



Knowledge, Attitude and Practice of Healthcare Workers Towards Availability of Antiretroviral Pre-Exposure Prophylaxis in Nigeria

Abayomi Joseph Afe^{1,*}, Adefunke Adetula¹, Olugbemiga Peter¹, Oluwalusi Ebenezer¹, Omolola Olonisakin¹

¹Community Medicine Department, Equitable Health Access Initiative, Lagos, Nigeria

Abstract

Introduction: The introduction of preexposure prophylaxis (PrEP) against incident HIV infection has changed the epidemiology of disease as continuous treatment with tenofovir and emtricitabine among high risk groups can reduce the relative risk for incident HIV infection by over 90%. However, despite the approved use of TDF+FTC, as a fixed dose combination of emtricitabine 200 mg and tenofovir disoproxil fumarate 300 mg, for oral PrEP since 2012, it does not appear to have become widely accepted and in use among healthcare workers especially those in low income countries. Researches are therefore needed to consider the awareness and practice of health workers towards the availability of PrEP services in this part of the world. Healthcare workers are expected to be promoters of the use of PrEP services.

Method: A cross sectional questionnaire-based study conducted in southern Nigerian over a 6 months period. Data were collected from 250 healthcare workers using interviewer-administered questionnaires. The data analysis was done using statistical package for the social sciences (SPSS) for windows version 20.0 software (SPSS Inc; Chicago, IL, USA). Frequency counts were generated for all variables and statistical test of significance was performed with chi-square test. Significance was fixed at $P < 0.05$ and highly significance if $P < 0.01$.

Results: A high proportion of the respondents (>60%) were highly educated healthcare workers (majorly Nurses and medical doctors) and about half (55%) having at least 10yrs working experience in the health sector with most especially on the HIV program (>90%), majority (94%) of the health workers were aware about ARV pre-exposure prophylaxis but very few (6%) could give the standard definition for PrEP as the use of ARV drugs by HIV negative persons to prevent the acquisition of HIV. Most (67%) of them gave wrong definition for PrEP and worse still about one fifth (20%) had no idea what PrEP was all about. Most (70%) could not correctly identify all the ARV drugs in a standard PrEP regimen while about 35% had no idea at all of the approved ARVs used for PrEP. Though PrEP services was not available at any of the facilities where the respondents were working, the approved drugs (TDF+FTC) for PrEP were available at about 40% of the health facilities (public and private) and 15% community pharmacies in the vicinity of the respondents. Only 60% of the respondents were willing to access PrEP service for themselves if indicated while 35% would not use such services even if it is indicated for reasons which include concern about adverse effects and safety. Awareness of PrEP was significantly associated with the ability of the healthcare workers to identify the correct ARV regimen, ARV dosages and also correct indication for PrEP. Awareness was also associated with the knowledge of the correct proven efficacy for PrEP (>95%) and high likelihood of seeing a patient placed on PrEP and willingness to use PrEP based on personal indication

Conclusion: The level of awareness of PrEP among healthcare workers was very high at about 90% yet many (60%) could not give correct standard definitions of PrEP, PrEP ARV regimen, dosages and level of efficacy of PrEP. Also none of the respondent had PrEP services available either at their center or any known referral centers. This is unacceptable in a country with second highest HIV burden in the world and has adopted PrEP in her national HIV guideline with ongoing PrEP demonstration studies. The few healthcare workers who were able to mentioned this information were more likely to have seen a patient placed on PrEP and were more willing to use PrEP based on personal indication.

Recommendations: There is need to deepen the and knowledge of PrEP among healthcare workers especially those in poor resource settings by engaging them through update courses outreach, educational resources, campaigns/seminars and workshops and various job aids. All healthcare service providers should be very comfortable to carry out HIV risk assessment of their clients and provide PrEP to those indicated directly or indirectly through referral

Corresponding author: Abayomi Joseph Afe, Community Medicine Department, Equitable Health Access Initiative, Lagos, Nigeria, Email: abayomiafe@gmail.com

