

**Review of Factors affecting access to Pre-exposure prophylaxis  
among Key populations in Nigeria**

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# **Review of Factors affecting access to Pre-exposure prophylaxis among Key populations in Nigeria**

A thesis submitted in partial fulfilment of the requirement for the degree of  
Master of Science in International Health

by

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**Signature:**



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## Acronyms and Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy ARV Antiretrovirals
AGYW	Adolescents Girls and Young Women
BBFSW	Brothel-Based Female Sex Worker(s) Behavior Change
CDC	Centers for Disease Control and Prevention
eMTCT	Elimination of Mother-to-Child Transmission of HIV
FCT	Federal Capital Territory
FGoN	Federal Government of Nigeria FLHE Family Life and HIV Education
FMoH	Federal Ministry of Health
FSW	Female sex workers
GDP	Gross domestic product
HCT	HIV Counseling and Testing
HIV	Human Immunodeficiency Virus
HSS	Health Systems Strengthening
HTS	HIV Testing Services
IBBSS	Integrated Biological and Behavioral Sentinel Surveys
MSM	Men who have sex with men
MTCT	Mother-to-child transmission of HIV
NACA	National Agency for the Control of AIDS
NASA	National AIDS Spending Assessment

NBBFSW Non-Brothel-Based Female Sex Workers

NDHS Nigeria Demographic and Health Survey

NGOs Non-Governmental Organizations

NHSSS National HIV Sero-prevalence Sentinel Survey

NPHCDA National Primary Health Care Development Agency

NSF National Strategic Framework

NSP National Strategic Plan PEP

PEPFAR President's Emergency Plan for AIDS Relief PHC Primary Health

PEP Post-Exposure Prophylaxis

PrEP Pre-Exposure Prophylaxis

PLWHIV People Living with HIV

PWID People Who Inject

STIs Sexually Transmitted Infections

UNAIDS United Nations Joint Program on HIV/AIDS

UNDP United Nations Development

UNICEF United Nations Children's Fund

USAID United States Agency for International Development

WHO World Health Organization

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## Abstract

**Background:** Nigeria has one of the highest rates of new HIV infections in the world. While progress has been made to operationalize the implementation of Pre-exposure prophylaxis (PrEP), being an effective HIV prevention, which reduces the risk of contracting the infection through by up to 99%, PrEP access, and uptake is, however, still at a sub-optimal level in key populations (sex workers, men who have sex with men, people who inject drugs).

This study explores barriers associated with PrEP uptake among key populations to inform effective HIV prevention strategies and recommend effective base practices.

**Methods:** Review of literature and an adaptation of the social and economic barriers framework to analyze PrEP access and uptake in the key population of interest.

**Findings:** The barriers to PrEP access and uptake in Nigeria are multi-dimensional. On one hand is the lack of implementation of government strategies to pro-actively ensure the inclusion of key populations in intervention programs as well as policies and laws that contribute to the stigmatization of key populations. On the other hand, are individual and social barriers that prevent members of key populations from seeking healthcare services including PrEP. These are however modifiable factors that could be addressed through behavioral changes and the building of strong social and community networks.

**Conclusion:** Access and uptake of PrEP have been challenging. Lessons from other countries show that the effective implementation of national prevention strategies is necessary for an impactful effort towards HIV epidemic control.

**Keywords:** HIV, Key Population, Nigeria, Policy, PrEP, Stigma

## Introduction

HIV is a global pandemic. Since the epidemic started in the 1980s, more than 36 million deaths have been recorded worldwide from. In 2015 it was estimated 36.7 (34-39.8) million people were living with HIV and 2.1 (1.8-2.4) million new infections. During that same year, an estimated 1.1 (0.94-1.3) million people died of HIV. (ART; Henrich et al., 2017). According to WHO estimates, only 60% of people infected with HIV know their status. The disparities between continents and countries are enormous in terms of prevalence, incidence, and death related to the virus and treatment coverage

Pre-Exposure Prophylaxis (PrEP) describes a daily oral intake of antiretroviral drugs (ARVs), which is recommended as a preventive or protective measure for HIV-uninfected people against potential exposure to Human Immunodeficiency Virus (HIV). It is highly recommended for high-risk key populations (Avert, 2020). Oral PrEP uses antiretroviral drugs ARVs by non-HIV carriers to block their acquisition before exposure. These ARVs generally consist of Tenofovir (TDF) in doses of 300 mg (monotherapy) or a combination of Tenofovir 300mg / Emtricitabine 200 mg (TDF / FTC), the last combination is the most used and recommended for MSM, transgender women, and heterosexual men and women.

In 2014, the WHO developed consolidated guidelines on preventing, diagnosing, and treating HIV for key populations or those at substantial risk of contracting HIV. Subsequently, in 2015, the recommendations included the delivery of PrEP as an additional alternative to people at significant risk of contracting HIV and should always be applied within the framework of combined prevention.

Recent data published by the Centers for Disease Control and Prevention (CDC) found PrEP to significantly lower the risk of HIV infection as a result of unsafe sex by over 90% and 74% from drug injection use, adding to the growing body of evidence relating to the efficacy of PrEP in preventing HIV acquisition among female sex workers (FSW), Men who have Sex with Men and People who inject drugs (PWID). The data is further characterized by the fact that individuals with lesser degrees of adherence are included in these figures, thus raising the actual level of protection for those who comply by close to 100% (CDC, 2019).

Furthermore, scientific evidence from several clinical trials focused on the use of PrEP succeeded in demonstrating that PrEP is very efficient in reducing the occurrence of HIV infection to an absolute minimum value. However, this holds only when the procedure is taken regularly and appropriately. As a result, PrEP has continued to be referred to as a critical milestone in HIV prevention (Avert, 2020). PrEP affords individuals who have few alternatives for HIV protection, particularly those who prefer not to or are unable to wear a condom, to exert effective control over their HIV and other risks in a befitting manner (UNAIDS, 2021). However, despite its proven efficacy and growing recommendations, there still exist several obstacles that continue to hamper the proper establishment and ramping up of PrEP use among key populations. This problem necessitated the current study, which aims to review the factors affecting the uptake of PrEP in key populations at high risk of HIV infection in Nigeria.

## Chapter One: Background Information on Nigeria

### 1.1 Geography

Geographically situated in the Western part of Africa (9.0820° N, 8.6753° E), Nigeria shares its northern borders with Niger and Chad, its western borders with the Republic of Benin, and its eastern borders with Cameroon, which extends to the Atlantic Ocean's shoreline and serves as the country's southern border. Nigeria shares its northern borders with Niger and Chad, its western borders with the Republic of Benin, and its eastern borders with the Republic of Benin (Fig 1). Given the country's 800 kilometers of coastline, it is well-suited for deploying naval forces. Nigeria can sustain a wide range of economic activities, including agriculture, industry, and commerce, due to its quantity of available land space (World Bank, 2021).



Fig 1.1 Map of Nigeria. Source: Nations Online Project.

## 1.2 Demography

Nigeria is well known for its very large population, making it the world's sixth-largest country in terms of population and the continent's most populous country. There are several other important demographic indices to be considered, including a high growth rate - 3.2 percent (which has been affected by lower infant mortality and higher fertility); a high school age/youthful population (with more than 43 percent of the population being 15 years or younger); and a very large labor force (constituting of a working-age group 15-59 that is over 40 percent of the population). The three largest ethnic groups are Yoruba (South-West Nigeria), Hausa/Fulani (Northern Nigeria), and Igbo (South-East Nigeria). Together, these three ethnic groups collectively make up over half of the country's population. Life expectancy in Nigeria was 53 years, a substantial improvement from 46 years in 1990 (NSF,2017).

## 1.3 Socioeconomic dynamics

As the most populous nation in Sub-Saharan Africa, a feature that places the nation as one of the most accessible markets in the region. The country also has a relatively qualified and prospective workforce, making it an excellent location for the efficient and successful administration of capital investments. It is well linked to the rest of the world via a strong system of road networks, railway lines, interior, and exterior waterways, marine and air routes (World Bank, 2021). Considered to possess the 29th largest economy on the planet, boosted by a gross domestic product (GDP) of about \$442.5 billion, Nigeria's GDP increased by 22 percent between 2010 and 2021, and it is still anticipated to expand by another 41% by 2025. (Carmen, 2021). Despite this apparent strength, disparities arising as a result of

social-economic backgrounds and opportunity continues to be severe, and this has had a negative impact on poverty reduction efforts. As of 2018, 40 percent of Nigerians were living in extreme poverty, with another 25 percent living in precarious circumstances. More recently, a rise in inflation has also had a negative impact on the welfare of households. This has continued to cause a rise in food prices in 2020 and is also expected to have driven more Nigerians into poverty (World Bank, 2021). At its core, the presence of disparities between rural and urban regions in Nigeria, particularly in terms of access to economic resources and development, has continued to encourage both internal and foreign migrations. Overall, the high levels of labor inaccessibility, population expansion, volatile politics, ethnic and religious incompatibilities, and hardship have been repeatedly highlighted as the primary drivers of significant mobility of both men and women around the nation and beyond its borders (Young 2013; Darkwah and Verter 2014; Rufai et al., 2019)

