Spring 5-20-2023

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Recommended Citation
Powe, Joseph, "HIV Treatment Utilization: An Exploration of One Ryan White Clinic" (2023). *MUSC Theses and Dissertations*. 799.
https://medica-musc.researchcommons.org/theses/799

HIV Treatment Utilization: An Exploration of One Ryan White Clinic

BY

Joseph Devone Powe

A doctoral project submitted to the faculty of the Medical University of South Carolina
in partial fulfillment of the requirements for the degree
Doctor of Health Administration
in the College of Health Professions

Acknowledgments

First, I want to thank my Lord and Savior Jesus Christ who has given me the opportunity to be accepted into the DHA program and making it to the end of my academic career. Words cannot express my gratitude to my professor and chair of my committee, Dr. Jillian Harvey, to Dr. Zahi Jurdi and Dr. Tawana Philpott Brown for your invaluable patience and feedback. I am also grateful to my classmates and cohort members for this has been fun and memorable. Next, I would be remiss in not to mention my family, especially my parents, my mother Roney Powe and late father Leroy Powe this endeavor would not have been possible without the generous support from you. This journey is for all your hard work in raising your children to be all that they want to be. Lastly, to my fiancée, Chelsea Maure, and my son Trinity Esaias, I love you both from the bottom of my heart, while my time away from you has been hard this degree is for our future. Your belief in me has kept my spirits and motivation high during this process.

Abstract of Doctoral Project Presented to the
Medical University of South Carolina
In Partial Fulfillment of the Requirements for the
Degree of Doctor of Health Administration

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by

Joseph Devone Powe

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According to the findings of recent research, the HIV epidemic is still an active problem all over the world. Some racial and ethnic groups have a significantly higher likelihood of contracting HIV, even though many efforts have been made at all levels of government, from the municipal to the federal, to raise public awareness of the recognized risk. There are two focal points for the HIV epidemic. While prevention is essential, infected patients must also be encouraged to continue treatment to accomplish viral suppression and delay the onset of AIDS. When we look more deeply at a local Ryan White program, we continue to understand better the supplementary services provided and the extent to which patients are utilizing these extension services.

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CHAPTER I INTRODUCTION

1.1 Background and Need

The human immunodeficiency virus, sometimes known as HIV, is a virus that destroys cells in the body that are responsible for helping the body fight infection (CDC, 2020). This leaves a person more susceptible to contracting other infections and diseases. It is transmitted through intimate contact with certain bodily fluids of a person who is infected with HIV, most commonly through sexual activity that is not protected (a sexual activity that does not involve the use of a condom or HIV medication to prevent or treat HIV), or through the sharing of injection drug, breast milk, vaginal fluids, or rectal fluids (CDC, 2021). Although the first cases of HIV and the late-stage Acquired Immune Deficiency Syndrome (AIDS) were not reported until the early 1980s, the disease began in the 1970s (CDC, 2021). During this time, the epidemic raced over the United States and the rest of the world. According to the World Health Organization (WHO), in 2023, more than 70 million people have been infected with HIV, and approximately 35 million have died from AIDS since the epidemic began (WHO, 2023). In addition, 38.4 million people worldwide were living with HIV in 2021; of those, 15 percent did not know they were HIV positive (U.S. Department of Health & Humans Services, 2015).

The stigma associated with HIV is characterized by unreasonable or unfavorable attitudes, behaviors, and evaluations of people living with or at risk of HIV (Marshall et al., 2022). It can harm the health and well-being of persons living with HIV by deterring individuals from knowing their HIV status, gaining access to medication, or remaining in care, all of which are necessary to maintain good health (Marshall et al., 2022). The stigma associated with HIV can also harm those who are at risk of contracting the virus by preventing them from obtaining HIV prevention tools and testing, as well as from having open conversations with their sexual partners about safer sex options (U.S. Department of Health & Human Services, 2020).

