Improving Pre- Exposure Prophylaxis (PrEP) Uptake as an HIV Prevention Strategy Among Higher Risk Hispanic Men: A Quality Improvement Project

Ivania Gertrudis Castillo-Morris

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Improving Pre- Exposure Prophylaxis (PrEP) Uptake as an HIV Prevention Strategy Among Higher Risk Hispanic Men: A Quality Improvement Project

A Scholarly Project Presented to the Faculty of the Nicole Wertheim College of Nursing and Health Sciences

Florida International University

In partial fulfillment of the requirements For the Degree of Doctor of Nursing Practice

By

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Acknowledgements

Abstract

Introduction

Correct and persistent Pre-Exposure Prophylaxis (PrEP) uptake is an evidence-based preventive measure that prevents at-risk populations from sexual transmission of HIV infection. Research-based studies have affirmed that PrEP can lower the risk of HIV infection by more than 90% when swallowed as required (Alzate-Duque et al., 2021). Evidence on HIV prevention suggests that taking PrEP as prescribed has 99% efficacy in HIV prevention (Grove et al., 2021). However, PrEP care continuum requires awareness and education about PrEP services to ensure successful implementation and adherence in at-risk populations including Hispanic males who have sex with males. Numerous settings, including primary care practices, STI clinics, and community-based organizations (CBOs), have investigated critical aspects of PrEP care continuum and strategies to best offer PrEP services. Though PrEP uptake has been on the rise recently, Carnevale et al. (2020) aver that the highest-risk populations, such as males Hispanic, and other minorities lacking access to community health centers (CHCs) remain under-prescribed PrEP medication. Evidently, daily PrEP is effective in lowering the acquisition of HIV for Hispanic men who have sex with men (MSM), PWID, bisexuals, heterosexual couples, discordant sexual partners, and sex workers. The objectives of this scholarly project is to create an educational program about PrEP based on Center of Disease Control guidelines and protocols
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to increase promotion and improve PrEP uptake among Hispanic males who have sex with males.

**Methodology** An electronic pre-test questionary survey, a voice Power-Point educational training, and post-test questionary survey was delivery to the participants after the IRB from Florida International University approved the qualitative improvement project implementation.

**Results:** The survey/pre-test was completed by 11 participants. The mean of the pre-test/survey was 3.63 with Standard Deviation (SD) of 3.55. The post-test/post survey mean was 8.81 with a standard deviation (SD) of 2.96. The result implied that primary care providers learned from the Quality Improvement Project Intervention. The primary care providers increased PrEP knowledge by 45%. The paired t-Test shows two tailed values of 0.1178 which it is statistically significant.

**Conclusion:** The educational training intervention successfully increased the knowledge and awareness of Primary Care Providers about PrEP, thus increasing education, awareness, and uptake of PrEP among Hispanic males at risk of HIV. Ongoing education and updating of PrEP guidelines are vital to increase the uptake of PrEP among Hispanic males at risk of HIV and further halt the HIV epidemic. However, most essential to prevent HIV in vulnerable populations such as Hispanic males who have sex with males.

*Keywords: HIV Pre-exposure prophylaxis PrEP prep MSM Hispanic males who have sex with male risk of HIV barriers to PrEP*
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Chapter 1: Introduction

Problem Statement

From 1980 to today, almost forty-three years have elapsed since the Human Immunodeficiency Virus appeared and the first individual was diagnosed with HIV, which became a pandemic. According to a Center for Diseases Control and Prevention (CDC) (2020) report, more than one million people in the USA live with HIV. One in seven individuals is HIV positive but has not been diagnosed or does not know the diagnosis. Also, the CDC reported that HIV infections had decreased only by seven percent in the last six years. HIV infection has decreased; however, during the last year, the CDC 2020 reported 32,759 new cases of HIV infections.

The CDC (2020) reported that progress has halted, and the number of new HIV infections has increased. The report emphasizes that effective HIV treatment does not reach individuals that need it the most, such as males who have sex with males, transgender, Hispanic /Latinos, and African Americans. There has been a decrease in new HIV infections from 36,000 in 2019 to 32,759 in 2020. (CDC 2020). Also, reported progress is not uniform among the geographic populations and locations in the United States. For example, the South has the highest rate of new HIV infections, at 16.8 per 100,000 people. (CDC 2016). Increasing education about prevention and access to HIV treatment could halt the HIV pandemic. Prevention is crucial to ending the HIV pandemic. Furthermore, increasing education about PrEP and access to prevention is a must to help end the pandemic in the USA.
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In a study by Ming et al. (2020), HIV Pre Exposure Prophylaxis was introduced as a very effective retroviral medication to prevent HIV.

A study by Gregg et al. (2020) reported that multiple clinical trials bring information about PrEP as a very effective medication to prevent HIV. The United States Preventive and Services Task Force (USPSTF) and CDC (2016) recommended the Food and Drug Administration (FDA) approved medications to prevent HIV. Truvada approved drug in 2012, Descovy in 2019, and Apretude injectable in 2022. However, individuals at risk of acquiring HIV have been prescribing neither of the three approved medications to prevent HIV. Moreover, according to Gregg et al. (2020), there are no primary care healthcare providers knowledgeable about PrEp to be able to educate their patient about PrEP and prescribe it. PrEP are drugs to be prescribed as preventive measures to healthy people at risk of acquiring HIV. However, the uptake of PrEP is low due to a lack of knowledge about PrEP among the vulnerable at-risk population including Hispanics males who have sex with males. Those three drugs approved for HIV prevention are potent tools to halt HIV; however, without education to the community, the PrEP uptake will remain deficient. (Gregg 2020).

Another study by Blackstock in 2017 reported that he surveyed the National Professional Organization for Primary Care Professionals. He questioned 2093 members about PrEP knowledge, prescribing PrEp, or referring patients to PrEP. His study concluded that only 266 primary care providers knew about PrEp.
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The PrEP clinical guidelines have been issued in by the US Public Health Services to be used among HIV negative male who have sex with male at risk of acquire HIV. (CDC 2014). After the guidelines were issued, the departments for public health have been promoting PrEP as prevention of HIV among at risk population. However, there was some success in PrEP implementation among male who have sex with male of high education and high socioeconomic status. This trend left behind PrEP uptake among minorities including Hispanic male who have sex with males (Doleza et al., 2015; Hood et. al., 2016; Martinez, Wu, et.al., 2016).

Multiple research study reported factors about the PrEP uptake and prescription among minorities including Hispanic who have sex with males. Also, reported that it is crucial to decreases the life time HIV risk of the those at risk of HIV. (Lelutili-Weinberger & Golub, 2016).

PrEP is a powerful tool for HIV prevention (Bonacci, Smith, & Ojikutu, 2021; Caba et al., 2022), but PrEP awareness and utilization are still lacking among Latino/Hispanic MSM who comprise 20% of newly diagnosed HIV cases (Alzate-Duque et al., 2020, Mansergh et al., 2019). Hispanics now surpass 50 million people in the U.S., and Spanish is the second most common language in the United States. Engaging the predominantly Hispanic community in preventing HIV transmission is of the essence. Past studies on the Latino community affirm this population remains disproportionately impacted by HIV more than whites (Rao et al., 2021; Watson et al., 2022). While seeking to increase PrEP uptake among the at-risk populations, male who have sex with male Carnevale et al. (2020) point out that Hispanic and African American males who have sex with male need attention as they comprise nearly two-thirds of new HIV diagnoses. Some
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Factors contributing to high HIV rates in these minority groups include poverty, mental health issues, substance abuse, and stigma.

Among Hispanics/Latinos male who have sex with male, (MSM) HIV risk differs based on their birthplace and years of residency in the U.S. (Trujillo et al., 2019). Recent Hispanic immigrants could benefit from better HIV education and prevention services such as access to PrEP and condoms. Moreover, non-U.S.-born Latino MSM, irrespective of the duration of residency in the U.S., could experience barriers to PrEP uptake compared to their American-born counterparts.

New HIV infections are diagnosed yearly in the U.S, and Hispanic MSM is the second largest subpopulation of new HIV infections, following African American MSM. Despite making up 20% of MSM, Alzate-Duque et al. (2021) emphasize that Hispanics are most unlikely than their ethno-racial counterparts to access testing and treatment for HIV. Regardless of the well-known PrEP benefits, its use among Hispanic MSM has fallen behind their White peers. Alzate-Duque et al. (2021) cite cultural barriers as possible hindrances to Hispanic MSM access to PrEP because of clinicians’ or health providers’ limited Spanish fluency. Another barrier may be Hispanic MSM limited accessibility to PrEP-informed clinicians and stigmatization of high-risk communities.

Carnevale et al. (2020) have expressed concerns that Hispanic MSM faces similar barriers to PrEP access as Black MSM, with an additional lack of health insurance, undocumented status, and language barrier. Both Hispanic and Black MSM experience medical mistrust, stigmatization, lower efficacy beliefs, socioeconomic burden, and problems discussing
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sexual health with health care providers (Caba et al., 2022; Mansergh et al., 2019). Research has also highlighted barriers to information concerning PrEP and PrEP access among Hispanic MSM (Mansergh et al., 2019). Spanish is the primary language spoken by Hispanic/Latino MSM which may inhibit learning about PrEP services and hinder access the information on HIV prevention. Community campaigns, written materials, and other PrEP educational resources for MSM are often in the English language.

Nonetheless, CDC provides media resources and information about PrEP and other HIV prevention measures in Spanish. Mansergh et al. (2019) claim that researchers are unaware of other PrEP resources provided in Spanish for Hispanic/Latino MSM. Furthermore, Trujillo et al. (2019) maintain that Hispanic MSM in the United States who prefer using education resources in Spanish could be in disadvantaged in knowing about PrEP and its accessibility since such materials might be sparse. Improving Hispanic MSM PrEP use necessitates providers to have culturally informed communication skills, routinize PrEP education, and expand coverage for PrEP treatment. There is a need to improve providers’ PrEP education and cultural comfort in prescribing PrEP by educating them on best practices that would develop cultural humility to increase PrEP uptake among Hispanic MSM. Additionally, tailored an educational program for primary care providers and targeted PrEP resources are required for Spanish-preferred Latino or Hispanic MSM, given their proportionately low awareness of PrEP compared to their English-preferred peers. Innovative approaches such as Spanish-language mass media and social media outlets can be established to improve access to PrEP and cater to all Hispanic MSM.

Significance to Nursing
Nurse Practitioners as primary care providers can improve the life of Hispanic males who have sex with males, and at risk of HIV by become knowledgeable about PrEP and overcoming the barriers that prevent Hispanic MSM to uptake PrEP. Since PrEP use has been slow in this population, it is important to address barriers to PrEP uptake and reduce the risk of HIV transmission among MSM. Sun et al. (2022). Furthermore, it is crucial to educate patients about PrEP. Therefore, providing a short-educational session about PrEP has proven to increase PrEP uptake among Hispanics MSM at risk of HIV. (Bonacci, Smith, & Ojikutu, 2021) Also, providing educational resources in Spanish will overcome the language barrier to increase PrEP uptake. In addition, providing educational training to primary care providers in their clinical practice setting has proven to increases primary care providers awareness of PrEP and PrEP prescriptions. (Bonacci, Smith, & Ojikutu, 2021).

Education interventions have the possibility to surge the number of providers prescribing PrEP to at-risk individuals. Undoubtedly, education interventions to Hispanics MSM at risk of HIV and primary care providers will improve the ability of providers to communicate about HIV risk to at-risk populations, including Hispanics MSM. Healthcare providers need to inform males Hispanics at risk of contracting HIV about PrEP as an accessible and effective prevention option. (Silapaswan, Krakower, and Mayer (2017).

**Chapter II: Summary of the Literatures Review**

The objective of this literature review is to methodically investigate the barriers affecting the uptake of pre-exposure prophylaxis among Hispanic male who have sex with a male and the
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prescription of PrEP by PCPs. And how those barriers relate to the unawareness or poor knowledge of PrEP among some primary care providers therefore unable to delivery education to Hispanic male who have sex with male and prescribe PrEP. In addition, this literature review will address barriers including, cultural, language, stigma and health care disparities affecting Hispanic MSM at high risk of acquiring HIV and how those barriers are preventing them to use PrEP as an HV prevention measure. In addition, the review includes other minorities at risk of HIV.

Search Strategy

Multiple systematic reviews, meta-analyses, and peer reviews were searched using multiple databases and sources such as PubMed/Med-Line, CINAHL, Center for Diseases Control, (CDC), World Health Organization, (WHO), Google Scholar Center, to obtain scientific evidence base journal and articles.

The key words utilized to search for articles in the literature review include: Pre-exposure prophylaxis, Hispanic males who have sex with male, MSM, primary care, PrEP, HIV, prevention, and implementation, Truvada, Descovy, Apretude, barriers, disparities, stigma. The search was done for articles written in English published between 2017 and 2022. This search brough hundreds of articles that were narrow to 35 articles relevant to the project question; including barriers of Hispanic males who have sex with male in obtaining PrEP and barriers of primary care providers in prescribing it. The search generated 35 articles (n-35) 12 were exclude after reviewing them, because were not closely relate to the project question. The total literature review focused on the remaining 23 articles.
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**HIV Among Hispanic Male**

**HIV Statistics Among Hispanic Male Who Have Sex with Male.**

In the U.S., Patrick et al. (2017) argued that MSM represents about 3-10% of the general population. According to Alzate-Duque et al. (2021), this group accounts for approximately 69% of new HIV infections. Nationwide, young, Hispanic, and Black MSM present a majority of new HIV infections (Watson et al., 2022); research shows that these trends continue in Miami-Dade County, Florida, and Washington, DC, two ethnically and racially diverse HIV/AIDS epicenters. Notably, 20% of the HIV-infected MSM in the U.S are Hispanic/Latino. More recent studies reveal that there is a significant increase in PrEP uptake among MSM, as reported by internet-based samples in several U.S cities. However, Carnevale et al. (2020) and Gomez et al. (2022) note that disparities in access remain, with only 10-12% of PrEP prescriptions provided to at-risk Hispanics and Black MSM. Ethnic and racial disparities in incidences of HIV and prevalence are still a key health concern in the United States.

