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WHO Clinical Staging at Initiation of Community-based ART Services among Key Populations in Nigeria

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Abstract

Introduction: WHO clinical staging and or CD4 were used as eligibility criteria for initiation and monitoring of patients on ART in Sub-Saharan African. With health facility-based ART services, most patients in Sub-Saharan African were initiated on ART at late WHO clinical staging. Data are lacking on the clinical staging at the initiation of community-based ART services in Nigeria. This study describes WHO clinical staging among key populations initiated on community-based ART services using WHO test and treat guideline in Nigeria.

Methodology: This is a baseline data analysis of a longitudinal study of all KPs who initiated community-based ART services in 7 states in Nigeria. Time 1 data abstracted from facility records includes age and sex, marital, educational, and employment status and WHO clinical staging at initiation.

Results: Eighty-two percent of participants were initiated at early WHO clinical staging (1& 2). Among KPs, 85% of FSW were initiated at the early stage, followed by MSM (75%) and then PWID (66%). More PWID (34%) were initiated at the late stage (3&4) followed by MSM (25%) and FSW (15%). Factors positively associated with early initiation include: being a female, sex partners living together, unemployment and low educational status.

Conclusion: Community based ART services using test and treat guideline will improve early initiation of KPs on ART services. However, further study to identify reasons for late ART initiation among KPs is required to support programme effort to achieve the UNAIDS 90-90-90 goals.

Keywords: *HIV/AIDS, key populations, community-based antiretroviral therapy, WHO clinical staging, test and treat.*

Introduction

The WHO clinical staging system is a staging and prognostic tool that was first developed in 1990 out of original clinical case definitions for AIDS and it was revised in 2007 [1]. It was initially developed as a highly specific method for diagnosing HIV infection before the availability of ELISA tests [2]. Subsequently in resource limited setting, because of lack of resources to support CD4 or viral load for management of HIV patients, the staging and or CD4 count were used to determine eligibility for ART and were also used to monitor patients on ART[1],[3] The clinical staging for HIV has been shown to be a practical and accurate way to manage HIV-infected patients, with international studies showing agreement between clinical manifestations included in the WHO staging system and laboratory markers including CD4 cell count, total lymphocyte count [2] and viral load level[4]. The staging recognized that the disease is progressive in nature with four clinical stages which correlate with the degree of immune-suppression in the disease spectrum [5] thus; it can be used for baseline assessment of patients and for monitoring patients on care and treatment [2]. It uses clinical parameters to classify subjects into any one of four categories i.e. stage 1 to IV, progressing from primary HIV infection to advanced HIV/AIDS [1]. Stages 1 and 2 are referred to the early stage while stages 3 and 4 are referred to the late stage of the disease that requires treatment base on WHO

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the previous guideline. According to Nigeria national ART guideline, all patients on ART must have WHO clinical staging at initiation and thereafter every 3-6 months during follow up visits [6]. However, evidence has shown that ART initiation in African sub-region is usually at a late stage [7] when patients are already in stage 3 or 4 with the CD4 level of <200cells/ µL. In a study in sub-Saharan African on late initiation of ART, [8] 50% of HIV-infected individuals in Nigeria had CD4 level of <200 cells/µL at HIV diagnosis, while in a peri-urban community near Cape Town, South Africa, 36% of HIV-infected individuals had CD4 <200 cells/µL and 31% presented HIV-related symptoms of WHO stage 3 or 4 at the time of diagnosis. In another study conducted in Ethiopia [7] on factors associated with initiation of ART at the late stage, 31.2% of participants-initiated ART late, of whom 85.1% already had advanced HIV disease at enrolment. This means that a large number of patients diagnosed at the late stage of the disease and were initiated on ART. The problem of late initiation on ART may be worse for KPs who have poor health-seeking behaviour [9] couple with stigma, discrimination, and lack of specific intervention focusing on KPs, they are likely to be identified at the late stage of the disease.