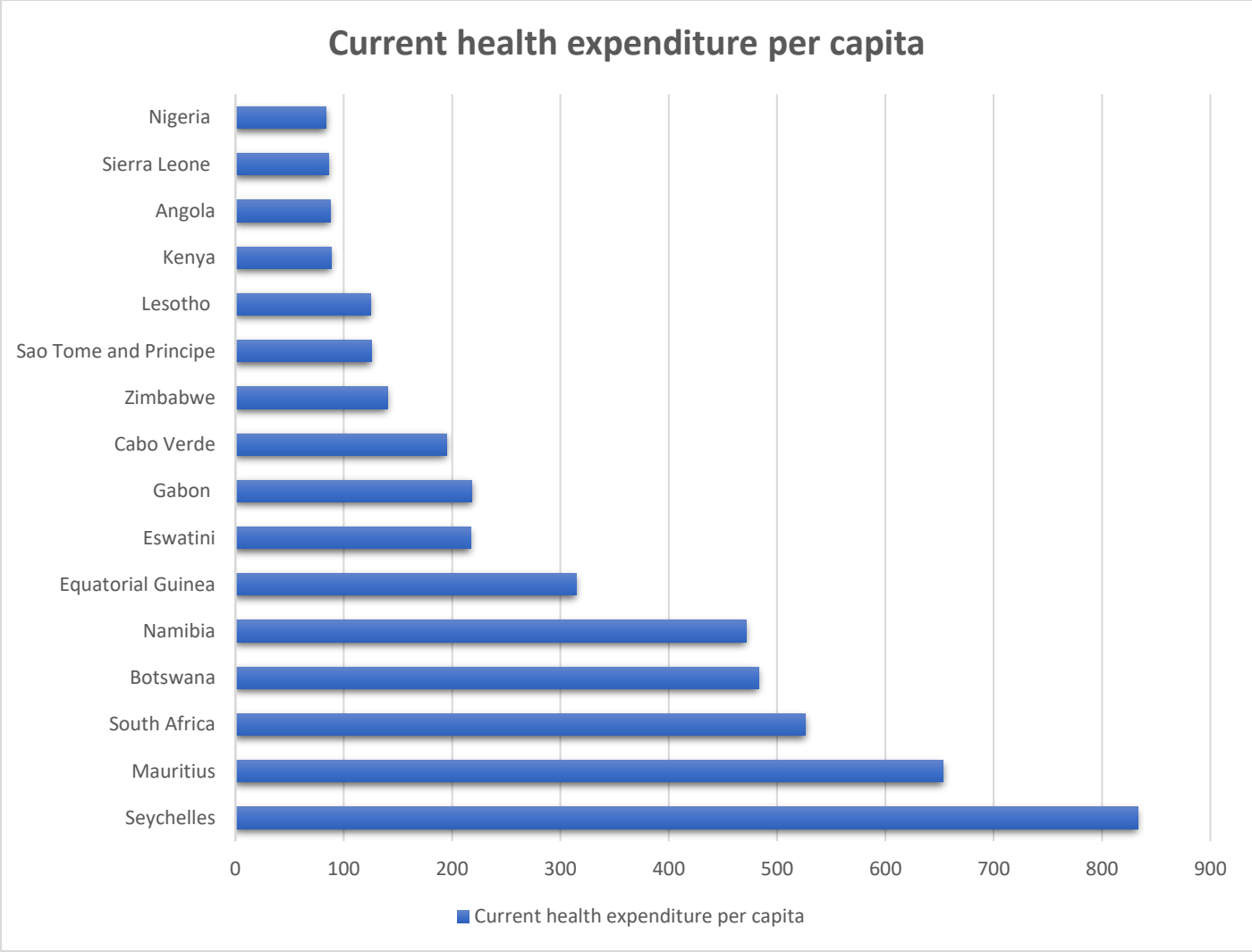


Fig 1.2: Current health expenditure per capita (current US\$). Source: World Bank.

### 1.4 HIV Disease Burden in Nigeria

With a prevalence rate of about 1.3% per 1000, Nigeria ranks second-highest number of overall HIV infections in the world and the highest number (>50,000) of annual AIDS-related deaths. According to current estimates, Nigeria accounts for around two-thirds of all new HIV infections in West and Central Africa, with about a 1.8million people currently living with HIV (UNAIDS, 2020). Furthermore, the data on prevalence rates show that people who inject drugs (PWID) account for 6.2% of the

total HIV prevalence rates within the population, coming in behind sex workers (16.7%) and men who sex with men (20.9%) making up the key populations (UNAIDS, 2020)

In its National Strategic Framework, the National Agency for the Control of AIDS (NACA, 2017) announced significant objectives for the next five years, including a goal of providing 90 percent of the general population with HIV intervention strategies by 2021 and 90 percent of critical groups adopting HIV disease prevention behaviors by 2021. They believe that one of the most effective ways to do this is via the building of community institutions.

3.47 million registered people are living with HIV in Nigeria, or 8.7 percent of the total number of people infected worldwide (Law et al., 2020), as mentioned in the introduction, the rapid increase in the number of people infected with HIV in the country is observed in large cities, such as Lagos, with a population of almost 20 million people (Awofala and Ogundele, 2018). Of particular concern to the Nigerian authorities is the spread of HIV in Abuja, which became the country's capital in 1991. In recent year, the study says, the rate of increase in the incidence of HIV in Abuja amounted to 10.2 percent (Awofala and Ogundele, 2018).

Furthermore, growing episodes of violence have led to displacements which also have implications for an increase in the incidence of HIV infection, officially there are over two million people internally displaced across Nigeria (NSF,2017, WHO,2020).

While the quality of Nigerian health care has improved significantly more recently than a decade ago, much effort is still needed for a more reliable and adequate health care system, particularly in the areas of human capital (Welcome, 2011). Lack of



robust maintenance culture and the inability to give adequate funds to replace aging infrastructure has also been observed to play a significant part in the situation.

#### 1.4.1 Female Sex workers (FSW)

The HIV/AIDS epidemic disproportionately affects female sex workers. They have 13.5 times more risks of becoming infected with HIV than the general population. For example, in West Africa, the UN estimates that 10 to 32% of new infections are linked to the sex trade (sex workers and clients). The prevalence over time appears to be stable. The rate of condom uses during last sexual intercourse increased (85% in 2012 against 78% in 2009). However, it is difficult to conclude with the limited data and surveys. Access to health and prevention services is difficult for sex workers because of marginalization and social and legal disadvantages (Rashti et al., 2020).

#### 1.4.2 People who inject drugs (PWID)

PWID represents only 0.2 to 0.5% of the population in the world. However, according to WHO, they represent 5 to 10% of people living with HIV. Substantial disparities exist between countries, ranging from 5% in Europe eastern 28% in Asia. In some countries, the incidence of HIV among injecting drug users may represent more than 40% of new infections. These differences can be explained by the prevalence of drug use injectables being very variable from one country to another. It is challenging for these populations to access voluntary testing and prevention of HIV / AIDS through criminalization, stigma, and discrimination. As a result, coverage of HIV prevention services among PWID is shallow and insufficient. Many developed countries comply with WHO recommendations of 200 syringes per IDU and year. For developing

countries, coverage is often less than 10% of IDUs for opioid substitution treatment (Ali et al., 2021).

#### 1.4.3 Men who have Sex with Men (MSM)

Globally, men who have sex with men are disproportionately affected by HIV, with an estimated prevalence of between 11–35%, they are 27 times more likely to acquire HIV than the general population. In 2017, MSM accounted for 57% of new HIV infections in Western Europe and North America, 20% in Eastern Europe and Central Asia, and an estimated 12% in Western and Central Africa (Avert,2021).

PrEP has the potential to significantly decrease incidents of HIV infections among this group, However, the majority of countries including Nigeria have enacted laws that criminalize same-sex activities thereby driving this key population underground and consequently elevating their risk of HIV and preventing them from accessing healthcare, including HIV services.

## Chapter Two: Problem statement/Justification, objectives, methodology

### 2.1 Problem Statement

The Acquired Immunodeficiency Syndrome (AIDS) arising from HIV infection is an incurable disease to this day and requires lifelong treatment for those infected with the virus (Saravanan et al,2018). According to the World Health organization's (WHO) latest global update,680,000 people died from HIV-related causes in 2020, and 1.5 million new infections (WHO UNAIDS,2021) people out of which almost 60 percent occur on the African continent. The most effective way to fight the virus is to prevent its transmission, to this end, the use of HIV Pre-Exposure Prophylaxis (PrEP) among other preventive measures are being adopted globally and have proven to significantly reduce the disease burden, the use of Prep is not for the general population, it is considered is the one the most effective method of significantly reducing infection rate when taken daily by people with a substantial risk of contracting HIV (Smith e. al., 2015, CDC,2021).

With a population of over 200 million (Worldbank,2021), Nigeria accounts for a substantial number of new HIV cases in the West African subregion. In its national HIV/AIDS strategic framework for 2017 to 2021, the National Agency for the Control of AIDS (NACA) ranked Nigeria's HIV incidence as second amongst in the world contributing 10 percent of new global infections and 14 percent of HIV-related deaths (NACA,2017).

In Nigeria, the distribution of HIV transmission modes varies, prevalence among the general population is high, unprotected heterosexual sex accounts for the highest number of new infections (Avert,2021), however, certain groups carry a far greater burden compared to the rest of the population, these key populations (KP) including

female sex workers, men who have sex with men (MSM), people who inject drugs (PWID) make up only 3.4% of the population, yet account for around 32% of new HIV infections (NACA 2017). KP are more vulnerable to HIV infection/ acquisition either because they engage in high-risk behaviors or because they are marginalized and as such reduced have access to healthcare services. It is estimated that the risk of acquiring HIV is 35 times higher in PWID, 26 times higher in sex workers, and 25 times in men who have sex with men (UNAIDS, 2021)

Pre-exposure prophylaxis is one of the most recommended interventions for reducing the risk of acquiring HIV infection among KP globally and has been adopted as a national HIV guideline in Nigeria with ongoing demonstration and implementation projects funded by the Bill & Melinda Gates Foundation and The U.S. President's Plan for Emergency AIDS Relief (PEPFAR), it is estimated that 124,000–125,000 individuals are currently taking PrEP (PrEP watch, 2021).

Limited PrEP awareness and access among KP, compounded by higher levels of stigma and criminalizing laws have significantly contributed to suboptimal health seeking behavior among this group

Given the effectiveness of treatments and optimization of PrEP usage in other groups, a thorough knowledge of the characteristics and factors that impact lack of access, awareness, uptake, and adherence in key populations is expected to aid in the development of interventions to enhance holistic HIV prevention.

## 2.2 Justification

Taking pre-exposure prophylaxis as recommended reduces HIV risk by more than 90 percent, yet, despite the introduction and acceptance of PrEP in Nigeria, there is reportedly low uptake of these HIV prevention services and high infection rates among the key populations, keeping Nigeria high on the list of countries with HIV burden and lagging far behind on global prevention targets.

It is pertinent to understand the determinants of PrEP uptake among the key population of interest as they contribute significantly to new HIV infections in Nigeria. This study seeks to review factors responsible for the underutilization of PrEP among KP. The significance of this study can be attributed to the paucity of research on PrEP access and adherence among KP in Nigeria, furthermore, available evidence shows that effective PrEP access and delivery mechanisms for KP in Nigeria have been short of reaching an ideal threshold to curb the spread of HIV in such high-risk populations; thus, successful implementation strategies require more insights into barriers and facilitators of PrEP uptake, determinants of service delivery and insights into best practices in a similar setting.