Hispanic and African Americans MSM, experience lower awareness of PrEP compared to White MSM (Bonacci, Smith, & Ojikutu, 2021; Caba et al., 2022), and this low awareness is attributed to identifying as gay persons and rare prior HIV screening and testing. Studies have also shown that Hispanic and Black MSMS seeking to access PrEP experiences common barriers such as stigma, lower efficacy beliefs, socioeconomic burden, stigma, medical mistrust, and lack of discussion about sexual health with clinicians (Carnevale et al., 2020). Disparities exist in the HIV infection and prevalence between Hispanic and Black MSM and white MSM, and there are
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inequities in PrEP uptake for sexual minority men. Just like in other at-risk populations, understanding the willingness and knowledge about PrEP efficacy among MSM is a crucial step toward increasing PrEP use. Given the rising rates of HIV transmission among Hispanic MSM and the importance of increasing prevention efforts, researchers must target prevention programs. In their studies, Carnevale et al. (2020) found that though awareness may be rising, PrEP use remains low even in areas that are highly affected by HIV. These authors recommend regionally tailoring PrEP information as well as implementing behavioral interventions to improve willingness and increase uptake among MSM.

**HIV Prevention Among Hispanic Male Who Have Sex with Male**

PrEP is an efficacious tool for HIV prevention (Bonacci, Smith, & Ojikutu, 2021; Caba et al., 2022), but PrEP awareness and utilization are still lacking among Latino/Hispanic MSM who comprise 20% of newly diagnosed HIV cases (Alzate-Duque et al., 202; Mansergh et al., 2019). Hispanics now surpass 50 million people in the U.S., and Spanish is the second most common language in the United States. Engaging the predominantly Hispanic community in preventing HIV transmission is of the essence. Past studies on the Latino community affirm this population remains disproportionately impacted by HIV more than whites (Rao et al., 2021; Watson et al., 2022). While seeking to increase PrEP uptake among the at-risk populations, Carnevale et al. (2020) point out that Hispanic and Black MSM need attention as they comprise nearly two-thirds of new HIV diagnoses. Some factors contributing to high HIV rates in these minority groups include poverty, mental health issues, substance abuse, and stigma.
Among Hispanics/Latinos MSM, HIV risk differs based on their birthplace and years of residency in the U.S. (Trujillo et al., 2019). Recent Hispanic immigrants could benefit from better HIV education and prevention services such as access to PrEP and condoms. Moreover, non-U.S.-born Latino MSM, irrespective of the duration of residency in the U.S., could experience barriers to PrEP uptake compared to their American-born counterparts. New HIV infections are diagnosed yearly in the U.S., and Hispanic MSM is the second largest subpopulation of new HIV infections, following African American MSM. Despite making up 20% of MSM, Alzate-Duque et al. (2021) emphasize that Hispanics are most unlikely than their ethno-racial counterparts to access testing and treatment for HIV. Regardless of the well-known PrEP benefits, its use among Hispanic MSM has fallen behind their White peers. Alzate-Duque et al. (2021) cite cultural barriers as possible hindrances to Hispanic MSM access to PrEP because of clinicians’ or health providers’ limited Spanish fluency. Another barrier may be Hispanic MSM limited accessibility to PrEP-informed clinicians and stigmatization of high-risk communities.

Carnevale et al. (2020) have expressed concerns that Hispanic MSM faces similar barriers to PrEP access as Black MSM, with an additional lack of health insurance, undocumented status, and language barrier. Both Hispanic and Black MSM experience medical mistrust, stigmatization, lower efficacy beliefs, socioeconomic burden, and problems discussing sexual health with health providers (Caba et al., 2022; Mansergh et al., 2019). Research has also highlighted barriers to information concerning PrEP and PrEP access among Hispanic MSM (Mansergh et al., 2019). Spanish is the primary language spoken by Hispanic/Latino MSM which
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may inhibit learning about PrEP services and hinder access the information on HIV prevention. Community campaigns, written materials, and other PrEP educational resources for MSM are often in the English language.

Nonetheless, CDC provides media resources and information about PrEP and other HIV prevention measures in Spanish. Mansergh et al. (2019) claim that researchers are unaware of other PrEP resources provided in Spanish for Hispanic/Latino MSM. Furthermore, Trujillo et al. (2019) maintain that Hispanic MSM in the United States who prefer using education resources in Spanish could be disadvantaged in knowing about PrEP and its accessibility since such materials might be sparse. Improving Hispanic MSM PrEP use necessitates providers to have culturally informed communication skills, routinize PrEP education, and expand coverage for PrEP treatment. There is a need to improve providers’ cultural comfort in prescribing PrEP by educating them on best practices that would develop cultural humility to increase PrEP uptake among Hispanic MSM. Additionally, tailored and targeted PrEP resources are required for Spanish-preferred Latino or Hispanic MSM, given their proportionately low awareness of PrEP compared to their English-preferred peers. Innovative approaches such as Spanish-language mass media and social media outlets can be established to improve access to PrEP and cater to all Hispanic MSM.

Hispanic Male Who Have Sex with Male Barriers to PrEP

MSM commonly cite PrEP attributes as a barrier to PrEP uptake, most MSM are concerned with probable PrEP’s side effects, cost, and efficacy. For Hispanic MSM, individual
barriers that hinder PrEP use include concerns about low awareness, language barriers, health care disparities, daily adherence, low perceived risk of acquiring HIV, and the potential increased risk of other STIs due to reduced condom use in the context of PrEP utilization. Regarding interpersonal hindrances to PrEP uptake, research has highlighted concerns that MSM may anticipate condomless anal intercourse following PrEP uptake, and fears that PrEP users may be perceived as HIV-positive when others see them using it. According to Sun et al. (2022), condomless sexual behavior among MSM is a well-known path of HIV transmission. With respect to structural barriers, Hispanic MSM has reported concerns over the ability to access PrEP due to unwillingness to discuss sexual health with providers; there is stigmatization toward sexual minorities such as MSM. Since PrEP use has been slow in this population, it is important to address barriers to PrEP uptake and reduce the risk of HIV transmission among MSM.

Correct and persistent Pre-exposure Prophylaxis (PrEP) uptake is an evidence-based preventive measure that prevents at-risk populations from sexual transmission of HIV infection. Research-based studies have affirmed that PrEP can lower the risk of HIV infection by more than 90% when swallowed as required (Alzate-Duque et al., 2021). Evidence on HIV prevention suggests that taking PrEP as prescribed has 99% efficacy in HIV prevention (Grov et al., 2021). However, the PrEP care continuum requires awareness and education about PrEP services to ensure successful implementation and adherence in at-risk populations. Numerous settings, including primary care practices, STI clinics, and community-based organizations (CBOs), have investigated critical aspects of the PrEP care continuum and strategies to best offer PrEP services. Though PrEP uptake has been on the rise recently, Carnevale et al. (2020) aver that the
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highest-risk populations, such as people of color, women, MSM, PWID, and other minorities lacking access to community health centers (CHCs) remain under-prescribed PrEP medication. Evidently, daily PrEP is effective in lowering the acquisition of HIV for men who have sex with men (MSM), PWID, bisexuals, heterosexual couples, discordant sexual partners, and sex workers.

PrEP uptake is not a singular behavior but a proxy for anchoring experiences such as interaction with insurance providers, persistent engagement with clinicians, and daily or periodic pill taking. Translating PrEP success into the real world needs awareness of risk, connection to PrEP services, PrEP persistence and adherence, initiation of PrEP services, and PrEP retention. To date, PrEP uptake has not been adequate to impact HIV incidence significantly. Sun et al. (2022) affirm that PrEP must be available, acceptable, and implemented to prevent HIV infections among at-risk populations. Thus, PrEP efficacy positively correlates with PrEP adherence (Camp & Saberi, 2021) and delivering effective PrEP-related services to high-risk groups is an important strategy to reduce new HIV cases. Public health officials, researchers, community leaders, and activists are making efforts to raise PrEP awareness and increase the willingness to engage in PrEP among at-risk groups. But these stakeholders have also varied in which individuals they contemplate PrEP care is best indicated for and how to create informative strategies to reach those populations. While WHO has indicated PrEP for all MSM, the U.S. CDC suggests PrEP only in MSM and bisexual men who meet the behavioral risk criterion (Grove et al., 2021). Besides, recommended criteria and messaging for PrEP rollout for other at-
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risk populations also varies, but; there is consensus that a higher risk of HIV exposure equates to more incredible benefits derived from PrEP protection.

**PrEP among Hispanic Male Who Inject Drugs**

Nonetheless, there is growing and the vast literature on MSM; limited research has examined PrEP interest and knowledge among people who inject drugs (PWID). PrEP is clinically efficacious and approved for HIV prevention among PWID; however, usage remains low, and intervention measures are understudied (Biello et al., 2018). According to Bazzi et al. (2018), PWID face injection and sexual-related HIV risks; however, uptake of PrEP among PWID remains low. Increasing PrEP use in this group requires interest and understanding of PrEP knowledge. In 2017, Bazzi et al. (2018) conducted semi structured interviews with PrEP providers and HIV-uninfected PWID in Northeast U.S. and found that accurate PrEP knowledge was low among PWID. The participants attributed this low PrEP knowledge to physician unwillingness and lack of time to discuss PrEP use with PWID. Insufficient knowledge of PrEP amongst PWID partly results from providers reluctance to prescribe or discuss it with this group, probably due to assumptions on medication adherence. But recent studies reveal moderately high willingness and interest in PrEP use among PWID.

Bazzi et al. (2018) further argue that HIV/AIDs disproportionately impact PWID, and 9% of the HIV diagnoses in the U.S. in 2016 were linked to injection drug use. This number keeps growing due to the rising heroin and opioid use rates. In 2018, CDC reported that PWID accounted for 10% of HIV cases in the U.S. Reportedly, approximately half (52%) of PWID in
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the U.S. have access to syringes through syringe service program (SSP), despite its efficacy in preventing HIV transmission related to the injection. Bazzi et al. (2018) reveal that only a third (33%) of the PWID report having consistent access to sterile syringes.

Studies show that once HIV is introduced in PWID networks, it can spread rapidly, as manifested by Indian HIV outbreaks in 2015 (Bazzi et al., 2018). HIV transmission can be higher in PWID networks due to syringe sharing, use of discarded syringes, and engaging in transactional sex and condomless anal or vaginal sex. In the qualitative study by Bazzi et al. (2018), PWID knowledge of PrEP was exceedingly low, while interest in PrEP uptake was mixed and influenced by HIV risk perceptions and prior PrEP knowledge. Based on their study, Bazzi et al. point to the importance of PrEP uptake interventions that address HIV risk awareness, increase PrEP knowledge and encourage high-risk persons to use PrEP for HIV prevention.

As revealed in other studies by Walters et al. (2017), low PrEP knowledge among PWID can reflect most PrEP marketing is focused on other at-risk populations, including MSM, bisexual, and sex workers. Poor PrEP knowledge amongst PWID also indicates that public health campaigns are intensively targeted toward other populations, resulting in misconceptions about the appropriateness of PrEP for those who inject drugs. Biello et al. (2018) recognize low PrEP knowledge, concerns about its side effects, and limited HIV risk perceptions as individual-level barriers. Accessible and adequate information, particularly PrEP availability, side effects, aspects of adherence, and the protections provided and not provided (i.e. PrEP does not protect individuals from other STIs), is required to increase PrEP knowledge among PWID. Past
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Literature studies show a need to avail this information in crucial areas frequented by high-risk PWID. Research has found that in other at-risk populations, compelling and comprehensible PrEP messaging and campaigns for PWID will need tailored content to their interests, needs, and concerns (Bazzi et al., 2018).

Prep Uptake among Bisexuals Hispanic Male

MSM continues to be the lesbian, gay, bisexual, transgender, and queer (LGBTQ) group with the utmost risk for HIV transmission in the U.S., and HIV disproportionately affects MSM and bisexual men, especially those that use stimulants (Viera et al., 2022). In 2019, according to Watson et al. (2022), CDC projected that only about 23% of individuals eligible for PrEP were using it due to disparities in PrEP awareness and uptake within the group of MSM and bisexual men. Discrimination and stigma are highly emphasized in bisexual men and reportedly have higher expected stigma relative to MSM. Bisexuality is mostly perceived as a sexual identity that propagates exclusion and discrimination of bisexual persons from both sexual minority and heterosexual communities. Compared to gay-identified counterparts, bisexuals are less likely to have ever undergone an HIV test and are also less likely to have PrEP awareness and utilization. Bisexual men are more likely to withdraw PrEP uptake over time.