HIV/AIDS has remained a public health concern, especially in resource-poor countries. Majority of the world's new HIV infections occur in resource-poor countries [10], with two-thirds of the world's HIV-infected population living in Africa [2]. Nigeria is said to be the second most affected country following South Africa in terms of a number of persons living with HIV/AIDS in the world [11]. In all countries and settings, KPs are disproportionately affected by HIV infection [12]. KPs are groups that have a high risk and disproportionate burden of HIV in all epidemic settings due to their behavioural patterns and specific legal and social challenges that increase their vulnerability to HIV, including barriers to accessing HIV prevention, treatment and other health and social services [13]. Key populations include Men who have Sex with Men (MSM), People Who Inject Drugs (PWID), and Sex Workers (SW), people in prisons and closed settings, and transgender people. UNAIDS estimated that between 40 and 50 percent of all new HIV infections among adults worldwide occur in these key populations and among their sex partners (PT) [12]. In Nigeria, It was estimated that SWs, MSM, and PWID make up 3.4% of Nigerian population, yet they account for 32% of new HIV infections [14]. The prevalence of HIV among MSM, brothel-based FSW, none brothel-based FSW and PWID in Nigeria are 23%, 19.4%, 8.6% and 3.4% respectively [15] compared to the national prevalence of 3.0 [16]. The implication is that these subpopulations will continue to drive the epidemic in all settings in Nigeria. Unfortunately, reaching KPs with HIV intervention is a huge challenge because of stigma, discrimination, violence and in some cases criminalization of KP behavioural patterns [12] which often limit their access to and utilization of comprehensive HIV prevention, treatment, care, and support services [17]. In Nigeria, there is stigma and discrimination as well as legislation against MSM, PWID and SWs practices making public health intervention for these groups more difficult. Because KPs are drivers of HIV epidemic, the lack of health coverage for KPs will continue to undermine the control for HIV infection. Currently, the government of Nigeria does not provide any KP specific health services thus, public health intervention for KPs is only provided through donor-supported projects. One of such project was the Strengthening HIV Prevention Services for Most at Risk Population (SHiPS for MARPS), a PEPFAR funded project through USAID Nigeria with focus on providing comprehensive prevention services including HIV counselling and testing and treatment as prevention for KPs within the communities. The SHiPS for MARPS project was implemented by Society for Family Health Nigeria in consortium with Population Service International and Center for the Right to Health in 7 states. The project in addition to outreach services, established One-Stop-Shops (OSS) facilities within the communities to provide comprehensive HIV ART services for KPs and their partners. The community health services provided by project offered an opportunity for KPs who hitherto, had a poor attitude to HIV counselling and testing to know their HIV status. With increased uptake of HIV counselling and testing among KPs in the communities, more HIV positive KPs were identified and were initiated on ART during mobile ART services or were linked to treatment at the OSS. The earlier an HIV positive patient is identified and linked to treatment the better the prognosis as evidence has shown that earlier initiation of HIV antiretroviral therapy is associated with better outcomes, including lower morbidity and mortality [18]

The last WHO consolidated guideline on the use of antiretroviral drugs was published in 2016 following an extensive review of evidence and consultations in mid-2015 [19]. Based on the new evidence, WHO recommended ‘’test and treat’’ meaning that all populations and age groups who tested HIV-positive should begin antiretroviral treatment as soon as possible after diagnosis irrespective of WHO clinical stage, CD4 count or viral load [19]. In line with WHO, the national guidelines for HIV prevention treatment and care 2016 recommend that ART should be initiated in all adults, all including pregnant and breastfeeding women, adolescents and children living with HIV, regardless of WHO clinical stage and at any CD4+ cell count [20]. Before the “test and treat” guideline by WHO, UNAIDS had set 90-90-90 goals for the control of HIV infection by 2020 and elimination of HIV by 2030[5]. The goals state that at least 90% of all people living with HIV know their HIV status, 90% of all identified positives are linked to ART and 90% of those linked to treatment achieve viral suppression [5]. In the context of “test and treat” guideline, the use of WHO clinical staging, CD4 count and viral load as eligibility criteria for initiation on ART are no longer valid as the only eligibility criteria is HIV positive serology result. However, these tests are still important as monitoring parameter for the patient on ART and in Nigeria, all patients initiated on ART must have WHO clinical staging at initiation and thereafter every 3-6 months during clinic visits. Since KPs are drivers of the epidemic, serious attention must be paid to theses group if we must achieve the UNAIDS goals. The SHiPS for MARPS project was focused on achieving the UNAIDS 90-90-90 goals using the test and treat strategy. Before the "test and treat" guideline, most patients in African Sub-region were initiated on ART at late stage using WHO clinical staging criteria [6]. With community ART services using test and treat strategy, it is yet to be described what WHO clinical staging are HIV positive patients identified in the communities and linked to treatment. If patients are identified at early WHO staging and linked to treatment then, this strategy should be scaled up as early initiation on ART is associated with better prognosis. This is even more important for KPs who currently have poor access to and utilization of health services. This study is set out to describe the WHO clinical staging at which HIV positive KPs are identified within the communities and linked to ART services using the test and treat strategy.

