ACCEPTABILITY, WILLINGNESS, AND USE OF PRE-EXPOSURE PROPHYLAXIS (PrEP) TO PREVENT HIV TRANSMISSION AMONG FEMALE SEX WORKERS IN LAGOS STATE.

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ABSTRACT

Introduction: Female sex workers (FSW) are disproportionately affected with and have a high risk of HIV Infection. Pre-exposure prophylaxis (PrEP) is an effective HIV preventive method that has become widely available and when scaled up it has the potential to reduce significantly the incidence of HIV among this key population. This study set out to determine the knowledge of PrEP, Acceptability of PrEP, willingness to use PrEP and the proportion of FSW using PrEP in Lagos.

Method: A descriptive cross-sectional study of 310 FSWs operating within the Lagos metropolis was carried out utilizing a multi-stage sampling technique. A mixed methods approach was employed, utilizing validated questionnaires administered through interviews and conducting in-depth interviews for data collection. BGT5\

Result: The mean age of respondents 26.8 years with a range of 19 years to 40 years. The overall knowledge of HIV is good, only 2 respondents (0.6%) did not know that HIV virus causes AIDS. About 54 per cent of the respondents had good knowledge of PrEP, 68 per cent of the respondents had high acceptability of PrEP and majority of the respondents (80%) are willing to use PrEP. Majority of the respondents (71.9%) have never been offered PrEP before. Out of 310 respondents, only (25.5%) have used PrEP. The bivariate analysis, statistically

significant association between average number of clients and knowledge of PrEP (P value 0.001). A statistically significant association exists between religion, ethnicity, educational qualification, age at which sex work commenced, the average number of clients per month, and the acceptability of PrEP, as indicated by the respective p-values (0.014, 0.002, 0.001, 0.003, and 0.007). There is a statistically significant association between religion, ethnicity, and willingness to use PrEP. (P value 0.005, and 0.008 respectively). In-depth Interview analysis revealed two key findings: a strong preference for injectables and a willingness to visit health centers for PrEP services.

Conclusion: This study highlights the favourable attitude towards PrEP among female sex workers in Lagos. However, the actual uptake of PrEP remains low, indicating the need for targeted interventions to increase utilization.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Sex work is an occupation found in every part of the globe and has been considered the oldest occupation.[1] Sex workers are individuals (male, female, transgender) who engage in consensual sexual services from physical intimacy to or erotic performance for money, drugs, goods, and other benefits regularly or occasionally.[2] Sex work is an inclusive phrase that has replaced the term prostitution, a word considered to be demeaning and which has also stigmatized and marginalized women who engage in it down in history.[3]

Sex workers engage in sex work for different reasons, including to support drug abuse and flexible working conditions. However, the majority do it for money to escape poverty and destitution.[4] Despite this immediate advantage, sex work poses a significant risk of contracting deadly and incurable infectious diseases like Human Immunodeficiency Virus (HIV).[5]

Female sex workers (FSW) in Lagos State comprise women and girls of different geographical and religious backgrounds. Experience of sex work in Lagos is different for this group of women: Some are victims of human trafficking, drug abuse, and even death.[6,7] FSWs in Lagos are also subjected to physiological, economic, and physical violence, putting them at high risk of HIV.[8] FSWs also use illicit drugs and are suspects of criminal activities.[9] A study found that the prevalence of alcohol use among FSWs in Lagos is greater than 67 per cent.[10]

HIV attacks the body's immune system.[11] HIV is a public health problem that causes immunodeficiency and death in infected people especially among untreated infected people.[12] Compromised immunity is a risk factor for the development of opportunistic infections and diseases in such individuals.[12] HIV is transmitted from one person to another by different modes but sexual activities have been the main driver of the disease since the beginning of the

pandemic and heterosexual contact is the commonest mode of transmission which can be easily prevented.[11,13]

Pre-exposure prophylaxis (PrEP) is a newer HIV preventive method. This method is referred to as pharmaceutical prevention because it involves certain pharmaceutical products to reduce the risk of HIV transmission.[14] Although there is no approved vaccine for HIV prevention, available pharmaceutical methods for HIV prevention include taking oral medications, topical microbicide gel, and injections of certain antiretrovirals.[14]

Oral pills for PrEP contain either single or combinations of antiretroviral drugs. Tenofovir disoproxil fumarate only regimen and a combination of Tenofovir and emtricitabine regimen.[15] Truvada combined regimen was approved for use in the United States in 2012, and it has since been approved in several other countries and can effectively protect against HIV up to 99 percent if taken as prescribed.[16,17]

Microbicides are biomedical products that can be used to prevent HIV transmission. They can come in the form of gel, caps, or rings.[18] A Centre for the AIDS Programme of Research in South Africa (CAPRISA) study found that microbicide gel based on 1% tenofovir is effective at preventing HIV transmission and safer than other biomedical products.[19] Intramuscular injections offer long-term protection against HIV transmission. This injection contains the new integrase inhibitor cabotegravir and can be used in place of pills for those who have difficulty adhering to them.[20]

1.2 STATEMENT OF THE PROBLEM

Globally, an estimated 37 million people were living with HIV in 2020, with 1.5 million new infections. Key populations account for 65 per cent of this HIV burden. Men who sleep with men (MSM), female sex workers (FSW), and people who inject drugs (PWID), 39 per cent of new infections among this occur in Sub-Saharan Africa.[21] The risk of acquiring HIV is 26 times

higher for sex workers compared to the general population.[21] Girls and women accounted for 65% of new infections in 2020.

The prevalence of HIV in Nigeria is 1.4% among people aged 15-49. In Nigeria, about 20% of new infections are attributed to FSW, their clients, and their client partners.[22] It is estimated that three fourth of these new HIV infections can be attributed to brothel-based female sex workers.[22] The criminality of prostitution has a lot of grey areas under the Nigeria criminal code act, which makes FSW vulnerable to victimization, extortion and rape.[23] And this further marginalize them from medical, legal, and social services thereby increasing their vulnerability[23].

Women are more likely than men to become infected with HIV due to the higher risk of transmission with receptive vaginal sex compared to insertive vaginal sex.[24] Condom is a barrier method that has demonstrated significant protection and reduction in incidence heterosexual HIV transmission.[20] However, studies have shown that consistent condom use among female sex workers and their partners is low due to different reasons including economic and relationship status.[25–27]

Female sex workers' risky behaviours, such as injecting drugs and having anal sex, are among the factors that increase their chances of contracting HIV also risky behaviours among partners and clients of FSW are some of the unperceived risks of HIV that FSW exposes themselves to especially when clients pay more for sex without condom.[28,29] Female sex workers are victims of Nigerian police, who raid FSW hotspots, extort money from them, and engage in unprotected sex with them, increasing their HIV risk.[30,31]

There are several factors that impede the use of PrEP as an HIV preventive method among FSW. These factors could be individual or structural factors, or both. Individual factors include marginalization, alcohol, drug use, and adherence. Although interviews revealed a high readiness to use PrEP for HIV prevention, it has been reported that FSW had limited knowledge

and awareness of the medication.[32] The length of a sexual work and social support can both have an impact on whether or not PrEP use is accepted and started.[33]

Stigma remains a major factor that prevent PrEP use among key populations, include sex workers. Concerns about stigma and discrimination were among the barriers and facilitators to PrEP regimens that were identified in a study that included sex workers.[34] Structural barriers make it difficult for people to accept or be willing to take PrEP; nevertheless, free services, closeness to a health center and ease of access, privacy, and confidentiality will make it easier to provide protection beyond the previously criticized usage of condoms.[35]

1.3 JUSTIFICATION FOR THE STUDY

The World Health Organization has recommended the use of PrEP to prevent HIV transmission and released guidelines in 2015.[36] Several studies have shown that PrEP reduces the incidence of HIV among key populations including heterosexual contacts.[37] One of the objectives of the national HIV and AIDS strategic framework is to ensure; 90% of the population, including key and vulnerable populations, have access to HIV combination prevention interventions by 2020 and 95% by 2030.[22]

The country's coordinating mechanism policy proposed this disproportionately affected population would be targeted for PrEP and self-testing.[22] It is therefore paramount to research if this group have access to PrEP, the acceptability, willingness, and use of pre-exposure prophylaxis to prevent HIV transmission among female sex workers in Lagos state.

There are few published studies that have addressed the gaps in knowledge about female Sex workers and the factors surrounding their use of PrEP in Nigeria, a study in Ghana found that the ever use of PrEP among FSW is 6.39 per cent.[38] In Nigeria, the factors that influence whether this key population are willing to use this drug to prevent HIV have not been fully

studied.[39] This study will contribute to knowledge about FSW and PrEP as well as provide information for policy on PrEP for FSW in Lagos state and beyond among stakeholders involve in HIV prevention programs.

RESEARCH QUESTIONS

1. What is the level of knowledge of pre-exposure prophylaxis among female sex workers in Lagos state, Nigeria.?
2. What is the level of acceptability of pre-exposure prophylaxis among female sex workers in Lagos state, Nigeria.?
3. What is the level of willingness to use pre-exposure prophylaxis among female sex workers in Lagos state, Nigeria.?
4. What is the prevalence of PrEP use among female sex workers in Lagos state, Nigeria.?

AIM AND OBJECTIVES

General Objectives

The study aims to assess acceptability, willingness, and use of Pre-exposure prophylaxis to prevent HIV transmission among female sex workers in Lagos state.

Specific Objectives

1. To determine the knowledge of the pre-exposure prophylaxis among female sex workers in Lagos state, Nigeria.
2. To assess the acceptability of pre-exposure prophylaxis among female sex workers in Lagos state, Nigeria.
3. To assess the willingness to use pre-exposure prophylaxis among female sex workers in Lagos state, Nigeria.
4. To determine the prevalence of PrEP use among female sex workers in Lagos state, Nigeria.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION TO LITERRATURE REVIEW: UNDERSTANDING THE INTERSECTION OF PROSTITUTION, HIV, AND PRE-EXPOSURE PROPHYLAXIS

The definition of prostitution has changed over time, and it simply implies physical sexual activity in exchange for payment.[1] In narrative a woman can prostitute herself for other than monetary values, like for employment, advancement in career.[40] Prostitution, on the other hand as compared to sex work implies criminality and immorality that demeans with stigmatization. Over the course of history prostitution have meant different things to different society and there have been different efforts to control it, for example Saint Louis IX banned prostitution and it was repeal in less than two years.[1] Prostitution till date remains a criminal activity in most part of the world including Nigeria.[41]

Communicable disease are diseases that spread or transmitted from one human to human or from an animal to a human. These diseases are spread by contact with, body fluids, blood products, and also via airborne. HIV is a communicable disease transmitted by contact, it was identified in April 1984.[16] It is a simian retrovirus that is believed to have originated from African primates and infected human.[42] Attention was first drawn to it when some men who sleep with men presented with a rare form pneumonia and malignancy in the United State in 1981.[43] The disease has gone on to cause a global pandemic.

People who engage in the voluntary exchange of sex for money and other benefits are at a greater risk of becoming infected with HIV than the general population.[44] And this is due to a variety of reasons such as having multiple sexual activities with different people, drug abuse

and intoxicant use, inconsistent and poor compliance with condom use.[45] The risk of acquiring HIV is comparably higher for female sex workers when compared to other women who do not trade sex globally and specifically in the sub-Saharan Africa region.[46] The concentrated epidemic in west Africa had greater odds among female sex workers when it was compared to the general population of women of reproductive age.[47]

A more recent biomedical strategy for HIV prevention is called pre-exposure prophylaxis. Pre-exposure prophylaxis is antivirals used in combination therapy for AIDS treatment, there being several regimens. There are oral medications, intramuscular injections, and topical treatments for pre-exposure prophylaxis.[48] Adults and teenagers take Truvada, an oral pill formulation of tenofovir and emtricitabine, once daily to prevent HIV.[49] Nigeria is one of the countries that has developed implementation guidelines and increased its use of PrEP as a result of the 2015 WHO recommendation.[50,51]

2.2 KNOWLEDGE OF THE PRE-EXPOSURE PROPHYLAXIS

Knowledge refers to the understanding or awareness of facts, information, skills, or concepts acquired through learning, experience, or education.[52] Knowledge is often a prerequisite for awareness. To be aware of something, you typically need some level of knowledge about it. Awareness can be seen as a higher level of consciousness or recognition compared to basic knowledge. It implies not only knowing about something but also recognizing its significance or relevance. Both knowledge and awareness play important roles in decision-making, personal development, and addressing societal issues and have been used interchangeably.[53]

While there is limited information available concerning the awareness of PrEP among FSWs, it is worth noting that PrEP holds promise as an effective means of HIV prevention for this at-risk group. Numerous studies conducted globally have revealed differing levels of PrEP awareness and knowledge among FSWs. One study in the United States used a yes/no response

format to measure respondents' awareness of PrEP and found that 21% of FSW in the study were aware of PrEP.[54] Only 31.8% of 1003 FSWs surveyed in Cambodia have heard about PrEP.[55] In Kampala, just 23.2% of adolescents and young FSWs were aware of oral PrEP, while only 3.9% were aware of injectable PrEP.[56] In south-western Nigeria, 89.9% FSW of the study population demonstrated good knowledge of PrEP.[57] A qualitative investigation carried out in Zimbabwe revealed that individuals who initiated PrEP use held optimistic views about the medication and had a strong belief in its potential to safeguard them against HIV.[58] Initially, they encountered challenges in comprehending PrEP and harbored concerns about potential side effects and rare adverse events as outlined in informational materials.[58] Less than 50% of the survey participants possessed knowledge about the necessary clinical care for PrEP, and prevalent misconceptions about PrEP were observed.[59] A study in Tanzania found that awareness of PrEP among FSW increased over time, and that repeated PrEP education was vital for sustaining willingness to use PrEP.[60] A significant majority of the participants, 92%, had no prior knowledge of PrEP among FSWs in Tanzania.[61]

2.2.1. FACTORS ASSOCIATED WITH KNOWLEDGE OF PRE-EXPOSURE PROPHYLAXIS

A study carried out in twelve Brazilian cities found that FSWs who are not affiliated with non-governmental organisations (NGOs), who have not attended a group HIV prevention lecture in the past six months, and who refuse to identify as sex workers to medical staff in health facilities know very little about PrEP.[62] In Jamaica, being in a relationship and recent physical violence were associated with PrEP awareness among 340 sex workers surveyed during multivariate analyses.[63] Women who inject drugs (WWID) engaging in transactional sex were more than three times as likely to report awareness of PrEP compared to WWID who did not.[64] Following PrEP awareness in an Indian community where PrEP awareness was low, qualitative

research revealed good knowledge and understanding of PrEP among FSWs.[65] Training of Healthcare worker significantly increased awareness and knowledge of PrEP among at risk population including FSW in a study conducted in central Uganda.[35] Cognitive barriers, including a lack of knowledge, have been identified as significant obstacles contributing to the low demand for PrEP among FSWs.[66] In particular, knowledge of PrEP has emerged as a pivotal factor influencing the decision-making process among FSWs in South Africa concerning the initiation and adherence to PrEP.[67] One of the main reason FSWs are not aware of PrEP is inadequate awareness programme.[68]

2.3 ACCEPTABILITY

Acceptability according to Cambridge dictionary is the quality of being satisfactory and able to be agreed to or approved of something. An attribute of something that makes it subject to approval for a purpose is its acceptability. Even though something is much less useful for this purpose than the ideal example, it is still acceptable if it is adequate to fulfil the goal for which it is intended. If something deviates from the ideal to the point where it is no longer adequate to fulfil the intended goal, or if it works against that aim, it is unacceptable (or has the property of being unsuitable). An object may be acceptable to one person but unacceptable to another, or it may be unacceptable for one purpose but acceptable for another.