Populations that HIV disproportionately affects are also commonly affected by stigma for various reasons, including their gender, sexual orientation, gender identity, race or ethnicity, drug use, or sex (U.S. Department of Health & Human Services, 2020). Discrimination is driven by the stigma associated with HIV in all spheres of society, including health care, education, the workplace, the court system, families, and communities (U.S. Department of Health & Human Services, 2020).

Eliminating the negative connotations associated with HIV is essential to ending the HIV epidemic. A societal phenomenon known as stigma is known to have a detrimental effect on the lives of persons living with HIV/AIDS (often referred to as PLWHA) (Armoon et al., 2022). However, defining HIV-related stigma (HRS) is challenging because it intersects with structural inequalities, cultural differences, discrimination by healthcare providers, and other factors. In addition, there are limitations to the tools that are used to measure stigma among PLWHA (Armoon et al., 2022). PLWHA and others from marginalized populations, such as LGBTQIA (lesbian, gay, bisexual, transgender, queer or questioning, intersex, and asexual) communities; people who use drugs; sex workers; and immigrants, are more likely to avoid seeking health care when they are subjected to stigma because it has a negative psychological impact on them and has a direct bearing on their behavior. Internalized, interpersonal, and institutionalized forms of HIV-related stigma are common in personal, professional, and medical treatment contexts (Armoon et al., 2022).

People living with HIV with limited access to antiretroviral therapy (ART) have been documented to have high rates of stigma (Sangaramoorthy et al., 2017). In 2019, more than 40 percent of PLWH in the United States were Black, and members of other racial and ethnic communities had higher rates of viral suppression than Black people. Ever since the beginning of the HIV epidemic, this epidemiological pattern has been consistent (Sangaramoorthy et al., 2017). A research study was performed on 35 women interviewed over 13 months, from September 2014 to October 2015. Overall, the researchers discovered that the stigma associated with HIV continued to be a significant problem for older Black women. In interviews that were only partially structured, participants revealed that community perceptions of HIV and negative stereotyping of PLWH continued to be highly stigmatizing, even though there has been an increase in public knowledge of the disease. These perceptions frequently led to experiences of rejection by family and friends and feelings of shame and remorse generated from within the individual (Sangaramoorthy et al., 2017).

African Americans have been one of the most populous ethnic groups to become infected with HIV/AIDS and die because of the disease over the previous 25 years, making them one of the groups most at risk for contracting the disease (U.S. Department of Health & Human Services, 2022). Even though there have been great leaps forward in terms of treatment, the United States of America is still working hard to stop the spread of the HIV epidemic across the country. There have been significant efforts made to raise awareness of the health disparity, such as the Ryan White Wellness Program, the Southern University HIV/AIDS Prevention Program (SU-HAPP), National HIV Awareness Day, and a significant number of other programs that have been designed to assist in closing the gap (CDC, 2020). Policy and advocacy groups have been established to address the enormous difficulty faced by persons affected with the condition. In addition to this, many committed community leaders are working to raise awareness. It is possible to eliminate health inequalities and stigmas by expanding access to medical treatment (CDC, 2020).

1.2 Problem Statement

Multiple concerns are associated with the HIV epidemic. First is associated with the disparate risks of infection across population groups and disparities in screening (Wejner et al., 2015). Next, there are disparities in access and quality of care for HIV-positive individuals (Wejner et al., 2015). When access is unequal, it can cause disparities in neighborhoods with low socioeconomic status. The rate of HIV has dropped over the years but has not stopped spreading in prisons, local communities, or nationally (CDC, 2021). In 2020, 30,635 individuals were diagnosed with HIV in the United States and its dependent territories. From 2016 to 2019, the annual number of new diagnoses decreased by 8 percent (CDC, 2022). In addition, an estimated 1,189,700 individuals had HIV at the end of 2019, and about 87 percent were aware they had HIV (CDC, 2022). These components build upon research-based justifications for a greater understanding of the situation and preliminary measures to battle the virus that spread among gay and bisexual African American men.