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Introduction

Worldwide, almost 1.8 million people became infected with HIV in 2016[1]. According to the Centres for Disease Control and Prevention [CDC] in 2015 about 1.1 million persons had indications for pre-exposure prophylaxis (PrEP) in the US but less than one in ten of them had PrEP. Also, the uptake of PrEP has been highly skewed, with some people who needed PrEP the most being less likely to have it [2]. While regulatory agencies in some countries have approved PrEP for use by populations at high risk of HIV, the W.H.O, in 2015, also recommended PrEP as an additional prevention option for HIV negative people at significant risk of HIV. The uptake and scope of PrEP activities is increasing globally, In June 2016 an estimated 60 000 people were enrolled on PrEP, the majority of whom were in the United States. The rapid establishment of government-regulated programmes across many nations is needed to improve the monitoring and evaluation of PrEP use and its impact on the epidemic to attain the

global target of reaching three million people at substantial risk of HIV infection with PrEP by 2020. [3].

The approved drug is a fixed dose combination of emtricitabine(FTC] 200 mg and tenofovir disoproxil fumarate (TDF] 300 mg, taken as a daily pill for preventing HIV infection. However, the number of new HIV cases globally does not appear to reduce especially among certain key populations such as young women, sex workers, people who inject drugs (PWID) and men who have sex with men (MSM) since regulators approved its use for that purpose in 2012[4, 5, 6].This is partly because in eastern and southern Africa, for instance, young women in serodiscordant sexual relationship who account for 26% of the region's new infections rarely have access to the PrEP. Researches are therefore needed to assess the availability of PrEP services, the awareness and practice of health workers about PrEP especially in Nigeria, where Healthcare workers are expected to promote the use of PrEP services.

Civil societies have joined medical authorities and agencies in demanding from and partnering with governments to provide PrEP, highlighting provision of PrEP as a human right. However, while some countries like the USA have already included PrEP in their national HIV prevention programmes, others such as Nigeria are in different stages of various PrEP demonstration projects. At whatever stage of PrEP programme implementation, countries must ensure access equity to PrEP, so that the very people who need it most, and are often the hardest to engage because of the same conditions that make them most vulnerable to HIV, are not disenfranchised. PrEP can be defined as the ongoing use of antiretroviral drugs by HIV-negative persons in a bid to reduce their risk of acquiring the HIV infection. It is a very potent HIV prevention strategy deployed during periods when the risk of HIV infection is high. People at high risk of HIV infection include those living in communities and sexual networks with HIV incidence of at least 3% higher than the general populations and this include men who have sex with men (MSM), female sex workers, women in heterosexual relationships, adolescent girls, people who inject drugs

PrEP service entails the daily intake of oral antiretroviral pill starting before a potential exposure to HIV and continuing afterwards. Apart from the approved combination ARV (TDF+FTC) for PrEP, standalone Tenofovir (TDF) has also been found to be effective in two PrEP clinical trials. Before prescribing ARV for PrEP, an HIV test and a risk assessment must be done to determine if a person's level of risk makes him eligible for the service. An important aspect of the PrEP service is the commitment to regular medical follow-up appointments every three months. During such visit the client is monitored for side effects and toxicity, and retested for HIV (if a person tests HIV positive, their PrEP use must be discontinued) and sexually transmitted infections (STIs). PrEP cannot protect against other STIs, such as gonorrhoea, chlamydia, herpes and syphilis, and their presence may reduce the ability of PrEP to prevent HIV infection.

There is also the need for an ongoing adherence support and additional HIV prevention services, such as risk-reduction counselling and provision of condoms. Continuous risk assessments are essential to determine

if a PrEP user is still at "high risk" and eligible for PrEP.

There is substantive evidence to show PrEP efficacy at reducing the risk of HIV infection across various categories of sexual exposure and sexes – male, female, transgenders, cisgenders. Many randomized placebo-controlled trials have proved the effectiveness of daily TDF+FTC as PrEP. These trials confirmed that PrEP can reduce the risk of HIV acquisition when used by several different populations, including men who have sex with men (MSM), transgender women who have sex with men, people who use injection drugs, and heterosexual men and women. The overall effectiveness of PrEP in those trials ranged widely from 0 to 75 % (7-12). But, reports from some other studies suggested that the consistent use of PrEP may reduce the risk of HIV infection by over 90 % [7, 8, 12,].