Acceptability is a nebulous term that is both extremely subjective and situational. Furthermore, determining acceptability isn't always a logical or consistent process. Even while an object could be adequate for one purpose, it might not be acceptable in the decision-eyes makers for another.[69]

The idea of acceptability, according to philosopher Alex Michalos, "is as ambiguous and bothersome as probability, confirmation, belief, justice, etc.," and he gives the word two different definitions in relation to the potential acceptability of hypotheses.[70] The idea of

acceptability is crucial to several disciplines, including economics, medicine, linguistics, and biometrics.

2.3.1 ACCEPTABILITY OF PRE-EXPOSURE PROPHYLAXIS

In the majority of studies on PrEP and microbicide, acceptability assessment plays a key role. That is the reason it seems and make sense that many participants won't stick with product use during a study if it's deemed unsatisfactory, and many people at risk of contracting HIV won't use the medication once it's available. Evaluation of product acceptability has been a challenging process that has changed as our comprehension of utilization has advanced beyond the most fundamental idea.[71] With the gradual recognition that acceptability is neither stable nor objective but rather involves a number of aspects and interactions of the product with the user, the sex partner, the environment, societal and cultural norms, this fundamental idea has grown through time.[72]

Acceptability and willingness have been used synonymously in the study of PrEP among various important populations, including FSW and has been confused with intention to use. The finding from contraceptive investigations that product use is only marginally predicted by perceived method qualities.[73] A common measure and rating using likert scale has been used by most PrEP studies to evaluate acceptability and willingness.

According to a qualitative study conducted in Malawi, sex workers find PrEP to be acceptable and strongly motivated to use it since it protects their health and lifespan, which is crucial given their high awareness of their risk of contracting HIV and desire to maintain good health.[74] The fact that PrEP provides protection before any potential HIV exposure was acknowledged by the participants.[74] PrEP acceptance was high due to the anticipated advantages of HIV prevention, but certain aspects of the medication, like size, colour, and flavour, might be enhanced to raise acceptance among Kenya's population of sex workers.[34]

PrEP acceptability was found to be substantially correlated with years of sex work, sex work stigma, and social support levels in Uganda, and also family support was connected with PrEP acceptability, which shows that women may find their families supportive of health concerns - Sex workers who were young and had spent less than five years in the field were more likely to accept PrEP.[33] The relationship between PrEP acceptability and a sense of social cohesion among study participants suggests that women who feel a sense of collectivism with their fellow sex workers will be more at ease with a new HIV prevention technology. PrEP acceptability was associated with a higher social cohesion score.[75]

2.4 WILLINGNESS TO USE PRE-EXPOSURE PROPHYLAXIS

The availability of options or access is correlated with the willingness to seek interventions. Willingness is the degree to which a person has the drive, assurance, and dedication to complete a particular activity.[76] It offers higher opportunities to capture the likelihood of seeking assistance because it necessitates little thought of unfavourable effects. In general, willingness is seen to be a better indicator of health risk when it has a social component.[77] Unsafe behaviours, like adultery or risky sex, are opportunistic for some people. It serves as a reliable indicator of human behaviour and is employed in a variety of fields, including psychology and economics.

According to literature review, there are several of factors that may influence individual's willingness to use or not utilize PrEP: this includes, PrEP attributes, health system issues, and individual characteristics.[78]

2.4.1 INDIVIDUAL FACTORS OF AFFECTING WILLINGNESS TO USE PrEP

Age has been identified as a factor that affects willingness to use PrEP; according to Chris et al., there is a statistically significant difference between those who started working in sex at age under 25 and those who are between 25 and 34 years old, with the latter group being 16%

less likely to be willing to take PrEP.[38] Another study conducted in Malawi found that young sex workers had a very high willingness rate of 96 per cent.[79] Geographical area and religion were found to be determinants of willingness in Ghana.[38] Socioeconomic factors also have an impact on willingness to use; individuals who find PrEP affordable are more inclined to do so.[78]

2.4.2 AWARENESS AND KNOWLEDGE

FSW who showed better HIV knowledge through testing or greater condom decision-making involvement were more inclined to use PrEP, the overall analysis revealed a link between limited awareness of PrEP and low desire to utilize PrEP.[80] Even among those who had prior knowledge and were more willing to use PrEP when it became available, sexual workers who had just had a brief education demonstrated a high level of willingness to use it.[32] A percentage larger than 96% at enrollment and during the follow-up period indicated that FSW in Tanazia were generally willing to utilize PrEP.

2.4.3. HEALTH SYSTEM FACTORS

Living more than a 30-minute drive from the PrEP is associated with a lower likelihood of using PrEP among eligible individuals who are targets for it.[81] According to qualitative study, FSW mentioned the desire to spend as little time as possible receiving PrEP at a clinic. These women acknowledged that having to wait in lines and travel to clinics to receive PrEP was difficult due to their conflicting obligations at work, home, and in their personal lives. Other factors discussed included the gender of healthcare providers, the frequency of receiving PrEP, and the integration of additional services.[79] FSW stressed the requirement for improved family planning and STI testing services, among other sexual and reproductive health services.[79]

2.4.4 CHARACTERISTICS OF PRE-EXPOSURE PROPHYLAXIS

There were worries about FSW needing a daily routine of taking pills, remembering to take the pills, or the requirement to take the pills daily if not routinely engaging in sexual activity.[82]

Participants who are FSW expressed concern about side effects, especially in light of coexisting medical conditions.[82] In spite of possible side effects, cost, and regular HIV testing, 61 per cent of participants in a study evaluating attitudes, preferences toward known qualities of the PrEP medicine, as well as future acceptability, reported a desire to use it.[83] Even after being warned about possible negative effects, cost, condom use, and periodic HIV testing, participants were still willing to use PrEP.[84] Participants admitted to feeling uneasy at the notion of using PrEP and said that telling their spouse or partners about it would be humiliating.[84] The hypothetical nature of the majority of the PrEP characteristics offered, the HIV stigma, and the participants' fear may all contribute to this.[84]

2.4.5 SIDE EFFECTS OF PRE-EXPOSURE PROPHYLAXIS

Like every medicine, there is potential for side effects or adverse reactions, and PrEP is no exception. The side effects are either immediate or occur long-term. The Immediate side effects include diarrhoea, nausea, fatigue and headache, and long-term side effects include reduced bone mineral, skin changes, fatty liver, and kidney damage.[85] The immediate side effects occur following the rise of enzymatic actions. Tenofovir diphosphate only combination side effects are increased people with Hepatitis B infection with the increased plasma level of alanine aminotransferase, a five times rise higher than the upper limit of normal, a result of Immune-mediated response to hepatitis B infection.[86] Diarrhoea has also been noted in people using tenofovir vaginal gel and also a risk of bone fracture though the results are not statistically significant.[87]

Tenoforvir/emtricitabine (TRUVADA) and tenoforvir only combination have a major side effect.[88] Truvada has demonstrated an effect on kidney health; it reduces glomerular filtration and may cause kidney failure or worsen kidney disease in people with kidney impairment.[89] Side effects are among the fears that deter people away from PrEP. Key populations in South Africa show a lack of willingness to use PrEP because of the fear of side effects, a 42 per cent

of the study participant.[90] In a randomized study, weight gain was identified as a side effect which some used to determine which arm of the study they belong to.

Women's experience with side-effects is consistent with those MSM, while some were relieved upon completion of the study because the drug made them sick or aggravated existing gastrointestinal symptoms, while some study participants noted that the reaction is a sign that the drug is working in the body and do not show worry.[91] Since the immediate side abates over time, side effects may not be a prominent barrier to the willingness to use PrEP when such pieces of information and counselling are provided to potential users.[34]

2.4.6 PRE-EXPOSURE PROPHYLAXIS STIGMA

Oxford defined it as a mark of disgrace because of a particular circumstance, quality, or person. Stigmatization has an impact on mental well-being and hinders seeking health care.[92] People living with HIV/AIDS (PLWHA) are victims of stigmatization, and the social behaviour of gossip may be the reason why some do not adhere to HAART drugs, a similar scenario for negative individuals seeking PrEP.[93,94] Fear of being labelled HIV-positive is the reason people may not want to tell people they are using PrEP.[95] MSM fear being judged by health care providers and being perceived as sexually perverted reduces their willingness to use PrEP and which could be a concern for FSW.[96]

PrEP-related stereotypes affect willingness to use PrEP. PrEP stereotypes are either genuine or predicted, which is a barrier to willingness or uptake of PrEP because people are aware that they will be judged for accessing it. Arising themes in PrEP-related stigma include the fear of being considered positive for HIV or leading an irresponsible sex life and promiscuous: however, some other themes are insignificant in heterosexual practices such as gay stigma.[97] And higher willingness to use PrEP has also been associated with lower PrEP stigma.[98]

2.4.6.1 PRE-EXPOSURE PROPHYLAXIS STIGMA SCALE

The PrEP stigma scale is a tool used to identify barriers to adoption of PrEP among as risk individuals. PrEP stigma scale incorporated domains of stigma framework, internalized, anticipated and experience stigma.[99] Different subscales, such as those that are personal or related to other people and sexual barriers subscales, were found using factor analysis.[100] While perceptions about PrEP users and public disapproval of PrEP were identified as two stigma scale subscales from factor analysis that are associated with anticipated stigma.[101] PrEP Stigma scale has also been validated from studies using different scales, Likert and semantics scales.[99]

Limitation with PrEP stigma scale is that it has focused mostly on Gay and bisexual people and less on heterosexuals and FSW, and discordant couples.[102] However some of the variable measures can be useful in studying barriers to willingness to PrEP among heterosexuals. These are variables related to family support, spousal support and acceptance, self-concern and well-being, and perception of health care worker and people when they are seen at clinics receiving drugs.

2.5 USE OF PRE-EXPOSURE PROPHYLAXIS

As PrEP is being rolled out across Africa, several strategies are proposed to facilitate use; integrated approaches and social factors could influence use of PrEP.[103] PrEP uptake confer extra benefit of improving relationships, reinforce commitments and joint efforts for HIV prevention.[104] Activities that facilitate implementation and use of PrEP should include innovative approaches that address structural barriers, campaigns addressing stigma, health education on risk perception could facilitate uptake of PrEP.[105] Distance from facilities and transport-related obstacles have affected and decreased uptake of ART for HIV treatment and testing; a similar outcome is also reported for uptake of PrEP.[106,107]

The number of PrEP start-ups among FSW in eThekwini, South Africa, who receive HIV prevention services from a real-world service provider grew each year, but PrEP persistence

fell to 53% one month after start-up and to just 9% after one year. Compared to FSW who are 25 years and older and younger women were more likely to stop taking PrEP as a result of skipping visits and are at the highest risk of contracting HIV.[67] Respondents found it difficult to attend follow-up sessions on a monthly basis, especially if they have to travel, and many also thought about ceasing PrEP use when they experienced symptoms like headaches or dizziness and while an increased appetite was considered by some as a sign of good health.[108]

The available research indicates that women's health behaviours, such as HIV risk reduction behaviours like condom usage, frequently depend on perceived support from people in their networks, and that habits are strengthened when social norms for adopting a new activity are obvious among supports.[109] This same support was not related to the commencement of PrEP, maybe because women may be very concerned about the stigma associated with sex work, and starting PrEP and adhering to a daily regimen may be associated with risks of being outed as a sex worker.[33] Low uptake of PrEP has also been associated with daily pill regime and low risk perception of HIV.[107]

According to a descriptive phenomenological study, both intrinsic and extrinsic motivational factors can drive FSWs to start PrEP. Self-protection from HIV infection and condom bursting were intrinsic factors, whereas extrinsic motivators included occupational risk related to sex work, increased likelihood of engaging in unprotected sex, encouragement from others, prior involvement in PrEP studies, need to care for children, and GBV.[110] Violence, including gender-based violence, has been identified as a driving force behind the start of PrEP. Violence has been linked to an increased risk of HIV in a variety of population groups.[111] FSWs may also be particularly motivated to use PrEP for a number of reasons, including the positive reinforcement they receive from other FSWs and the increased likelihood that they will engage in unprotected sex because they believe PrEP will protect them from HIV.[110]

2.5.1 ADHERENCE TO PRE-EXPOSURE PROPHYLAXIS

The efficacy of PrEP to prevent HIV transmission among heterosexuals is associated with high medication adherence proven by the presence of medication in plasma.[112] The paradigm of prevention-effective PrEP adherence advocates for the use of PrEP during periods individual feels they are more at risk and medication use in the absence of risk confers no benefit, especially among people with few or irregular sexual activities.[113] According to research, PrEP use and adherence are higher among groups that believe they are at a higher risk of contracting HIV.[114]

Adherence to medication has always been a challenge therapy for chronic conditions, and it is associated with failure to achieve cure, relapse, and complications. Low topical PrEP adherence has been reported to be less than 80 per cent.[115] Low PrEP adherence has also been connected to young women's lack of social support.[116] However, HIV acquisition is independent of social roles, making adherence a major barrier for HIV prevention. The findings of a qualitative study, PrEP adherence will be hampered by a marriage crisis brought on by the HIV-positive partner disclosing their status, a problem that MSM do not encounter.[117]

CHAPTER THREE

METHODOLOGY

3.1 DESCRIPTION OF THE STUDY LOCATION

Lagos state is located in the south-western geopolitical zone of Nigeria, it is the smallest state in size and the most populous state in Nigeria with population of over 15 million people.[118]

Lagos State is bounded by the Atlantic oceans to the south with creeks and lagoon making up 22% of it's 3,577 km. It shares boundary with Ogun state from the north and east and Republic of Benin to the West. The capital of Lagos state is Ikeja.