## 2.3 General objective

To critically explore and analyze factors affecting access and use of Pre-Exposure Prophylaxis (PrEP) in key populations while drawing on best practices from other countries with similar settings to contribute to a coordinated HIV prevention approach and make recommendations for designing effective PrEP interventions for at-risk HIV populations in Nigeria.

### Specific objectives:

1. To explore the underlying individual and interpersonal factors influencing the access to and uptake of PrEP among key populations in Nigeria.
2. To identify the environmental and policy barriers to access and use of PrEP among key populations in Nigeria
3. To examine current approaches and best practices for PrEP access as well as HIV prevention approaches in other countries with a similar context
4. Make recommendations for designing effective PrEP interventions for key populations with a high risk of HIV infection in Nigeria.

## 2.4 Methodology

This study is a review of published literature and a desk study of relevant materials and data to address set objectives using different keywords to retrieve necessary articles and publications on the topic.

### 2.4.1 Search Strategy

The search strategy included all parts of the research topic and assure the collection of evidence. To construct a practical and succinct search, the literature search thoroughly explored publications in PubMed/Medline, Google Scholar, PsycINFO, Cochrane, Embase, CINHALL, and the Vrije University (VU) online library, grey literature, national policies, surveys, and reports from national and international

websites such as UNAIDS, WHO, CDC, PrEP Watch, AVERT. These websites provided databases with recent evidence-based medical guidelines and prior study research. The search criteria used for the selection of studies literature are peer-reviewed and grey literature, qualitative and quantitative studies published between 2010-2021 to captures trends before and after the introduction of PrEP; official government data as well as studies done in other countries with a similar context to Nigeria using the following search terms across all databases: Nigeria, PWID, Stigma, policy, MSM, FSW, PrEP-Cost (“pre-exposure prophylaxis” or “preexposure prophylaxis” or “antiretroviral prophylaxis” or “preexposure chemoprophylaxis” or PrEP) AND (HIV OR AIDS) Furthermore, papers that provide substantial answers to the research question were given preference over all other article categories examined for this study.

#### 2.4.2 Conceptual framework

This study utilized the social and economic barrier conceptual framework adopted by Long Hoang Nguyen et al. (2021) to systematically describe and comprehensively show interactions among the different identified determinants of PrEP access and adherence which is useful in establishing sustainable solutions in at-risk populations.

#### 2.4.3 Social and economic barriers model

This model was developed by Psychologist Urie Bronfenbrenner in the late 1970s to demonstrate how a complex range of social influences and nested environmental interactions affect individuals. The framework emphasizes facilitator and barriers pathways from the individual through available services to specific stratifying health outcomes. This framework was preferred to other frameworks because it attempts to

explain the research problem being studied succinctly and will invariably not only allow the identification of these causal factors in the current population of interest but will also enable the description of their implications.

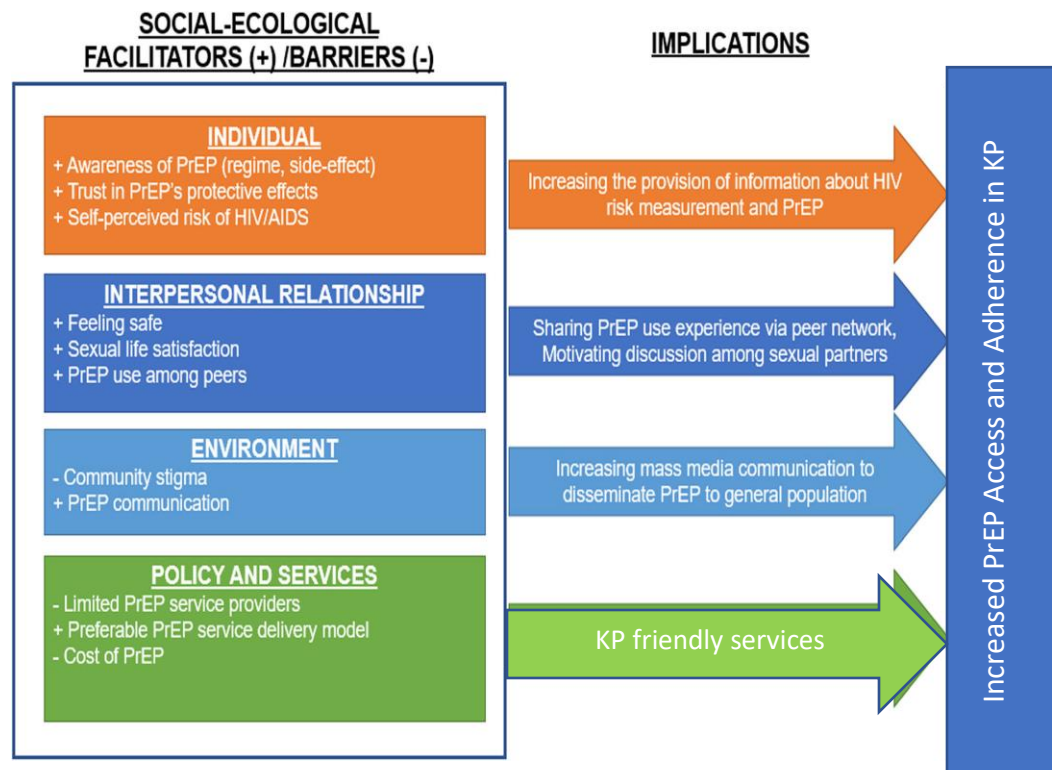


Fig 2.1: Framework to increase PrEP access and adherence MSM. Adapted by Long Hoang Nguyen et al. (2021), developed by Urie Bronfenbrenner.

## 2.5 Limitations of the study

PrEP services almost non-existent in Nigeria, consequently, there is limited data, documents and literature to evaluate its performance. Official government data on the population covered by PrEP services is also not available. Due to these information gaps, literature review for this thesis is based on, published papers, national frameworks, international best practices, and guidelines. All these have been examined to have a closer outlook on the operations and implementation of PrEP



## Chapter Three: Study Results

Study results and findings uses the conceptual framework outlined in chapter 2 (Figure 2.1). Starting with the bottom row, the framework depicts available PrEP national policies and services currently provided by the Federal government of Nigeria as well as international funding partners, followed by environmental, interpersonal relationships, and individual factors and their implications (positive and negative) towards increased PrEP access among key populations.

### 3.1 Policy and strategy

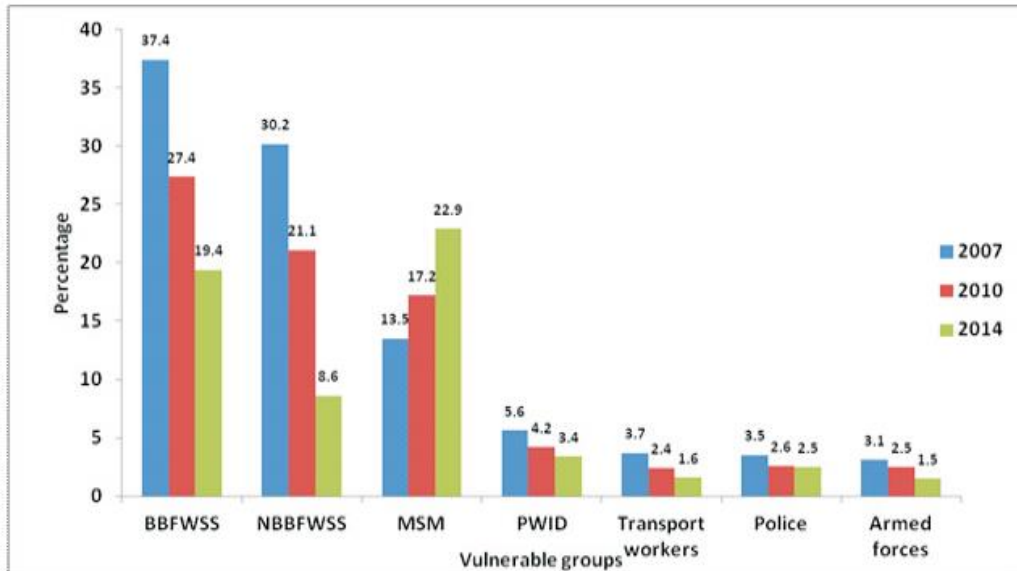
Nationally, there have been documented efforts channeled towards ensuring the protection of high-risk key populations against the contraction of HIV infections. In line with these efforts, the federal government initiated key strategies and policies aimed to consolidate the efforts of other key players and policymakers. These policies and strategies are what will be described and examined under this segment, after which the discourse will zoom in on PrEP service providers.

PrEP in Nigeria was backed by a substantial government commitment by establishing a national framework for action and highlighted in the NSF following the WHO recommendation in September 2015 for oral pre-exposure prophylaxis (PrEP) to be offered as a prevention choice for people a high risk of HIV infection as part of a combination of HIV prevention approaches (WHO,2015). In the NSF, a target that 90% of key and vulnerable populations have access to desired HIV prophylaxis by 2021 is one of the five-set targets to end AIDS. The NSF notes that HIV prevention

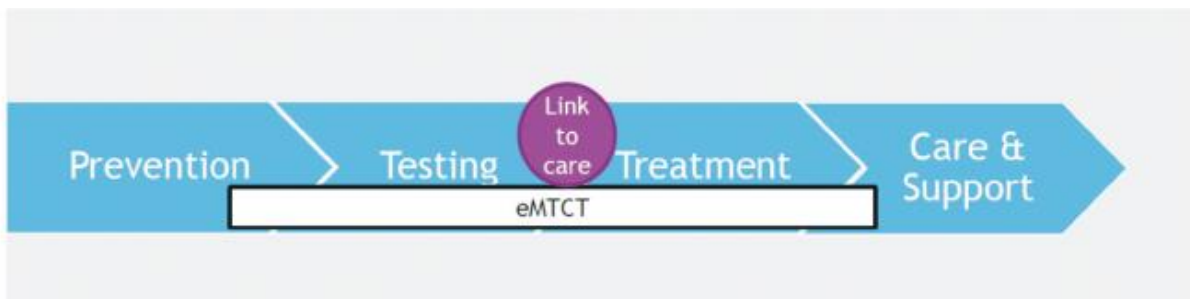
is critical to the success of achieving AIDS epidemic control in Nigeria and as such, prevention of infection among key populations is a key driver of national and global efforts.