Apart from differences linked to sexual identity, major racial disparities in PrEP uptake also persist (Bonacci, Smith, & Ojikutu, 2021). Hispanic and Black Bisexual men are considerably most unlikely than their white counterparts to report PrEP uptake. They are also less likely to discuss PrEP with their health provider, irrespective of awareness. Watson et al. (2022) identify key barriers to PrEP uptake in Bisexual men as medical mistrust, cost issues,
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stigmatization of PrEP use, and lack of access to PrEP care. Numerous HIV prevention programs treat bisexual, gay, and other MSM as a single or homogenous group, regardless of the differences in HIV prevention needs and HIV risk behaviors. This aspect leads to prevention services that might not be targeted and culturally relevant.

Strong connections to the gay community have proven to raise awareness and PrEP access (Watson et al., 2022); however, marginalization, stigma, and inadequate targeted HIV prevention strategies may pose distinctive barriers to PrEP uptake among these ethno-racially and sexually diverse populations. Understanding the impact of stigma in the utilization of PrEP among bisexuals might be important in creating effective interventions focused on increasing PrEP uptake in this group. Bisexual face intersecting stigma related to sexuality, gender, and race leading to exclusion and discrimination by the society. Studies in this review show that bisexual face stigmatization even in the clinics and pharmacies when they reveal about their sexuality to the health providers. Like the MSM and other members of the LGBTQ community, bisexuals do not feel comfortable about revealing their sexual identity and discussing their sexual behavior with providers because they fear stigma. As a consequence, such individuals may be reluctant to seek PrEP care because stigma leads to social isolation and restriction to a circle of persons sharing the same sexuality status.

For black bisexuals, race-based distrust within the healthcare system has been linked to lower willingness and interest in PrEP uptake. Distrust presents additional barriers that bisexuals of color may experience as both sexual and ethnic minorities seek to obtain a PrEP prescription (John et al., 2017). Among bisexuals using PrEP, maintaining daily dosage adherence has also
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been mentioned as a barrier to its use. Nonetheless, many bisexual men using the alternative dosing of 2-1-1 have reported high PrEP persistence and adherence. Alternative PrEP intake methods, such as long-acting injectables, could reduce barriers with daily pill adherence issues or forgetting pills when using the 2-1-1 dosing schedule. Strongly promising results have been reported in a clinical trial of injectable PrEP that was concluded in mid-2020 (Grove et al., 2021), and possibly this formulation of PrEP could be more convenient to consumers who forget daily pills. While promoting PrEP adherence, health providers are expected to also have interventions that promote follow-up clinic visits to expand uptake.

Advancements in self-administered STI and HIV testing at home make it feasible for patients to achieve the quarterly STI/HIV testing required for PrEP uptake. Bisexuals and other stigmatized groups can conduct these tests at home for each follow-up scheduled without visiting a clinic. At-home bacterial STD testing, both rectal and urethral, has been recognized as a feasible testing approach for bisexuals and MSM (John et al., 2017); this strategy has also demonstrated cost-effectiveness compared to clinic-based testing. These strategies can help to expand PrEP adherence management, especially for bisexuals willing to initiate PrEP uptake but facing obstacles to the routine follow-up requirement.

After the initial prescription of PrEP, research shows that most bisexuals prefer using home-based PrEP services for persistence. Both younger men and older men prefer home-based PrEP to clinical visits for HIV/STI testing and prescription renewal (John et al., 2017). The expansion of home-based PrEP services could have the capacity to increase PrEP use among younger bisexuals at the greatest risk of HIV transmission and those who intend to initiate PrEP
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care. Further, home-based PrEP also resonates with bisexuals who live far away from health providers that prescribe PrEP medication. Therefore, home-based PrEP services sound like an effective mechanism to lessen bisexuals’ perceived barrier to PrEP persistence.

**PrEP Uptake among Discordant Sexual Partners**

PrEP is an effective HIV prevention tool for discordant sexual partners, and its uptake has increased in the recent past amongst this group. However, there is little research on the experiences and perspectives of heterosexual discordant couples in the U.S. (Bazzi et al., 2017). Most studies on this population have concentrated on sub-Saharan Africa. Heterosexual contact contributes to new HIV transmissions among adolescent and adult women in the U.S. Based on the high economic and social costs of HIV, researchers show that it is crucial to prevent infections in HIV sero-discordant partners. Promoting combination antiretroviral treatment (cART) and adherence with the decreased virus levels and renewal of immune function improves the well-being and health of HIV-positive persons while preventing infection in discordant couples.

Following the enhanced life expectancy of individuals taking ART, studies show that most discordant couples in the U.S report childbearing motivations and fertility desires. Affordable artificial insemination methods have facilitated live births amongst HIV-positive women. However, the risk of infection during conception remains a serious concern for heterosexuals where a female partner is HIV-uninfected, and the male is infected (Kawwass et al., 2017). Since transmission of HIV from males to females is highly efficient, unprotected sex
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could still have some, though small, risk of transmission among female partners in a discordant relationship. Condomless sex among discordant sex partner risk varies depending on the characteristics of the couples, including the presence of other STIs, viral load of the HIV-positive partner, and inflammations in the genital tract. Despite viral suppression for HIV-positive male partners, these couples should consider assisted reproductive technologies for safer conception.

Besides adherence to ART among the HIV-infected partner and adoption of assisted reproductive technologies, condomless sex combined with PrEP uptake among uninfected partner is an alternative reassuring safe conception strategy. Although cART alone for the HIV-positive partner is an efficacious prevention method, Bazzi et al. (2017) argue that viral loads may not be constantly suppressed all time and might still intermittently transmit the virus. Evidently, PrEP could undoubtedly add a layer protected to the uninfected partner facing risk for HIV transmission. While limiting condomless sex to fertility periods among discordant couples, CDC has endorsed the PrEP conception strategy as effective and safe for discordant couples.

Qualitative research on discordant sexual partner utilization of biomedical prevention approaches has highlighted the significance of PrEP-related attitudes and disclosure of discordant or HIV status. Research has also stressed the importance of HIV risk perceptions, trust between partners, male partner support, HIV-related stigma, decision-making and communication between partners, and community norms concerning biomedicine. Besides little being known about discordant sexual partners’ attitudes, decision-making processes, and acceptability of PrEP for conception in the U.S., PrEP awareness for this purpose
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is low. Specifically, the social contexts and relationship dynamics that might hinder or promote discordant couples PrEP uptake for conception have not been adequately explored.

According to Bazzi et al. (2017), denunciation of HIV-discordant relationships and HIV stigma leads to feelings of social isolation notwithstanding strong partner support in discordant relationships. The larger community disapproves of these couples despite their subsequent desires to have normal families. Though church participation provides a sense of identity and social capital, couples remain reluctant to disclose their HIV-discordant status to communities or families. Thus, discordant sexual partners tend to rely on each other to garner the social support needed to cope with HIV. Reportedly, PrEP provides these HIV-discordant partners with a sense of improved relationship intimacy by facilitating safer and natural conception via condomless sexual intercourse. Furthermore, establishing marketing strategies that use positive messaging has been accentuated as an intervention to combat HIV stigmatization and raise public PrEP awareness. Most importantly, PrEP has been found to be a more financially feasible choice for safer conception.

Studies of HIV-discordant partners recognize the couple’s aspiration to return to normalcy regardless of living with HIV as a critical driver of PrEP use. Cultural ideals regarding having normal families and childbearing increase the desire for discordant couples to regain a sense of normalcy. HIV-discordant couples believe that raising PrEP awareness in public would enable them to decrease the stigma they face from their families or community and would feel more comfortable with their HIV status. Increasing advertisements and awareness could result in
more knowledge and conversations about HIV-discordant status and help to reduce social isolation.

**PrEP Uptake Among Hispanics Sex Workers**

PrEP has proven efficacy in enabling HIV prevention among female sex workers (FSW), but there is not a lot of research available on PrEP awareness and uptake in this group. Much of the research on PrEP in the U.S. is focused on MSM; it offers insights into attitudes and awareness about PrEP services for other vulnerable populations at risk of HIV infection. In the U.S., heterosexual females represent approximately 19% of new HIV cases (Tomko et al., 2019). The unlawful nature of commercial sex work in many nations contributes to stigmatization and health outcomes linked to structural vulnerability, drug use, and eminent rates of client violence. Structural susceptibilities and their related adverse health outcomes could intensify stigmatization associated with sex work creating a hindrance to HIV testing, PrEP uptake, and HIV treatment. Prior studies in Baltimore, Mexico, and China have found that even if PrEP awareness among women selling sex is low, interest is high (Tomko et al., 2019). Intimate partner violence experiences are cited as an important contributor to reduced PrEP interest among FSWs. Understanding potential hindrances to HIV-related care from the perception of this marginalized and stigmatized population may improve access to PrEP and other sexual health services.

Behavioral HIV analysis studies in the U.S. involving 4,722 high-risk heterosexual females found that 18% of participants were sex workers, with a 4.1% HIV prevalence, compared to 2.5% among non-sex workers (Footer et al., 2019; Tomko et al., 2019). Individuals
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who trade sex for money, services, goods, or favors face a higher risk of contracting HIV and other STIs. Tomko et al. (2019) further suggest that female sex workers (FSW) have a higher risk of HIV infection, which is 13.5 times that of women of similar age who do not trade sex globally. Irrespective of documented disproportionate risks of HIV worldwide, little research in the U.S. has centered on HIV among FSWs. The existing disparities observed in the FSW can be partially understood through structural vulnerability theory. According to Tomko et al. (2019), structural vulnerabilities prevail where a group’s or individual position in a community compels behavior following conflict with current power structures, increasing negative health outcomes risk and health inequities at a population level.

Studies have underscored the responsibility of sexual transmissions via unprotected sex in enabling HIV amongst people injecting drugs, including women who inject drugs. With augmented HIV risk among sex workers and PWID, PrEP needs to be a high priority in preventing new HIV incidences. Research has shown a strong interest in PrEP uptake among female sex workers and women injecting drugs. PrEP uptake and adherence among sex workers and other high-risk populations are hindered by individual factors such as risk perceptions, interpersonal barriers like partner support, and structural factors such as stigma.

The lack of PrEP awareness and low sexual HIV risk perception among women injecting drugs and trading sex supports the need for interventions that promote education on sexual health risks and HIV prevention. This aspect affirms the importance of integrating PrEP with other prevention services in primary care settings and HIV prevention in STI clinics, as cited by previous studies. Approaches concerning the use of long-term contraception
formulations by women indicate the significance of tackling potential barriers to PrEP utilization via patient counseling and health provider education. Footer et al. (2019) support the development of varied PrEP modalities, such as injection and implant, to allow variation in individual product preferences. Grove et al. (2021) stress that other PrEP formulations and different methods of delivery – including topical microbicides, vaginal rings, and long-acting injectables – are now under clinical trials.

Healthcare providers have been recognized as the powerful drivers of PrEP uptake among sex workers. Providers can make PrEP care part of holistic sex education delivered in sexual health clinics. Providing comprehensive sex education is essential to the sexual health of sex workers and increasing PrEP use among this vulnerable population. However, decisions about whether to use or continue PrEP relate to sex workers' choices regarding exchange sex (Kislovskly et al., 2022). Sex workers describe PrEP as “life-saving” as it allows them the freedom to forego condoms, especially for clients that opt to have condomless sex and pay more. Research on women who trade sex and women injecting drugs found participant familiarity with the pill delivery method, which influences initial preferences, arguing that physician education on new PrEP modalities needs use other medications, such as a contraceptive implant, as the point of comparison. Following the structural vulnerability of this group, injectable and implant delivery modes emerged as the primary positive attribute. However, Footer et al. (2019) note that there is limited data on the acceptability of injectable, implant (parenteral PrEP) among the at-risk population. Long-lasting substitutes to oral PrEP are hypothesized to possibly address users' likelihood of forgetting to take oral PrEP pills. PrEP implants or injections could offer ease of
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use and a greater level of confidence because there is less concern about daily adherence among disproportionate populations.

Like other at-risk populations, sex workers PrEP uptake and adherence is affected by cost concerns and daily dosage intake since their involvement in exchange sex occurs almost daily. Many sex workers prefer female or male condoms to PrEP due to these unpleasant features and uncertainty of how PrEP actually works. While some understand the benefits of PrEP in HIV prevention in the context of condomless sex, they do not perceive this benefit when HIV risk can be mitigated in other ways, such as condom use. In recent research conducted by Kislovskiy et al. (2022) on HIV prevention among sex workers, participants raised concerns that one could use PrEP and fail to mess up. They are worried that the body could be loaded with unnecessary drugs. Most of the research participants argued that they were not interested in taking drugs “for no reason,” and this echoes the sentiment of side effects concerns expressed in other populations.

This group's other concerns regarding PrEP uptake are the multistep processes involved in accessing PrEP care. This barrier has been an important concern for MSM and PWID, as well as their feelings of discomfort discussing sexual health behavior issues with providers. Obtaining PrEP involves a series of steps, such as scheduling an appointment with the provider or clinician who prescribes PrEP, having insurance or funds to cover the cost, and experiencing numerous challenges in filling the prescription at the pharmacy. Cost and access to PrEP remain a concern for sexual workers interested in PrEP care, especially those that lack health insurance and access to clinics offering low-cost care. In addition to these barriers, bias, stigma, and racism were cited as challenges when interacting with pharmacies and medical clinics. Sex workers experience
unprecedented stigmatization when revealing their involvement in transactional sex. Even while a sex worker is visiting a clinic for an HIV test, nurses or physicians may immediately assume they are HIV positive.