Objective

To describe WHO clinical staging among KPs initiating ART in a community-based ART service based on WHO test and treat guideline.

Methodology

Site

This study was carried out across 7 states supported by SHiPS for MARPS project. In each state, the project established One-Stop-Shop facility to provide HIV counseling and testing, treatment and care services for KPs and their partners. Other services provided at the OSS include cervical cancer screening, syndromic management of other sexually transmitted diseases and partner notification services. The project also implemented mobile ART services moving from one community to the other were KPs were located.

Study design

A longitudinal study of all HIV positive KPs who were initiated on ART at the 7 OSS and during mobile ART services from October 2016 to March 2017 was conducted. After initiation, time 1 data were abstracted from medical record of each patient to obtain their baseline characteristics. This study is an analysis of the baseline characteristic to determine the WHO clinical staging at which patients were initiated on ART at the OSS and during mobile ART services.

Sampling technique

All patients initiated on ART during enrollment period were eligible for the study and data was abstracted for all of them. But all patients who were transferred to the facilities during the enrollment were excluded since they were old patients who already initiated ART in other facilities but were

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transferred to the SHiPS project because it was more convenient for them as the project focused on KPs.

Data collection

Data were abstracted from already existing medical records in the OSS. Each facility maintained the national patient register which captured all the variables for analysis on the study. The following data were abstracted: socio-demographic of patients, the state where OSS was located, local government area where the patient resides, WHO clinical staging at initiation and type of KP. A line listing of the patients was developed on an Excel template to capture all the variables required for analysis on the study. The final Excel template merged for all the states was imported to SPSS version 20 for analysis.

Ethical consideration

Ethical clearance for the study was obtained from the Nigeria Institute of Medical Research. Only information documented in routine patient care register was abstracted and use for analysis with no additional patient contacts or study specific inquiries

Result

The study was conducted between October 2016 and September 2017 in the 7 states supported by SHiPS for MARPS project. This result is based on baseline data collected after initiation on ART. A total of 3,611 KPs including their partners were initiated on ART at the OSS and during mobile ART services. Out of the 3,611 KPs initiated during the period, 2351(65%) were FSW, 688(20%) were MSM, 339(9%) were partners of KPs (PT), 155(4%) were male PWID and 78(2%) were female PWID. The baseline characteristics and WHO staging at initiation are presented below.

Table 1. Socio-demographic characteristic of the respondent

Characteristics	Type	Number	Percentage
Sex	Male	1135	31
	Female	2474	69
Educational status	None	510	14.1
	Primary	720	19.9
	Secondary	1762	48.8
	Tertiary	620	17.2
Occupational status	Employed	1265	35.1
	Student	304	8.4
	Unemployed	2029	56.5
Marital status	Married	1185	33
	Single	1874	52
	Divorced	239	6.5
	Separated	26	0.7
	Widowed	268	7.3
	Co-habituating	19	0.5
Age	15-24 (young people)	934	25.9
	≥25 years (adults)	2677	74.1
	Min = 15, Max=75, Mean =30.9, std = 8.7		