The wide range in the effectiveness of PrEP in all these studies is due to different levels of adherence to the prescribed ARV among the study participants, as some participants only took their pills occasionally while others failed to take their pills at all [13].

Literature Review: the iPrEx study [7] proved the efficacy of pre-exposure prophylaxis (PrEP) with daily oral TDF +FTC combination to prevent HIV acquisition in men who have sex with men (MSM) and transgender women. The Lancet HIV journal also reported a demonstration trial of PrEP among MSM and transgender women vulnerable to HIV under real-world conditions in the Brazilian public health system, [8]. The results showed that PrEP was effective, drug adherence was good, and sexual risk compensation was not observed; which was a surprise to a few in the HIV prevention field. Several other studies have shown that MSM and transgender women were willing to use PrEP, had good drug adherence, and did not start having riskier sex [8, 9] so why the delay in PrEP implementation? The usual reasons for the slow implementation of PrEP programme include poor knowledge among policy makers, fear of increased expenditures associated with PrEP, criminalization of sexual behaviours, and the stigma and discrimination that MSM and transgender women face in many parts of the world [10] leading to denial of PrEP to these vulnerable populations. The Brazilian PrEP study demonstrated the effectiveness and feasibility of PrEP in

a real-world setting and that PrEP can be offered at public health-care clinics in a middle-income country with majority of the enrollees retained in care and having high levels of adherence without risk compensation in the investigated populations [11].

Previous works that have demonstrated adherence as a critical factor in the success of PrEP intervention include the [14, 15] nested sub-study of the Partners trial In 2013 which concluded that high (> 80%) PrEP adherence was associated with 100% PrEP efficacy (95% CI 83.7 to 100%) [16] and the VOICE trial in 2015 which failed to demonstrate PrEP clinical effectiveness in young African women [17], where only 30% of quarterly plasma samples contained a detectable level of TDF.

Common causes of poor adherence to PrEP that have been documented in studies [18, 19] include individuals low risk perception, ARV side-effects, perceived stigma and dosing regimen incompatibility.

Three different oral dosing regimen options for PrEP which have been investigated are the Daily *dosing*, *Event-driven dosing*, where individuals take two tablets prior to intercourse, followed by single doses 24 and 48 h after the first [20] and the Time *driven dosing* where individuals take pills twice weekly with a post-intercourse boost [21, 22, 23]. In all these routes, adherence was consistently associated with effectiveness. Recently long-acting PrEP formulations with controlled release have been suggested to lead to improved adherence and acceptability [24], implying high efficacy.

The fear of emergence of ARV resistance with PrEP has been debunked by several studies that showed that the only few cases of ARV resistance was associated with individuals who were infected between enrolment and randomisation [25, 26, 27], or had missed diagnoses of pre-existing HIV infection [19], and were later randomised to receive PrEP.

PrEP in Nigeria

Nigeria with the second highest number of new HIV infections annually needs to significantly slow the HIV epidemic to achieve the 90-90-90 UNAIDS goal of eliminating HIV infection by 2030. Therefore, it is important that Nigeria adopt the combinations of

prevention strategies comprising of the mutually reinforcing biomedical, behavioural, and structural interventions. These strategies include the use of PrEP, which holds promise in protecting many of the most vulnerable and at-risk populations. However, the awareness, knowledge, and accessibility of health workers about including PrEP as part of the HIV-prevention program in Nigeria is still abysmally low. For a successful PrEP program in Nigeria the government would have to ensure its free sustained access in addition to addressing the expected additional heavy workload for health personnel, address the capacity needs of the health workforce, create awareness of the program in the community, avoid depending solely on foreign donors, and invest in the local production of the approved PrEP drug. Also incorporating PrEP into the current HIV-prevention programme and decentralizing PrEP delivery would improve access and coverage of PrEP. Few potential community concerns about PrEP that need to be addressed for a successful PrEP use in Nigeria include the wrong notion that promoting PrEP could promote sexual promiscuity, a likely increase in risky sexual behaviours, misconceptions and misinterpretations about PrEP use because of low literacy levels, stigma associated with PrEP use, poor adherence with daily dosing by healthy individuals, and the fear of side-effects potentially decreasing adherence to the PrEP regimen. Healthcare workers are critical stakeholders in the design and implementation of the PrEP project to promote acceptance and rapid scale up of PrEP. These therefore require regular updated appropriate and clear information about PrEP to be able to prescribe and manage people on PrEP. On the part of the potential users of PrEP, challenges that are needed to be overcome include Stigma as identification as someone in need of PrEP coupled with the mandatory repeated hospital visits are stigmatizing and suggestive of HIV infection, unsupportive legislative environment that makes working with some key populations such as MSM challenging. Other concerns including adhering to ARV drugs in the absence of HIV infection, fear of the requisite baseline HIV testing, side-effects from ARV therapy use, potential for drug resistance arising from drug unavailability and nonadherence, increased HIV risk