The National Strategic Framework (NSF) 2017-2021 is the nation's attempt to build on past progress and lessons learned from with the earlier frameworks to further intensify national response given the urgency to bridge the gaps that hampers the realization of global and national goals towards ending AIDS in Nigeria by 2030. The five thematic areas addressed are; Prevention of HIV among general and key populations; HIV Testing Services (HTS); Elimination of Mother-to-Child transmission of HIV (eMTCT); HIV Treatment; and Care, Support, and Adherence. In accordance with the design of the national response, implementation strategies are multi-sectoral, with the National Agency for the Control of AIDS (NACA) serving as the national coordinating body.

To facilitate intervention programming, epidemiological appraisals were conducted to estimate the population of FSW, MSM, and PWID, and map out the geographical location of key populations as presented in the NSF (Figure 3.1)



As highlighted in the NSF, HIV prevention interventions are developed using an investment approach that will facilitate access of those disproportionately affected by HIV transmission (KP) to receive targeted and effective HIV prevention services. Besides PrEP, the Framework also acknowledges the provision of access to post-exposure prophylaxis (PEP) to populations at high risk, Treatment as Prevention (TasP) and effective treatment of sexually transmitted infections are critical elements of HIV prevention programs (NSF,2017). Specific interventions include the prevention-testing-treatment-care cascade for key populations, condom access, and access to treatment of sexually transmitted infections (NACA,2017)



*Fig 3.2: the continuum of interventions in the national response (NSF,2017)*

While the problem of the risks of infection among the key population is widely acknowledged at the national level, the targets highlighted in the NSF (fig.3.1) for ensuring that they are availed with avenues to access PrEP are not close to realization, furthermore, there is no data available official on PrEP progress report.

Despite promoting national commitments to facilitating access to PrEP for groups who are at substantial risk of contracting HIV infection, the legal somewhat hostile legal environment in Nigeria makes it challenging for this same group of interest to access HIV prevention tools. Notable of mentioning is the Same-Sex Marriage Prohibition Act signed into law in 2014 this act has had negative effects on the access of MSM to HIV treatment and other healthcare. It prohibits associations between MSM and other persons; with the risk being jailed without the option of fines for 14years (UNAIDS 2014, Durosinmi-Etti et.al., 2021).

Notably, the only provision that could warrant the arrest of FSWs is probably a section of the Nigeria criminal code act that provides for "Indecent Acts", it is however disheartening that Nigerian law enforcement agents and a wide segment of the society continue to harass, arrest and assault women they perceive as prostitutes, collectively, MSM, FSW and PWID face police harassment and are incriminated for possession of condoms, drugs injection marks and even just being perceived as someone who behaves like the opposite sex. Invariably, these laws and their societal impact make healthcare providers uneasy about providing services. These barriers elevate concerns about how KP in Nigeria, who are at substantial risk for HIV infection are expected to access PrEP.

- |                  |   |
|------------------|---|
| <b>Target 1:</b> | 90% of the general population have access to HIV prevention interventions by 2021.                  |
| <b>Target 2:</b> | 90% of key and vulnerable populations adopt HIV risk reduction behaviour by 2021.                   |
| <b>Target 3:</b> | 90% of key and vulnerable populations have access to desired HIV prophylaxis by 2021                |
| <b>Target 4:</b> | 100% of Nigerians have access to safe blood and blood products by 2021.                             |
| <b>Target 5:</b> | 90% of the general, key and vulnerable populations have access to safe injection practices by 2021. |

*Fig 3.3: Targets for HIV prevention strategies (NSF,2017)*

### 3.1.1 Limited PrEP Service Providers

Unlike other African countries like South Africa with high HIV prevalence, Nigeria has not integrated PrEP into routine health services in public and private health facilities nor provided PrEP financing since the HIV prevention guidelines became effective. To date, and despite it being included in the NSF, PrEP is not readily available in Nigeria, National demonstration projects are conducted only in four states through funding by the Bill and Melinda Gates Foundation and the USA President's Emergency Plan for AIDS Relief (PEPFAR) . These programs have been majorly tasked with providing oral PrEP to HIV-negative partners in HIV serodiscordant relationships where one of the couples is infected with HIV while the other is not.

HIV response efforts in Nigeria are almost fully international donors dependent with PEPFAR and the Global Fund accounting for 67% and 15% respectively of the \$532.4m reported HIV spending in 2018 (COP 2020).

## Ongoing demonstration projects map

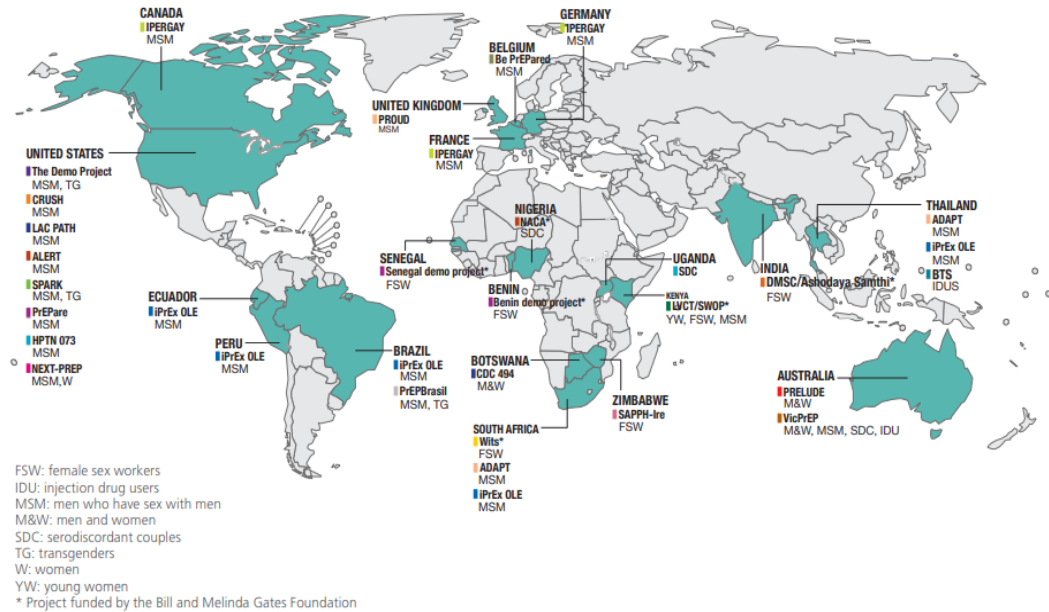


Figure 3.4: ongoing PrEP demonstration projects, source WHO 2021

Similarly, the RISE PrEP roll-out project in Nigeria, an initiative of the Jhpiego (an affiliate of Johns Hopkins University) only operates in four states (Adamawa, Akwa-Ibom, Cross-river, and Niger), the program provides HIV testing services to heterosexual couples and all sexual contacts of people who test positive, with negative results and followed and offered PrEP, although, some members of KP and their partners may be counted as serodiscordant heterosexual couple. Where PrEP is recommended by private healthcare providers, uptake and adherence depend on their ability to procure it out of pocket as members of KP have a diverse socio-economic background.

### 3.1.2 Preferable PrEP Service delivery

Careful selection of the mode and medium of disseminating information and obtaining feedback from key populations is critical to determining the level of acceptance of service delivery and utilization of the service provided.

Studies suggest that providing PrEP through peer-led facilities for MSM and FSW may lead to improved uptake and adherence (Emmanuel et al, 2020). In one study, it was found that although there was a high level of awareness (95.2%). Respondents in that study supported the use of trained peer educators and HIV-test counselors to provide vital information as well as refer clients to clinics that provide PrEP (Emmanuel et al., 2020).

There is a significant gap in actionable knowledge about the use of PrEP even among the more educated segments of the population, such as medical practitioners in Nigeria who commonly carry out important aspects of HIV services like testing, counseling, and treatment (Esin et al. 2012; Omorogbe et al, 2012). The reality of such inadequate knowledge among the population responsible for sensitizing the general public about the uses of PrEP and administering the prophylactic is a potential setback in the fight against HIV infection as there is a relatively higher level of risk exposure within this group of professionals.

To illustrate this trend, another study by Afe et al, (2020) found that even though there was a general awareness of PrEP among health workers in a health facility in Southern Nigeria, a majority of them (70%) could not define it correctly, and even the general knowledge among this group was questionable with one-fifth (20%) not knowing what the term 'Pre-Exposure Prophylactic' meant (Afe et al., 2020). This, however, is not to say that when people come for HIV testing, they are not at all being sensitized and counseled about PrEP.

### 3.1.3 Cost of PrEP

Individuals infected with HIV will need to be on antiretroviral treatment (ART) for their entire life to stay healthy. Conversely, with less estimated cost and prescribed to be taken consistently when at heightened risk of HIV, PrEP is considered by UNAIDS to be a cost-effective and key component of a fast-tracked HIV response (AVERT,2021).

Studies have shown evidence on the cost-effectiveness of PrEP in terms of the number of HIV infections averted and lifetime treatment costs averted. Although this literature suggests that costs of oral PrEP are lower than antiretroviral (ARV) drug costs based on cost per dose and duration of use, funding the cost of PrEP on top of other prevention programs remains one of the main challenges, especially in resource-constrained settings like Nigeria where the government has offered no provision for PrEP financing since the 2016 HIV prevention guidelines became effective. The ongoing arrangements in Nigeria are such that PrEP services are either available free of charge to serodiscordant couples on donor-funded demonstration programs or procured from a community pharmacist (CP) or patent and proprietary medicine vendors (PPMV). Under the donor-funded programs, the cost price of PrEP is unavailable. The medications are purchased directly and supplied to the Nigerian government. However globally, the high cost of purchasing PrEP out of pocket has been a major hindrance. Gilead Sciences, the makers of the recommended and effective PrEP (Truvada) have come under attack for increasing the price by 45% since its approval in 2014 (Healthline,2020).