N=3611

Sixty-nine percent of the patients were female while 66% had at least secondary education. Un-employed accounted for 56.5% while only 35% were employed and the remaining 8.4% was the student. While 52% were single, 33% were married. Majority of the patients were the old adult (74.1%) and the rest were the young person (25.9%). Mean age was 30.9±8.7 (range 15-75)

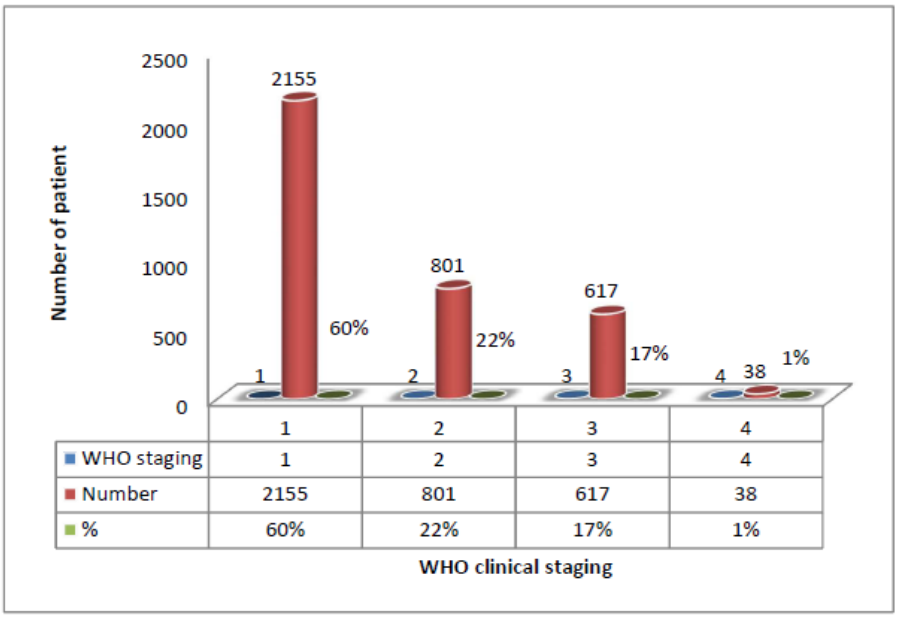

Figure 1. WHO clinical staging at initiation on ART among KPs and PTs

Sixty percent of the participants were initiated at WHO clinical stage 1, 22% were initiated at stage 2, 17% at stage 3, while only 1% was initiated at stage 4. Cumulatively, 82% were initiated at the early stage (stage 1 and 2) while 18% were initiated at the late stage (stage 3 and 4).

Table 2. KPs and WHO clinical staging at initiation on ART

Type of KPs	WHO staging at initiation								Total
	1		2		3		4		
	No.	%	No.	%	No.	%	No.	%	
FSW	1469	62%	536	23%	326	14%	20	1%	2351
MSM	386	57%	125	18%	167	24%	10	1%	688
PT	225	67%	62	18%	49	14%	3	1%	339
PWID	75	33%	78	33%	75	32%	5	2%	233
Total	2155	60%	801	22%	617	17%	38	1%	3611

Among KPs, 85% of FSW was initiated at an early stage (1&2), followed by MSM (75%) and then PWID (66%). More PWID (34%) were initiated at the late stage (3&4) followed by MSM (25%) and FSW (15%). Similar to FSW, 85% of PTs were initiated at early stage 1&2, while 15% were initiated at late stage 3&4.