behaviour, coping with frequent hospital visits for drug refills, and counselling, and the long-term sustainable provision of the PrEP. To ensure rapid scale up of the PrEP, it has been suggested that the drugs would have to be provided free of cost, prescribed and dispensed by qualified health workers, particularly doctors, pharmacists, and pharmacy assistants, in both public and private health facilities, decentralize service delivery for PrEP from the primary healthcare level to the tertiary level, integrated into routine outpatient care or existing ART programme[28].

Methods

This was a cross sectional questionnaire-based study conducted in southern Nigerian states of Ondo and Ekiti over a 6 months period. Data were collected from 250 healthcare workers using interviewer-administered questionnaires. Quantitative data were collected during the interview using a questionnaire comprising of 35 close ended questions. The questions were to determine participant's demography, awareness on PrEP including knowledge, concerns, and attitudes towards the use of a PrEP by the healthcare workers and where PrEP services can be located within the surroundings of the health workers. Respondents had the option to comment and give additional information not captured by the available options. The data analysis was done using statistical package for the social sciences (SPSS) for windows version 20.0 software (SPSS Inc; Chicago, IL, USA). Frequency counts were generated for all variables and statistical test of significance was performed with chi-square test. Significance was fixed at $P < 0.05$ and highly significance if $P < 0.01$.

Study Participants

Healthcare workers aged 18 years older who were involved in the care and treatment of HIV cases and implementation of HIV-prevention and treatment programmes in Nigeria were recruited to participate in the study.

Ethical approval

This study was approved by the Ethics and Research committee of Federal Teaching Hospital Ido ekiti, Ekiti state with protocol number ERC/2017/02/20/30B. The study was conducted in full

compliance with the approved ethical protocol. All research staff engaged in this study was trained on research ethics emphasizing the importance of informed consent and confidentiality. No names or personal identifiers were recorded on any of the study materials which were stored securely.

Of the 246 respondents, 78%(n=191) were male while female health workers made up the remaining 23%(n=55). Most (60%) of the respondents were within the age range 25-29yrs, followed by 22% belonging to the age range 35-39yrs while another 20% were aged ≥ 50 yrs. Over 60% of the respondents had first degrees (Bachelor/HND degrees), 12% had master's degree, 12% had OND, 7% had secondary education and 2% had fellowships. Less than 1% had the two extremes of qualifications (elementary education and Ph.D holders). Nurses and midwives constituted the largest proportion (46%) while medical doctors and counsellors constituted 12% each. Other categories of health workers interviewed were Laboratory staff (7.3%), Pharmacist (3.3%), Pharmacy technician (2.9%), Medical Record Staff (12%) and community health extension workers (1.62%). A few staff (n=22, 8.9%) working on an HIV project were also interviewed. More than half (55%) of these staff have had at least 10yrs working experience in the health sector. The largest proportion of these staff (44%) worked in public secondary hospitals, while 19%, 16% and 15% worked in public tertiary hospitals, government agencies and public primary health centers respectively. Fewer proportions worked with private hospitals (4.5%) and NGOs or CBOs (1.63%). Over 90% of the study participants have had experience working either in an HIV clinic or on HIV program as project staff, with an ongoing working experience of 4-6yrs (28%), 1-3yrs (22%), 7-9yrs (21%), <1yrs (11%) and ≥ 10 yrs (8%) on the program (Table 1).