The Morbidity and Mortality Weekly Report (2021) found that only 67 percent of African American gay and bisexual men who had recently been diagnosed with HIV and 58 percent of African American gay and bisexual men who had previously been diagnosed with HIV were linked to HIV medical care within 90 days of receiving their diagnoses. Compared to homosexual and bisexual men of other races or ethnicities, the percentage of African American gay and bisexual men who have achieved viral suppression is significantly lower (Pitasi et al., 2021). Due to a combination of socioeconomic factors, the poverty rate among African Americans is disproportionately high. Directly and indirectly, the socioeconomic factors associated with poverty, such as limited access to high-quality health care, housing, and HIV prevention education, both increase the risk for HIV and affect the health of people who are infected with HIV or who are at risk for contracting the virus (Schneider & Bouris, 2022)

According to the CDC HIV/AIDS Surveillance Report Volume 32, South Carolina ranked 9th among states (SCDHEC, 2020), with 19,329 South Carolinians currently living with HIV/AIDS. Men, in general, are 45 percent more likely than women to contract HIV because of heightened risky behavior. The number one cause of transmission is male-to-male sexual contact, and approximately 80 percent of South Carolina residents diagnosed with HIV are male (SCDHEC, 2020).

South Carolina is one of the top 10 states listed with the highest HIV/AIDS case incidence rates (SCDHEC, 2020). African Americans are disproportionately impacted by HIV/AIDS in South Carolina. African Americans comprise 27 percent of the State's population, but 66 percent of those living with HIV are African American. The South Carolina Department of Health and Environmental Control has prioritized addressing the health risks and disparities in specific populations. These populations include African Americans, men who have sex with men (MSM), and 25–29-year-old age groups of the cases with an identified risk factor (SCDHEC, 2020). In 2020, the highest reported risk factor for PLWHA was men who have sex with men (57 percent) (SCDHEC, 2020). By strengthening the quality of care with providers and increasing testing, SCDHEC seeks to enhance the overall quality of care for those diagnosed and reduce the spread of the disease, especially within vulnerable and high-risk populations (SCDHEC, 2020).

South Carolina has the highest incidence rates; viral suppression is essential to reducing the number of new cases. Adherence to treatment and access to care prevents HIV from replicating within the body, also known as "viral suppression." According to research, if a person's viral load cannot be detected, they are less likely to transmit HIV to their sexual partners, which can help prevent the spread of the disease and lead to a generation free of AIDS

(Hull & Montaner, 2013).

1.3 Research Questions and Research Hypotheses

This research aims better to understand the barriers to HIV treatment and care. This study will investigate Ryan White patients' demographics and their utilization of healthcare services. The study will address the following research objectives:

- Describe the patient demographics for those who participated in a Ryan White program between January 1, 2022, and November 30, 2022.
- Describe the types of healthcare services utilized by the patient population.
- Examine the relationship between demographic characteristics (race, gender, poverty level, age, geographic location) and healthcare utilization.

We hypothesize that vulnerable or disadvantaged patients will have lower utilization of healthcare services compared to patients with more excellent resources.

1.4 Population

The study will examine Ryan White's data from a program in the Southeastern United States. The population includes 912 HIV+ patients who participated in the program from January and November 2022.

Patients in this sample group were offered medical, mental health, and dental visits.

2 CHAPTER II SCOPING LITERATURE REVIEW

This chapter examines the available literature on the history of HIV and the Ryan White program. Searches were conducted using relevant academic databases such as Google Scholar, PubMed, and ProQuest. An initial review of the literature included an extensive search of the history of HIV, the cost-effectiveness of the treatment, and the trends HIV affected in the gay/bisexual community. The initial rounds of literature included vital terms such as: "Ryan White," HIV, HIV cost effectiveness, History of HIV in African Americans, and PrEP.