Table 3. Age and WHO clinical staging at initiation

Age in years	WHO clinical staging				Total
	Early		Late		
	No	%	No	%	
15-24 (Young person)	754	81%	180	19%	934
≥25 (Old adults)	2202	82%	475	18%	2677
Total	2956	82%	655	18%	3611

X2 = 1.089, P-value = 0.2967 at 95% CI

Eighty-two percent of old adults were initiated on ART at the early stage compared to 81% young person initiated at the late stage. The difference was not statistically significant P-value = 0.2967

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Table 4. Sex and WHO clinical staging at initiation on ART

	WHO staging at initiation				
	Early		Late		
Sex	No	%	No	%	Total
Female	2087	84%	389	16%	2476
Male	869	77%	266	23%	1135
Total	2956	82%	655	18%	3611

X^2= 31.275; P = 0.000 at 95% CI

More female (84%) were initiated at early stage than male (77%). This difference was statistically significant, P-value = 0.000 at 95% CI

Table 5. Status of sex partner and WHO clinical staging at initiation

	WHO staging at initiation				
	Early		Late		
Status of sex partner	No	%	No	%	Total
Living together	1019	85%	185	15%	1204
Living separately	1937	80%	470	20%	2407
Total	2956	82%	655	18%	3611

X^2 = 9.357; P = 0.002 at 95% CI

Eighty-five percent of sex partners living together were initiated on ART at early stage than 80% among sex partners living separately. P = 0.002 at 95% CI

Table 6. WHO clinical staging and educational status of respondents

	WHO staging at initiation				Total
	Early		Late		
Educational status	No	%	No	%	
At most primary	1067	87%	162	13%	1229
At least secondary	1889	79%	493	21%	2382
Total	2956	82%	655	18%	3611

X^2 = 30.837; P = 0.000 at 95% CI

Only 79% of participants who had at least secondary education were initiated at an early stage compared to 87% among those that had at most primary education. The difference was significant P = 0.000 at 95% CI

Table 7. Employment status and WHO clinical staging at initiation

	WHO staging at initiation				Total
	Early		Late		
Occupation	No	%	No	%	
Employed	1008	80%	257	20%	1265
Student	243	80%	61	20%	304
Unemployment	1705	83%	337	17%	2042
Total	2956	82%	655	18%	3611

$X^2 = 8.48$; P = 0.014 at 95% CI

Eighty-three percent of unemployed KPs were initiated at an early stage than those employed (80%) or being a student (80%). The difference was statistically significant. P = 0.014 at 95% CI

Discussion

Since it was developed, the WHO clinical staging system has been a useful tool for staging and management of HIV/AIDS cases in the Sub-Saharan African region and has proved pragmatic and useful in facilities at both the first level and the referral level [21]. In line with the WHO guideline, Nigeria has used WHO clinical staging and CD4 count as eligibility criteria for initiation on ART and for patient monitoring over the years. In our study, 82% of the participants were diagnosed and initiated at an early stage while 18% were diagnosed and initiated at the late stage of the disease. This is an improvement over previous studies [6], [7] which have shown that most patients in the Sub-Saharan African region were initiated at the late stage. Studies [18], [22], [23] have shown that early initiation of HIV positive patient on antiretroviral therapy is associated with better outcomes, including lower morbidity, mortality and HIV transmission. A similar finding was also demonstrated by the "START and TEMPRANO studies which demonstrated a 50% reduction in morbidity and mortality among individuals with HIV who had CD4 counts >500 cells/mm^3 and who were randomized to receive ART immediately versus those that ART initiation was delayed [24]. It was based on findings from these studies that WHO in 2016 issued the test and treatment guideline for patients confirmed to be HIV positive. Countries have since then adjusted their ART guidelines in line with WHO recommendation. Nigeria in the last ART guideline [25] stated that all patients who are positive and are willing to start should be initiated on ART. The SHiPS for MARPs project implemented test and treat among KPs using mobile ART services and OSS facilities located in the communities. Routine HIV counselling and testing were carried out among a cohort of KPs attending Peer sessions on minimum prevention package intervention and during outreaches to where KPs lives like bunks for PWID, brothels, and street for FSW and MSM parties. Identified positives were either initiated same day or are referred to OSS to be initiated within the next 2 weeks. With these activities, it was possible to reach a large number of KPs at an early stage of the disease as evidenced by finding in our study. While early initiation has great benefit, there is some evidence from observational studies that starting ART on the same day as HIV diagnosis may increase the risk of loss to follow-up, particularly among pregnant women. [26] This call for caution by project implementing this strategy to pay careful attention to ensuring that patients make an informed choice when offered ART soon after diagnosis. Some reasons attributed to late initiation of ART in Sub-Saharan Africa include [8]: Firstly, there is a poor attitude to voluntary counselling and testing as people agree to test when they are already sick because of HIV infection. Secondly, in facilities where identified positive patients are enrolled for HIV care, there is usually a long waiting list for the patient to be initiated on ART because an individual may not be willing to commence treatment immediately due to denial or the patient is seeking an alternative method of treatment. Thirdly, some of the patients on the waiting list may be at the early stage of the disease and the treatment centre will continue to monitor the patient until they convert to stage 3 or 4 when they are clinically eligible to commence treatment according to WHO ART guideline. Fourthly, the facility may not have sufficient resource to support such large number of the patient on their waiting list. With the new WHO guideline on the test and treat strategy, this has eliminated barriers to initiation on ART as the only eligibility criteria is a confirmed HIV positive serology test. The increased awareness of screening and community-based counselling and testing services will increase the number of HIV positive persons identified who will need to be initiated on ART. However, with increasing support from donor agencies to scale up ART services, more positive patients will be reached to benefit from ART services.

