Akwa Ibom State, of the 24 who reported reactive results, 87.5% (21) had confirmatory testing, 100% of them (21) reported confirmed HIV positive results. 100% of them (21) were successfully linked with HIV care and treatment. For ages 10–19 (males and females combined), they constituted zero (Tab. 4 and 5).

Linkage to HIV prevention services for non-reactive results. In Cross-River State, of the 458 reported results, 443 (96.7%) were non-reactive results. Of this number, 269 were males (60.7%) and 174 females (39.2%). Of these 443, all accessed HIV prevention services (Tab. 2 and 3). In Akwa Ibom State, of the 505 reporting results, 480 (95%) reported non-reactive results, of whom 53.8% (258) were males and 46.2% (222) were females (Tab. 3 and 4). Of these 480 clients, 29.8% (143) accessed HIV prevention services. Disaggregated males aged 30–39 years constituted 29.8% (143), followed by females aged 30–39 with 21.9% (105). There were none among the 10–19 years age group (females and males combined) linked to HIV prevention services (Tab. 4 and 5).

DISCUSSION

Across both the Cross-River and Akwa Ibom States, males received offers of self-testing more often than women, but the exact reasons for this are not yet known. It might be because most men presented requests for sexual products like condoms, lubricants, and even emergency pills, more frequently and confidently than women, because of the sexual conservatism in many Nigerian States. In a survey conducted by Trojan condoms, it was found that women were less likely to purchase condoms [14] because of shyness in buying them [15]. Since the offer of HIVST relies on the risk stratification tool, it is most likely that men would receive more offers for HIVST.

Across all age ranges, males and females 20–29 and 30–39 years received most of the offer for an HIVST kit. This is not surprising for these cohorts because as in the age group 18–29, this is considered the period when people have the most sex [3]. This age group has sex an average of 112 times per year or twice weekly [16].

Adolescents aged 10–19 across the two States received very minimal offers. This may be because many of them are minors and the FDA only approved HIVST for use in those aged 17 and over [5] because of the psychological maturity required to handle reactive cases. Therefore, in the current study, and in cases where HIVST kits were offered to this cohort, it was with parental consent.

There was a general low acceptance of offers from clients in both States, which could be attributed to the perceived high cost of the kit. As at time of report, the cost of a single kit, used once, is one thousand seven hundred naira (₦1,700) – about \$4.5. A report by the National Bureau of Statistics (NBS) shows that about 40% (around 80 million) of the Nigerian population earns below the country's poverty line of ₦137,430 – about \$381.75 per year. This is less than ₦369 per day – marginally less than one dollar [17]. To increase the affordability of the kits, it would be important to subsidize it. A similar study in Zimbabwe showed that a perceived high cost of HIVST is a discouraging factor for its uptake in the population [18].

The higher acceptance rate observed from Cross River compared to Akwa Ibom State might be on account of the distribution model. Since the kits are provided free of charge to elicit partners in ICT during CAM activities – where there must be full payments in community pharmacies – it could be that Cross River State distributed more kits through CAM activities than Akwa Ibom State. Another possibility could also be related to urban-rural financial differences. As the data did not emphasize the difference between rural and urban offers and acceptance, it might be that Akwa Ibom State concentrated more on rural areas compared to urban areas; or it might be related to the experience of the pharmacists and the CAM teams. Inequality has also been established in earnings across gender in Nigeria, it might be that men are able to afford the kits more compared to women [19]. The current study observed in both States that the age group 10–19 years had the least acceptance. As stated earlier, this cohort mostly requires parental consent before such tests could be performed, hence the lower acceptance in the group.

On whether clients need assistance or not, both States indicated that the majority carried out the test unassisted; this is encouraging since HIVST, at its core, is meant to offer privacy to the testers. And more so, the testing itself

is a non-technical, and easy-to-use product. For unassisted testing, males from both States constituted a larger number than females. This could be as a result of tendency of males for independence, and sometimes their consideration that testing is a waste of time. Males are less likely to rely on the paternalistic tendencies of healthcare providers than females.

In the results' reportage, more than 50% from both States who took the tests reported their results. This is surprising since secondary reporting – which is sometimes difficult to obtain from clients – is mostly required for unassisted testing. Cross-River and Akwa Ibom States reported reactive results of 5.7% and 4.8%, respectively. Of these reactive cases, Cross-River State was only able to link 48% for confirmatory testing and further management. In contrast, Akwa Ibom State was able to link 87.5% of its reactive cases for confirmatory testing and further management. Despite the disparity between the two States, from the onset Akwa Ibom had a higher cohort than Cross River. It might also be that Akwa Ibom State had a more robust linkage system for reactive cases compared to Cross-River State.

Cross-River State was able to link 100 % of non-reactive cases for prevention services, while in Akwa Ibom State, less than 40% were linked to prevention services. Before carrying out the test, pre-test counselling is usually carried out to each client; therefore, in the end, prevention services will be given to the clients whatever the results. This is because pre-exposure prophylaxis for clients at risk and counseling is one of the prevention services provided after the test. A tentative reason cannot be given for the disparity in the non-reactive cases linked to prevention services in the two States.

Limitation of the study. Since the results used in this study rely mainly on the results reported by clients, there might be possibilities of clients reporting a negative result, even when it might have been positive. There have been no reports of such cases, but there are suspicions that it could happen.

CONCLUSIONS

The present study has demonstrated the impact of HIV self-testing (HIVST) introduction to address testing services in hard-to-reach population in Nigeria. Many of the clients offered testing services through self-testing accepted the kits, although hindered by the perceived higher cost. Confirmatory testing of the reactive results from HIVST were also confirmed through conventional testing models, which suggests that HIVST is a reliable screening testing tool. In many cases, there was significant linkage to healthcare for confirmatory testing – in reactive cases – and prevention services for non-reactive cases.

Further studies should be carried out to evaluate the impact of self-testing on the psyche of potential clients, and the possible emotional trauma it might cause in reactive cases where unassisted testing is undertaken.

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