There are 20 Local Government Areas in Lagos state, with jagged borders neighbouring other states and each other.[119] The state is densely populated with diverse groups and ethnic communities.[120] People in the state work in both formal and informal sectors; those in the informal sector include self-employed individuals in micro-businesses and artisans.[121] The formal sector consists of major financial institutions, oil and manufacturing companies that are regulated by the government through tax collection.[121] Lagos is a transit point for long-distance truck drivers who drive to Lagos to offload and upload goods and fuel and then visit sex workers during a brief visit.[122]

Hotspots are physical locations where FSW visits and parades to seek clients. These physical locations could be indoor such as clubs, hotels, brothels or outdoor, streets and motor parks. Due to the likelihood of police raids, hotspots may only last a short while before FSW relocates to another location.[123] In Lagos, the large percentage of FSW work in and around hotels and bars, with only 6% working in public spaces.[124,125]A nation-wide mapping survey to identify key population hotspot estimated that there are about 2974 FSW hotspot in Lagos.[123]

3.2 STUDY DESIGN

This study was a descriptive cross-sectional study. Mixed methods, comprising both quantitative and qualitative methods of data collection, were used to determine the knowledge, acceptability, willingness, and use of Pre-Exposure Prophylaxis among female sex workers in Lagos State.

3.3 STUDY POPULATION

Study population were females who engage in consensual sexual activities in exchange for money and other benefits in Lagos State.

3.4 ELIGIBILITY CRITERIA

3.4.1 INCLUSION CRITERIA

1. Female sex workers above the age of 18 years who reside in Lagos state.[57]

3.4.2 EXCLUSION CRITERIA

1. Female sex worker who was too intoxicated to give informed consent[126]

3.5 SAMPLE SIZE DETERMINATION

Sample size was determined using the Cochran's formular[127]

$$n = \frac{Z^2 pq}{d^2}$$

n = minimum sample size

z = confidence interval at 95% = 1.96

p = estimated prevalence of PrEP use from similar study = 0.1754[128]

q = 1 – p = (1 - 0.146) = 0.854

d = standard error at 5% = 0.05

$n = (1.96)^2 \times 0.1754 \times (0.8246) / (0.05)^2 = 222.3 = 222$

The population size is greater than 10,000.

Assuming a response rate of 90%

Correction for non-response: Sample size/ response rate

222/0.9 = 246

The minimum sample size selected for the study was 246.

The sample for the study increased to 310 to increase the generalizability of the study.[127]

3.6 SAMPLING TECHNIQUE

A multistage sampling technique was used in the selection of participants into the study.

Stage 1: Selection of LGA

The sample frame consisting of all the twenty local government areas in Lagos state was created. Four LGA were selected using simple random sampling technique by balloting. The names of each local government areas were writing on pieces of paper and folded, then four random pieces of paper were selected to reveal the four local government that respondents were recruited from.

The four selected LGAs were.

Ojo

Alimosho

Agege

Ikorodu

Stage 2: Selection of hotspots

Visits to selected LGAs was carried out to identify the venues frequented by FSW, days of the week and times they congregate at those venues and also an estimation of the number of FSW that visit each venue. All this information was written down, then a venue-day-time (VDT) sampling frame was created. Venues with estimated fewer sex workers were excluded from VDT in the sampling frame. A feasibility survey was also carried out to determine the following: venue owner's permission to enter the venue, interviewer's safety (since some sex workers operate in the evening), and venue layout to allow confidentiality of conducting interviews before being included in the sampling frame. Simple random technique by balloting was used to select 6 hotspots from each LGA to make a total of 24 hotspots.

Stage 3: Selection of participants

Participants were approached and engaged, the research assistants explained to the participants the nature of study, confidentiality, willingness to participate and withdraw from the study. Majority consented to sign an informed consent and participate; the respondents were taking to a private room/area provided by the building owner to complete the survey. Some respondents made an appointment with research assistant the following morning to complete the survey. Consenting respondents were recruited until minimum sample size was achieved.

3.7 DATA COLLECTION TOOLS AND TECHNIQUES

3.7.1 QUESTIONNAIRE

Information was collected from participants using an interviewer administered questionnaire. The questionnaire had four sections.

Section A obtained information on socio-demographic characteristics of respondents such as age at last birthday, current marital status, highest level of education was classified as primary/ secondary/ tertiary, do you have a regular paying job, major source of income.

Section B obtained information about knowledge of HIV/AIDS and PrEP using YES, NO and DO NOT KNOW responses. Question about HIV knowledge include HIV is the virus that led to AIDS, can people get HIV from mosquito bites, only people who look sick can spread HIV/AIDS, can people reduce their chance of getting HIV by using condoms. Questions on PrEP knowledge include These are drugs people can use to prevent getting HIV, PrEP is used after exposure to HIV, PrEP is an injection, PrEP prevents all sexually transmitted diseases.

Section C assessed acceptability and questions were structured as; would you consider accepting PrEP as a method to prevent HIV if it is made available in Nigeria and – it is free, it is safe, it more than ninety per cent effective, it is once daily pill, it is once monthly injection, it is a vaginal cream.

Section D explored willingness to use PrEP using the following questions; How likely would you be to take PrEP if - You have access to free counselling on PrEP, it has immediate side effects, it has long term effect on your health, you must take a pill every day, you must see a healthcare worker before getting the drug.

Section E obtained information to determine the proportion of FSW using PrEP, using the following questions: have you ever been offered oral PrEP before, are you currently using PrEP, have you ever taken oral PrEP before? If you have taken oral PrEP before, why did you decide to start? - I am sexually active, I feel that I am at risk for HIV, I have multiple sexual partners

3.7.2. IN-DEPTH INTERVIEW

An In-depth interview with FSWs was conducted to explore and gain insight into the acceptability, willingness and use of PrEP. Fifteen FSW were invited to participate in in-depth interview, but Seven participants obliged and were interviewed.

3.7.3 PRE-TESTING

The quantitative data collection tool was pre-tested at Kosofe local government, not selected by sampling method for recruiting participants. A total of 30 questionnaires, which is 10% of the estimated sample size, were administered at a brothel to determine the clarity of the questionnaire and identify any ambiguities. The questionnaire was found to be clear by all participants, and no corrections were necessary.

3.7.4 RESEARCH ASSISTANTS

Three research assistants who holds a Bachelor of Science degree and have participated in previous study among FSW and works closely with FSW were recruited for data collection. They were further trained on the information required, eligible participants and to recruit only

FSW who are willing to participate in the study. This was done for two days with each daily section lasting up to 2 hours.

3.8 SCORING SYSTEM

HIV and PrEP knowledge were assessed using yes/no and do not know responses. Each Yes response was assigned 1 and each No, do not know response was assigned 0. The total possible score for knowledge of HIV and PrEP is 10, the scores were then converted to percentages. The scores that were less than 50% were considered as poor knowledge of HIV and PrEP, and scores that were 50% and above were considered good knowledge.

A five-point Likert scale was used to assess acceptability and willingness. Responses were divided into two categories, with choices 5 and 4 regarded as good acceptance/willingness to use PrEP. Choices 3, 2, and 1 were classified as low acceptance/unwilling to use PrEP. Acceptability of PrEP had a minimum score of 6 and a maximum score of 30. Willingness to Use PrEP had a minimum score of 9 and a maximum score of 45. The outcomes are expressed as percentages. With a cutoff point of 18 for acceptability of PrEP and 27 for willingness to use PrEP, scores below 60% indicate poor PrEP acceptance of PrEP and unwillingness to utilize PrEP. Yes/no responses were used to assess use of PrEP. The proportion of FSW who used PrEP is reported as a percentage.

3.9 DATA ANALYSIS

The data was entered into Microsoft excel sheet cleaned and analyzed with statistical package for the social science (SPSS) version 26.0. The data from the questionnaire were presented in frequency table and pie chart. Measures of central tendency and dispersion were calculated based on the data distribution and P value < 0.05 was taken for statistical significance. The independent variables were age as at last birthday, current marital status, highest level of education. The dependent variables were knowledge of PrEP, acceptability of PrEP,

willingness to use PrEP. Chi-square was used to test for associations between categorical variables. Confidence interval was set at 95% for all statistical tests. The bivariate analysis was carried out to determine association between variables.

In-depth interviews were carried out among respondents who consented to participate in the study.

Step 1: Data Collection

In this study, data were collected through in-depth interviews. Respondents who consented to participate in the study were selected for the interviews. The interviews were conducted in a secured and quiet location to ensure privacy and comfort during the discussion.

Step 2: Recording and Note-taking.

During the interviews, audio recordings were made to capture the respondent's responses accurately after consent to record was sought. Additionally, the researcher took jottings and notes to supplement the recorded information and capture non-verbal cues, reactions and context that could not be recorded by the audio recording.

Step 3: Transcription

After the interviews were concluded, the audio recordings were transcribed with the help of a research assistant to create written records of the discussions and sessions and was revised by the researcher. This step involved converting the spoken words into written text, ensuring that the verbal content description and nuances of the interviews were thoroughly captured.

Step 4: Coding

In this next phase, codes were developed based on the transcribed interviews and also using the jottings taken during the interviews. These codes were labelled, tagged and assigned to specific segments of the objectives of the study that represented key concepts, ideas, or themes

arising from the data. Coding was used as a systematic way to organize and categorize the data in relation to specific objectives.

Step 5: Data Analysis

Using the identified codes, data analysis was conducted to identify emerging themes. The codes were used to group similar responses and perspectives together under different objectives of the study, enabling the researchers to identify patterns and trends within the data.

Step 6: Reporting and Discussion

The identified themes were then reported and discussed in the result section. To support and illustrate the themes, relevant quotes from the interviews were included. These quotes provided direct and verbatim expressions from the respondents, adding credibility and context to the reported themes.

4.0 ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Health Research and Ethical Committee of the Lagos University Teaching Hospital. Written consents were obtained from participants after deliberate explanations; of freedom to participate and withdraw from the study at any time without any consequences. Any benefits from participation in the study were also explained to participants, which is that the information will be published so that decision makers can use it to provide preventive and targeted services to FSW. The purpose and objectives of the study were explained to the participants. Participants were also informed on how their confidentiality and privacy will be protected. Participants' names and addresses were collected; instead, a serial identification number were provided for each participant. All collected data were kept confidential in a secure cabinet with limited access and is to be destroyed upon the conclusion of the study. The In-depth interview was conducted in a private location that ensured privacy and confidentiality.

CHAPTER FOUR

RESULTS

A total of 310 respondents who were FSW answered the questionnaire, with a response rate of 100%

Table 1: Socio-demographic characteristics of participants

	Frequency	Percent
Age		
<20yrs	22	7.1
21-30yrs	232	74.8
31-40yrs	56	18.1
Total	310	100.0
Mean age and SD		26.835+4.3110
Religion		
Christianity	184	59.4
Islam	121	39.0
Traditional	5	1.6
Total	310	100.0
Ethnicity		
Yoruba	135	43.5
Igbo	48	15.5
Hausa	20	6.5
Others	107	34.5
Total	310	100.0
Educational Qualification		
None	2	0.6
Primary	28	9.0
Secondary	278	89.7
Tertiary	2	0.6
Total	310	100.0
Regular paying job		
1Yes	292	94.2
2No	18	5.8
Total	310	100.0
Age started sex trade		
<18yrs	25	8.1
18-20yrs	184	59.4
21-25yrs	87	28.1
>25yrs	14	4.5
Total	310	100.0
Mean and SD		20.323+2.6266
Type of sex trade engaged		
Anal	1	0.3
Vaginal	309	99.7
Total	310	100.0
Average clients in a month		
1-10client	38	12.3
11-20client	184	59.4
21-30client	76	24.5
30client+	12	3.9
Total	310	100.0

The mean age of respondents was 26.8 years with a range of 19 years to 40 years. More than three quarters of the participants had only secondary school leaving certificate (89.7%). Only one sex worker practices only anal sex 0.3%. More than half of the respondents were Christians (59.4%).

Table 2: KNOWLEDGE OF HIV/AIDS AMONG RESPONDENNTS

Variable	Yes	No	I don't know
	Frequency, n =310 (%)	Frequency, n =310 (%)	Frequency, n =310 (%)
HIV is the virus that can lead to AIDS.	308 (99.4)	2 (0.6)	0 (0.0)
Can people get HIV from mosquito bites?	14 (4.5)	293 (94.5)	3 (1.0)
Can people get HIV by sharing food with a person who has HIV?	31 (10.0)	267 (86.1)	12 (3.9)
People who look healthy can have HIV.	285 (91.9)	23 (7.4)	2 (0.6)
Only people who look sick can spread the HIV/AIDS virus	68 (21.9)	237 (76.5)	5 (1.6)
Can people reduce their chance of getting HIV by using a condom every time they have sex?	304 (98.1)	5 (1.6)	1 (0.3)
Can people become infected with HIV by having unprotected oral sex?	293 (94.5)	7 (2.3)	10 (3.2)
Having another sexually transmitted disease like gonorrhea or herpes increases a person's risk of becoming infected with HIV.	296 (95.5)	6 (1.9)	8 (2.6)
There are drugs available to treat HIV that can lengthen the life of a person infected with the virus.	261 (84.2)	40 (12.9)	9 (2.9)
There is a cure for AIDS	11 (3.5)	271 (87.4)	28 (9.0)

The over knowledge of HIV is good, only 2 respondents (0.6%) did not know that HIV virus causes AIDS. More three quarters (84.2%) know that there are drugs available for the

managements of HIV/AIDS, and majority (98.1%) know that using condom every single time reduces the risk of getting HIV.