“On-demand” PrEP among Hispanics MSM

According to Grov et al. (2021), the U.S. Food and Drug Administration (FDA) approved the initial PrEP formulation (oral Truvada) in 2012 and another once-daily pill (emtricitabine and tenofovir alafenamide) in 2019. Both of these oral formulations are FDA-approved and were initially recommended for once-daily uptake before establishing other dosing strategies, such as 2-1-1 dosing for gay and bisexual men. The 2-1-1 PrEP, also known as “on-demand” or “event-driven” PrEP, allow users to take 2 pills 2-24hrs before engaging in sex, then 1 pill 24hrs after the initial dose, and 1 more pill 24hrs after the second dosage. Despite the proven efficacy of “on-demand” PrEP and approval by the World Health Organization (WHO), it is not recommended by CDC and the FDA (Caba et al. 2022). WHO has suggested that other than HIV testing, screening STIs, and condom use, providers should also consistently integrate PrEP into prevention programs (Sun et al., 2022). The episodic PrEP has been highly recommended for bisexual men and MSM but not yet recommended for vaginal sex because Truvada takes longer to protect vaginal tissue.

In their study with MSM, Camp and Saberi (2021) argue that the major reason for 2-1-1 PrEP preference included the need to take fewer pills and engage in sex less frequently. Camp and Saberi (2021) note that 2-1-1 dosing could be an alternative approach for MSM facing challenges with daily PrEP adherence. Approximately 63.7% of participants indicated switching
from daily PrEP uptake to 2-1-1, while 46.4% were concerned with wanting to take fewer pills. Other benefits of 2-1-1 dosing include cost reduction, fewer clinic visits, and the desire to decrease possible side effects of PrEP uptake. According to Camp and Saberi (2021), more than 84% of respondents reported high PrEP uptake adherence with 2-1-1 dosing. Arguably, the “event-driven” PrEP is more responsive to the patient's needs and desires, which could be the reason for higher adherence to the 2-1-1 compared to the daily PrEP dose.

The 2-1-1 dosing regimen might be a desirable option for Hispanic and Black MSM who struggle with adhering to a daily PrEP regimen. Besides, this reduced dosing schedule appears more cost-effective than a daily PrEP regimen. Unplanned sexual encounters among MSM were cited as the major barrier to 2-1-1 PrEP dosing, resulting in missing the initial dose (double-dose pre-sex) and forgetting to take doses after sex. In addition to unplanned sex and trouble recalling the dosing schedule, Camp and Saberi (2021) recognize the lack of providers’ knowledge of “on-demand” as a frequent barrier to 2-1-1 PrEP uptake. Mental health, substance abuse, and stigma are also identified as barriers to 2-1-1 PrEP adherence.

**PrEP Awareness**

Awareness of PrEP stands low among at-risk populations, including Hispanic MSM, PWID, bisexuals, discordant sexual partners, and sex workers in the U.S and other parts of the world. PrEP awareness is critical to PrEP uptake; Sophus and Mitchell (2019) affirm that strategies to increase PrEP awareness are essential to increasing PrEP use. Irrespective of efforts to increase PrEP access and uptake by at-risk individuals, there is still a tremendous unmet demand. Intensifying access within primary care settings can be crucial for increasing PrEP
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implementation. Interventions to scale up PrEP prescription should emphasize provider educational interventions, screening of at-risk populations, and community engagement concerning medication adherence and accessibility to support services.

The extent of PrEP uptake will largely determine the impact or benefits of PrEP on public health for individuals or groups at substantial risk for HIV infection. Despite growth in PrEP uptake and moderate levels of coverage in some cities, notable barriers to enhancing PrEP among at-risk populations remain. In a research study with MSM, Sullivan and Siegler (2018) reveal that lack of enlightenment on PrEP indications (such as STD diagnosis) and lack of risk perception was cited as common reasons for delaying PrEP use when it was recommended. At the same time, women at higher risk of contracting HIV were concerned with costs, stigma and fear of family members’ and providers’ reactions. Costs of PrEP access include time expended seeking medication and cash out-of-pocket (Sullivan, & Siegler, 2018).

Depending on the setting, cost barriers can be handled at the local or national levels. In the State of Florida, for instance, PrEP services are provided at low-or-no cost to people at a higher risk of acquiring HIV. Other than costs, Sullivan and Siegler (2018) state that patients must be able to identify a nearby provider willing to prescribe PrEP; the challenge is that not all clinicians prescribe PrEP medication. Income inequalities in at-risk populations further exacerbate access to clinics that provide PrEP services. In the U.S, Sullivan and Siegler (2018) argue that PrEP clinics were inadequate in counties with a higher proportion of residents living in poverty (lacking medical insurance), identifying as Hispanic or African American. Ironically, the inequalities in PrEP access are happening in the same populations that HIV most impacts
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**Disparities in PrEP**

Recent HIV surveillance data in the U.S. revealed that PrEP coverage was 61.1% for White persons, 13.7% for Hispanic/Latino individuals, and 8.0% for Black individuals (Bonacci, Smith, & Ojikutu, 2021). This data confirms that fewer Hispanic and Black MSM, in contrast to White MSM, had an awareness of PrEP care, had used PrEP, or had discussed PrEP care with their provider. The federal government initiative to end the HIV epidemic is set to prescribe PrEP to $\geq 50\%$ of at-risk individuals by 2025 and attain a 90% reduction in HIV cases by 2030 (Bonacci, Smith, & Ojikutu, 2021). As of 2018, the initiative had only achieved prescription for 18% of the population with an indication for PrEP care in the United States. PrEP use remains highest among gays, bisexuals, and MSM, though need still surpasses prescriptions (Grove et al., 2021).

Black MSM have an HIV acquisition risk of 40% in their lifetime, while Hispanics/Latinos and White MSM present a risk of 20% and 9%, respectively. These disparities are attributed to system racism and structural inequities, existing within a complex network of contemporary and historical structures, norms, policies, and practices. Thus, addressing these root causes of ethnic and racial disparities is essential for the federal government to achieve its initiative of eradicating the HIV epidemic. According to Bonacci, Smith, and Ojikutu (2021), there are significant disparities for women in the U.S., with PrEP regimen coverage at only 9% in contrast with 25.8% for men. These findings are augmented for Black/African American women, who reportedly have 13 times greater rate of new HIV incidences than White women.
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Innovative and practical approaches that overcome barriers are needed to lessen PrEP disparities for Hispanic/Latino and Black communities.

**Stigma Among Hispanic/Latino MSM**

The Hispanic/Latino male who have sex with male (MSM) are greatly disproportionately affected for HIV. (Brook et., 2019). The center for Disease Control and Prevention estimates that the risk of Hispanic who have sex with males is 1:4 the risk of acquiring HIV. Compared to the white MSM rate of 1:11 the risk of HIV. This high risk of HIV among Hispanic MSM rings the alarm to increase the uptake of PrEP among this at-risk population. Although scientific evidence shows rise of PrEP uptake disparity among Hispanic MSM persist. To decrease the disparity the crucial strategy is to facilitate PrEP uptake among all groups that will benefit from it. However multiple barriers among Hispanic/Latino to uptake PrEP; including language barrier, structural factors, racism, homophobia (Gracia et al.2017). In addition, a potential barrier to prep is the social stigma attached to PrEP has been identified as deeply discretionary that marks an individual as socially devaluated (Goffman 2009). Also, PrEP stigma has a negative consequence to PrEP uptake; including poor PrEP medication adherence and discontinuation. (Haire et al.2015). The negative experience of PrEP stigma can affects no only PrEP uptake but also, the individual at risk of HIV reputation and the relationships with family sex partner, friends, and even with primary health care provider. (Brooks et al., 2018)

**Individual and Network-Level Barriers**

Individual and network-level obstacles to PrEP increase include interpersonal factors and intrapersonal characteristics. Some of the interpersonal factors highlighted by Bonacci, Smith,
and Ojikutu (2021) are social interactions and relationships that mediate a person’s likelihood of PrEP uptake. Intrapersonal characteristics include beliefs, attitudes, practices, language, and knowledge related to PrEP and HIV prevention. Limited knowledge about PrEP and lack of awareness concerning its safety and benefits, which are most predominant among Hispanic and Black individuals, obstruct PrEP utilization. Researchers have recognized discordance between the perceived and actual risk of HIV transmission to hinder PrEP uptake for Black women and men. Issues about possible side effects also reduce the willingness to PrEP utilization (Bonacci, Smith, & Ojikutu, 2021).

Additionally, competing priorities with other health needs (psychosocial and physical), employment, shelter, and food could reduce PrEP use. PrEP-related and HIV-related stigma, medical mistrust, heterosexism, and racism, whether experienced or perceived, hinder Hispanic/Latino and Black persons from finding and adhering to PrEP care. Markedly, sexual and social networks may influence PrEP awareness and impose expectations and norms on PrEP use or nonuse.

**Healthcare System-Level Barriers**

Clinician-related and other factors affecting prevention and care are examples of healthcare system-level barriers. Among providers, Bonacci, Smith, and Ojikutu (2021) cite barriers such as sexism, overt racism, stigmatization, transphobia, homophobia, and unconscious bias of individuals with substance abuse problems. Lack of provider knowledge and awareness of PrEP care hinders prescribing. Further, clinicians worry that using PrEP might escalate risk behaviors, and concerns over risk compensation reduce PrEP prescription. Screening for HIV
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infection risk based mainly on individual behaviors could miss at-risk individuals exacerbated by the community- or partner-level factors, especially for heterosexual Black women (Bonacci, Smith, & Ojikutu, 2021). Purview paradox, concerns about which clinical settings are fit to prescribe PrEP, lead to the shortage of PrEP prescribers. Hence, this paradox raises questions about whether HIV specialists (who care for individuals with HIV) or primary care physicians (who see HIV-negative persons) are most suitable to prescribe PrEP medication.

**Structural-Level Barriers**

The policies, systems, societal norms, and practices influencing the PrEP continuum are considered structural-level barriers. Even the availability of PrEP assistance programs, lack of affordable and adequate health insurance and financial barriers limit users’ access to PrEP care. People of color and young people are less likely to have drug coverage, and they are under-insured, indicating that PrEP rollout can further worsen racial inequalities in HIV incidences (Grov et al., 2021). Financial barriers include out-of-pocket costs for laboratory services and PrEP medications; without insurance, a 30-day PrEP could cost around $1,500 in the U.S. (Grove et al., 2021). Similarly, lack of transportation and distance to providers prescribing PrEP delays access to PrEP services. Limited English proficiency and immigration status limit healthcare access and PrEP uptake, particularly for Black and Hispanic immigrant communities.

**Approaches to Promote Equitable PrEP Access and Uptake**

The multi-tiered challenges discussed in this literature review impede equitable delivery of PrEP to the populations most disproportionately impacted by HIV incidences. Undoubtedly, effective approaches and interventions that are culturally responsive, innovative, and sustainable
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need to be implemented to reduce disparities and address challenges. According to Bonacci, Smith, and Ojikutu (2021), addressing the root causes of inequitable PrEP provision and utilization barriers—which include racism and structural inequities—is essential to the realization of attaining a 90% reduction in HIV cases by 2030. Most of the interventions and approaches discussed in past studies were explicitly developed to serve Hispanics/Latinos and Black persons.

**Individual and Network Level**

Bonacci, Smith, and Ojikutu (2021) assert that at the individual and network levels, interventions to promote equitable HIV prevention mainly focus on guiding patients on PrEP adherence, social and peer networks, and mobile health services. Studies in this review show that providing culturally tailored HIV prevention counseling services and having client-centered care coordination effectively increases PrEP uptake. Integrating PrEP navigators in STD clinics and CBOs has proven effective in equitable and fair PrEP use. Peer-led PrEP guidance and PrEP navigation via phone support has resulted in increased scheduled appointments and PrEP initiation. A past study offering PrEP care to Hispanic men along with culturally tailored counseling on HIV reduction revealed that 79% of participants started PrEP uptake, and more results after 6 months reported 64% PrEP adherence. Expanding on that study, the Washington, DC Health Department placed locals as PrEP navigators and screened over 3000 individuals within STI clinics and CBOs, and more than 35% initiated PrEP care. In another study, researchers implemented a PrEP program navigated by peers targeting MSM, heterosexual women, and transgender women, about 90% of participants, initiated PrEP with a persistence of
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70%-80% 3 months later (Bonacci, Smith, & Ojikutu, 2021). Implementers across these care navigation tailored services to promote communication with at-risk communities while addressing their PrEP needs.

**Healthcare System Level**

Approaches to increase PrEP uptake for Hispanic/Latino population emphasize expanding PrEP prescribing clinics to ensure adequate access to PrEP care. Conducting educational outreach to primary care providers in their practice settings has proven to increase primary care provider’s PrEP awareness and prescriptions (Bonacci, Smith, & Ojikutu, 2021). Innovations in PrEP care delivery have led to nurses- and pharmacists-delivered PrEP service programs like the recent programs in Georgia and DeKalb County that implemented a PrEP assessment and prescription protocol by nurses in public clinics. Using a practice protocol that involves collaboration, pharmacists could be allowed to start and manage PrEP care under a physician’s supervision. PrEP programs developed by community pharmacies have successfully delivered PrEP care and reached Hispanic/Latino and African American communities.