Though up to 94% of the health workers were aware about ARV pre-exposure prophylaxis, only 6% could correctly defined PrEP as the use of ARV drugs by HIV negative persons to prevent the acquisition of HIV. A whopping 70% gave wrong definition for PrEP and up to 20% had no idea what PrEP was all about. Only 34% could correctly identify all the ARV components of a standard PrEP regimen while 24% gave wrong PrEP ARV

Results: Table 1-4

Table 1. Respondents Profile

CHARACTERISTICS	Frequency	%
SEX		
Male	191	77.64%
Female	55	22.36%
Total	246	100
AGE		
25-29	15	60.97%
30-34	31	12.60%
35-39	55	22.35%
40-44	46	18.69%
45-49	48	19.51%
≥50	51	20.73%
Total	246	100.00%
Highest Education Qualification		
Primary	1	0.41
Secondary School	18	7.32
OND	30	12.2
Bachelor/HND	159	64.63
Masters	30	12.2
Ph.D	2	0.81
Fellowship	6	2.44
Total	246	100.00%
Professional role		
Medical Doctor	36	14.63%
Nurse/Midwife	113	45.93%
Lab staff	18	7.32%
CHEW/CHO	4	1.62%
Pharmacist	8	3.25%
Pharmacy technician	7	2.85%
Medical Record Staff/M&E	3	12.20%
Counselor	35	14.22%
HIV Programme Staff	22	8.90%
Total	246	100.00%

Duration Of Health work Practice	Frequency	%
<1yr	3	1.22%
1-3yrs	13	5.28%
4-6yrs	42	17.07%
7-9yrs	50	20.33%
≥10yrs	136	55.28%
None	2	0.81%
Total	246	100.00%
Place of Primary Assignment	Frequency	%
Private Health Facility	11	4.47%
Public Primary Health Facility	37	15.04%
Pubic Secondary Hospital	108	43.90%
Public Tertiary Hospital	46	18.70%
Government Agencies	40	16.26%
NGOs/CBO	4	1.63%
Total	246	100.00%
Worked in HIV Clinic/program	Frequency	%
Yes	226	91.87%
No	20	8.13%
Total	246	100.00%
Duration of work in HIVclinic /Program	Frequency	%
<1yr	28	11.38%
1-3yrs	55	22.35%
4-6yrs	70	28.45%
7-9yrs	53	21.54%
≥10yrs	20	8.13%
None	20	8.13%
Total	246	100.00%

Table 2. Knowledge of Pre-exposure prophylaxis (PrEP)

Knowledge		
Heard of PrEP	Frequency	%
Yes	230	93.50%
No	16	6.50%
Total	246	100.00%
Definition of PrEP	Frequency	%
Correct	14	5.69%
Wrong	166	67.48%
I don't know	50	20.33%
Not Applicable	16	6.50%
Total	246	100.00%
Identify ARV Regimen for PrEP	Frequency	%
Correct	84	34.15%
Wrong	59	24.0%
Not Applicable	16	6.50%
I don't know	87	35.4%
Total	246	100.00%
ARV Dosage for PrEP (tablet mg/dly/duration)	Frequency	%
Correct	148	60.16%
Wrong	19	7.72%
Not Applicable	16	6.50%
I don't know	63	25.61%
Total	246	100.00%
Indication for PrEP	Frequency	%
Correct	151	61.38%
Wrong	36	14.63%
Not Applicable	16	6.50%
I don't know	43	17.48%
Total	246	100.00%
Efficacy of PrEP	Frequency	%
Correct	59	23.98%
Wrong	32	13.01%
I don't know	139	56.50%
Not Applicable	16	6.50%
Total	246	100.00%

Table 3. Availability of PrEP

Seen anybody on PrEP	Frequency	%
Yes	0	0
No	235	95.5
Not Applicable	11	4.5
Total	246	100.0
PrEP service available intrafacility	Frequency	%
Yes	0	0.0
No	233	94.7
Not Applicable	13	5.3
Total	246	100.0
Availability of ARV for PrEP	Frequency	%
Private Hospital	11	4.5
Public Hospital	83	33.7
Pharmacy Store	37	15.0
Don't Know	102	41.5
Not Applicable	13	5.3
Total	246	100.0
Willing to use PrEP	Frequency	%
Yes	147	59.8
No	86	35.0
No Response	13	5.3
Total	246	100.0
No, why	Frequency	%
Adverse Effect/Safety Concern	15	6.1
No Response	71	28.9
Not Applicable	160	65.0
Total	246	100.0