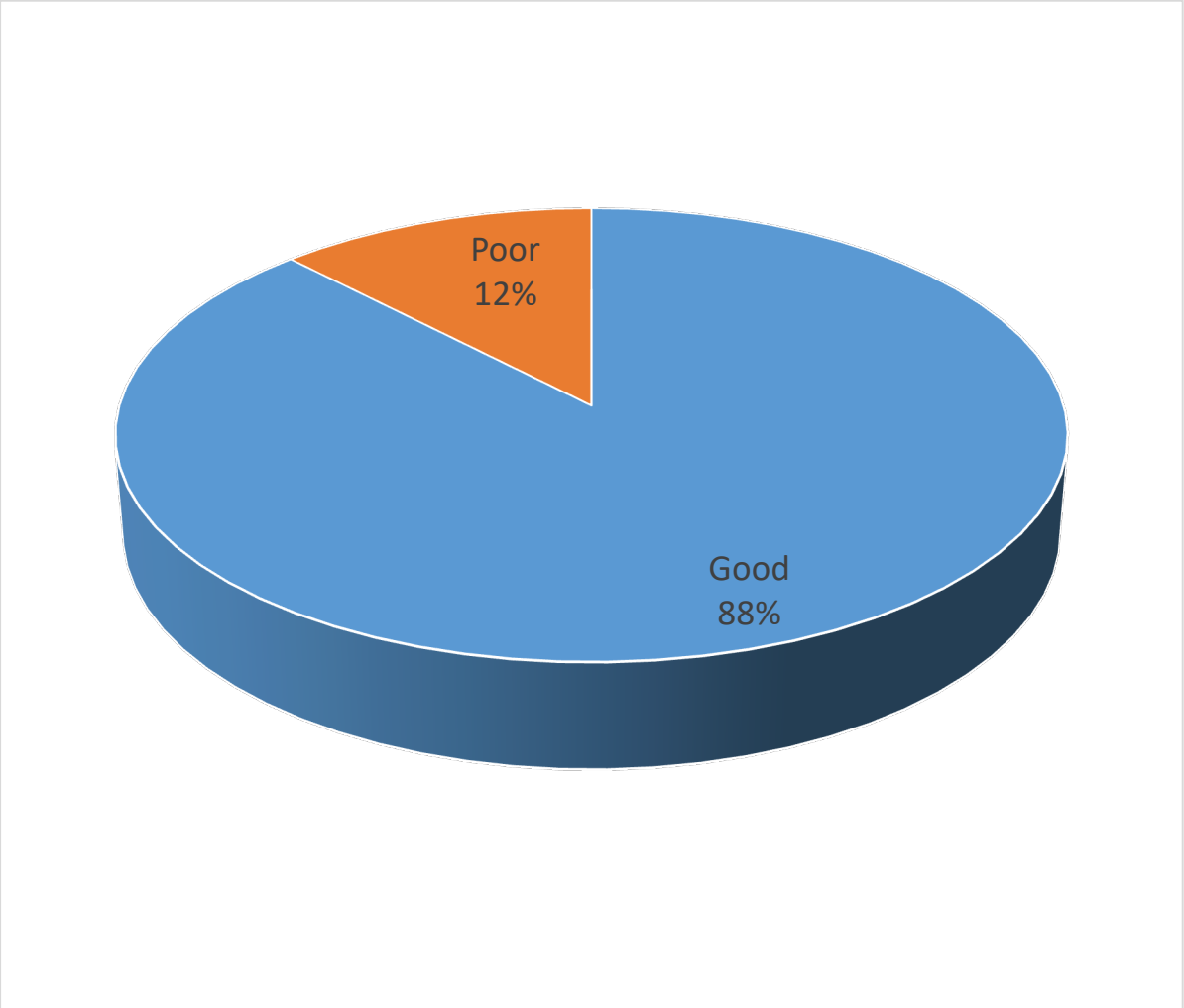


Figure 1: Pie chart showing overall score Knowledge of HIV/AIDS: Majority of the respondents had good knowledge 88% while 12% had poor knowledge of HIV/AIDS

KEY

POOR KNOWLEDGE OF HIV

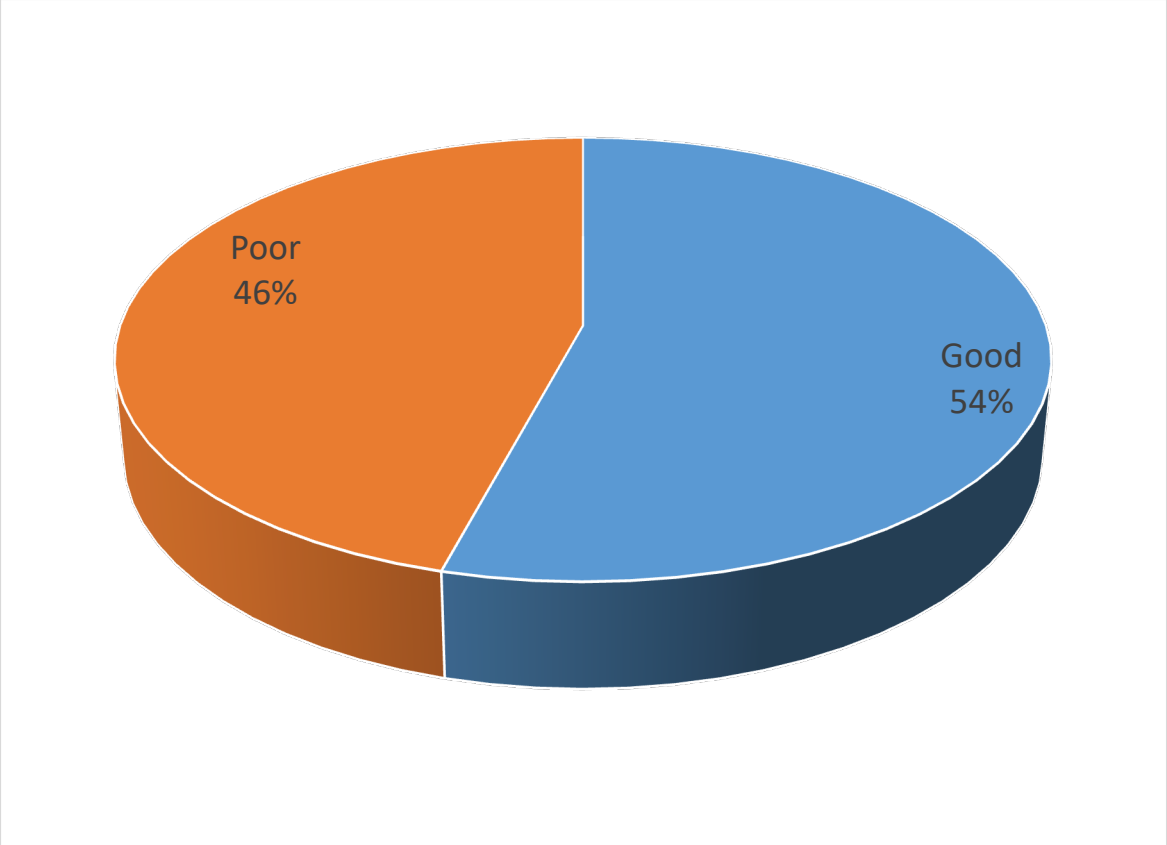
GOOD KNOWLEDGE OF HIV

Table 3: KNOWLEDGE OF PRE-EXPOSURE PROPHYLAXIS AMONG RESPONDENNTS

Variable	Yes	No	I don't Know
	Frequency, n=310 (%)	Frequency, n=310 (%)	Frequency, n=310 (%)
There are drugs people can use to prevent getting HIV.	167 (53.9)	5 (1.6)	138 (44.5)
PrEP is used after exposure to HIV.	86 (27.7	80 (25.8)	144 (46.5)
Pre-exposure Prophylaxis is an injection.	20 (6.5)	140 (45.2)	150 (48.4)
Pre-exposure prophylaxis prevents all sexually transmitted diseases.	56 (18.1)	110 (35.5)	144 (46.5)
Pre-exposure prophylaxis prevents only HIV.	124 (40.0)	41 (13.2)	145 (46.8)
Pre-exposure Prophylaxis is used more than once a day	21 (6.8)	144 (46.5)	145 (46.8)
Only HIV negative people can use Pre-Exposure Prophylaxis	156 (50.3)	32 (10.3)	122 (39.4)
Pre-exposure Prophylaxis provides long-term immunity to HIV.	159 (51.3)	11 (3.5)	140 (45.2)
Pre-exposure Prophylaxis is protective from the first day of use.	157 (50.6)	9 (2.9)	144 (46.5)
Pre-exposure prophylaxis does not have side effect	49 (15.8)	114 (36.8)	147 (47.4)

More than half (53.9%) of the respondents believe that PrEP are drugs that can be used to prevent HIV and about one quarters (27.7%) of the respondents think that PrEP is used after

exposure. About Half of the respondents (51.3%) thinks PrEP provides long lasting immunity to HIV.



KEY

POOR KNOWLEDGE OF PRE-EXPOSURE PROPHYLAXIS

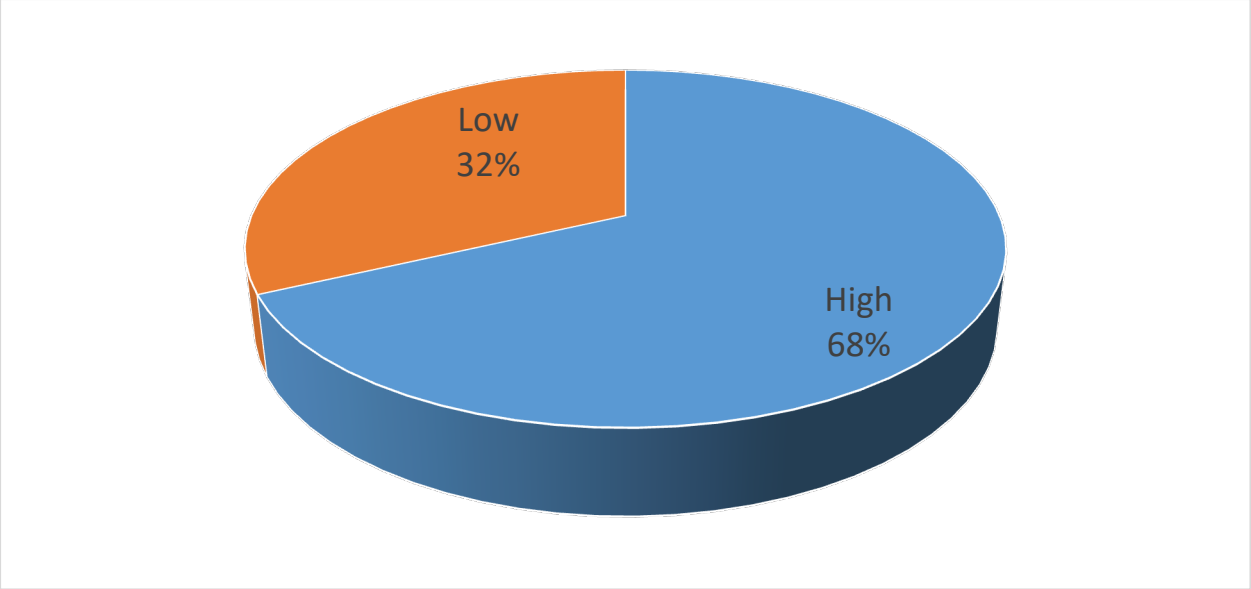
GOOD KNOWLEDGE OF PRE-EXPOSURE PROPHYLAXIS

Figure 2: Pie chart showing overall score Knowledge of PrEP: About 54% of the respondents had good knowledge of PrEP while 46% had poor Knowledge of PrEP

Table 4: ACCEPTABILITY OF PRE-EXPOSURE PROPHYLAXIS AMONG RESPONDENNTS

Accepting PrEP as a method to prevent HIV for if it is made available in Nigeria	Very likely (n=310) Freq. (%)	Likely Freq. (n=310) (%)	Undecided Freq. (n=310) (%)	Not likely (n=310) Freq. (%)	Very Unlikely (n=310) Freq. (%)
It is free	167(53.9)	141(45.5)	2(0.6)	0(0.0)	0(0.0)
It is safe	150(48.4)	148(47.7)	12(3.9)	0(0.0)	0(0.0)
It is more than ninety per cent effective.	138(44.5)	68(21.9)	95(30.6)	8(2.6)	1(0.3)
It is a once daily pill	119(38.4)	51(16.5)	55(17.7)	75(24.2)	10(3.2)
It is once monthly intramuscular injection	11(3.5)	50(16.1)	31(10.0)	109(35.2)	109(35.2)
It is a vaginal cream	16(5.2)	45(14.5)	33(10.6)	90(29.0)	126(40.6)

PrEP acceptability was high with more than (90%) likely to accept PrEP for HIV prevention if it free and safe. Close to three quarter of the respondents were unlikely to accept PrEP if it is an Injection (70.2%) or vaginal cream (69.6%).