Moreover, Bonacci, Smith, & Ojikutu (2021) report that telehealth-based PrEP care can effectively reach populations where time and distance constraints are primary barriers. PrEPTECH telehealth study for young Hispanic and Black MSM found telehealth feasible after reportedly initiating PrEP in 84% of the participants. Another strategy to overcome time and distance barriers to visiting PrEP clinics is to deliver part of PrEP services at home. Though PrEP initiation occurs during a clinic visit, lab specimens and most follow-ups occur at home. Home delivery or prescription mail-order options proved effective in a feasibility study
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created in three U.S cities (Bonacci, Smith, & Ojikutu, 2021). However, the major limitation of this approach is that it excludes homeless populations and risks further exacerbating the existing PrEP disparities, given that homelessness affects Hispanics and Black individuals at disproportionate rates in contrast to Whites. PrEP mobile van outreach illustrates another means to reach disproportionately affected populations. Using a collaboration between a CBO and a multilingual team in Miami, a mobile van outreach program successfully initiated PrEP on 166 of 168 at-risk individuals; most of the candidates were Hispanics/Latinos.

**Structural Level**

Studies in this review uphold that some states have designed PrEP assistance programs to promote PrEP uptake by helping cover medication costs. Moreover, a few states cover laboratory and medical-related costs in the assistance programs. Bonacci, Smith, and Ojikutu (2021) posit that states could increase access to preventive care and PrEP services by expanding insurance coverage. Studies have confirmed increased PrEP provision and uptake in states with expanded Medicaid.

**Improving Access to and Persistence on PrEP**

Inequality to PrEP access can be addressed by developing programs that cater for unequal economic status and geographic locations experiencing long commute times to care. At the same time, seeking interventions that facilitate PrEP access, Sullivan and Siegler (2018) advocate for the extensive implementation of PrEP provision within accessible clinic settings, including primary care, mental health, and reproductive health settings, to avoid PrEP exacerbating health
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Inequalities. Current gaps in PrEP service clinics could be tackled by strategically enrolling providers in underserved regions in the existing accessible structures.

Researchers recognize patients’ persistence in PrEP care as the main feature of the PrEP continuum. Persistence is required for PrEP to have a significant effect on HIV; Sullivan and Siegler (2018) specify that sustaining high PrEP retention will be critical. The interventions to enhance adherence to long-term are complex and entail multiple components, such as reminders, self-monitoring, PrEP education, counselling, and follow-up telephone calls to remind patients of a scheduled visit. The use of multimodal intervention strategies could effectively improve adherence to PrEP care. A multimodal approach to promote PrEP adherence comprises PrEP education that includes the benefits of adherence, developing ways to remember doses when travelling, and delivering feedback on PrEP adherence. Based on recommendations by researchers, education-based approaches for PrEP users could be presented in the form of a brief discussion with a health provider or printed materials. Education is pertinent to PrEP adherence and could focus on providing information about the medication and improving users’ self-perception and understanding of HIV infection risk. Moreover, education-based interventions provide details on the PrEP requirements, possible side effects, and symptoms and signs of acute HIV infection. Educational intervention is less resource intensive and arguably more feasible for PrEP care implementation.

Ways to Increase PrEP Implementation

Improving the implementation of PrEP in primary care requires multilevel interventions to tackle barriers to PrEP rollout. Silapaswan, Krakower, and Mayer (2017) recommend adopting
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Both patients- and provider-level interventions. Currently, efforts to expand PrEP uptake among at-risk populations include improving access to PrEP, encouraging PrEP persistence, integrating PrEP-related services with other medical programs, and developing ways for monitoring PrEP use. A review of health provider interventions to increase PrEP adoption in primary care stressed the significance of community-based organization partnerships and routine HIV screening. Researchers also emphasize proper provider training, cost hindrances placed on patients, and time constraints while conducting standard patient risk assessments.

Studies have also emphasized the importance of improving PrEP use by increasing access, integrating PrEP with other sexual programs, enhancing persistence, and monitoring PrEP uptake. But, researchers have looked into the specific strategies that can effectively increase PrEP awareness and uptake. Sophus and Mitchell (2019) suggest the use of digital media (social media platforms), mass media campaigns, eHealth (healthcare delivered via the internet), and education-based interventions increase PrEP awareness among at-risk populations and result in their potential PrEP uptake. However, research on whether these approaches are proven to increase PrEP awareness in at-risk populations effectively is limited.

Educational Interventions

Research indicates that awareness of PrEP efficacy relates to providers’ willingness to provide PrEP to at-risk populations. According to Silapaswan, Krakower, and Mayer (2017), evidence-based educational programs for providers are necessary to equip them with information on behavioral risk assessments, comprehensive sexual healthcare, PrEP efficacy and safety data,
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and clinical practice guidelines. Education interventions have the possibility to surge the number of providers prescribing PrEP to at-risk persons. Undoubtedly, education interventions will improve the ability of providers to communicate about HIV risk to at-risk populations, including PWID. Healthcare providers need to inform people at risk of contracting HIV about PrEP as an accessible and effective prevention option.

Community Engagement to Optimize Medication Adherence and Individual Knowledge

Other than provider educational interventions, Bazzi et al. (2018) have shown the importance of developing specialized health education, outreach campaigns, and tailored marketing efforts for risky populations. Some notable outreach efforts include brochures distributed through community-based organizations, word of mouth, and advertising that appeals to at-risk populations. Patient-oriented interventions are critical to optimizing PrEP implementation as they can lead to self-directed referrals for starting PrEP medication. This aspect means that educational approaches comprised of PrEP-related information should be directed to men who have sex with men, individuals who inject drugs, and other at-risk populations.

According to Carnevale et al. (2020), community engagement is vital because people are informed about the risk of HIV acquisition. Primary care providers must be aware of local resources, such as community-based organizations, to provide ongoing support for PrEP adherence. Partnership with the community raises awareness and patient linkage to PrEP services by encouraging local agencies and hospitals to work together. Researchers emphasize
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Implementing targeted outreach programs to local communities with utmost risk of HIV infection (Carnevale et al. 2020). This targeted outreach is achievable through close collaboration with the local communities to teach PrEP care and approaches to lower hindrances to PrEP uptake and persistence.

**Improved Screening for Suitable Candidates for PrEP**

The current unmet demand for PrEP necessitates improved approaches to identifying at-risk populations for PrEP within primary care. Most providers may feel uncomfortable discussing HIV risk and sexual behavior with patients, limiting access to PrEP services. Patients eligible for PrEP candidates may not be identified because providers may not routinely conduct sexual risk behavior assessments. Similarly, patients may be uncomfortable discussing their sexual behavior with providers. In one HIV clinic setting, Silapaswan, Krakower, and Mayer (2017) argue that 46% of patients were uneasy discussing their sexual practices with their providers. Risk screening algorithms have been developed to detect patient candidates for PrEP through patient-reported behaviors that produce estimates of HIV risk. Through increased routine data gathering, providers in HIV clinics and primary care should be able to identify suitable candidates for PrEP care. Incorporating PrEP programs with comprehensive sexual health services via technology-based approaches or clinic-based programs provides opportunities to screen and identify PrEP candidates and strengthen linkages to PrEP care. After prescribing PrEP to at-risk people, reducing barriers to persistence and adherence to PrEP is fundamental to gaining the most population benefits (Sullivan, & Siegler, 2018).
Silapaswan, Krakower, and Mayer (2017) assert that it would be necessary for the U.S healthcare system to incentivize primary care providers to administer routine HIV risk evaluations and to lead the provision of PrEP as part of value-based care. Effective care coordination improves behavioral risk assessment and PrEP adherence counseling, among other health-related services. Though providers face challenges in coordinating and providing PrEP, primary care providers have the opportunity to talk about PrEP-related services in the context of overall health. Moreover, primary care settings have the infrastructure to deliver coordinated longitudinal care required for PrEP implementation to individuals at a higher risk of contracting HIV. Primary care providers are well-trained to provide holistic care and shared decision-making with patients, and they are ideal for increasing PrEP uptake. The use of bidirectional communication can help to identify the root causes of HIV risk behaviors such as substance abuse, depression, discrimination, and stigma (Silapaswan, Krakower, & Mayer, 2017).

Getting PrEP to at-risk Hispanic male who have sex with male will necessitate a coordinated, multi-sectoral response. Systems to monitor PrEP uptake are needed to follow up on progress and identify underserved communities and groups (Sullivan & Siegler, 2018). When a person at high risk for contracting HIV visits the clinic and shows interest in commencing PrEP, Carnevale et al. (2020) point out that there is an immediate opportunity for the provider to intervene and engage the patient. Other studies have demonstrated that using peer navigators and
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PrEP counselors contributes to the success of the HIV prevention program and leads to more PrEP referrals (Silapaswan, Krakower, & Mayer, 2017).

Chapter III: Purpose, PICO Clinical Question, and Objectives

Purpose:
Increase utilization of PrEP uptake and services among Hispanics males who have sex with male by increasing awareness, knowledge and willingness to prescribe PrEP of primary care providers. The Hispanic MSM awareness and education about PrEP and primary care providers knowledge and confidence in prescribing PrEP following PrEP guidelines and protocols will halt the HIV pandemic. The Quality Improvement project will support the integration of PrEP by providing education to providers about PrEP thus increasing access to it. By addressing Hispanic MSM and primary care providers barriers related to PrEP uptake this qualitative improvement project will decreases new HIV infections in the Hispanic community.

The purpose of this Quality Improvement Project is to provide an educational training that address barriers to Hispanic males who have sex with males and primary care providers to increases awareness and knowledge about PrEP to increase the willingness of primary care providers to prescribe PrEP and reduce the HIV infection among this vulnerable population.

Primary care providers unwillingness to prescribe PrEP, and multiple other factors are affecting care and prevention of HIV among Hispanic males who have sex with males. Some of the barriers are poor education and low awareness of PrEP of the at-risk population, primary care providers lack of knowledge of guidelines and protocols. (Bonacci, Smith & Ojikutu, 2021).
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Other factors affecting PrEP uptake are racism, stigmatization, unconscious bias of the primary care providers and substance abuse problems, (Bonacci, Smith & Ojikutu, 2021). Low or lack of PrEP knowledge and awareness of it; hinders prescribing PrEP among Hispanic males at risk of HIV. Furthermore, some primary care providers are afraid that using PrEP might increases the risk behaviors, and due to that concern PrEP prescription is reduced. Thus, the individual at risk of HIV missed the chance to uptake PrEP and prevent HIV. Bonacci, Smith & Ojikutu, 2021). The health care providers community has a Purview Paradox, this contradiction in which the primary care provider think pre-exposure prophylaxis is beyond their scope, and an experienced HIV Specialist /Infectious Diseases Provider who cares for HIV positive individuals; or Primary Care Providers who care for HIV negative population. There is the Purvie-Pardox. In the context of being a health care provider any one should be together to halt the HIV pandemic. Furthermore, primary care providers are providers that care for HIV negative individuals, thus primary care providers must have the awareness and education of PrEP guidelines and protocols to prescribe PrEP to this vulnerable population.

**Project Question**

**PICO Clinical Question**

Will education/ training interventions implementation will address primary care providers PrEP prescribing; such as lack of knowledge, awareness, clinical practice, comfort with screening, attitude toward PrEP and confidence in prescribing PrEP, increases their willing to prescribe PrEP among Hispanic Men at Higher Risk for HIV.

**Objectives**
The Quality Improvement Objectives are:

In the time-frame of the DNP Quality Improvement Project

1- Will develop an educational program utilizing multiple resources including evidence-based data from Center for Diseases Control and Prevention guidelines and protocols to educate primary care providers about PrEP. Education must include training to decrease barriers affecting the uptake of PrEP among Hispanic MSM including low or not awareness, language, stigma, undocumented status, mistrust, problem discussing sex health, providers bias.

2- Evaluate primary care providers pre -education intervention by conduction a12-15 questions to evaluate cultural competency associated with Hispanic male who have sex with male, PrEP awareness, comfort when assessing at Risk for HIV Hispanic males.

3- Evaluate primary care providers pre - and post - survey to assess knowledge of PrEP guidelines, and protocols, and awareness.

4- Educate at least 10 primary health care providers in the Hispanic Community by delivering a voice over power point educational training electronically, online resources from the Center for Disease Control and Prevention for Pre -Exposure Prophylaxis to increases awareness and knowledge about PrEP.

Chapter IV: Definition of Terms

The following definitions are the most important terminology used in this Quality Improvement Project:
Improving Pre-Exposure Prophylaxis Uptake as an HIV Prevention Strategy

HIV, Stigma, PrEP, MSM, Truvada, Descovy, Apretude.

1- HIV (*Human immunodeficiency Virus*) It is a virus that attack immune body’s immune system. There is not currently cure for it however there is treatment that can keep the virus under control. If HIV is left with not treatment it can lead to AIDS (Acquired immune-deficiency syndrome) Once people acquired HIV, they have it for life. People who acquired HIV can live long and healthy lives if they have appropriate and effective HIV treatment.

2- PrEP /HIV Stigma It is a negative beliefs and attitude toward people with HIV and seeking PrEP. It is a prejudice that label people or individual as part of a group or community that is believed to be socially unacceptable

3- PrEP (*Pre-Exposure Prophylaxis*) Is a preventive measure used to reduce the risk of acquiring HIV. It is a medicine that reduces the chances of acquiring HIV from sex or injection drug use. When PrEP is taken as prescribed it is highly effective for preventing HIV

4- MSM Men who have sex with men

5-Truvada Brand Name Truvada (tru va duh) Generic name: tenofovir disoproxil fumarate 200 mg and emtricitabine. 300 mg.