Table 4. Associations between Respondents characteristics and their PrEP knowledge

Characteristics	Heard of PrEP	Difference btw PEP &PrEP	Correct definition for PreP
Age	P=0.56		
Gender	P=0.33		
HEQ	P=0.75	P=0.924	
Professional role	P=0.732	P=0.00	P=0.034
Marital	P=0.93		
Worked in HIV program	P=0.11	P=0.00	P=0.02
PrEP Regimen	P=0.00		
PrEP Dosage	P=0.00		
PrEP Indication	P=0.00		
See PrEP Px	P=0.00		
PrEP Efficacy	P=0.00		
Willing to use PrEP	P=0.00		

regimen and about 35% had no idea at all of the approved ARVs used for PrEP.

Though PrEP service was not yet available at any of the facilities where the respondents work, about 18% claimed to have seen patients placed on PrEP. Also about 34% public hospitals, 15% pharmacy stores and 5% private hospitals had the approved ARV drugs (TDF+FTC) for PrEP. Only 60% of the respondents were willing to access PrEP service for themselves if indicated while 35% would not use such services even if it is indicated for reasons which include concern about adverse effects and safety.

Respondents who had heard of PrEP were more likely to mention the correct ARV regimen and dosages used for PrEP and also the correct indication for PrEP. This category of health workers were also able to state the correct proven efficacy for PrEP (>95%) and were more likely to have seen a patient placed on PrEP and they were also more willing to use PrEP if they were prescribed based on indication. Gender, highest educational qualification (HEQ) and the professional role had no significant impact ($P > 0.05$) on the awareness and knowledge of the respondents about PrEP, however among those who were aware of PrEP, professional role and history of working on HIV clinic/program were significantly associated with their ability to differentiate between PEP and PrEP.

Discussion

Even though over 60% of the respondents were highly educated health workers (majorly Nurses and medical doctors) with more than half having at least 10 years working experience in the health sector and most especially on the HIV program (>90%), majority (94%) of the health workers had heard about ARV pre-exposure prophylaxis but very few (6%) could give the standard definition for PrEP as the use of ARV drugs by HIV negative persons to prevent the acquisition of HIV. Most of them gave wrong definition for PrEP and worse still about one fifth had no idea what PrEP was all about. Most (70%) could not correctly identify all the approved ARV drugs in a standard PrEP regimen while about 35% had no idea at all of the approved ARVs used for PrEP. Though PrEP services were not available at any of the facilities where the respondents were working, the

approved drugs (TDF+FTC) for PrEP were available at about 40% of the health facilities (public and private) and 15% community pharmacies in the vicinity of the respondents. This is a reflection of the current reality in Nigeria, where PrEP is only available on the ongoing national demonstration project being conducted by the National Agency for the Control of AIDS (NACA) which aim to evaluate the effectiveness of models for delivery of PrEP and TasP as combination prevention strategy for 1,200 heterosexual, serodiscordant couples. Study findings will be used to inform scale-up of PrEP and TasP as part of comprehensive national HIV-prevention package. In terms of willingness to use PrEP if indicated, more than half of the respondents were willing to use PrEP if prescribed and for those who were not willing, commonest reason for this was the concern for the side effects or adverse reactions. According to the manufacturer some common side effects of taking TDF+FTC include mild nausea, diarrhea, headaches, and/or weight loss, which mostly disappear after a few weeks of taking PrEP. However, reductions in bone-mineral density and kidney health have been observed in some HIV-positive people taking TDF+FTC as part of their long-term treatment for HIV. Similar toxicities were also seen in a very small proportion of PrEP users but the kidney damage resolved after stopping PrEP. Another concern is the potential for the development of drug resistance. If an HIV-negative person becomes HIV positive while using PrEP, their virus could develop resistance to TDF+FTC.