KEY

LOW ACCEPTABILITY OF PRE-EXPOSURE PROPHYLAXIS

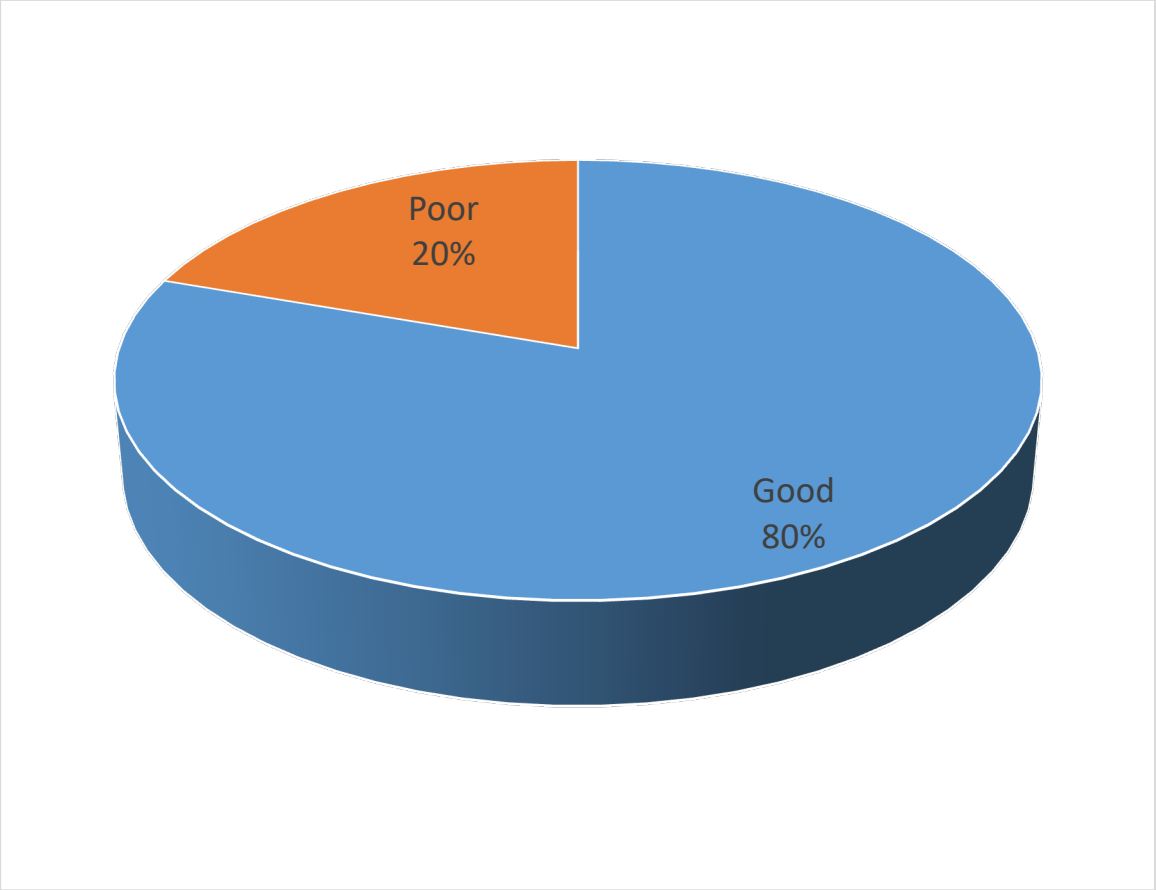
HIGH ACCEPTABILITY OF PRE-EXPOSURE PROPHYLAXIS

Figure 3: Pie chart showing overall score of Acceptability of PrEP: About 68% of the respondents had high acceptability of PrEP while 32% had low Acceptability of PrEP

Table 5: WILLINGNESS TO USE PRE-EXPOSURE PROPHYLAXIS AMONG RESPONDENNTS

How likely would you be to take PrEP if	Definitely will (n=310) Freq. (%)	Probably will (n=310) Freq. (%)	Not sure (n=310) Freq. (%)	Probably will not (n=310) Freq. (%)	Definitely will not (n=310) Freq. (%)
You have access to free counselling on PrEP	157 (50.6)	150{48.4	1(0.3)	0 (0.0)	2 (0.6)
It has immediate side effects	30 (9.7)	10 (3.2)	35 (11.3)	36 (11.6)	199 (64.2)
It has long term effect on your health	2 (0.6)	5 (1.6	70 (22.6)	41 (13.2)	192(61.9)
You must take a pill every day	99 (31.9)	80 (25.8	115 (37.1)	9 (2.9	7 (2.3)
It is available at pharmacy, and you do not need prescription	100 (32.3)	142 (45.8)	56 (18.1)	2 (0.6)	10 (3.2)
You must pay for the drug	43 (13.9)	86 (27.7)	164 (52.9)	8 (2.6)	9 (2.9)
You must see a healthcare worker before you get the drug	96 (31.0)	83 (26.8)	104 (33.5)	14 (4.5)	13 (4.2)
You must go HIV clinics to access the drug	52 (16.8)	60 (19.4)	155 (50.0)	20 (6.5)	23 (7.4)

Willingness to use PrEP is high with greater than 98% willing to use PrEP if they have access to counselling of PrEP. However, about 70% of respondent are not willing to use PrEP if it has side effects or long-term effects on health.



KEY

POOR WILLINGNESS TO USE PRE-EXPOSURE PROPHYLAXIS

GOOD WILLINGNESS TO USE PRE-EXPOSURE PROPHYLAXIS

Figure 4: Pie chart showing overall score of Willingness to use PrEP: Majority of the respondents are willing to use of PrEP 80% while 20% had poor Willingness to use PrEP

Table 6: USE of PRE-EXPOSURE PROPHYLAXIS AMONG RESPONDENNTS

	Fre-quency	Percent (%)
Ever been offered oral PrEP before		
Yes	87	28.1
No	223	71.9
Total	310	100.0
Ever taken oral PrEP before		
Yes	79	25.5
No	231	74.5
Total	310	100.0
Does/did your main partner (non-sex work partner) know that you are taking oral PrEP		
Yes	16	20.3
No	63	79.7
Total	79	100.0
Does/did your clients know that you are taking oral PrEP?		
Yes	78	98.7
No	1	1.3
Total	79	100.0

Majority of the respondents (71.9%) have never been offered PrEP before. Out of 310 respondents, only (25.5%) have used PrEP.

Table 7: ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND KNOWLEDGE OF HIV/AIDS AMONG RESPONDENTS

	Knowledge of HIV/AIDS				
	Good Freq. (%)	Poor Freq. (%)	Total Freq. (%)	x^2	p-value
Age					
≤20yrs	16(72.7)	6(27.3)	22(100.0)	5.088	0.079
21-30yrs	207(89.2)	25(10.8)	232(100.0)		
31-40yrs	49(87.5)	7(12. 5)	56(100.0)		
Total	272(87.7)	38(12.3)	310(100.0)		
Religion					
Christianity	163(88.6)	21(11.4)	184(100.0)	1.182	0.554
Islam	104(86.0)	17(14.0)	121(100.0)		
Traditional	5(100.0)	0(0.0)	5(100.0)		
Total	272(87.7)	38(12.3)	310(100.0)		
Ethnicity					
Yoruba	118(87.4)	17(12.6)	135(100.0)	5.710	0.127
Igbo	38(79.2)	10(20.8)	48(100.0)		
Hausa	17(85.0)	3(15.0)	20(100.0)		
Others	99(92.5)	8(7.5)	107(100.0)		
Total	272(87.7)	38(12.3)	310(100.0)		
Educational Qualification					
None	1(50.0)	1(50.0)	2(100.0)	17.267	0.001*
Primary	19(67.9)	9(32.1)	28(100.0)		
Secondary	251(90.3)	27(9.7)	278(100.0)		
Tertiary	1(50.0)	1(50.0)	2(100.0)		
Total	272(87.7)	38(12.3)	310(100.0)		
Age started sex trade					
<18yrs	15 (60.0)	10(40.0)	25(100.0)	19.994	0.001*
18-20yrs	164(89.1)	20(10.9)	184(100.0)		
21-25yrs	80(92.0)	7(8.0)	87(100.0)		
>25yrs	13(92.9)	1(7.1)	14(100.0)		
Total	272(87.7)	38(12.3)	310(100.0)		
average clients in a month					
1-10client	26(68.4)	12(31.6)	38(100.0)	18.338	0.001*
11-20client	162(88.0)	22(12.0)	184(100.0)		
21-30client	72(94.7)	4(5.3)	76(100.0)		
30client+	12(100.0)	0(0.0)	12(100.0)		
Total	272(87.7)	38(12.3)	310(100.0)		

Note: * statistically significant at p≤0.05

Level of education, age started sex trade and average number of clients per month are statistically associated with knowledge of HIV.

Table 8: ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND KNOWLEDGE OF PRE-EXPOSURE PROPHYLAXIS AMONG RESPONDENTS

	Knowledge of PrEP				
	Good Freq. (%)	Poor Freq. (%)	Total Freq. (%)	x^2	p-value
Age					
≤20yrs	7(31.8)	15(68.2)	22(100.0)	5.032	0.081
21-30yrs	128(55.2)	104(44.8)	232(100.0)		
31-40yrs	33(58.9)	23(41.1)	56(100.0)		
Total	168(54.2)	142(45.8)	310(100.0)		
Religion					
Christianity	100(54.3)	84(45.7)	184(100.0)	0.081	0.960
Islam	65(53.7)	56(46.3)	121(100.0)		
Traditional	3(60.0)	2(40.0)	5(100.0)		
Total	168(54.2)	142(45.8)	310(100.0)		
Ethnicity					
Yoruba	77(57.0)	58(43.0)	135(100.0)	5.046	0.168
Igbo	31(64.6)	17(35.4)	48(100.0)		
Hausa	9(45.0)	11(55.0)	20(100.0)		
Others	51(47.7)	56(52.3)	107(100.0)		
Total	168(54.2)	142(45.8)	310(100.0)		
Educational Qualification					
None	0(0.0)	2(100.0)	2(100.0)	4.161	0.245
Primary	16(57.1)	12(42.9)	28(100.0)		
Secondary	150(54.0)	128(46.0)	278(100.0)		
Tertiary	2(100.0)	0(0.0)	2(100.0)		
Total	168(54.2)	142(45.8)	310(100.0)		
Age started sex trade					
<18yrs	10(40.0)	15(60.0)	25(100.0)	5.242	0.155
18-20yrs	109(59.2)	75(40.8)	184(100.0)		
21-25yrs	42(48.3)	45(51.7)	87(100.0)		
>25yrs	7(50.0)	7(50.0)	14(100.0)		
Total	168(54.2)	142(45.8)	310(100.0)		
average clients in a month					
1-10client	17(44.7)	21(55.3)	38(100.0)	19.705	0.001*
11-20client	86(46.7)	98(53.3)	184(100.0)		
21-30client	55(72.4)	21(27.6)	76(100.0)		
30client+	10(83.3)	2(16.7)	12(100.0)		
Total	168(54.2)	142(45.8)	310(100.0)		

Note: * statistically significant at p≤0.05

There is a statistically significant association between average number of clients and knowledge of PrEP.

Table 9: ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND ACCEPTABILITY OF PRE-EXPOSURE PROPHYLAXIS AMONG RESPONDENTS

	Acceptability of PrEP				
	High Freq. (%)	Low Freq. (%)	Total Freq. (%)	x^2	pvalue
Age					
≤20yrs	17(77.3)	5(22.7)	22(100.0)	3.764	0.152
21-30yrs	151(65.1)	81(34.9)	232(100.0)		
31-40yrs	43(76.8)	13(23.2)	56(100.0)		
Total	211(68.1)	99(31.9)	310(100.0)		
Religion					
Christianity	137(74.5)	47(25.5)	184(100.0)	8.513	0.014*
Islam	71(58.7)	50(41.3)	121(100.0)		
Traditional	3(60.0)	2(40.0)	5(100.0)		
Total	211(68.1)	99(31.9)	310(100.0)		
Ethnicity					
Yoruba	95(70.4)	40(29.6)	135(100.0)	14.774	0.002*
Igbo	42(87.5)	6(12.5)	48(100.0)		
Hausa	13(65.0)	7(35.0)	20(100.0)		
Others	61(57.0)	46(43.0)	107(100.0)		
Total	211(68.1)	99(31.9)	310(100.0)		
Educational Qualification					
None	1(50.0)	1(50.0)	2(100.0)	15.783	0.001*
Primary	28(100.0)	0(0.0)	28(100.0)		
Secondary	180(64.7)	98(35.3)	278(100.0)		
Tertiary	2(100.0)	0(0.0)	2(100.0)		
Total	211(68.1)	99(31.9)	310(100.0)		
Age started sex trade					
<18yrs	23(92.0)	2(8.0)	25(100.0)	13.874	0.003*
18-20yrs	114(62.0)	70(38.0)	184(100.0)		
21-25yrs	61(70.1)	26(29.9)	87(100.0)		
>25yrs	13(92.9)	1(7.1)	14(100.0)		
Total	211(68.1)	99(31.9)	310(100.0)		
average clients in a month					
1-10client	28(73.7)	10(26.3)	38(100.0)	12.266	0.007*
11-20client	129(70.1)	55(29.9)	184(100.0)		
21-30client	42(55.3)	34(44.7)	76(100.0)		
30client+	12(100.0)	0(0.0)	12(100.0)		
Total	211(68.1)	99(31.9)	310(100.0)		

Note: * statistically significant at p≤0.05

There is a statistically significant association between religion, ethnicity, educational qualification, age started sex trade, average number of client in a month and acceptability of PrEP.

Table 10: ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND WILLINGNESS TO USE PRE-EXPOSURE PROPHYLAXIS AMONG RESPONDENTS

	Willingness to use PrEP				
	Good Freq. (%)	Poor Freq. (%)	Total Freq. (%)	x^2	pvalue
Age					
<20yrs	15(68.2)	7(31.8)	22(100.0)	3.085	0.214
21-30yrs	186(80.2)	46(19.8)	232(100.0)		
31-40yrs	48(85.7)	8(14.3)	56(100.0)		
Total	249(80.3)	61(19.7)	310(100.0)		
Religion					
Christianity	153(83.2)	31(16.8)	184(100.0)	12.694	0.002*
Islam	95(78.5)	26(21.5)	121(100.0)		
Traditional	1(20.0)	4(80.0)	5(100.0)		
Total	249(80.3)	61(19.7)	310(100.0)		
Ethnicity					
Yoruba	111(82.2)	24(17.8)	135(100.0)	11.909	0.008*
Igbo	45(93.8)	3(6.3)	48(100.0)		
Hausa	17(85.0)	3(15.0)	20(100.0)		
Others	76(71.0)	31(29.0)	107(100.0)		
Total	249(80.3)	61(19.7)	310(100.0)		
Educational Qualification					
None	1(50.0)	1(50.0)	2(100.0)	3.221	0.359
Primary	20(71.4)	8(28.6)	28(100.0)		
Secondary	226(81.3)	52(18.7)	278(100.0)		
Tertiary	2(100.0)	0(0.0)	2(100.0)		
Total	249(80.3)	61(19.7)	310(100.0)		
Age started sex trade					
<18yrs	17(68.0)	8(32.0)	25(100.0)	3.886	0.274
18-20yrs	148(80.4)	36(19.6)	184(100.0)		
21-25yrs	71(81.6)	16(18.4)	87(100.0)		
>25yrs	13(92.9)	1(7.1)	14(100.0)		
Total	249(80.3)	61(19.7)	310(100.0)		
average clients in a month					
1-10client	33(86.8)	5(13.2)	38(100.0)	3.363	0.339
11-20client	148(80.4)	36(19.6)	184(100.0)		
21-30client	57(75.0)	19(25.0)	76(100.0)		
30client+	11(91.7)	1(8.3)	12(100.0)		
Total	249(80.3)	61(19.7)	310(100.0)		

Note: * statistically significant at p≤0.05

There is a statistically significant association between religion, ethnicity and willingness to use PrEP.