It is one of several medications that are currently used to treat human immunodeficiency virus (HIV) and hepatitis B virus infection. Also, Truvada is used to prevent HIV infection, and it is referred as “pre-exposure prophylaxis” or “PrEP”.

How does Truvada (PrEP) help prevent HIV infection?

The two medications that make up Truvada (tenofovir and emtricitabine) block important pathways that viruses use to set up infection. If taken Truvada as PrEP daily, the presence of the
medication in your bloodstream can sometimes stop the virus from establishing itself and slow the spread of HIV in your body.

**6- Descovy Brand Name.** Tenofovir Alafenamide 200 mg and Emtricitabine 25 mg. It is one of medication used to lower the risk of acquiring HIV through sex. It is the smallest tablet for PrEP. Descovy is not for everyone. Because there is not research and studies about the effectiveness of Descovy in people assigned female at birth and is at risk of acquiring HIV through vaginal sex; it cannot be prescribed to them.

**7- Apretude - Generic Name** Cabotegravir 200 mg extended-release injectable suspension for PrEP. It is the only injectable approved medication approved for PrEP for people at risk of HIV through sex, and weight at least 77 pounds. (35 kg). It is given every other month by the health care provider. At the beginning it is given one injection intra-muscular one time every month for two months, then once every two months. Apretude is a long-acting medicine and might stay in your body for longer than 12 months after the last injection.

**Chapter V**

**Theoretical Framework of the Project**

The quality improvement project implementation will be supported by Awareness to adherence Model. The Awareness to Adherence Model stated that compliance with clinical practice guidelines must follow multiple cognitive, sequential and behavioral steps. The steps including **Awareness:** Which is the primary care provider awareness and knowledge of the current PrEP
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guidelines and protocol, and agreement furthermore, constitutes a primary care provider’s acceptance, adoption, and adherence to the guidelines, and protocol. (Fleming et al., 2020). The last step is progression, in this step primary care provider must overcome barriers to adoption and adherence to the guidelines and protocols.

The model proposed by Patmath et al. (1996) will be applicable to the Hispanic MSM who also become aware of PrEP and learn about the benefits and side effects of PrEP. The individual at risk of HIV must agree to initiate the uptake of PrEP and commit to adhere to the daily intake of the oral medication or the bimonthly injection.

The United State Department of Health and Human Services (U.S HHS) in 2019 released a plan for Ending the HIV Epidemic in USA. One of the strategies is to increase PrEP use as a critical component. However, efforts to increase PrEP uptake should target adequate adherence. According to USHHS (2019), males who have sex with males, and more than four doses of Truvada or Descovoy per week shown to decreases the risk of acquiring HIV by 90%. According to Nunn et al. (2017) the current level of adherence among PrEP user in unknown and long-term adherence and persistence it a challenge for minorities population due to multiple barriers including knowledge about the benefits of PrEP adherence to prevent HIV. Many individuals at risk of HIV align PrEP with a seasonal risk due to it is not life-long use. Individual changed their risk perception and behaviors.

Education intervention is needed to increase PrEP uptake while promoting high level of commitment to adherence and persistence among Hispanic MSM and all those at risk of acquiring HIV. Individual counseling about PrEP benefits and side effects, importance of
adherence to prevent HIV. Individual at risk of HIV can improve adherence by increasing their knowledge of PrEP efficacy and perceived benefits.

Other factors affecting adherence to PrEP among population at risk are socio-economically, stigma, poor decision making, unable to keep dosing regimen, side effects and low perception of their risk of HIV. Furthermore, PrEP should be prescribed and delivery with a holistic approach, recognizing other needs of the Hispanic MSM including language barrier, immigration status. Finally, the effectiveness of oral or injectable PrEP will depend on the individual adherence, witch at the same time is influence by their knowledge of PrEP and their perceive benefits.

Chapter VI: Methodology

Study Design
This qualitative improvement project targeted two groups including Hispanic male who have sex with male and primary care providers. In collaboration with my mentor, the participants was made aware of the purpose of the improvement project and the method that will be used to improve primary care providers knowledge about PrEP and PrEP guidelines and protocols and the responsibility of the primary care providers in educating and making Hispanic MSM of the benefits of PrEP. The target primary care providers received an educational training about PrEP. Furthermore, the indirect however, the most important population Hispanics MSM at risk of HIV. In addition, the privacy of the primary care providers participating in the quality improvement project was maintained confidential, except to DNP student and project team.
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The qualitative improvement project was aim to increases uptake and prescription of PrEP among Hispanic males who have sex with males, by increasing primary care providers knowledge and to become confidence in prescribing PrEP following CDC guidelines and protocols. This project seeks to support the integration of PrEP into the primary care clinical setting furthermore, increasing the access of PrEP among this vulnerable population. By addressing one of the most important barriers of primary care providers related to PrEP, this quality improvement project contributed to halt the HIV epidemic in the Hispanic community.

Setting

The quality improvement project Improving Pre- Exposure Prophylaxis (PrEP) Uptake as an HIV Prevention Strategy Among Higher Risk Hispanic Men, increased PrEP uptake among Hispanic males by providing education training via power point/ zoom at primary care providers who serve vulnerable population at risk of acquiring HIV including Hispanic male who have sex with male. The educational training about PrEP following CDC guidelines and protocol was delivery to healthcare provider serving in South Florida including Miami Dade and Broward Counties in a primary care clinical setting. This quality improvement project was tailored to meet the needs of the Hispanic community; especially the Hispanic MSM community. It also, improved the prevention of HIV by increasing PrEP prescription.

Sample

The quality improvement project Improving Pre-Exposure Prophylaxis (PrEP) Uptake as an HIV Prevention Strategy Among Higher Risk Hispanic Men mainly targeted Hispanic male
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with male who have sex with male. However, utilized primary care providers to deliver the educational intervention.

**Intervention**

The Quality Improvement Project involved the uptake of PrEP services among Hispanic males at risk of HIV, and educational training of primary care providers on PrEP prescription and patient follow-up. Approximately 12 primary care providers received an online Power Point educational training. This video power point delivered information based on CDC guidelines and protocol to address the barriers that prevent primary care providers to prescribe PrEP to the Hispanic males who have sex with male. An online pre and post survey to evaluate knowledge and awareness of PrEP.

**Instruments**

The instrument utilized was a survey tool about PrEP clinical knowledge, comfort, attitude and familiarity with PrEP of the primary care providers. The pre-survey had 12-15 items that was compiled from an already survey instrument and few items from the CDC’s PrEP clinical guidelines. A brief information sheet explaining the quality improvement project. The survey is expected to take about 10-15 minutes to complete and was available online. After the survey is completed and the Power Point educational training delivered; then a post-survey-questions remained followed.

**Data Collection Procedure**

The data collected from the pre- post surveys was stored in Qualtrics.com. The data generated and reported allowed to analyze data from the surveys. The information from the surveys was
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keep confidential and protected, except from the project mentor, principal investigator, and DNP student, and authorized Florida International University that may request access to collected data. The pre- and post- survey questionaries was used to evaluate the knowledge and awareness of PrEP using open ended questions. (Appendix A). The survey ensured the core competence of the primary care providers to educate Hispanic MSM and other vulnerable population. The communication did take care via emails, and provide detailed information about the quality improvement project process. Before the educational training was delivery; a link from Qualtrics.com to answer the pre- survey questionary was send to the participants. Then the Power Point educational training was emailed to the professional emails. After the educational intervention is done; another link from Qualtrics.com was delivery with the post educational training intervention. The educational training was delivery to all participants.

Ethics/Human Subjects Protection

Ethical considerations involved in the quality improvement project include protection of human rights, patient privacy and confidentiality. According to Florida International University policies anyone involve in any research must complete the Collaborative Training Initiative (CITI) educational program according to the type of research is been conducting. This quality improvement project did not involved any risk neither psychological, physical economically or negatively affect the target populations. The participation of the primary care providers in the quality improvement project was voluntary.

Chapter VII: Results
A careful review of updated literature helped this DNP student to identify the multiple barriers to PrEP uptake among Hispanic males at risk of HIV acquisition. The main barrier affecting PrEP prescription is the poor/lack of knowledge among primary care providers (PCPs). Pre-Exposure Prophylaxis knowledge among primary care providers (PCP) was initially assessed using the instrument pre-survey-test.

This DNP student found a low percentage of knowledge about PrEP among PCP. Eleven participants responded to the pre-test survey. All participants were included in the one-hour power point training because the PrEP knowledge was less than fifty percent. Of those eleven participants, ten (90.9%) were female, and one was male (9%). Other genders were not included. The pre-test - survey revealed poor PrEP knowledge, PrEP guidelines, and policies among participants.

To address the knowledge barrier about PrEP knowledge, guidelines, and protocols, an educational PowerPoint training was developed under the supervision of the quality improvement project investigators.

An hour-long-voice Power-Point Educational Training was delivered to the participants. The PowerPoint addressed the basic knowledge about PrEP, PrEP-guidelines, and protocol. After the educational training was delivered, a post-survey test was delivered.

The educational training intervention successfully increased the knowledge and awareness of Primary Care Providers about PrEP, thus increasing education, awareness, and uptake of PrEP among Hispanic males at risk of HIV. Ongoing education and updating of PrEP guidelines are vital to increase the uptake of PrEP among Hispanic males at risk of HIV and further halt the
HIV epidemic. However, most essential to prevent HIV in vulnerable populations such as Hispanic males who have sex with males.

Although, the results of the educational training were successful, as shown in the increase of the correct answers in measures in the post-survey/test which increased to from 36% to 81%. This result suggests that primary care providers are willing to learn about PrEP guidelines and protocols and prescribe PrEP. *(Figure 1).*

Furthermore, formal education training, which includes PrEP education as mandatory for license renewal courses, should be included to make every healthcare provider aware of PrEP, thus being able to educate vulnerable communities.

*Figure 1. Pre and Post Test Score Comparison*
Improving Pre-Exposure Prophylaxis Uptake as an HIV Prevention Strategy

After the pre-survey test and post-survey test was completed, a paired t-test was performed. The two tails P value equals 0.1178. The SD of differences is 3.55732279, considering significant differences between the two groups. *(Figure 2).*

However, the effect size is medium, so the magnitude of the difference between the average of the differences and the expected average of the differences is medium.

**t-Test Results**

![t-Test Results](image)

*Figure 2. Paired t-Test results*  
1: Pre-Test  2: Post Test

The Quality Improvement project shows that education about PrEP is crucial to increasing PrEP uptake and prescription. Mandatory training programs could be an efficient method to increase PrEP uptake and prescription.

**Chapter VIII: Discussion**
Improving Pre-Exposure Prophylaxis Uptake as an HIV Prevention Strategy

Since 2012 the Food and Drug Administration has approved three safe drugs for HIV prevention. Truvada in 2012, Descovy in 2019, and Apretude the injectable version to prevent HIV and halt the HIV pandemic. (Rao. et al. 2022) Although there are three approved drugs to use as Pre-Exposure Prophylaxis (PrEP), the uptake among individuals at risk of HIV remains low among at-risk populations, including Hispanic at risk of HIV. This quality improvement project identified barriers to PrEP uptake. One significant barrier is the poor knowledge and awareness of the primary care providers (PCP) in the primary care clinical setting serving a Hispanic population at risk, including Hispanic males with sex with males. Patients want to have a trusting relationship with their healthcare provider, and crucial is the individual's trust to discuss sexual health and high risk-behaviors that place them at risk of HIV. PCPs' poor knowledge and unawareness of PrEP will miss the opportunity to increase PrEP uptake among Hispanic males at risk of HIV. The project demonstrated that increasing PrEP knowledge and awareness of PrEP among PCP will increase the uptake of PrEP among Hispanic males at risk of HIV. Furthermore, help to halt the HIV pandemic.

The results of the project implementation clearly show that healthcare providers are willing to prescribe PrEP to a risk population, such as Hispanic males at risk of HIV, if they get the appropriate training. Providers were randomly selected, and a pre-survey/test about PrEP showed poor knowledge and awareness of PrEP. The training was provided self-education via PowerPoint. However, classroom training that provides PrEP training certification could be recommended. Although the PowerPoint lasts about 60-70 minutes, addressing the basics of PrEP. More comprehensive and extended training addresses integrating the primary care PrEP
Improving Pre-Exposure Prophylaxis Uptake as an HIV Prevention Strategy

and sexual minority culturally competent history as a single visit. This approach could make open communication easy for educating healthcare providers about PrEP. Pre-Exposure Prophylaxis training, awareness, and prescription of PrEP to any individual at risk of HIV are essential to address the knowledge gap and to halt the HIV pandemic.

Approximately less than 40% knowledge about PrEP among PCP was found after the participants responded to the pre-test survey. Of the participants that responded the Pre-Survey ten (90.9%) were female, and one was male (9%). Other genders were not included. The pre-test - survey revealed poor PrEP knowledge, PrEP guidelines, and policies among participants. The results of the educational training were successful, as shown in the increase of the correct answers in measures in the post-survey/test which increased to from 36% to 81%.

Although the educational training was successful, the effect sizes is medium. The difference between the average of the differences and the expected average of the differences is medium. So it will make a significant difference if the education become massive and in multiple training methods.

Chapter IX: Limitations

The project has a few limitations, and the first and most important limitation of this project was the sample size. The sample size (n=11) is a setback that interferes with the project results. The validity and generalizability of the project cannot be accurate due to the small
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sample. Another limitation could be the time frame to answer the pre-and post-surveys/tests. Also, the length of PowerPoint Training might be too long extended.