In our study, 85% of FSW were initiated at early stage followed by MSM (75%) and PWID (66%). Although this study was conducted among KPs, the higher proportion of FSW initiated at the early stage may not be unconnected with health-seeking behaviours which have been reported to be better among women than in men [27], [28], [29]. In all but one of 12 developing countries studied by the Centres for Disease Control and Prevention, HIV-infected women were significantly more likely than men to receive antiretroviral therapy [28]. On World AIDS Day 2017, UNAIDS released a new report

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showing that men are less likely to take an HIV test, less likely to access antiretroviral therapy and more likely to die of AIDS-related illnesses than women [30]. According to a study [31], UNAIDS earlier in 2016 reported that 60% of women of 15 years or older living with HIV were on treatment, whereas this was true for only 47% of men. In South Africa, the figures are 51% for women and 37% for men and as a result, globally 27% fewer women and girls had HIV-related illnesses than men and boys [31]. The reason might not be unconnected to the fact that sickness may be seen as a sign of weakness for many men, and this perception has resulted in a reluctance of care-seeking among men [27]. Other reasons could be stigma, societal norms that discourage men from admitting ill health, and employment responsibilities [28]. In Uganda, some men reported they would rather avoid knowing their HIV status and receiving life-saving treatment because they associated being HIV-positive with emasculating stigma. One study in South Africa showed that 70% of men who had died from AIDS-related illnesses had never sought care for HIV [28].

Past research has also documented low uptake of HIV prevention and health services among MSM, self-reported fear of seeking health services, and concerns of disclosure of sexual orientation and discrimination in health settings were the major issue with MSM. [31] Unfortunately, globally, epidemics of HIV are expanding among MSM with consistently high incidence rates. Data from multiple continents show consistently high incidence rates, particularly among the youngest age groups, and in many high-income settings, overall epidemic trends are in decline *except* among MSM [32]. The recent wave of anti-homosexual court decisions and legislation in Russia, India, Nigeria, and Uganda underscores the threats to universal access faced by these populations and is illustrative of the fundamental challenges involved in extending the benefit of ART access to those who need it [32]. With these obvious challenges among men, we will not end Aids if we don't make sure our health strategies focus on encouraging men to use health services and work with men to foster greater gender equality [29].

HIV prevalence among people who inject drugs is 28 times higher than among the rest of the population [33]. Despite the increased risk of HIV for people who inject drugs they are among those with the least access to HIV prevention, treatment, and healthcare. This is because drug use is often criminalized and stigmatized [33]. Almost half of those seeking treatment for injecting-related/ problems did so during an emergency or crisis [34]. In the USA, even though ARV use increased from 58% in 2009 to 71% in 2015 and in all 3 cycle years, a higher percentage of ARV treatment was observed among males, PWID of older age (≥50), and PWID with current health insurance [29] however, this rate is lower than the other sub-population of KPs [36]. Globally, drug users have reduced access to and utilization of ART, and initiate treatment at more advanced stages of infection even in developed countries with relatively good access in the general population [36].