SUMMARY OF QUANTITATIVE RESULTS

The mean age of respondents 26.8 years with a range of 19 years to 40 years, the overall knowledge of HIV is good, only 2 respondents (0.6%) did not know that HIV virus causes AIDS. About 54 per cent of the respondents had good knowledge of PrEP, 68 per cent of the respondents had high acceptability of PrEP and majority of the respondents (80%) are willing to use PrEP.

QUALITATIVE RESULTS

Seven FSW participated in an in-depth interview, the interview was carried out consecutively and recorded using an audio recorder in a private environment. The recordings were transcribed, and a list of code were created. Themes from the interview were identified and are presented below.

ACCEPTABILITY OF PRE-EXPOSURE PROPHYLAXIS

Acceptability was high among the respondents, and preference of PrEP is influenced with the characteristics of how it will be administered; some participants have preference for PrEP as an injection.

43 years old FSW said *"IF DEY DO AM FOR INJECTION E GO GOOD, IF DEY GIVE YOU ONCE E GO LAST FOR TWO MONTH OR THREE MONTHS BECAUSE NO BE EVERYBODY LIKE TO DEY SWALLOW MEDICINE"*

36 years old FSW said *"TO DEY SWALLOW MEDICINE E DON TIRE ME."*

45 years old FSW said *"I GO USE IF NA INJECTION, THIS THING OF DRUG E DEY TIRE PERSON, THREE MONTHS WE GO LIKE AM."*

One respondent raised concern over stigma, a reason for preference of Injection.

40 years old FSW said *"NA INJECTION WE DEY FIND, BECAUSE THIS DRUG IF WE DEY TAKE AM SOME PEOPLE WEY NO KNOW AM GO THINK SAY NA HIV MEDICINE YOU DEY TAKE. NO BODY GO KNOW SAY YOU DEY TAKE DRUG."*

WILLINGNESS TO USE PRE-EXPOSURE PROPHYLAXIS

The respondents were asked if they will be willing to go to the hospital to collect PrEP, particularly if the place of collecting PrEP is an HIV clinic.

43 years FSW said "*I GO COME HOSPITAL."*

45 years FSW said *"I GO GO BECAUSE NA HELP DEY WAN HELP ME"*

49 years old FSW "I GO GO HIV CLINIC, IT DOESN'T MEAN, MY CONSCIENCE IS CLEAR, NO BE ONLY THROUGH SEX PERSON IF GET AM."

They were asked about waiting time at hospital. If they will come to the hospital and wait before being attended to, most are willing to wait to access the services of counselling, testing and other benefits.

43 years old FSW *"I GO SIT DOWN, YOU KNOW SOMETHING OF HEALTH LIKE THAT, NA PATIENCE YOU GO FIND, TO FIND WETTIN CARRY YOU GO, BECAUSE AS PEOPLE PLENTY YOU GO COOL DOWN"*

49 years old FSW *"I GO WAIT, YOU WEY DON DECIDE TO GO SOMEWHERE, YOU GO WAIT NOW, SHEY YOU WANT GO COME GO BACK THE NEXT DAY"*

34 years old FSW *"I GO WAIT, EVEN IF NA 2 HOUR I GO WAIT."*

An interviewee reacted to not wanting to go a distance healthcare facility.

One FSW said *"I NO FIT GO FAR HOSPITAL TO TAKE AM."*

They were asked about side-effects; Most of them are willing to use PrEP despite some immediate side effect.

45 years old FSW "*AS THEY GIVE US, THEY TELL US THAT E GO DO YOU ONE KIND, SOME GO TURN YOUR EYES, BUT WHEN YOU DON MASTER AM SMALL, E NO GO DO YOU ANYHOW*"

40 years old FSW *"E DEY AFFECT BODY BUT IF IT E DEY HELP, I GO USE AM"*

When asked about long-term effect.

52 years old FSW said, *"SHEBI E GO GET TIME WEY IF YOU USE AM REACH E GO AFFECT BODY, IF NA 30 DAYS IF I COME USE AM AFTER THAT SHEBI NA ME SABI WETTIN I GO FIND"*

USE OF PRE-EXPOSURE PROPHYLAXIS

FSW were asked if they were using PrEP, 5 out of the 7 respondents are using currently using PrEP. When asked why they are using PrEP;

45 years old FSW "*TO PROTECT MYSELF*"

25 years old FSW "*I DO TAKE IT, WHEN I CAME TO LAGOS DEY INTRODUCE ME TO PrEP MY SISTER"*

45 years old FSW *"I USE BECAUSE IT FOR PROTECTION, I AM SCARED FOR INFECTION EVERYTIME."*

When asked about how they use it, if it is every or demand.

40 years old FSW "*NA EVERYDAY I DEY USE AM*"

43 years old FSW *"I DEY USE AM 11 O'CLOCK WHEN I WANT SLEEP. THEY TELL ME SEY MAKE I USE WHEN I GO REMEMBER LIKE BEFORE I SLEEP."*

CHAPTER FIVE

DISCUSSION

This study was carried out in Lagos state which has the highest HIV rate among south-western states in Nigeria. In this study FSW were questioned on their awareness about, acceptance of, willingness to use, and use of PrEP. Only 2 respondents, i.e., 0.6 per cent, were not aware that the HIV virus causes AIDS, demonstrating very high level of knowledge on HIV/AIDS among respondents.

The first objective of this study was to assess the level of knowledge of PrEP among FSWs. And findings revealed that the FSWs in this study demonstrated a good level of awareness regarding PrEP, with approximately 54% of the respondents showing a high level of knowledge. This result is encouraging and suggests that efforts to educate FSWs about PrEP have been somewhat successful. This finding indicates that some FSWs in this study understand the concept and potential benefits of PrEP in preventing HIV transmission. PrEP is an effective preventive measure, and its successful implementation depends on the knowledge and awareness of the target population. However, it is worth noting that while 54% of the respondents demonstrated good awareness of PrEP, there is still room for improvement. Nearly half of the participants have limited knowledge or misconceptions about PrEP, and this could be attributed to the fact that intervention programs may not have reached some of them and as well as low level of literacy among some respondents in the study. Additionally, the stigma surrounding sex work and legal barriers in Nigeria could be significant factors hindering awareness about PrEP, and because it is of essence to acknowledge that sex workers might find it impractical to visit facilities and disclose their occupation to access HIV protection measures.

However, this situation is different in other settings. For instance, among high-risk participants in Uganda, including FSWs, only 33% had heard of PrEP before healthcare worker training

which increased to 76% after the training.[35] Despite the presence of some stigma and legal barriers in the Ugandan context, the positive impact of healthcare worker training on PrEP awareness among high-risk individuals, including FSWs, highlights the potential effectiveness of targeted interventions. The variations in PrEP awareness rates between Uganda and Nigeria underscore the importance of recognizing contextual factors that influence health-seeking behaviors and access to preventive services in different environments and populations.

The study's findings are consistent with previous research conducted in similar settings and populations, which have also reported varying levels of PrEP awareness. Notably, the comparison with a study conducted in Ogbomosho, which reported a high knowledge rate of 88% among FSWs, stands out.[57] This rate surpasses the 54% awareness rate observed in our study. Although there is a difference in Level of awareness between the two studies, the overall consistency of findings, which indicates higher-than-average levels of awareness in studies conducted in another southwest state, suggests that there may be some generalizability to the broader context of PrEP awareness among FSW.

The findings emphasize the critical role of targeted educational campaigns and interventions tailored to address the specific needs and characteristics of different populations at risk of HIV. For instance, in Kenya, a qualitative study involving 16 FSW participants revealed that none of them were aware of PrEP.[32]

The in-depth interviews carried out provided further insight, revealing that a specific non-governmental organization (NGO) played a proactive role in reaching out to FSWs, providing them with vital information about PrEP, and facilitating access to preventive measures. This organization emerged as a valuable source of knowledge for some participants, showcasing the significant impact NGOs can have in disseminating information about PrEP and encouraging its utilization among FSWs.

This study also found a statistically significant association between the average number of clients and knowledge of PrEP. This suggests that FSWs who have a larger number of clients are more likely to proactively seek ways to protect themselves from HIV transmission. This is logically consistent with what was found in an in-depth interview in a study in Kenya among FSW who never heard of PrEP, these FSWs considered PrEP to be appropriate for protection because the number of clients can increase.[32] Additionally, because this method enables FSWs to use PrEP without obtaining their client's or partner's consent or approval, it gives them more control and protection from HIV.

Awareness and understanding were important themes when exploring PrEP acceptability. The level of acceptability observed in this study is promising, as it suggests that a significant proportion of the participants are open to considering PrEP as a viable option for protecting themselves from HIV. This positive attitude towards PrEP may be influenced by factors such as previous knowledge about PrEP, perceived efficacy and susceptibility, trust in healthcare providers, and experiences related to HIV risk. It is interesting to note that the acceptability rate of PrEP among the FSWs in this study 68% is lower than what was found among FSWs in Malawi 97%.[79] The disparity in acceptability rates between different populations and settings can be attributed to several factors. Firstly, the level of awareness and exposure to PrEP information differ between the two study populations. In Malawi, there may have been more extensive awareness-raising efforts or targeted PrEP promotion, because the level of awareness of the study population was 70% prior to the study. In comparison, this study's findings are similar to those in Jamaica, where 32% of participants had awareness of PrEP, and there was a high acceptability of 80%.[63] Focus group discussion among FSW in south Africa also showed high acceptability of PrEP.[129]

The findings of this study on the acceptability of Prophylaxis PrEP among FSWs provide valuable insights into their preferences and concerns regarding different PrEP delivery

methods. The use of simple terms and direct questioning allowed for a clear assessment of the respondents' acceptability towards oral, injectable, and topical PrEP options.

The quantitative results indicate that oral PrEP was the most acceptable method among the FSW respondents. This suggests that the daily pill regimen may be viewed as a feasible and convenient option for HIV prevention among FSWs in the study population. On the other hand, injections and vaginal creams were the two delivery methods that most respondents were least inclined to embrace if PrEP became widely available. This non-preference may be influenced by factors such as potential discomfort associated with injections, and concerns about the practicality of using vaginal creams.

Interestingly, the qualitative findings from in-depth interviews with FSWs currently using PrEP revealed a preference for injectable form over tablets form, FSW may prefer injectable PrEP for its potential to provide longer-term protection and non-daily use. This discrepancy between the qualitative and quantitative results could be due to the fact that of some of the survey respondents had not yet started taking PrEP. The qualitative insights highlight the significance of considering the experiences and opinions of individuals who are actively using PrEP when assessing acceptability.

The comparison with a study conducted in Tanzania among FSWs, where the majority expressed a preference for long-acting injectables over oral pills, supports the notion that injectable PrEP may be well-received among this population.[130] The concerns about pill burden and potential stigma associated with taking oral medication, is also corroborated by the study conducted in Tanzania, this findings are important and practical barriers and social factors that may impact PrEP acceptability and adherence.

Research suggests that poverty often drives FSWs to engage in sex work to meet their basic needs, such as daily food and housing.[131] PrEP acceptability was high in this study with more

than 90% of FSW likely to accept PrEP for HIV prevention if it free and safe. In light of this, these findings emphasize the need for PrEP to be made available for free if it is to be widely accepted among FSWs. Economic constraints may hinder FSWs's ability to afford PrEP and providing it at no cost can improve access and uptake. In a study conducted with at-risk individuals in Peru, researchers examined the impact of hypothetical scenarios related to PrEP and out-of-pocket spending on the decision to accept PrEP. The results revealed a significant association between out-of-pocket spending and the willingness to accept PrEP.[82] Understanding this economic context and financial barriers are crucial for successful implementation and uptake of PrEP among FSWs and could be an essential step towards empowering this vulnerable population with effective HIV prevention tools.

Five socio-demographic factors were found to be statistically significantly associated with acceptability of PrEP which includes religion, ethnicity, educational qualification, age started sex trade, average number of clients in a month. Lagos is a majority Yoruba state composed of diverse population of different tribe and religious background.

The findings indicate that FSWs who identify as Christians have a higher percentage (74.5%) of high acceptability towards PrEP compared to those who practice Islam (58.7%) and traditional religion (60.0%). This suggests that religion may play a role in shaping attitudes and opinions towards PrEP within this group of individuals. Understanding the influence of religious beliefs on the acceptability of PrEP becomes crucial for designing targeted interventions and awareness campaigns in Lagos, given its diverse population practicing different religions. For instance, religious beliefs about family planning and contraception may affect the acceptability of contraceptive use among some Christian faithful. Healthcare providers and policymakers should be aware of the potential role of religious beliefs in shaping attitudes towards HIV prevention strategies like PrEP among FSWs in this environment.

While research on the acceptability of PrEP among FSWs is increasing, the influence of religion on acceptability remains an understudied aspect. Few studies have specifically considered the influence of religion on PrEP acceptability among FSWs. Therefore, it is essential to delve deeper into this aspect to gain a more comprehensive understanding of how religious beliefs may affect FSWs's decision-making regarding PrEP. Qualitative research can be particularly valuable in exploring the nuances of how religion influences attitudes towards PrEP among FSWs. Conducting in-depth interviews or focus group discussions with FSWs from different religious backgrounds can provide valuable insights into the specific beliefs, concerns, and considerations related to PrEP within each religious group.

Ethnicity is also found to have a statistically significant association with PrEP acceptability among FSWs is an intriguing observation. The study reveals that FSWs from the Igbo ethnic group show the highest percentage (87.5%) of high acceptability, while those from the Yoruba ethnic group have the next highest percentage (70.4%). This suggests that ethnicity may play a role in shaping attitudes towards PrEP within this specific group of FSWs in the study population.