In Nigeria, although advocacy groups are encouraging doctors to prescribe PrEP privately for patients who cannot be enrolled in government programs, this approach



is hampered by high cost and scarcity the selling, price varies and depends on how it is sourced, the majority of vendors procured from the open market and non-governmental organizations. Reported challenges with the supply chain include high costs, distance from suppliers, product scarcity, and variability in demand which in turn influence the retail price to consumers. Regulatory agencies played none or limited role in determining the selling price of PrEP, market surveys reported in 2020 by Dirisu et.al, shows the cost for one month supply of Truvada (30 tablets) in Nigeria ranges from 3,947 naira (\$10.3) to 36,500 naira (\$88.34). Similarly, Carel Pretorius et.al, 2020 reported PrEP cost in Nigeria as \$221 per year (which is about \$18.41 per month) (Table 3.2) one of the highest costs in Africa.

Furthermore, the study found that these costs as well as indirect costs relating to logistics and transportation affect people differently. Rural dwellers may have to travel further to reach providers; It was also found that users sometimes stopped PrEP or missed appointments due to logistical challenges related to the distance of cost of transportation (Gombe et al., 2020).

While poor socioeconomic status is not a cut crossing factor in KPs, in some cases it plays a pivotal role in PrEP acquisition and uptake, several members of KP are unemployed and depend on their families who may not be able to afford the costs or may not want to pay for PrEP (Durosinmi-Etti et al., 2021).

Country	Oral PrEP Unit Cost	ART Unit Cost,
Ethiopia	106	190
Haiti	117	625
Malawi	121	250
Zimbabwe	121	254
Mozambique	133	260
Uganda	133	467
Lesotho	148	297
Tanzania	164	480
Zambia	170	292
Eswatini	195	513
Kenya	206	257
Nigeria	221	819
Namibia	236	673

Figure 3.5: ART and PrEP cost (USD) across Africa, source: Carel Pretorius et.al, 2020.

## 3.2 Environment

The environmental level explores factors that generally come into effect in communal settings where social relationships and interactions take place. At this level, the characteristics of these settings are explored to illustrate how they account for the varying levels of PrEP uptake across communities.

### 3.2.1 Community Stigma

According to Pieterse (2011), the fear of stigmatization in South Africa has greatly hampered the uptake and utilization of PrEP. This finding tallies with that of

Omorogbe et al, (2012). Stigma cuts across all key populations in Nigeria, the Nigerian society is highly communal (owing to its general participatory and ownership practice), and most of the social support available to vulnerable persons are accessible from the family, religious, and socio-cultural organizations and some professional and age-group social networks. All of these structures are implicated in stigmatizing members of KP (Idoko et.al, Ogunbajo et.al, Adesina, et.al, Dirisu et. al), contributing the KPs avoiding face-to-face community activities and missing out on opportunities and avenues to learn about PrEP, HIV self-testing (HIVST), and other prevention approaches.

The WHO (2015) reports that the debilitating nature of addiction and drug use especially among PWID makes them much more reliant on informal structures, such as the family, for social and educational support, as well as safety, food, shelter, and the fulfillment of their physiological as well as social needs. However, when such informal structures of authority are also implicated in the culture of a stigma there can only be little progress made. In addition, the social marginalization of members of KP also makes it difficult for them to access correct information and adequate health services, especially regarding information that can cause changes in behavior (UNAIDS, 2014). Such stigmatization and discrimination were considered as a major barrier even when there is a willingness to adopt PrEP biomedical intervention and treatment.

### 3.2.2 PrEP Communication

Careful selection of the mode and medium of disseminating information to the target population is critical to the level of acceptance and service utilization.

Various PrEP intervention programs have employed a range of channels in messaging these essential services across to the target groups. These range from person-to-person direct messaging, social media, television, and radio adverts, with varying degrees of success at increasing PrEP uptake (Durosinmi-Etti et al, 2021). Their study carried out among a total of 1169 key populations (which included the high-risk groups as well as key influencers of the high-risk groups such as HIV program offices) in an urban community in Nigeria (Durosinmi-Etti et al., 2021) assessed facilitators, barriers to, and needs of the KP groups in communicating PrEP interventions.

Given the low level of communication mechanisms and awareness about the HIV prevention services, particularly PrEP among KPs in Nigeria as identified in several studies (Idoko et.al, Durosinmi-Etti et.al, Abayomi et.al), strategic communication planning is pertinent to ensure increased access to PrEP information to foster existing efforts towards the reduction the of new HIV infections. But then, the question remains that If PrEP is not really available or only available at a very high cost, then would it be possible to increase access through KP having more awareness about it? This has been a major debate, as a result of some of these communication studies, some members of KP who can afford Prepare better informed to procure it out of pocket (keeping in mind that some members are not particularly poor) but from my findings, most of these studies are aimed at getting funding for an eventual free distribution of Prep for these government neglected group.

An identified gap by Idoko et al., (2015), is the poor attitude of health care workers towards KP who are potential users, these attitudes include breaching confidentiality and privacy protocols, this was expressed as a major concern by interviewed members of KP as a form of stigmatization, and thus as a reason for not returning

for healthcare services. Furthermore, most of the respondents had not been educated nor prescribed PrEP by the health workers, which is in contrast with findings from studies conducted in developed settings such as Canada, where healthcare providers are relatively knowledgeable about HIV and 13% said they had prescribed PrEP (Sen et al., 2013).

In their extensive study on PrEP communication for KPs, Durosinmi-Etti et al., (2021) reported the need to present PrEP information in languages that KPs are not conversant with, else, the goal of the communication may be defeated. They emphasized the languages to a dialect that people would understand. This is particularly of importance in the Nigerian context, given its multiethnicity characterization, and literacy level, especially considering that the English language (a foreign language) is its official national language.

The preferred channels to receive PrEP messages varied across KP groups. The majority of FSWs interviewed preferred face-to-face contacts, phone calls, and SMS, while the MSM group prefer social media-based channels – mainly WhatsApp, Facebook, Instagram, and Twitter (Durosinmi Etti et al., 2021). On the PWID preference, information is still very much scarce, making it difficult to reach a defensible conclusion on the group's preferred channel to receive PrEP messages.

Durosinmi Etti et al., 2021, also opined that incorporating KP's opinions would enrich the program's success as it relates to increasing awareness for the uptake of HIV preventive services.

### 3.3 Interpersonal relationships affecting the use of PrEP

At this level, close interpersonal relationships are explored for their capacity to influence individual perception, choices, and decisions, important factors such as close social circle-peers, partners, and family members-influence individual behavior and contribute to their experience and general health outcome. Real or perceived perceptions of other people have bearing on our eventual behavior. Also, peer network and their motivation have a great impact on improving knowledge, positive attitude regarding HIV prevention, and accessing health care services (Zunyou Wu, et al., 2002).

#### 3.3.1 Feeling Safe

A fallout of stigma that is deserving of further attention is the fear that one would be assumed to be HIV positive due to constant hospital visits or the use of PrEP. Idoko et al (2015) report that the stigma that surrounds PrEP use is a likely reflection of the age-old stigma associated with ARV use for the management of HIV infection. The stigma of AIDS was noticed to be present in the experience of people who use PrEP in different ways, negatively interfering with the search for and adherence to prophylaxis, as well as making these people more susceptible to discrimination (Dubov et al., 2018). Possessing and taking antiretroviral drugs can lead to PrEP users being confused with people with HIV, resulting in discrimination.

The fear of social embarrassment and pain of being associated with the use of medications for HIV leads to withdrawal, rejection, and missed opportunities to start-up PrEP among the KPs, with the fear that emotional and social injuries when found with such medicines. Some KPs confessed that they would give up on life than be caught with PrEP (Durosinmi-Etti et. al,2021).

In a similar study conducted by Velloza et.al (2020) in South Africa in relation to PrEP uptake among another group of adolescent girls and young women (AGYW), they reported that stigmatization by close family members was adversely affecting the uptake of PrEP by this particularly high-risk group.

Psychosocial well-being has been found to influence the use of PrEP services. Ogunbajo et al, (2019) found that history of suicidal thoughts negatively correlated with willingness to use PrEP (aOR 2.05; 95% CI: 1.02 to 4.10) among MSM in Nigerian.

### 3.3.2 PrEP use among peers

Peer network and motivation have a great impact on improving knowledge, positive attitude regarding HIV prevention, and access to health care services. Social support, network-forming abilities, and personal relationships play an important role in determining how information is received and perceived. According to Durosinmi-Etti et al, (2021) the ability of KPs to network within their communities and on personal relationships was found to be an important enabler of the acquisition of PrEP information.

As is the case in most communities in Nigeria and other male dominated societies, the male partner of a serodiscordant couple has a significant influence on the uptake of PrEP. In the study by Idoko et al. (2020), it was observed that HIV-negative male partners in serodiscordant relationships were more likely to resist enrolment in PrEP programs than HIV-negative female partners (Idoko et al, 2020).

### 3.4 Individual factors affecting the use of pre-exposure prophylaxis

The culmination of many psycho-social factors and behaviors levels of socialization, personality traits, beliefs, knowledge, etc, have been noted to have profound consequences on health and well-being. The risks for infection, and at times, course of illness for infectious diseases can either be exacerbated or inhibited by human behavior related to attitude. Among the attitude forming and influencing factors that are of interest to this study are knowledge about the causes, prevention and treatment of HIV, and fatalistic health beliefs.

#### 3.4.1 Awareness of pre-exposure prophylaxis

The relationship between awareness and behavioral change can, in cases, prove to be unpredictable as it would be reasonably expected that increased awareness of the risks of HIV and the available preventive strategies would lead to healthier choices and acceptance of treatment. However, this has not always been the case as different factors are often responsible for the behaviors and actions of people. This is attributable to several complex interacting factors thus necessitating a more detailed assessment of the beliefs and attitudes.

The study by Ajayi et al (2018) was done to examine awareness levels and use of PrEP and post-exposure prophylaxis (PEP) among Nigerian university students. The level of awareness of PrEP and PEP was found to be generally low at 18.9% and 25.4% respectively. In that study, an important determinant of awareness of PrEP use was knowledge of partner serostatus. The low level of awareness among the general population compares closely to the findings of the study by Ogunbajo et al, (2019) done in the northern, middle belt, and southwestern regions of Nigeria.