According to Idoko et al [28] the poor attitude of health care workers towards PrEP users, including breaching confidentiality and stigma expressed by health care workers could also be one of the concerns about PrEP use by serodiscordant couples in Nigeria. None of the respondents had prescribed PrEP for any patient, and none had seen any client that was placed on PrEP. This is in contrast with findings from other studies in the developed settings such as the survey conducted among Canadian healthcare providers relatively knowledgeable about HIV, in which 13% said they had prescribed PrEP [29]. In a separate survey of Canadian AIDS Service Organization (ASO) workers, 11% knew of one or more people using PrEP [30]. Awareness and knowledge of PrEP among healthcare workers can be improved by engaging them through update courses,

outreach, educational resources, campaigns/seminars and counselling/workshops. These efforts need to ensure that they know what PrEP is and who it is for and that any decisions related to starting or stopping PrEP are well informed. Efforts also need to engage those at "high risk" and address their lack of PrEP knowledge and awareness. All healthcare service providers need to be prepared to talk about HIV risk perception with clients so as to differentiate someone who requests PrEP but is actually at low risk and does not need PrEP from someone who may perceive himself to be at low risk when in reality his behaviour puts him at high risk for HIV infection. In a study presented at the PrEP education press conference titled, "Emergency Medicine Physicians Overlooked in PrEP Education Efforts," Tortelli and coauthors found that in a survey of 67 emergency medicine physicians, although the majority of respondents were aware of PrEP, only 24% were knowledgeable about its guidelines [31]. Furthermore, 57% of ED physicians sampled were uncomfortable discussing PrEP with patients, 54% had concerns about whether PrEP was effective, 90% were concerned about adverse effects of PrEP, and 70% feared it would promote HIV resistance.

In addition, according to Tortelli and colleagues, emergency medicine physicians are unlikely to prescribe PrEP because it requires follow-up and continued care. Nevertheless, ED physicians can serve a crucial role in identifying patients at high risk for HIV—who would otherwise go unnoticed—and referring these patient to appropriate care.

Although PrEP is not meant to replace other effective HIV prevention strategies (such as condoms and needles replacement), it may provide an important prevention option during periods where a client is struggling to manage their HIV risk in other ways. Since PrEP carries risks and is expensive, it is not a strategy that a client would necessarily need or want to take for a long period of time. Healthcare service workers at primary and secondary levels need to be aware of and develop partnerships with other higher health facilities with capacity to offer PrEP. This can ensure that clients who may benefit from PrEP, and are interested in using it, are linked to a location where it is available. To further improve knowledge and awareness on PrEP,

electronic, paper and social media can be recruited into the publicity of information on PrEP. This coupled with development of job aids on PrEP for clinicians would increase the awareness and knowledge. While PrEP service can be made available free of cost if the cost is covered by organizations providing funding for HIV care and treatment in the country.

Conclusion

PrEP has been shown to be highly effective yet numerous barriers impede the wider adoption of PrEP prescription and use. Some of these barriers lie with healthcare workers who have limited knowledge of the product and are unaware that it's safe, effective, and available. In this study, the level of awareness of PrEP among healthcare workers was very high at about 90% yet many(60%) could not give correct standard definitions of the ARV regimen, dosages and level of efficacy of PrEP. Also none of the respondent had PrEP services available either at their center or any known referral centers. This is unacceptable in a country with second highest HIV burden in the world and has adopted PrEP in her national HIV guideline though still conducting demonstration studies. Healthcare workers who were aware of PrEP appeared to be better equipped with all necessary information to prescribe and counsel their clients appropriately on the use of PrEP.

Recommendation

Awareness and knowledge of PrEP among healthcare workers especially those in poor resource settings need to be improved by engaging them through update courses outreach, educational resources, campaigns/seminars and workshops and various job aids. All healthcare service providers should be very comfortable to carry out HIV risk assessment of their clients and provide PrEP to those indicated directly or indirectly through referral. Also engagement of PrEP champions and PrEP users who are powerful advocates that can get correct information about PrEP to all the nooks and crannies where potential clients can be found would go a long way to promote its use . This will also be a powerful way to influence community by being a visible example.

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