The observation that FSWs from the Igbo ethnic group, which constitutes about 15.5% of the respondents, are more likely to accept PrEP than FSWs from other ethnic groups highlights an interesting contrast with findings from other studies. For example, the study conducted among FSWs in a community in Tanzania found that local ethnic group members were more likely to accept PrEP.[130] Additionally, a study in China also found certain ethnicities to be associated with higher acceptance of PrEP.[29]

This discrepancy in the influence of ethnicity on PrEP acceptability among different studies suggests that the role of ethnicity in shaping attitudes towards PrEP may be context-specific and influenced by cultural and social factors unique to each setting. The mention of certain tribes in Nigeria not accepting immunization is a relevant parallel to consider. It highlights how

cultural beliefs and practices can influence healthcare decisions and acceptance of preventive services. Similarly, the acceptance of PrEP may be influenced by cultural norms and beliefs about HIV prevention and the use of medications. Understanding the influence of ethnicity on PrEP acceptability is crucial for developing targeted interventions that consider the cultural diversity within the FSW population. Culturally sensitive and context-specific approaches are necessary to promote PrEP acceptance and utilization among FSWs from different ethnic backgrounds.

Educational qualification exhibits a statistically significant association with PrEP acceptability among FSWs. The study reveals that FSWs with primary education have the highest percentage (100%) of high acceptability towards PrEP, followed by those with secondary education (64.7%). The high acceptability of PrEP among FSWs with primary education is an encouraging result, as it indicates that even with a basic level of education, these individuals are receptive to using PrEP as an HIV prevention strategy. This finding aligns with a similar study conducted in Tanzania, where participants with a primary education level were also more likely to accept PrEP.[130] This suggests that basic education can play a significant role in increasing awareness and understanding of PrEP, making it more acceptable among FSWs.

Interestingly, the study also indicates that a greater than-average percentage of FSWs with secondary education are likely to accept PrEP. This is consistent with findings from a study conducted in South Africa, which also associated education level with PrEP acceptability, showing that FSWs with secondary education were more likely to accept PrEP.[132] Education can empower individuals with knowledge about the benefits of PrEP, how to access it, and its effectiveness in reducing the risk of HIV transmission. Higher education levels may enable FSWs to better comprehend the scientific information about PrEP and its potential impact on their health.

The significant association between the age at which FSWs began sex work and their acceptance of PrEP sheds light on the potential impact of early entry into the sex trade on HIV prevention attitudes. The study reveals that FSWs who started sex work before the age of 18 have the highest percentage (92.0%) of accepting PrEP. This finding suggests that young FSWs who entered the sex trade at an early age are more receptive to utilizing PrEP as an HIV prevention strategy compared to their counterparts who started sex work at a later age.

Early entry into the sex trade can be influenced by a variety of factors, including socio-economic conditions, personal circumstances, and cultural norms. Many individuals who enter the sex trade at a young age may have experienced trafficking, coercion, or exploitation, making them particularly vulnerable to HIV and other health risks. This study also notes that the majority of FSWs in this population started sex work before the age of 21 years and possess only a secondary leaving certificate as the highest level of education. This suggests that lack of access to tertiary education and challenging economic conditions may contribute to the vulnerability of these women and their decision to engage in sex work.

Furthermore, these findings thus suggest several potential reasons why young FSWs and those who start sex work early may consider the acceptance of PrEP. Firstly, they may be more aware of the hazards of HIV exposure given their exposure to high-risk situations at a young age. Secondly, fear and uncertainty during their duration in the sex trade may lead them to consider PrEP as a way to protect themselves from HIV infection while they continue their work or plan to quit sex work. However, it is crucial to acknowledge that early entry into the sex trade and the decision to engage in sex work are often complex and multifaceted. Economic hardships, lack of educational opportunities, and social marginalization can create a cycle of vulnerability that may influence their attitudes towards HIV prevention measures.

The average number of clients FSWs serve in a month also displays a statistically significant association with PrEP acceptability. The study indicates that FSWs with a higher number of

clients 30 clients+ have a 100% high acceptability of PrEP. This means that FSWs who serve a greater number of clients perceive a higher risk of HIV transmission due to their increased exposure to potential sources of infection. As a result, they may be more inclined to consider PrEP as an additional preventive measure to protect themselves from HIV. FSWs often face higher risks of HIV transmission due to the nature of their work, which involves multiple sexual partners and potential condom-less sex. Those with a significant number of clients may perceive a heightened risk of HIV exposure, which can drive their acceptance of and embrace additional preventive measures like PrEP.

The similarity of this finding to studies conducted in Tanzania and China, where the number of clients per week was associated with PrEP acceptability, reinforces the significance of this observation.[130,133] It suggests that the perceived risk of HIV transmission and exposure to potential infection sources are consistent factors influencing PrEP acceptability among FSWs in different settings.

Furthermore, both quantitative and qualitative research in other studies has highlighted the significance of violence as a motivator for FSWs to accept PrEP.[13463] FSWs with a significant number of clients may face challenging circumstances where they may have to exchange condomless sex for benefits or safety. Such situations may further increase their perceived vulnerability to HIV infection, making them more likely to consider PrEP as a means to protect themselves. The findings suggest that PrEP can be an important tool in empowering FSWs to take control of their health and reduce their risk of HIV transmission, especially in contexts where they face elevated risks due to the number of clients they serve.

However, it is essential to recognize that PrEP is not a standalone solution to the complex challenges faced by FSWs. It should be part of a comprehensive approach that addresses the structural and social factors contributing to their vulnerability, such as violence, exploitation, and stigma. Access to comprehensive sexual and reproductive health services, including PrEP,

should be coupled with efforts to empower FSWs economically, promote safer working conditions, and combat discrimination and violence.

The high willingness to use PrEP found in this study is indeed a positive and encouraging finding, as it suggests that a significant proportion of the respondents are open to adopting this HIV prevention strategy as 80% of respondents indicate willingness to use PrEP as an HIV preventive method.

The similarity in willingness rates to use PrEP between this study and the one conducted in Anambra state in Nigeria (91% of FSWs willing to use PrEP) further reinforces the positive trend in PrEP acceptability among FSWs in Nigeria.[135] This alignment in findings points out that FSWs in the southern region of the country may share similar attitudes and preferences regarding PrEP as an HIV prevention tool. Such consistency in willingness rates across the region is essential for policy formulation and successful implementation and scale-up of PrEP programs.

Comparing the results with the study conducted in Ghana, where 53.59% of respondents indicated their willingness to use PrEP, highlights the importance of considering contextual factors when interpreting willingness rates.[38] National variations, social norms, cultural beliefs, and access to healthcare services can all play a role in shaping attitudes towards PrEP. The difference in willingness rates between the Nigerian and Ghanaian studies may reflect the influence of these factors. Additionally, the Ghana study being conducted nationwide could have captured a broader range of perspectives, including those from less urbanized or remote areas, which may have contributed to the lower willingness rate.

Contrastingly, the study conducted in China, which reported a lower willingness to use PrEP 35.5% of participants, stresses the importance of recognizing the diversity of attitudes towards PrEP across different populations and settings. Cultural norms, stigma, healthcare infrastructure, and HIV awareness levels are factors that can influence PrEP acceptability in

different countries. Overall, these comparative findings emphasize the need for tailored and context-specific approaches in promoting PrEP uptake and acceptability.

A high percentage of respondents (greater than 98%) expressed willingness to use PrEP if they have access to counselling, there are notable challenges that need to be addressed to maximize PrEP uptake and acceptability. One of the identified challenges is the clinic waiting time and the time taken during counseling. For FSWs, who often lead busy and unpredictable lifestyles, visiting a health center and waiting for counselling sessions may be perceived as burdensome and time-consuming. This can deter some individuals from seeking PrEP services, even if they are willing to use it. To address this issue, implementing strategies to streamline clinic processes and reduce waiting times can improve the overall experience for FSWs accessing PrEP. Additionally, exploring alternative service delivery models, such as mobile clinics or community-based distribution, can make PrEP more accessible and convenient for this population.

The unwillingness to interact with healthcare workers also presents a potential barrier to PrEP use. Stigma, fear of judgment, and concerns about confidentiality may be factors influencing this reluctance. Building trust and creating a supportive and non-judgmental environment within healthcare settings can help alleviate these concerns and encourage FSWs to seek PrEP services without hesitation. Qualitative finding provided some insights that despite these potential barriers, FSWs displayed willingness to use PrEP which may be due to friendly approaches that the said NGO used to bring preventive services to into this community.

Counseling plays a crucial role in PrEP initiation and adherence, as it provides individuals with essential information, guidance, and support. Addressing concerns about potential side effects and long-term effects of PrEP through comprehensive counseling sessions can help dispel myths and misconceptions, thereby increasing acceptance and willingness to use PrEP. In addition to addressing barriers related to counseling and healthcare interactions, it is essential

to incorporate FSWs' perspectives and preferences into the design and implementation of PrEP programs. Engaging FSWs in the decision-making process, understanding their unique needs, and involving them in the development of targeted educational materials and awareness campaigns can enhance the relevance and effectiveness of PrEP interventions.

Moreover, continuous monitoring and evaluation of PrEP programs can provide valuable insights into the challenges faced by FSWs and help identify areas for improvement. Regular feedback from FSWs regarding their experiences with PrEP services can guide program adjustments to better align with their needs and preferences. Partnerships with community-based organizations and peer-led initiatives can play a vital role in promoting PrEP acceptance and uptake among FSWs. Peer educators and outreach workers from within the community can serve as trusted sources of information and support, encouraging their peers to consider and utilize PrEP as an essential tool in HIV prevention. By implementing targeted strategies, involving FSWs in program design, and creating supportive healthcare environments, PrEP programs can better meet the needs of this vulnerable population and contribute to the overall goal of reducing HIV transmission.

The study revealed that two factors, religion, and ethnicity, were statistically significant associated with willingness to use PrEP. This implies that these factors played a role in shaping individuals' attitudes towards PrEP.

The study's finding of a statistically significant association between religion and willingness to use PrEP among FSWs raises a vital consideration about how religious beliefs and teachings may influence attitudes towards HIV prevention methods. The observation that a higher percentage of Christian respondents expressed a "good" willingness to use PrEP compared to Muslims and those with traditional beliefs suggests that religious affiliation may indeed play a role in shaping attitudes towards PrEP among FSWs. However, it is crucial to interpret this association with caution and consider various factors that could contribute to this finding.

One possible explanation for the higher willingness among Christians could be related to their access to health-related information through religious communities. Some churches and religious organizations may actively engage in health promotion and education, including HIV prevention. Such efforts may increase awareness and knowledge about PrEP among Christians and potentially influence their positive attitudes towards using this preventive method.

On the other hand, the Ghana study's findings, which also showed an association between religion, specifically among Muslims, and PrEP use, suggest that religious teachings and norms may shape perceptions of premarital sex and sexual health practices.[38] The Quran's teachings may influence certain communities' beliefs about premarital sex, leading to a stigma associated with engaging in activities such as sex work. As a result, FSWs in such communities may have a heightened desire to protect themselves from HIV and other sexually transmitted infections due to potential exposure to judgment and discrimination.

It is essential to recognize that the relationship between religion and attitudes towards HIV prevention is complex and multifaceted. The influence of religion on individuals' behaviors and choices may vary based on cultural contexts, interpretations of religious teachings, and the level of exposure to health education and information.

The mention of the tragic incident involving a sex worker in Lagos State being burned alive for carrying a copy of the Quran highlights the potential existence of social stigma and discrimination faced by individuals engaged in sex work.[7] While this incident may not directly relate to the association between religion and PrEP use, it underscores the importance of addressing stigma and discrimination in the context of HIV prevention efforts. Stigma can hinder access to healthcare services, including PrEP, and may contribute to a reluctance among FSWs to seek and use preventive measures.

To promote PrEP uptake among FSWs, it is essential to address potential barriers related to religious beliefs, cultural norms, and social stigma. This can be achieved through targeted and

culturally sensitive health education and outreach programs that involve religious leaders and community influencers. Providing accurate information about PrEP, its effectiveness, and its role in HIV prevention can help dispel myths and misconceptions.

The study's findings on the association between ethnicity and willingness to use PrEP offer some insights into how cultural and regional factors can impact attitudes towards HIV prevention methods. Specifically, the study revealed that Yoruba ethnicity was statistically linked to a greater willingness to use PrEP, possibly influenced by Lagos being a majority Yoruba state.

It is worth noting that the geographic location of the study site can indeed influence individuals' willingness to use PrEP. This was evident in a similar study conducted in Ghana, where the willingness to use PrEP varied across different regions of the country.[38] Local communities' levels of awareness, education, and cohesion among the FSW community all played a role in shaping their attitudes towards HIV prevention methods.

Furthermore, the comparison with the study conducted in Anambra, where the majority of respondents were of Igbo ethnicity, is also enlightening.[135] This comparison highlights how ethnicity and regional factors can differ in their influence on the willingness to use PrEP. In the Anambra study, belonging to a specific location within the region, such as Onitsha, emerged as a significant predictor of willingness to use PrEP. This suggests that sub-regional differences, even within similar ethnic groups, can shape attitudes towards HIV prevention methods.

The findings from this study shed light on the challenges and opportunities related to PrEP uptake among FSWs in Nigeria. The low proportion of respondents who have received a PrEP offer (28.1%) may be attributed to significant legal obstacles faced by sex workers in the country, hindering government efforts in HIV prevention programs. Criminalization and stigmatization of sex work can create barriers to accessing healthcare services, including PrEP.

However, the qualitative study reveals that specific NGOs like Heartland Alliance International advocate and target key populations, including sex workers, for HIV prevention, leading to some respondent's knowledge of PrEP. Despite these efforts, more needs to be done to reach those at risk of HIV infection, particularly FSWs.

Among the 310 respondents, 25.5% reported prior use of PrEP. This percentage stands higher than the study conducted in Anambra state, where only 3.9% reported ever using PrEP.[135] However, it is lower than the study conducted in southwest Nigeria, covering Ogbomosho and Lagos, where a significant 88.6% reported PrEP usage.[57]

When compared to Ghana study, the usage of PrEP in this study is notably higher, as only 6.39% of the participants in the Ghanaian study reported previous use of PrEP. Conversely, the reported PrEP usage rates in Zimbabwe (45.5%) and South Africa (33%) surpass the findings of this study.[136] These statistics emphasize the substantial variation in PrEP usage across different countries, signifying that PrEP uptake can vary significantly based on the specific context and healthcare landscape in each country.