Another limitation that significantly impacted this quality improvement project is time constraint, primary care providers are busy healthcare providers, and new visits that include sexual health and assessment for HIV risk place extra stress on healthcare providers and individuals. Because it is a new assessment that, in the beginning, will take longer time than the general consultation, once the project is well implemented and primary care providers continue moving on with PrEP as HIV prevention, and the risk assessment is integrated as part of the visit will be easier. However, in the beginning, it is a limitation of the project. The last limitation identified was that the Pre-Survey/Test Post Survey/Test was primarily answered by female healthcare providers. Only one male health care provider answered the Pre- and Post-survey/test, which bring a new question. Are female health-care providers more willing to learn about PrEP than male healthcare providers?

*Figure 4*

![Pre-Post Survey Test Demmographics](image)

*Figure 4: Male -Blue  Female- Orange*
Chapter X: Implication for Advanced Practice Nursing

To increase Pre-Exposure Prophylaxis (PrEP) access among Hispanic males at risk of HIV, educational training based on CDC guidelines and protocol will support advanced registered nurse practitioners working in the primary care setting to progress from awareness of PrEP-to-PrEP prescription (Rao et al., 2022). Participation of advanced nurse practitioners in the initiative "Ending the HIV Epidemic in the U.S. [EHE], (CDC2019) is crucial to reduce new HIV infections by 90% by the year 2030. Advanced nurse practitioners working in the primary care clinical setting are in a vital position to initiate HIV prevention strategy, including PrEP in Hispanic males at risk of acquiring HIV. The CDC (2019) recommended community-driven strategies to balance the advances in HIV prevention and to reduce the racial and ethnic disparities that contributed to the prevention of HIV. An important strategy that must be addressed to prevent HIV among Hispanic males at risk is the awareness and knowledge gaps through educational training of primary care providers, including advanced practice registered nurses, to increase the access of PrEP to the most vulnerable at risk of HIV.

Although there is no standardized education PrEP program, educational training like the one presented in this DNP project covers the essential information to initiate PrEP for at-risk Hispanic individuals. Also, the training is based on the CDC guidelines and protocols. Increasing the uptake of PrEP among Hispanic males at risk of HIV requires an educational program for primary care providers, including advanced practice nurses must be provided. This educational
Improving Pre-Exposure Prophylaxis Uptake as an HIV Prevention Strategy

training increases the PrEP knowledge among participants. Moreover, Advanced Nurse Registered Nurses are in a critical position to halt the HIV epidemic in the USA.

Initiating and continuing PrEP in the primary care setting is crucial to care for the most vulnerable population. Furthermore, the future of PrEP definitely will be in the advanced practice registered nurses' hands to stop the HIV pandemic. Nurse practitioners are positioned to lower the barriers to effective prevention of HIV, adherence to PrEP medication, and reducing additional HIV infections. Advanced Practice Registered Nurse plays a vital role in assessing and educating the population at risk of HIV and prescribing PrEP to those at risk. The scope of practice of the advanced registered nurse practitioner allows them to be an active educator and promote PrEP as an HIV prevention.

Nursing could advance in a giant step if HIV prevention education is in the nurse practitioner curriculum. A new generation of advanced practice registered nurses will graduate with the basic knowledge to prescribe PrEP in their practice.
Chapter XI: Conclusion

The quality improvement project addressed the lack/poor knowledge about PrEP affecting primary care providers (PCPs) and Hispanic males at risk of acquiring HIV. This lack of knowledge and unawareness of HIV Pre-Exposure Prophylaxis (PrEP) are tremendously affecting the uptake of PrEP among Hispanic males at risk of HIV.

The model used to provide awareness and educational training was supported by Awareness to Adherence Model. The Awareness to Adherence Model states that compliance with clinical practice guidelines must follow multiple cognitive, sequential, and behavioral steps. The project implementation addressed the importance of the PCPs in improving awareness and knowledge of PrEP and CDC clinical guidelines to increase the prescription of PrEP to Hispanic males who have sex with males and are at risk of acquiring HIV.

As a result of this Quality Improvement educational training implementation, the PCPs became knowledgeable and increased their awareness about PrEP, CDC guidelines, and the standard of care to initiate PrEP. They were, furthermore, able to educate, screen for the risk of HIV, and prescribe PrEP to Hispanic males and anyone at risk of acquiring HIV.

Ongoing PrEP clinical education and new strategies focusing on primary care providers must be vital in decreasing and eradicating the HIV epidemic. Also, crucial to focus on education and make aware of how important it is to assess the risk of HIV infection in a vulnerable population, including Hispanic males who have sex with males. The implementation of the Quality Improvement Project brings positive results and also brings more questions for further research.
Implementing the Quality Improvement project was done by sending a pre-test, an educational training, and post-test about PrEP to anonymous emails picked randomly from public sources. The surveys asked for demographics. Only one male participant answered the pre-test/survey and post-test/survey.

**Chapter XII: References**


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and related intervention needs among people who inject drugs. *Harm reduction journal, 15*(1), 1-12.


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https://www.cdc.gov/hiv/group/hiv-ida.html


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Chapter XIII: Appendices

Appendix A: IRB Approval Letter
IMPROVING PRE-EXPOSURE PROPHYLAXIS UPTAKE AS AN HIV PREVENTION STRATEGY

MEMORANDUM

To: Dr. Eric Fenkl
CC: Ivania Castillo-Morris
From: Carrie Bassols, BA, IRB Coordinator
Date: March 2, 2023

Proposal Title: “Improving Pre-Exposure Prophylaxis (PrEP) Uptake as a Prevention Strategy Among Hispanic Men at Higher Risk for HIV”

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the Exempt Review process.

IRB Protocol Exemption #: IRB-23-0075    IRB Exemption Date: 03/02/23
TOPAZ Reference #: 112668

As a requirement of IRB Exemption you are required to:

1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
3) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

Special Conditions: N/A

For further information, you may visit the IRB website at http://research.fiu.edu/irb.
Appendix B: Recruitment Letter

Recruitment Letter

Recruitment Email letter for Improving Pre-Exposure Prophylaxis (PrEP) Uptake as an HIV Prevention Strategy Among Higher Risk Hispanic Men: A Quality Improving Project

Dear Health Care Provider,

My name is Ivania G Castillo-Morris; I am a student in the Graduate Nursing DNP program at Florida International University; and I am inviting you to volunteer and participate in my Doctor of Nursing Practice Quality Improving Project. The goal of my project is to increase the utilization of Pre-Exposure Prophylaxis (PrEP) uptake among Hispanic males who have sex with males and are at risk of HIV by increasing knowledge of PrEP among Primary Care Providers. As a Primary Care Provider, you can participate in this project by answering the Qualtrics Questionnaire before and after delivering the educational Training about PrEP Guidelines and Protocols.

Before delivering the educational training about PrEP, you will answer a Pre-Test questionnaire, which is expected to take 10-15 minutes. Then, you will be asked to view about 60-75 minutes of educational voice-over PowerPoint-academic training about PrEP online.

After completing the online educational training about PrEP, you will be asked to complete the post-test questionnaire, which is expected to take approximately 10-15 minutes. Please remember that this is voluntary participation. You decide to participate or not.

Please click on the link provided to participate in this volunteer education training (Qualtrics Questionnaire).

If you have any questions about the project, don't hesitate to contact me via email at icast059@fiu.edu or 305 905 1956.
Appendix C: Pre-Test-Post test

Introduction:

The questionnaire is crucial part of my DNP Quality Improvement Project, which the goal is to Improve Pre-Exposure Prophylaxis (PrEP) Uptake as an HIV prevention among Hispanic males at risk of HIV by improving primary care providers knowledge about PrEP. Your responses will help to decreases the gap of PrEP uptake among Hispanic men at risk of HIV.

The following questionnaire will be utilized to evaluate practitioners’ knowledge, awareness, and attitudes toward PrEP. Kindly respond to the questions as truthfully as possible. The information provided will be confidential. (Check all that applies)

When answering the questions

- Please do not write any personal information
The answers are anonymous and will be kept confidential

The participation is voluntary

**Demographic:**

Gender: Female____ Male____

Age: 30-40 yrs.____ 40-50 yrs.____ >60 yrs.____

How long have you been a primary care provider? _______________

Race: White____ Black____

Ethnicity: Hispanic ____ Haitian____ Caucasian ____ Asian____ Other____

**PrEP Knowledge Survey**

1.) Does your practice serve a substantial population of any of the following groups

   *(Check all that applies)*

   a) Hispanic MSM, bisexual, transgender communities. ☐

   b) Hispanic people who inject drugs ☐

   c) Hispanic sex workers and their clients ☐

   d) Hispanic heterosexual men and women ☐

2.) How comfortable do feel discussing sexuality and sexual risks behavior with patients, including Hispanic MSM?

   a) Very comfortable ☐
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b) Comfortable

c) Neither comfortable nor comfortable

b) Uncomfortable

3.) Do you conduct routine screening for HIV infections?

a) Yes

b) No

4.) Do you routinely conduct routine HIV screening for all those whose seek treatment for sexually transmitted infections?

a) Yes

b) No

5.) How often do you ask patients about the sexual activities in the past 12 months?

a) Every time

b) Occasionally/Sometimes

c) Never

6.) Have you ever been asked information about PrEP by a patient?

a) Yes

b) No

7.) How many times have you prescribed HIV-PrEP in the past 12 months?

a) Never

b) 1-5
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c) 6-10

d) >1

8.) Are you aware of the current CDC guidelines on PrEP prescribing?

a) No Familiar

b) Somewhat familiar

c) Very familiar

9.) How would you describe your current knowledge of PrEP?

a) Not familiar

b) Somewhat familiar

c) Very familiar

10.) Do you support routine use of PrEP for at risk populations?

a) Yes

b) No

11.) What is your preferred learning method for Pre-Exposure Prophylaxis?

a) Online Power Point Academic Training

b) Peer-reviewed journals

c) Website
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d) CME/CE

e) Brochure

12.) How often do you encourage HIV testing among patients at high-risk for HIV?

a) Always

b) Sometimes

c) Never

Post-Test Knowledge Survey

1. What is pre-exposure prophylaxis (PrEP)?

a) PrEP is the use of anti-retrovirus (ARVs) by people who are HIV negative to prevent acquiring HIV before exposure to the virus.

b) PrEP is the use of ARVs by people who are HIV positive to prevent acquiring HIV before exposure to the virus.

c) PrEP is the use of ARVs by people who are HIV negative to prevent acquiring HIV after exposure to the virus.

2. PrEP should be started one week before HIV exposure in cisgender man and three weeks in Cisgender Female

a) True

b) False

3. PrEP provides HIV prevention and should be used concurrently with condoms to prevent other STIs.
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4. Vulnerable populations targeted for PrEP include:
   a) Hispanic males at risk of HIV
   b) Males who have sex with male
   c) Sex worker
   d) People who inject drugs (PWID)
   e) Heterosexual males or females in a Discordant Sexual Partnership
   f) All the above

5. PrEP efficacy depends on commitment and adherence
   a) True
   b) False

6. All the following could be a side effects associated with PrEP except:
   a) Nausea, Vomiting, abdominal pain
   b) Bleeding
   c) Creatinine elevation
   d) Loss of bone mineral density

7. To initiate PrEP care, a patient must:
   a) Be HIV Seronegative
   b) Be at high-risk for HIV
   c) Have an eGFR > 60 ml/min for Truvada and > 30 ml/min for Descovy
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d) Be committed to take PrEP as prescribed
e) All the above

8. HIV testing is required before prescribing PrEP.
   a) True
   b) False

9. When offering PrEP, to a risk of acquiring HIV individual; a PCP must be sensitive, supportive, and nonjudgmental.
   a) True
   b) False

10. HIV risk screening questions should address patients’ behavior rather than their sexual identity.
    a) True
    b) False

11. A PCP should recommend PrEP if a client:
    a) Had sex with more than one partner
    b) Had sex with a person who has HIV
    c) Had sex with people whose HIV status you do not know
    d) Has history of another STIs
    e) All the above

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13. Initial PrEP visit should not include testing for hepatitis B,C virus (HBV) (HCV)
   a) True
   b) False

14. Patients using PrEP should visit their healthcare providers:
   a) A month after initiating PrEP
   b) Every 3 months thereafter
   c) All the above