Our study also found some associations with early initiation on ART. More female were initiated at the early stage than male (P=0.000 at 95% CI). This might be due to better health-seeking behaviours already observed among female than male. [27], [28], [29]. The study also found that patients who were married or co-habituating were initiated more at the early stage than single or separated sex partners (P=0.002 at 95% CI). This might be as a result of routine HIV testing and counselling in antenatal care and universal treatment eligibility for pregnant women with HIV [28] Sex partners who are living together are more likely to desire children prompting the women to attend antenatal care services. A study found that acceptance of HIV testing was an important determinant of seeking antenatal care in medical clinics. Unlike women, who often learned their HIV status through antenatal testing, men became aware of their status when they eventually sought formal medical services after long periods of illness and exhausting other forms of medical care, including chemists and traditional [37]. Besides, there has been a lot of focus on women on the issues of HIV/AIDS and reproductive health than men. In our study, we also found that patients who had no education at all and those that have at most primary level education were initiated at the early stage more than those that have at least secondary education. This is contrary to what was described in Europe where a study found that the proportion of advanced HIV disease decreased with increasing educational level: 52, 45, 37, and 31% for uncompleted basic, basic, secondary and tertiary education (P for trend < 0.001 for interaction test). However similar to our finding, a study in Spain found that women with higher educational level are at risk of late diagnoses and thus late initiation (OR=1.4 at 95% CI {0.8-2.5})

[39]. Educational status is a strong determinant of socioeconomic status and it is expected that more educated person should have better knowledge of health services and utilize them [38]. Even though in this study, unemployed patients-initiated ART at the earlier stage, other studies have shown that employed HIV-infected individuals, particularly those in low- and high-income countries [40], and patients with financial constraints [41] were more likely to adhere to ART than the unemployed individual. In our study, 82% vs 81% of old adults and young person were initiated on ART at the early stage of the disease. This difference was not significant, P-value = 0.2967. A much more difference was however observed in a study [42] conducted in South African which reported that 97% of HIV diagnosis occurred after presentation with clinical disease and a higher proportion of adolescents had advanced HIV disease at presentation compared to adults (WHO Stage 3/4 disease (79.3% vs 65.2% ($p < 0.001$)). The delay on diagnosis and initiation by young person was attributed to some complex issues face by adolescents living with HIV which includes; emerging sexuality, peer influence, stigma, delayed disclosure of diagnosis, and consent legislation, all of which complicates retention and adherence to ART [43]. Addressing these issues takes time and can result in delaying ART initiation even if clinical treatment eligibility criteria are met [43].

Conclusion

Our study has shown that community-based ART services using test and treatment guideline has the potential to ensure early initiation of KPs on ART. Since early initiation has been shown to have a great benefit including reduction of transmissible infection, community ART services is a good strategy to implement treatment as prevention. More so that KPs are the drivers of the epidemic, achieving reduced transmission by these groups will facilitate the achievement of UNAIDS 90-90-90 goals.

It is a well-known fact that KPs experience a range of challenges including stigma, discrimination, punitive laws, policies and practices that limit their access to ART and other HIV interventions in many countries. On this project, a higher level of positive KPs identified was initiated at the early stage than the general population. This achievement may not be unconnected with the fact that the project focused on KP services only. KPs are freer to access services in a place they know that they will not be stigmatized or discriminated. An end to AIDS is only possible if we overcome the barriers of criminalization, stigma, and discrimination that remain key drivers of the HIV epidemics among key populations.

Late initiation was highest among PWID followed by MSM. Further study is required to understand the issues around late initiation on ART despite the fact that KP focused intervention are available to them. This is important particularly for MSM in Nigeria whose HIV prevalence has consistently been on the increase.

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