According to the in-depth interviews, individuals who used PrEP received the medication for free from an NGO, heartland alliance international. However, despite taking PrEP, the majority of these individuals did not disclose this information to their partners. Several factors could contribute to this behaviour. HIV stigma, as previously mentioned, is a significant barrier to PrEP use and disclosure. Additionally, some FSW may choose not to inform their partners about their involvement in sex work, which could also impact their decision to disclose PrEP usage. Lack of social support from partners, family, or loved ones regarding sex work could further discourage disclosure. It is worth noting that some FSWs may find disclosing their PrEP usage humiliating, aligning with the findings of Eisingerich et al.'s study.[84] These findings highlight the complex interplay of various factors, including stigma, disclosure of sex work, and social support, in relation to PrEP usage and disclosure among FSW.

According to this study, the majority of individuals who have used PrEP (98.7%) disclosed this information to their clients. There could be various reasons for this behaviour. It is possible that some FSWs disclose their PrEP usage to encourage their clients to take additional measures to protect themselves against HIV. This aligns with the broader goal of promoting safer sexual practices and reducing the risk of transmission.

However, it is important to note that the study does not explicitly specify the motivations behind disclosing PrEP usage to clients. The mentioned reasons, such as persuading clients to have sex without condom for higher pay or discouraging HIV-positive individuals, are possible explanations based on hypothetical scenarios, but they should not be generalized without further evidence or data specific to the study. The findings highlight the complexity of disclosure practices among FSWs and the diverse motivations that may underlie such behaviour.

CONCLUSION

This descriptive study assessed the knowledge of pre-exposure prophylaxis (PrEP), acceptability of PrEP, willingness to use PrEP and use of PrEP among female sex workers (FSW) in Lagos State.

The overall knowledge of PrEP respondents is good. About 54% of the respondents had good knowledge of PrEP. Only one sociodemographic variable, the number of clients in a month, was statistically significant in association with knowledge of PrEP.

Acceptance of PrEP was good among respondents, as 68% had high acceptability of PrEP. A statistically significant association was found between religion, ethnicity, educational qualification, age started sex trade, the average number of clients in a month and acceptability of PrEP.

Willingness to use PrEP is high as 80% of the respondents are willing to use PrEP, and greater than 98% are willing to use PrEP if they have access to counselling. A statistically significant association between religion, ethnicity, and willingness to use PrEP.

The proportion of respondents using PrEP is low as only 25.5% were currently using PrEP, and the majority (71.9%) have never been offered PrEP.

The findings revealed that FSWs exhibited good knowledge of HIV and PrEP, and the acceptability and willingness to use PrEP were high, indicating widespread acceptance of this preventive method. However, despite favourable attitudes, the actual use of PrEP among this population remained low.

RECOMMENDATIONS

Based on the study findings, the following recommendations are made and tailored to address findings related to each specific objective

Government

1. Awareness Initiatives: The government should initiate targeted awareness campaigns to increase the knowledge of PrEP among FSWs since some FSW. These campaigns should provide information on what PrEP is, how it works, and where it can be accessed.
2. Creating Supportive Environments: Government entities should advocate for legal reforms to protect the rights of key populations, including FSWs, and reduce the stigma associated with sex work. This will create an environment where PrEP is more readily accepted.
3. Integration with Routine Services: Government entities should integrate PrEP services with routine HIV testing and counselling programs. This will facilitate the identification of FSWs at high risk and the provision of PrEP to those who are willing to use it.

4. Accessibility and Affordability: The government should continue to make PrEP available for free of charge to FSWs through public health facilities and programs, despite low uptake. This will contribute to increasing the prevalence of PrEP use among this population.

Healthcare Workers

1. Training and Education: Healthcare workers should receive training on PrEP and be equipped to educate FSWs on its benefits, address any concerns, and provide accurate information on its use.
2. Individualized Support: Healthcare workers should offer tailored counselling sessions to FSWs who are willing to use PrEP, addressing their specific concerns, explaining the benefits, and emphasizing the importance of adherence.

NGOs and Community-Based Organizations

1. Culturally Sensitive Campaigns: NGOs should design culturally sensitive awareness campaigns specifically targeting FSWs to enhance their understanding of PrEP and its role in HIV prevention.
2. Collaboration with Leaders: NGOs should collaborate with religious and community leaders to create supportive environments for PrEP acceptance among FSWs and reduce stigma related to HIV and sex work.
3. Peer Support: NGOs should continue to facilitate and support peer support groups among FSWs to encourage PrEP uptake and adherence. These groups can provide a sense of community and support around HIV prevention.

FSW Community

1. Active Engagement: FSWs should actively engage in awareness campaigns and educational programs to learn about PrEP and its benefits for HIV prevention.

2. Seeking PrEP Services: FSWs should seek PrEP services from healthcare facilities or NGOs that offer free or affordable PrEP, taking an active role in protecting their health.
3. Disclosure: Consider disclosing PrEP usage to clients to promote safer sexual practices and reduce the risk of HIV transmission.

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APPENDIX I

STUDY QUESTIONNAIRE

ACCEPTABILITY, WILLINGNESS, AND USE OF PRE-EXPOSURE PROPHYLAXIS TO PREVENT HIV TRANSMISSION AMONG FEMALE SEX WORKERS IN LAGOS STATE.

Dear Respondent,

I am Abdulraheem Kamaldeen Sunkanmi, a postgraduate student at University of Lagos, Nigeria. I am conducting research on **"Acceptability, willingness, and use of pre-exposure prophylaxis to prevent HIV transmission among female sex workers in Lagos state"** as a requirement for the award of Masters in Public Health. Your sincere response would be appreciated. Participation is voluntary but would be appreciated.

SECTION A: SOCIO-DEMOGRAPHIC OF RESPONDENTS

I would like to begin by asking a few questions about you.

1. What is your age at last birthday? _____(years)
2. What is your current marital status? _____
3. What is your religion? Christianity Islam Traditional
4. What is your tribe? Hausa Igbo Yoruba Others
5. What is your highest level of education? None Primary Secondary Tertiary
6. Do you have regular paying job? Yes No
7. What occupation is your major source of getting money? _____
8. What age did you start sex trade? _____
9. What type of sex trade do you engage in? Anal Oral Vaginal
10. On average, how many clients do you have in a month? _____

SECTION B: KNOWLEDGE OF HIV/AIDS AND PrEP

KNOWLEDGE OF HIV/AIDS

Now, I would like to ask you about HIV/AIDS.

1. HIV is the virus that can lead to AIDS. Yes No Do not know
2. Can people get HIV from mosquito bites? Yes No Do not Know
3. Can people get HIV by sharing food with a person who has HIV? Yes No Do not know
4. People who look healthy can have HIV? Yes No Do not know
5. Only people who look sick can spread the HIV/AIDS virus. Yes No Do not know
6. Can people reduce their chance of getting HIV by using a condom every time they have sex? Yes No Do not know
7. Can people become infected with HIV by having unprotected oral sex? Yes No Do not know
8. Having another sexually transmitted disease like gonorrhea or herpes increases a person's risk of becoming infected with HIV. Yes No Do not Know
9. There are drugs available to treat HIV that can lengthen the life of a person infected with the virus. Yes No Do not know
10. There is a cure for AIDS. Yes No Do not know

KNOWLEDGE OF PrEP

1. There are drugs people can use to prevent getting HIV. Yes No Do not know

2. PrEP is used after exposure to HIV Yes No Do not know
3. Pre-exposure Prophylaxis is an injection Yes No Do not know

4. Pre-exposure prophylaxis prevents all sexually transmitted diseases? Yes No Do not know
5. Pre-exposure prophylaxis prevents only HIV Yes No Do not know
6. Pre-exposure Prophylaxis is used more than once a day Yes No Do not know

7. Only HIV negative people can use Pre-Exposure Prophylaxis Yes No Do not Know
8. Pre-exposure Prophylaxis provides long-term immunity to HIV Yes No Do not know
9. Pre-exposure Prophylaxis is protective from the first day of use Yes No Do not know
10. Pre-exposure prophylaxis does not have side effect Yes No Do not know

SECTION C: ACCEPTABILITY OF PrEP

PrEP is a drug taken by someone who is HIV negative and is at risk of HIV to protect themselves from contracting HIV.

	Would you consider accepting PrEP as a method to prevent HIV for if it is made available in Nigeria and	Very likely	Likely	Undecided	Not likely	Very Unlikely
1	It is free					
2	It is safe					
3	It is more than ninety					

	per cent effective.					
4	It is a once daily pill					
5	It is once monthly intramuscular injection					
6	It is a vaginal cream					

SECTION D: WILLINGNESS TO USE PrEP

The following questions asks you if you are willing to use PrEP. and what will influence your willingness to use PrEP. I will read the questions and the responses to you to choose the most appropriate response that describes how you feel.

	How likely would you be to take PrEP if	Definitely will	Probably will	Not sure	Probably will not	Definitely will not
1	You have access to free counselling on PrEP					
3	It has immediate side effects					
4	It has long term effect on your health					
5	You must take a pill every day					

6	It is available at pharmacy and you do not need prescription					
7	You must pay for the drug					
8	You must see a healthcare worker before you get the drug					
9	You have to go HIV clinics to access the drug					

SECTION E: USE OF PrEP

I am going to ask you about PrEP use.

		1=Yes
1	Have you ever been offered oral PrEP before	Yes No
2	Are you currently using PrEP	Yes No
3	Have you ever taken oral PrEP before?	Yes No
4	If you have taken oral PrEP before, why did you decide to start?	I am sexually active I feel that I am at risk for HIV

		I have multiple sexual partners I have clients who I believe could be HIV positive I have clients who do not want to use condoms (Mark all that apply)
5	Does/did your main partner (non-sex work partner) know that you are taking oral PrEP?	Yes No
	Does/did your clients know that you are taking oral PrEP?	Yes No

For Current PrEP users

6	If you are still taking oral PrEP, what is reason for continuing to take it?	I am sexually active I feel that I am at risk for HIV If you are still taking oral PrEP, I have multiple sexual partners I have clients who I believe could be HIV positive I have clients who do not want to use condoms Other (Mark all that apply)

APPENDIX II

INTERVIEW GUIDE

Interview guide for acceptability, willingness and use Pre-exposure prophylaxis (PrEP) to prevent HIV transmission among female sex workers (FSW) in Lagos state, Nigeria.

Objectives	**Prompts**
Introduction/Greeting	Good day How are you doing today
Knowledge of PrEP	Have you heard of PrEP before now? What do you know about PrEP? How did you learn about PrEP?
Acceptability of PrEP	Suppose that PrEP is at least 90% effective in preventing HIV when taken daily. How likely would you be to take PrEP if it were available for free? What about if you have to pay for it Would accept PrEP if it made available as an injection what about if it a vaginal cream
Willingness to use PrEP	Will you be willing to take PrEP if it

	provided by government clinic and you have to go the clinic for the drug. Why not? You have to wait for at least two hours before you can get the drug? Why do you think it does not worth the wait? You have to take a screening test every time before you can get the drug.? And what about if it has effect on your health after prolong use.
Use of PrEP	Do you use PrEP? Can you tell me why you have decided to use PrEP If you use PrEP, please tell me if you prefer to use it daily or only when you need it? Can you tell me why?

APPENDIX III

PARTICIPANT INFORMATION AND CONSENT

TITLE OF RESEARCH: Acceptability, willingness and use of pre-exposure prophylaxis to prevent HIV transmission among female sex workers in Lagos state

NAME & AFFILIATION OF RESEARCHER: This study is conducted by Dr. Abdulraheem Kamaldeen Sunkanmi.

I will like you to be a part of a study to be conducted at certain hotspots in Lagos. I want you to know why I am carrying out the study and how it may benefit you before you decide. Participation is not compulsory. If you choose not to participate you can opt out of the study at any time.

INTRODUCTION: Pre-Exposure Prophylaxis is a medicine that is used to prevent the transmission of human immunodeficiency virus. HIV is a communicable disease that is transmitted from one person another by sexual contact, Injections and by other means. The disease can weaken the immunity and without treatment cause death.

PROCEDURE OF THE RESEARCH: The research will involve you answering some questions from a questionnaire that will be administered by a researcher. This will be at no cost to you. You will not be required to provide your name or contacts to ensure confidentiality. The results of the study will be communicated to you if you wish to know them.

POTENTIAL BENEFIT: This study will identify what sex workers know about the use of Pre-Exposure prophylaxis to prevent the transmission of HIV. The information obtained may be used by other researchers, the government to make policies and also implementation of programs for the use of Pre-Exposure prophylaxis.

RISKS: There is minimal risk to you if you choose to take part in this study. And, you might be required you to spend about 15 minutes of your time in carrying out the assessment.

CONFIDENTIALITY: All information obtained in this study will be treated with utmost confidentiality.

WILLINGNESS TO PARTICIPATE: Your participation in this research is entirely voluntary and if you choose not to participate, there are no consequences attached to your decision. You can choose to withdraw from the study at any time.

After administration of the questionnaire, advice/counselling about PrEP can be provided to you if want.

Statement of person obtaining informed consent.

I have fully explained this research to the respondent and given sufficient information, including the risks and benefits, to make an informed decision.

Date……. Signature……

Statement of Person Giving Consent:

I have read the description of the research. I understand that my participation is voluntary. I know enough about the purpose, methods, risk and benefits of the research study to judge that I want to take part in it. I understand that I may withdraw from being part of this study at any time. I have received a copy of this consent form to keep for myself.

Date…… Signature…….

Researcher's Contact:

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Health Research Ethics Committee's Contact: Room 107, Administrative Block

Lagos University Teaching Hospital, Idi-Araba, Lagos.

APPENDIX IV

CITI CERTIFICATION

CITI PROGRAM

Completion Date 05-Jan-2022
Expiration Date 05-Jan-2024
Record ID 46102346

This is to certify that:

Kamaldeen Abdulraheem

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Human Research
(Curriculum Group)
Group 1 - Investigators
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

West African Bioethics Training Program

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w83c35151-39a6-4f50-b044-a82d25a06717-46102346