However, this study also revealed an above-average level of awareness among known high-risk groups within the study population surveyed as 53.6% were aware of PrEP pre-survey. Furthermore, the level of population awareness of PrEP was found to correlate with residence in the federal capital territory, Abuja, and Lagos state in the southwest region. In the same study, it was shown that nearly half of the Nigerian MSM surveyed had no prior awareness of PrEP, but after being informed about its potential benefits, the majority were willing to use it.

The findings of the study by Ogunbajo et al., (2019) also revealed that awareness of PrEP was also positively correlated with the use of sex partner seeking location-based apps, these location-based mobile applications are more common among urban dwellers and may present a good medium for reaching members of the high-risk groups in these regions with informative content on awareness about PrEP through the use of information technology. If these apps are leveraged properly, they can be adjusted to contain information about PrEP.

#### 3.4.2 Lack of Trust in the protective effect

Expectations and perceptions about PrEP product attributes have also been found to influence the uptake of HIV prevention products and services. Findings have identified concern about side effects, drug-drug interactions as major determinants of PrEP uptake. Traditionally, there is a history of mistrust of orthodox western medication especially for diseases that seem modern and are subjects of many conspiracy theories. There are documented cases of mistrust of the medical community stemming from instances of unethical medical practices and experimentation that used people of African descent as guinea pigs for experiments that left them with a

chronic and debilitating health condition. Closer home in Nigeria, the infamous field trial of the drug, Trovan by Pfizer in Kano in 1996 which maimed tens of children and led to the avoidable deaths of others has been a contributory factor to not just vaccine hesitancy, but the idea of medication as prophylaxis, however, there is beginning to be a paradigm shift with this perception.

Findings from surveys have identified concern about side effects, drug-drug interactions as major determinants of PrEP uptake. Regarding willingness to use PrEP if available, the study of Afe et al (2020), as well as Durosinmi-Etti et al, reported that more than half of the respondents said they were willing to use PrEP if prescribed; for those who were not willing, the most common reasons given were a concern for the side effects or adverse reactions, these concerns may have originated from manufacturers listing some common side effects of taking TDF+FTC to include nausea, diarrhea, headaches, and/ or weight loss.

### 3.4.3 Self-perceived risk of HIV/AIDS

Perceived risk is a cognitive representation of the likelihood of experiencing a negative event and has been considered a motivating force toward changing risky behaviors. It suffices to say that when an individual accurately perceives himself as being at high risk for contracting HIV, such an individual is more likely to take action such as HIV testing, communicating openly with partners about HIV status, and/or engaging in safe sex practices, and being mindful about the risky modes of administering drugs. However, when there is a dissonance between actual behavior and perceived, factors such as lack of awareness, impulsivity, and risk appetites can be suggested as mediating factors (Ochonye et al,2019). In the absence of data on

the perceived risk of HIV infection among KPs in Nigeria, data from a similar population from other parts of the world are adopted to buttress the hypothesis that the perceived risk of infection among this high-risk group is low compared to what is obtainable from the general population. In the study by Gombe et al (2020), carried out among key HIV study populations comprising largely of FSWs, the perception of risk of contracting HIV was found to influence their uptake of PrEP. An interesting implication of the effect of the relationship between the awareness of exposure to HIV infection was that the confidence which came as a result of the initiation of PrEP use also meant a decrease in the perception of risk exposure. This meant that respondents who initiated PrEP sometimes defaulted in its use, missed counseling appointments, or continued with risky sexual practices (Gombe et al 2020).

Awareness of risk exposure is largely based on knowledge of own and partner HIV serostatus and includes other broad and related categories such as STI incidence. This level of awareness has been correlated with an increased likelihood of PREP use; however, the corollary is also found to be true.

### 3.5 Instances of PrEP uptake in other settings

In many countries with similar settings as Nigeria, HIV prevention policies and innovations drive access to important interventions to fight the HIV/AIDS pandemic. Three of these countries that have been considered below are Kenya, South Africa, and Thailand. The choice of these countries is owned by their innovation and policy frameworks towards creating easy access to HIV/AIDS intervention programs and projects.

### 3.5.1 Kenya:

Kenya is ranked as one of Africa's HIV successful progress stories, with the rates of new HIV infections less than a third of what they were in the 90s. In 2016, the estimate of new infections was 62,000 compared to 100,000 in 2013 (AVERT 2021). This steady decline has been attributed to the integration of PrEP among other HIV/AIDS intervention programs and projects into existing national HIV care service delivery mechanisms in 2016, the government issued full regulatory approval of PrEP rollout (HIV Prevention Revolution Road Map) targeting key populations with dedicated resources to areas and with the highest prevention outcomes, subsequent commitments to providing PrEP to 500,000 people who face a substantial risk of HIV infection by 2020 with the aim of making half of all Kenyan adults aware of PrEP (Kathryn Peebles et al ). Consequently, integration of PrEP provision into existing public health HIV care service delivery platforms resulted in minimal additional staff burden and low incremental costs.

Since the launch of the HIV Prevention Revolution Road Map in 2013, PrEP services are available in more than 900 facilities nationally with the inclusion of diverse settings such as STI clinics, HIV treatment sites, drop-in centers for key populations, and safe spaces for adolescents with users numbering over 14 000 making Kenya the first African country to have a successful national public health PrEP program (Masyuko et al., 2013).

Following the need to reduce HIV/AIDS contraction level, strong government leadership has been pivotal to the success of the PrEP rollout, which was catalyzed by strong partnerships with the key population as well as local and international stakeholders. Furthermore, integration of PrEP into existing logistics and health

information systems; investments into implementation research, and adequate commitment through funding have helped to promote and sustain program implementation. If this rate of commitment and success continues, it is estimated that Kenya will be able to 1.1 million new HIV infections and 761,000 AIDS-related deaths by 2030 (AVERT 2021).

### 3.5.2 South Africa:

South Africa has the biggest HIV epidemic in the world (UNAIDS, WHO, PREPWATCH) with 7.7 million people living with HIV (AVERT 2021). In South Africa, HIV prevalence among the general population is high at 20.4%, significantly higher among people who inject drugs, men who have sex with men, and sex workers. In the southern part of Africa, South Africa alone accounts for a third of all new HIV infections. As of 2018, about 240, 000 new HIV infections were detected, with 71,000 deaths from AIDS-related illnesses.

South Africa became one of the first countries in Africa to introduce PrEP in June 2016, beginning with the provision of oral PrEP at facilities providing services to sex workers and later expanded to MSM as well as university students at selected campus clinics, followed by the provision at primary health care facilities. However, programmatic data show variability in uptake and adherence among key populations (Pillay D, et al). Social stigma has continued to be the major barrier to accessing effective services.

Studies show that users, especially women initially take up and adhere to PrEP, but adherence drastically declines over time due to stigma particularly where community awareness about PrEP is low and exacerbated by cultural norms. Similarly, studies

among MSM, FSW, and Adolescents Girls and Young Women (AGYW) also found that stigma significantly reduces PrEP interest, uptake, and adherence (Velloza et al, 2020).

Considerable effort is required to reduce PrEP stigma and its counter-productive impact on HIV prevention efforts, this will require a paradigm shift in program implementation approaches necessary to promote the broader rollout of PrEP as an effective prevention mechanism while improving its uptake and utilization by those who need it most.

In their study, Velloza et al identified PrEP disclosure as a tool for changing social stigma and community beliefs around PrEP and thereby improving uptake and adherence. Their results also highlighted the opportunity for stigma to reduce and PrEP programs to improve through campaigns that brand PrEP around wellness and empowerment, rather than HIV risk and sexual behavior to counter stigmatizing narratives.

### 3.5.3 Thailand:

In Asia and the Pacific, Thailand has one of the highest HIV prevalence. This accounts for 9% of the region's total population of people living with HIV. Although there has been a decline, prevalence is still high, especially among key affected groups, with young people from key populations being the most at risk. Thailand, included PrEP service into the country's Universal Health Coverage in 2019, becoming the first country in Asia to scale up PrEP service at such a large scale (PrEP Watch 2021). In addition to the antiretroviral therapy was introduced in the benefits package of healthcare schemes and compulsory license on the antiretroviral drug in the mid-2000s, allowing the Government Pharmaceutical Organization to produce and sell

ARVs and PrEP at affordable rates. This was achieved through synergy with civil society groups, health providers, and patients living with HIV/AIDS.

This effort is a significant reason that Thailand has reduced HIV new infections, reduce AIDS-related deaths by 60% since the peak in 2004 (UNAIDS 2021). The Thai government has set a national target to end HIV/AIDS by achieving zero cases of new HIV infections by 2030 with renewed financial investment to enhance prevention mechanisms for HIV risk population groups including sex workers, injecting drug users, men who have sex with men, and individuals living with HIV-positive partners.

## Chapter Four: Discussion

Discussion of study findings is in relation to the components of the conceptual framework introduced in Chapter 2. Data on usage of PrEP among KP in Nigeria is scarce and inadequately documented, yet there is ample evidence to justify academic and policy interest in this population as their risk of HIV infection is highest accounting for more than one-third of new HIV infections (COP,2020). The relatively higher prevalence among KPs further is exacerbated by unsupportive, societal biases, stigma and discrimination, punitive national laws, and the lack of implementation of the NSF.

While the problem of the risks of infection among these populations is acknowledged and strategic action plans are designed, program implementation is heavily donor funded with almost non-existent government support, paradoxically, more effort is put into treatment than prevention. While PrEP services are not as readily available and users who can afford them do so at unregulated expensive rates, other intervention services geared towards treatment such as testing ARV, PEP are widely available at little cost.

Findings also highlighted the poor attitude of health care workers towards KP including breaching confidentiality and stigma. Lack of proper understanding of the importance and benefits of PrEP among healthcare providers further reveals that firstly, PrEP is not easily available in many health centers in Nigeria, and then that the prevention of infection among high-risk populations is not considered paramount of HIV administration and health promotion in Nigeria. This situation sadly is reinforced by law through anti-homosexual promulgations.