15. Patients’ HIV risk should be assessed during every visit.
   a) True
   b) False

16. PrEP can’t be used with drugs and alcohol.
   a) True
   b) False
### Appendix: D

#### Table of Evidences

<table>
<thead>
<tr>
<th>Sources</th>
<th>Purpose/Problem</th>
<th>Study Design</th>
<th>Sample</th>
<th>Strengths/Weaknesses</th>
<th>Methodology of data collection</th>
<th>Outcomes Reported</th>
<th>Resources Determining Level of Evidence</th>
<th>Level of Evidence</th>
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<tbody>
<tr>
<td>Alzate-Duque et al. (2009)</td>
<td>Train clinicians best practices in prescribing PrEP to Spanish Speaking MSM</td>
<td>Survey Research</td>
<td>18 participants</td>
<td>Strength: Medical Spanish modules may help to deliver equitable equitable care Weakness: The workshop fails to address skills acquisition. Besides, it does not assess ability to apply the content while engaging with Spanish-speaking MSM</td>
<td>Focus groups</td>
<td>Improved participants’ comfort and confidence in discussing sexual health and PrEP care. Improved culturally informed communication skills among participants</td>
<td>AAMC</td>
<td>Level IV</td>
</tr>
<tr>
<td>Bazzi et al. (2018)</td>
<td>Improve PrEP uptake among PWID via specialized marketing and outreach efforts</td>
<td>Qualitative Study</td>
<td>33 participants</td>
<td>Strength: links findings to study objectives Weakness: Findings may not generalize to other geographic areas such as rural Weaknesses: no inclusion and exclusion criteria</td>
<td>in-depth, semistructured Interviews</td>
<td>-Low PrEP knowledge and misperceptions concerning its use -Low perceived HIV risk amongst PWID -Improving clinicians knowledge, willingness, and comfort can increase PrEP uptake among PWID</td>
<td>CDC</td>
<td>Level I</td>
</tr>
<tr>
<td>Bazzi et al. (2017)</td>
<td>Explore serodiscordant couple relationships and the contextual factors, perceptions, and decision making process about PrEP for safer conception</td>
<td>Qualitative Study</td>
<td>6 Couples</td>
<td>Strength: Provides unique implications for enhancing serodiscordant couples’ health in the U.S. Findings include ways to reduce HIV stigma, promote PrEP awareness in this group Weaknesses: Study focused on a single recruitment site. - Small qualitative nature, mainly foreign-born couples.</td>
<td>Qualitative interviews</td>
<td>Broader social contexts and relationship dynamics influences serodiscordant couples' PrEP uptake. Disapproval of serodiscordant couples and HIV stigma led to social isolation</td>
<td>UNAIDS</td>
<td>Level I</td>
</tr>
<tr>
<td>Biello et al. (2018)</td>
<td>Explore PrEP acceptance and perceived barriers to PrEP uptake</td>
<td>Qualitative Research Study</td>
<td>33 Participants 12 key-Informants</td>
<td>Strengths: Provides evidence-based strategies to address multilevel PrEP uptake barriers among PWID. Weakness: limited to two urban centers and may not generalize non-urban</td>
<td>Qualitative, semi-structured interviews</td>
<td>High interest in PrEP, but multilevel barriers hinder PrEP access and use</td>
<td>CDC</td>
<td>Level I</td>
</tr>
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<table>
<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Sample Size</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonacci et al. (2021)</td>
<td>Systematic Review of Existing Literature</td>
<td>113 articles</td>
<td>Strengths: Comprehensive and exhaustive review of available data on PrEP among Blacks and Hispanics. Weakness: Potentially relevant studies could have been missed in the review, and possibility of bias.</td>
<td>Provides innovative and collaborative interventions to address barriers at individual, network, and structural levels.</td>
</tr>
<tr>
<td>Caba et al. (2022)</td>
<td>Cross-sectional Study</td>
<td>820 Participants</td>
<td>Strengths: findings support research objectives. Weaknesses: Data used was collected from a cross-sectional, nonprobability sample. Thus, findings cannot be generalized to all Latinos and Black SMMGD especially those not in social media.</td>
<td>CDC National Survey Data</td>
</tr>
<tr>
<td>Camp &amp; Saberi (2021)</td>
<td>Cross-sectional Study</td>
<td>140 Participants</td>
<td>Strengths: Study findings endorse results from other studies. Weakness: Sampling bias is probable.</td>
<td>WHO US Public Health Service</td>
</tr>
<tr>
<td>Carnevale et al. (2020)</td>
<td>Cohort Study</td>
<td>1181 participants</td>
<td>Strengths: Study links objectives to findings Weaknesses: Lack of program reproducibility in more clinical settings.</td>
<td>CDC IV</td>
</tr>
<tr>
<td>Footer et al. (2019)</td>
<td>Cohort Study</td>
<td>28 women (16 WWID, 12 FSW).</td>
<td>Strengths: Study provides literature on awareness of delivery modalities. Weaknesses: Findings may not be representative of rural areas.</td>
<td>CDC IV</td>
</tr>
<tr>
<td>Gomez et al. (2022)</td>
<td>Qualitative Study</td>
<td>103 Participants</td>
<td>Strengths: The study successfully identifies patterns that could help to inform community-based strategies to increase PrEP uptake. Weakness: Compensating research participants $40 could lead to biasness. The study does not include perspectives of HIV+ men because of the inclusion criteria.</td>
<td>US National Institute of Health WHO</td>
</tr>
</tbody>
</table>
## Improving Pre-Exposure Prophylaxis Uptake as an HIV Prevention Strategy

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study Design</th>
<th>Study Details</th>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Web Search</th>
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<th>WHO Level</th>
<th>ASRM</th>
<th>ACOG</th>
<th>CDC Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grov et al. (2021)</td>
<td>This review focuses on how PrEP has improved sexual self-esteem, enhanced sexual pleasure and reduced sexual anxiety. The research examines how different elements of sex and sexuality have been shaped by bisexuals, gays, transgender persons, and cisgender women</td>
<td>Review of existing literature</td>
<td>573</td>
<td>Strengths: Authors reviews past studies on PrEP use and analysis the results which can be used to inform future research. Weakness: The paper presents limited information on PrEP use among transgender and cisgender women</td>
<td>Web Search</td>
<td>The findings indicate that PrEP uptake has positively changed sex. PrEP has increased sexual health-care use and PrEP does not increase risk of condomless sex. PrEP has improved sexual pleasure and reduced sexual anxiety</td>
<td>CDC</td>
<td>Level I</td>
<td>ASRM</td>
<td>Level 1</td>
</tr>
<tr>
<td>John et al. (2017)</td>
<td>The study evaluates whether Gay, bisexuals, and MSM who have not yet started PrEP use would prefer home-based PrEP care compared to provider or specialist clinic.</td>
<td>Cohort Study</td>
<td>906 participants</td>
<td>Strengths: Longitudinal nature of data. Weaknesses: Self-reported data gathering procedures could have potential response bias. The study excluded men previously or currently on PrEP and data could not be generalized for this group</td>
<td>Questionnaires</td>
<td>The study findings show that younger men preferred home-based PrEP services. Due to barriers concerning frequent medical checkups most men preferred primary care providers than specialist clinics.</td>
<td>CDC</td>
<td>III</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kawwass et al. (2017)</td>
<td>This report discusses ways to prevent HIV transmission among HIV-negative women who attempt conception with their HIV-infected partners</td>
<td>Review of Existing Studies</td>
<td>Strengths: The review provides evidence of HIV risk reduction strategies among discordant partners who wish to conceive. The report provides recent data on semen processing safety and PrEP effectiveness amongst discordant couples Weaknesses: Risks of selection bias</td>
<td>Online Databases</td>
<td>Strategies to minimize HIV-risk transmission are needed for HIV-discordant couples seeking to conceive. The risk of transmission from infected man to non-infected woman is low when suitable measures such as PrEP, highly active antiretroviral therapy, and sperm washing are used</td>
<td>CDC</td>
<td>Level I</td>
<td>ACOG</td>
<td></td>
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</tr>
<tr>
<td>Kislovskiy et al. (2022)</td>
<td>The study seeks to understand PrEP perceptions of individuals who exchange sex</td>
<td>Qualitative Study</td>
<td>22 Participants</td>
<td>Strengths: Use of Community-partnered Participatory approaches. This Study also includes heterogeneous populations. Weaknesses: Limitation include absence of sexual identity reporting and age-range represented missed under 18 persons. Besides, there was low compensation $15 to attract broader sample</td>
<td>Interviews</td>
<td>Choices on PrEP uptake was relative to other behavioral choices concerning exchange sex. Multistep process of PrEP access was cited as a barrier to uptake Providers were identified as key players in PrEP use. PrEP care requires to be stream-lined to increase access to people who exchange sex.</td>
<td>CDC</td>
<td>VI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mansergh</td>
<td>PrEP awareness</td>
<td>Cross-sectional</td>
<td>484</td>
<td>Strength: Study recruited MSM Online Hispanic MSM preferring</td>
<td></td>
<td></td>
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<td></td>
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<table>
<thead>
<tr>
<th>Study Details</th>
<th>Study Design</th>
<th>Participants</th>
<th>Survey Method</th>
<th>Survey Findings</th>
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</thead>
<tbody>
<tr>
<td>et al. (2019) and uptake among Hispanics MSM</td>
<td>Study Design: Both online and via CBOs</td>
<td>Sentence limitation: Spanish language meaning it was convenient to participants</td>
<td>Survey: Use of Spanish language could be disadvantaged from learning about PrEP or HIV prevention services because most resources are available in English</td>
<td></td>
</tr>
<tr>
<td>Patrick et al. (2017)</td>
<td>Study Design: Cross-Sectional Study</td>
<td>1346 Participants</td>
<td>Survey: Results show that PrEP awareness may be rising in Miami-Dade County and Washington, DC but uptake remains low</td>
<td>NHBS IV</td>
</tr>
<tr>
<td>Rao et al. (2021)</td>
<td>Study Design: Longitudinal</td>
<td>310,954 Participants</td>
<td>Survey: Implementing linguistically and culturally appropriate interventions which routinize PrEP referral and education can expand PrEP services for Latinos. Collaboration with providers and community agencies and addressing structural and social barriers is important to increase PrEP uptake</td>
<td>CDC IV</td>
</tr>
<tr>
<td>Silapaswan, Provider Behavior, Krakower, &amp; Mayer (2017)</td>
<td>Study Design: Review of Research Studies</td>
<td>Strength: Recommendations case on addressing PrEP barrier are discussed</td>
<td>Web Databases: Expanding access in primary care settings can scale up PrEP implementation Provider education and community engagement are critical toward PrEP access and adherence</td>
<td>CDC I, FDA</td>
</tr>
<tr>
<td>Sophus &amp; Mitchell (2019)</td>
<td>Study Design: Systematic Review Studies</td>
<td>Strength: Study findings support research objectives.</td>
<td>Online Databases (CINHL, PubMed, ERIC): Information and massages about PrEP should be provided to everyone, not only to at-risk persons.</td>
<td>CDC IV</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Study</th>
<th>Objective</th>
<th>Study Design</th>
<th>Sample Size</th>
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<th>Weaknesses</th>
<th>Bibliographic Database</th>
<th>Method</th>
<th>Results/Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun et al. (2022)</td>
<td>Increase awareness and willingness to utilize PrEP among MSM</td>
<td>Systematic Review &amp; Meta-analysis</td>
<td>156 articles (228,403 MSM)</td>
<td>Strength: The study is reliable because it uses scholarly sources. Also, covers PrEP awareness and use among MSM in depth. Weakness: Some studies used in this review were weak in quality-assessment which could impact conclusions.</td>
<td>Willingness to use PrEP care was impacted by high perceived HIV risk, condomless sexual behavior, and social network influence</td>
<td>JIAS</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>Tomko et al. (2019)</td>
<td>To explore awareness and interest in PrEP care amongst HIV-negative female sex workers (FSW)</td>
<td>Cross-sectional Analysis</td>
<td>232 Participants</td>
<td>Strength: Objective is clearly stated in study. It also gives an in-depth view of the topic. Weaknesses: The study sample consisted of only street-based FSW in Baltimore and conclusions cannot be generalized in other contexts such as brothels or geographic areas.</td>
<td></td>
<td>NCBI</td>
<td>IV</td>
<td></td>
</tr>
<tr>
<td>Trujillo et al. (2019)</td>
<td>To examine changes in Hispanic MSM’s sexual risk behaviors by years of residence in the U.S and place of birth</td>
<td>Cross-sectional Analysis</td>
<td>4,731 Participants</td>
<td>Strengths: Reliable and provides an in-depth view of the topic. Weaknesses: Samples used are not nationally representative and findings are not generalizable to all Latino MSM.</td>
<td></td>
<td>NHBS</td>
<td>IV</td>
<td></td>
</tr>
<tr>
<td>Viera et al. (2022)</td>
<td>To assess barriers and facilitators to PrEP use among MSM who use substances</td>
<td>Qualitative Study</td>
<td>21 Participants</td>
<td>Strengths: Research findings support objectives. Weaknesses: Generalizability is limited because was conducted on small sample from two areas.</td>
<td>HIV prevention interventions, including PrEP care, needs to address linguistic and cultural concerns of Latino MSM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walter et al. (2017)</td>
<td>Explore differences in PrEP and PEP awareness linked with awareness among MSM, PWID, and high-risk heterosexuals</td>
<td>Cross-sectional Survey</td>
<td>2,483 Participants</td>
<td>Strengths: The study is the first assessment of these at-risk group concerning PrEP/PEP awareness. Weaknesses: Study sample was from New York and cannot represent whole nation. Survey data was self-reported and there is possibility of bias.</td>
<td>PrEP/PEP awareness can be increase via use of targeted educational efforts by region and group. There is inequalities among at-risk groups on basis of awareness which impact PrEP access and uptake</td>
<td>NHBS</td>
<td>IV</td>
<td></td>
</tr>
<tr>
<td>Watson et al. (2022)</td>
<td>To examine anticipated stigma linked to PrEP uptake</td>
<td>Longitudinal Study</td>
<td>992 Participants</td>
<td>Strengths: Characteristics of research participants are well described. Weaknesses: Data cannot be generalized in all Black/Latino MSM because it is not representative</td>
<td>Results emphasize the significance of considering place, time, and personal situations in shaping PrEP uptake</td>
<td></td>
<td>IV</td>
<td></td>
</tr>
</tbody>
</table>
Also, inclusion and exclusion criteria are not mentioned