The importance of adopting context-specific approaches which take particular group population attributes into account in the development and design of PrEP interventions that meet user needs cannot be overstated, findings suggest that interventions structured around the development of small cohesive communities in which members act as key influencers take responsibility for disseminating integrated messages on PrEP use delivered using multiple channels, is a promising approach for ensuring improved compliance within these communities. An important adjunct to this approach is the scaling up of awareness programs for correcting negative perceptions surrounding HIV infection, the importance of testing, and the acceptance of treatment. These programs should focus on communicating the risks of contracting HIV, the risk of exposure, available services, and the dangers of stigmatization. These measures will help in reducing barriers to communication on PrEP services, sensitizing the populace, and forging a victory towards the reduction and possible eradication of HIV contraction.

As was demonstrated, logistical challenges such as transportation play an important role in the degree of access to information and care services, and the continuation of PrEP use. Key population members in communities that are remote from the main cities or which are at hard-to-reach areas due to terrain would require a more comprehensive approach to service delivery.

Attitudes and perceptions are amenable to change, and just as knowledge and information are known to facilitate the modification of attitudes, long-held beliefs and cultural practices can also reinforce the perpetuation of undesirable attitudinal dispositions. Beyond the level of the individual, the degree of community interest, public opinions, and perceptions have a real influence on the general health and

wellbeing of the population. Expectations and perceptions about PrEP product attributes were also found to influence the uptake of HIV prevention products and services. Continuous efforts are necessary to raise PrEP awareness and its benefits to ensure more accurate HIV risk perception, especially among key populations. Findings from this review highlights limited concern around risk, barriers to PrEP uptake, some identified concerns border around safety, side effects, cost, and effectiveness which can all be addressed through strong programs focused on acceptability and affordability. Barriers regarding side effects associated with oral PrEP diminish after the first month.

Exploring group-specific barriers that hamper the uptake of PrEP among key populations, this study found that the pervasive homophobia coupled with the widespread criminalization of sex between men has resulted in MSM being very poorly engaged with prevention and care across Nigeria. FSWs and PWID are less engaged in HIV prevention and care services because sex work and drug use are criminalized and stigmatized, leading to anxiety about confidentiality and contact with authorities. As PrEP use expands globally, it is hoped that gaps identified through this review as opportunities for future research into PrEP values and preferences among key populations and in diverse implementation settings. Also, from the examples of Kenya, South Africa, and Thailand, we can observe the deliberate efforts of the government in conjunction with health service providers towards ensuring a reduction in the contraction of HIV/AIDS and the sensitization of PrEP. No doubt, Nigeria can learn from this and strategize through policies and effective sensitization.

## Chapter Five: Conclusion and Recommendations

### 5.1 Conclusion

Nigeria is far behind in global and national targets set to fight the HIV/AIDS epidemic. With more efforts geared towards treatment, the effectiveness of PrEP as a critical component of comprehensive HIV prevention programming cannot be overemphasized. The barriers to PrEP access and uptake in Nigeria in multi-dimensional one hand is lack of adequate national policies and service provision to promote equitable access among the key population, on the other hand, are interpersonal, economic, and social barriers and other factors that are population-based and modifiable that would require behavioral changes and building of strong social and community networks.

For HIV prevention targets to be met and for efforts to be impactful, considerable efforts must be made to make PrEP and other prevention services available, accessible and acceptable to key populations. Policies and guidelines for optimal interventions for FSW, PWID, AND MSM as non-homogenous groups will foster better service delivery. Best practices in a similar setting should also be adapted for better program implementation and desirable outcomes.

### 5.2 Recommendations

The following recommendations to promote better access to PrEP by key affected population are based on the findings of the study:

- 1- Provision of basic amenities such as equitable access to universal health services may impact the uptake and adherence to PrEP services.

- 2- To increase political, financial, and technical commitments to the prevention and control efforts to respond to the increasing HIV burden seen in the case of Kenya. Also, it is important to develop a strategic framework compliance mechanism that will require the curative sector to conduct a strategic audit for its capacity and to identify weaknesses and strengths.
- 3- Provision of legislation and laws to support the provision of PrEP for KPs in Nigeria. Also, there needs to be a change in the law, especially those that barricade access to PrEP and stigmatize people of key populations.
- 4- PrEP awareness among healthcare workers should be improved by engaging them through update courses, outreach, educational resources, campaigns/seminars, and counseling/workshops to improve their knowledge to give well informed PrEP counseling.
- 5- To scale up PrEP services by building the capacity of the health system at the national level to reduce fragmentation at service delivery and ensure equitable access to health services.

## References:

- Addisu Y, Birhanu Z, Tilahun D, & Assefa T. Predictors of treatment-seeking intention among people with cough in East Wollega, Ethiopia based on the theory of planned behavior: a community based cross-sectional study. *Ethiop J Health Sci.* 2014;24:131–138.
- Afe, A., Adetula, A., Olugbemiga, P., Ebenezer, O., Olonisakin, O. (2020). Knowledge, Attitude and Practice of Healthcare Workers towards Availability of Antiretroviral Pre-Exposure Prophylaxis in Nigeria *Equitable Health Access Initiative, Lagos, Nigeria*
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50: 179–211.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84(5), 888-918.
- Antai, D. (2009). Inequitable childhood immunization uptake in Nigeria: a multilevel analysis of individual and contextual determinants. *BMC Infectious Diseases*, 20:181–90. Available from: <https://doi.org/10.1186/1471-2334-9-181> (Accessed 30 October 2021).
- AVAC. Nigeria PrEPWatch 2019 August 18, 2019

Avert (2020). Pre-exposure Prophylaxis (PrEP) for HIV prevention. Available at:[https://www.avert.org/professionals/hivprogramming/prevention/pr-e-exposure-prophylaxis#footnote16\\_fixmca0](https://www.avert.org/professionals/hivprogramming/prevention/pr-e-exposure-prophylaxis#footnote16_fixmca0) (Accessed September 27 2021).

Avert. (2015). HIV and AIDS in Nigeria. Retrieved from <http://www.Avert.org/professionals/hiv-around-world/sub-saharan-africa/nigeria>

Bartholomew L.P. G., Kork G, Gottlieb N. H., & Fernandez M. E., (2011). Planning health promotion programs: an intervention mapping approach. Wiley: Jossey-Bass.

Becker, M. (1974). The health belief model and personal health behavior. *Health Education Monographs*, 2, 324–473.

Bezu, S., Stein, H. (2014). Are rural youth in Ethiopia abandoning agriculture? *World Development*, 64, 259–72. Available from: <https://www.sciencedirect.com/science/article/pii/S0305750X14001727> (Accessed 30 October 2021).

Bisseleua, H., Latifou, I., Adebayo O., Kwesi, A-K. (2018). Diversification and livelihood strategies in the cocoa belt of West Africa: The need for fundamental change. *World Development Perspectives*, 10, 73–79. Available from: <https://ideas.repec.org/a/eee/wodepe/v10-12y2018ip73-79.html> (Accessed 30 October 2021).

Brooks, R. A., Landovitz, R. J., Kaplan, R. L., Lieber, E., Lee, S.-J., & Barkley, T. W. (2012). Sexual Risk Behaviors and Acceptability of HIV Pre-Exposure Prophylaxis among HIV Negative Gay and Bisexual Men in Serodiscordant Relationships: A Mixed Methods Study. *AIDS Patient Care and STDs*, 26(2), 87–94.

Carey MP, Sen TE, Seward DX, Vanable PA. Urban African American men speak out on sexual partner concurrency: Findings from a qualitative study. *AIDS and Behaviour*. 2010; 14(1):38–47.

Carmen. (2021). *Investing in Nigeria: What you need to know*. Investment Monitor. Available from: <https://www.investmentmonitor.ai/nigeria/investing-in-nigeria-what-you-need-to-know> (Accessed 30 October 2021).

Centers for Disease Control and Prevention (CDC) (2019). PrEP. Available at: <https://www.cdc.gov/hiv/risk/prep/index.html> (Accessed September 2021).

Cohen, S. E., Vittinghoff, E., Bacon, O., Doblecki-Lewis, S., Postle, B. S., Feaster, D. J., Liu, A. Y. (2015). High Interest in Preexposure Prophylaxis among Men Who Have Sex with Men at Risk for HIV Infection. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 68(4), 439–448.

Darkwah, S., Nahanga V. (2014). Determinants of International Migration: The Nigerian Experience. *Acta Universitatis Agriculturae et Silviculturae*

*Mendelianae Brunensis*, 62, 321–27. Available from:  
[https://econpapers.repec.org/article/mupactaun/actaun\\_5f2014062020321.htm](https://econpapers.repec.org/article/mupactaun/actaun_5f2014062020321.htm) (Accessed 30 October 2021).

Degenhardt, L., Mathers, B., Vickerman, P., Rhodes, T., Latkin, C., Hickman M. (2010). Prevention of HIV infection for people who inject drugs: why individual, structural, combination approaches are needed. *Lancet*, 376, 285-301

Dirisu, Osasuyi, Oluwafunke Ilesanmi, Akinwumi Akinola, Mayokun Adediran, Waimar Tun, and Rex Mpazanje. 2021. "Exploring the regulatory context for HIV self-testing and PrEP market authorisation and use in Nigeria," Policy Brief. Abuja: Population Council.

Ekundayo, O. T., & Ogbaini-Emovon, E. A. (2014). Knowledge, attitude, and practice of Human Immunodeficiency Virus infection post-exposure prophylaxis among 83 resident doctors in a tertiary hospital, Benin City, Nigeria. *International Journal of Community Research*, 3(3), 68-73.

Eluwa, G I., Strathdee, S A., Adebayo, S B., Ahonsi, B., Adebajo. S A., (2013). A profile on HIV prevalence and risk behaviors among injecting drug users in Nigeria: Should we be alarmed? *Drug and Alcohol Dependence*. 127:1–3,

Esin, I., Alabi, S., Ojo, E., & Ajape, A. (2011). Knowledge of human immunodeficiency virus post-exposure prophylaxis among doctors in a



- Nigerian tertiary hospital. *Nigerian Journal of Clinical Practice*, 14(4), 464-
- Farmer P (1996) Social inequalities and emerging infectious diseases. *Emerg Infect Dis.* 1996, 2 (4): 259-69. 10.3201/eid0204.960402. Review
- Glauser, W. (2014). Health worker-only HIV clinic improves care for all. *Canadian Medical Association Journal*, 186 (1), 1. Retrieved from [www.cmaj.ca/content/186/1/E19.full](http://www.cmaj.ca/content/186/1/E19.full)
- Hagan H, Pouget ER, Des Jarlais DC & Lelutiu-Weinberger C. (2008). Meta-regression of hepatitis C virus infection in relation to time since onset of illicit drug injection: the influence of time and place. *Am J Epidemiol.* 168:1099–109
- Idoko, J., Folayan, M.O., Dadem, N.Y. (2015). Why should I take drugs for your infection?" outcomes of formative research on the use of HIV pre-exposure prophylaxis in Nigeria. *BMC Public Health* **15**, 349 (2015). <https://doi.org/10.1186/s12889-015-1690-9>
- Joint United Nations Programme on HIV/AIDS (UNAIDS) (2020). *AIDSinfo*. UNAIDS. Available from: <https://aidsinfo.unaids.org/> (Accessed 30 October 2021).
- Karadima, S., Whiteaker, J. (2021). *Can FDI fix Nigeria's broken healthcare infrastructure?* Investment Monitor. Available from: <https://www.investmentmonitor.ai/business-activities/real-estate/can->

[fdi-fix-nigerias-broken-healthcare-infrastructure](#) (Accessed 30 October 2021).

Kronenfeld, J. J., & Glik, D. C. (1991). Perceptions of risk: Its applicability in medical sociological research. *Research in the Sociology of Health Care*, 9, 307–334.

Kvanvig, J. (1992). Hasker on Fatalism. *Philosophical Studies*, 66(1-2), 91-101.

LaMorte, W.W. (2018). The Theory of Planned Behavior. Accessed on 30/05/2019 from <http://sphweb.bumc.bu.edu/otlt/MPHModules/SB/BehavioralChangeTheories/behavioralChangeTheories3.html>

M.L. Adelekan, R.A. Lawal (2006). Drug use and HIV infection in Nigeria: a review of recent findings. *Afr. J. Drug Alcohol* 118-129

Malakoff, D. (2001). Nigerian families sue Pfizer. *Science, New Series*, 293(5536), 1742

Mathers, M.B., Degenhardt, L., Phillips, B., Wiessing, L., Hickman, M., Strathdee, A S., Wodak, A., Panda, S., Tyndall, M., Toufik, A., Mattick P R., (2008). Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review. *Lancet*, 372 (2008).

Masyuko Sarah, Mukui Irene, Njathi Olivia, Kimani Maureen, Oluoch Patricia, Wamicwe Joyce, Mutegi Jane, Njogo Susan, Anyona Micah, Muchiri Phillip, Maikweki Lucy, Musyoki Helgar, Bahati Prince, Kyongo Jordan,

Marwa Tom, Irungu Elizabeth, Kiragu Michael, Kioko Urbanus, Ogando Justus, Were Dan, Bartilol Kigen, Sirengo Martin, Mugo Nelly, Baeten Jared M., Cherutich Peter, on behalf of the PrEP technical working group (2018) Pre-exposure prophylaxis rollout in a national public sector program: the Kenyan case study. *Sexual Health* **15**, 578-586.

<https://doi.org/10.1071/SH18090>

National Agency for the Control of AIDS. (2017). *Federal Republic of Nigeria National HIV and AIDS Strategic Framework 2017-2021*. NACA. Available from <https://www.childrenandaids.org/sites/default/files/2017-11/NATIONAL-HIV-AND-AIDS-STRATEGIC-FRAMEWORK.pdf> (Accessed 30 October 2021).

National Strategic Framework on HIV and AIDS: 2017-2021

Nguyen, L.H., Nguyen, H.L.T., Tran, B.X. et al. A qualitative assessment in acceptability and barriers to use pre-exposure prophylaxis (PrEP) among men who have sex with men: implications for service delivery in Vietnam. *BMC Infect Dis* **21**, 472 (2021). <https://doi.org/10.1186/s12879-021-06178-5>

Ochonye, B., Folayan, M.O., Fatusi, A.O. et al. Sexual practices, sexual behavior and HIV risk profile of key populations in Nigeria. *BMC Public Health* **19**, 1210 (2019). <https://doi.org/10.1186/s12889-019-7553-z>

Ogunbajo A, Iwuagwu S, Williams R, Biello K, Mimiaga MJ (2019) Awareness, willingness to use and history of HIV PrEP use among gay, bisexual, and other men who have sex with men in Nigeria. *PLoS ONE* 14(12): e0226384.

Olawale Durosinmi-Etti, Emmanuel Kelechi Nwala, Funke Oki, Akudo Ikpeazu, Emmanuel Godwin, Paul Umoh, Arome Shaibu, Alex Ogundipe, Abiye Kalaiwo (2021) Communication Needs for Improved Uptake of PrEP and HIVST Services among Key Populations in Nigeria: A Mixed-Method Study DOI: <https://doi.org/10.21203/rs.3.rs-427101/v2>

Omorogbe, V. E., Omueme, V. O., & Isara, A. R. (2012). Injection safety practices among nursing staff of mission hospitals in Benin City, Nigeria. *Annals of African Medicine*, 11(1), 36-41.

Oyekale, A.S. (2017). Assessment of primary health care facilities' service readiness in Nigeria. *BMC Health Services Research*, 17, 172. Available from <https://doi.org/10.1186/s12913-017-2112-8> (Accessed 30 October 2021).

Petty, R. E., Wheeler, S. C., & Tormala, Z. L. (2003). Persuasion and attitude change. In T. Millon & M. Lerner (Eds.), *Handbook of psychology: Personality and social psychology* (pp. 353-382). Hoboken, NJ: Wiley

Pieterse, M. (2011). Impeding access? Stigma, individual responsibility, and access to post-HIV-exposure prophylaxis (PEP) in South Africa. *Medicine*

*and Law*, 30(2), 279-294. Retrieved from  
<https://www.ncbi.nlm.nih.gov/pubmed/21877471>

Pillay D, Stankevitz K, Lanham M, Ridgeway K, Murire M, Briedenhann E, et al. (2020) Factors influencing uptake, continuation, and discontinuation of oral PrEP among clients at sex worker and MSM facilities in South Africa. *PLoS ONE* 15(4): e0228620. <https://doi.org/10.1371/journal.pone.022862>

Rufai, M., Ogunniyi, A., Salman, K.K., Oyeyemi, M., Salawu, M. Migration, Labor Mobility and Household Poverty in Nigeria: A Gender Analysis. *Economies*. 2019; 7(4):101. Available from: <https://doi.org/10.3390/economies7040101> (Accessed 30 October 2021).

Senn H, Wilton J & Sharma M, (2013). Knowledge of and Opinions on HIV Pre-exposure Prophylaxis among Front-Line Service Providers at Canadian AIDS Service Organizations. *AIDS Research and Human Retroviruses*. 2013; 29(9):1183-9. 31.

Smith D K., Herbst J H., Rose C E., (2015), Estimating HIV protective effects of method adherence with combinations of preexposure prophylaxis and condom use among African American men who have sex with men. *Sexually transmitted diseases*. 2015; 42(2):88–92. Pmid: 25585067.

Tortelli B, Char D, Powderly WG & Patel R. (2017) Comfort discussing HIV pre-exposure prophylaxis with patients among physicians in an urban

emergency department. *Program and abstracts of IDWeek San Diego, California*. Abstract 1416

Tucker JS, D'Amico EJ, Wenzel SL, Golinelli D, Elliott MN & Williamson S (2005) A prospective study of risk and protective factors for substance use among impoverished women living in temporary shelter settings in Los Angeles County. *Drug Alcohol Depend*. 2005, 80 (1): 35-43.

UNAIDS. (2014). the Gap Report | UNAIDS. Retrieved June 20, 2017, from [http://www.unaids.org/en/resources/documents/2014/20140716\\_UNAIDS\\_gap\\_report](http://www.unaids.org/en/resources/documents/2014/20140716_UNAIDS_gap_report)

United Nations Population Fund (2021). *World Population Dashboard: Nigeria*. United Nations Population Fund. Available from: <https://www.unfpa.org/data/world-population/NG> (Accessed 30 October 2021).

Vanguard (2017). *Full list of all 371 tribes in Nigeria, states where they originate*. Vanguard Publishing. Available from: <https://www.vanguardngr.com/2017/05/full-list-of-all-371-tribes-in-nigeria-states-where-they-originate/> (Accessed 30 October 2021).

Weinstein N. (1984) why it won't happen to me: Perceptions of risk factors and susceptibility. *Health Psychology*. 1984; 3 (5):11-20.

Welcome M. O. (2011). The Nigerian health care system: Need for integrating adequate medical intelligence and surveillance systems. *Journal of Pharmacy & Bio-Allied Sciences*, 3(4), 470-478. Available from:

<https://doi.org/10.4103/0975-7406.90100> (Accessed 30 October 2021).

Wode, B E. (2005). HIV/AIDS Knowledge, Attitudes, and Opinions among Adolescents in the River States of Nigeria the International Electronic Journal of Health Education, 2005; 8: 86-94 <http://www.iejhe.org>

World Bank (2018). Current health expenditure per capita (current US\$) – Nigeria. World Bank Group. Available from: <https://data.worldbank.org/indicator/SH.XPD.CHEX.PC.CD?contextual=region&end=2018&locations=NG&start=2018&view=bar> (Accessed 30 October 2021).

World Bank (2021). *The World Bank in Nigeria*. The World Bank. Available from: <https://www.worldbank.org/en/country/nigeria/overview#1> (Accessed 30 October 2021).

World Health Organization (2015). Policy brief: WHO expands recommendation on oral pre-exposure prophylaxis of HIV infection (PrEP). Available at: [https://apps.who.int/iris/bitstream/handle/10665/197906/WHO\\_HIV\\_2015.48\\_eng.pdf;jsessionid=0FF1F0C2002F493E392EB772FD8FE6DF?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/197906/WHO_HIV_2015.48_eng.pdf;jsessionid=0FF1F0C2002F493E392EB772FD8FE6DF?sequence=1) (Accessed September 27, 2021).

Young, A. (2013). Inequality, the rural-urban gap, and migration. *Quarterly Journal of Economics*, 128, 1727–85. Available from:

<https://econpapers.repec.org/RePEc:oup:qjecon:v:128:y:2013:i:4:p:1>

[727-1785](#) (Accessed 30 October 2021).