History of Ryan White HIV Program

In the fiscal year 1990 (FY1990), the Comprehensive AIDS Resources Emergency Act, also known as the Ryan White CARE Act, was enacted to provide low-income, uninsured, and underinsured individuals with access to community-based HIV care and support services. The Ryan White Program (RWP), which serves as a "payer of last resort" and has a budget of $2.4 billion for FY 2021, fills the gaps for those who have no other source of coverage or face coverage constraints (HRSA, 2022). The financing provided by the RWP assists community-based providers develop their fundamental capabilities to provide an integrated care model to their patients (HRSA, 2022). This model includes but is not limited to primary medical care, behavioral health services, legal assistance, and housing support. The AIDS Drug Assistance Program (ADAP) of the RWP provides financial assistance with medicine to the 5,919 South Carolinians now receiving antiretroviral therapy (HRSA, 2022). Through the RWP, people receive at least one medical, health, or associated support service annually. Most RWP funding is distributed directly to the city and state health departments, and the plurality of this revenue is redistributed to local providers, such as AIDS assistance organizations. (HRSA, 2022).

Ryan White Reporting and Outcomes

The Ryan White HIV/AIDS Program (RWHAP) offers uninsured and marginalized people with HIV a comprehensive system of HIV primary medical care, medicines, and essential support services (Ryan White HIV/AIDS Program Biennial Reports, 2022). The RWHAP funds cities/counties, states, and local community-based groups to offer HIV care and treatment services (Ryan White HIV/AIDS Program Biennial Reports, 2022). The HIV/AIDS Bureau produces a report every two years to highlight the innovative care methods of the Ryan White HIV/AIDS Program. These reports give an update on the Ryan White HIV/AIDS Program's efforts to improve the health outcomes of HIV-positive individuals, highlight client demographics and services received, and describe the triumphs and challenges of beneficiaries. The funding provides more than 500,000 people annually for those diagnosed with HIV (Ryan White HIV/AIDS Program Biennial Reports).

Cost-Effectiveness

According to a cost-effectiveness study conducted in South Carolina, 41.3 percent of newly diagnosed cases of HIV are discovered at a late stage in the progression of the illness (Rampaul et al., 2018). It is suggested that progress has been made with a reduction in the proportion of individuals who are tested late in the course of HIV infection to 35 percent; however, South Carolina still lags behind other states, ranking 43rd in the percentage of individuals with late HIV diagnosis (Rampaul et al., 2018).

A delayed HIV diagnosis is linked to a higher risk of HIV-related comorbidities, poorer health outcomes, a shorter life expectancy, and more extraordinary HIV transmission, all contributing to increased healthcare costs. The number of HIV-positive people eligible for antiretroviral therapy (ART) has increased because programs encouraging testing and treatment and guidelines suggest ART for everyone living with HIV (Rampaul et al., 2018). HIV-positive people will have to pay more for their initial medical care.

On the other hand, early diagnosis and treatment are hoped to decrease risks of opportunistic infections, morbidity and mortality associated with HIV, and rates of HIV transmission (Rampaul et al., 2018). Of the 1,958-sample population, a study used quality-adjusted life-years (QALYs) and the incremental cost-effectiveness ratio (ICER) to demonstrate DLCC (discounted lifetime cost of care). Furthermore, the overall DLCC was $569,633,353 ($290,926 per person). When ranked based on the CD4 count at diagnosis, the DLCC for those with an initial CD4 count ≤200 was $262,374 per person, and for those with an initial CD4 count >500, it was $416,776 per person (Rampaul et al., 2018). Individuals whose CD4 count was lower when diagnosed with HIV had a reduced DLCC. However, they also had a higher number of lost QALYs, a more significant number of lifelong HIV transmissions, and a shorter additional life expectancy (Rampaul et al., 2018).

A study was conducted to assess the change in mental health (depression and anxiety) and the disparities in mental health trajectory among HIV-positive gay and bisexual men (GBM) one year after diagnosis (Luo et al., 2020). The prospective factors contributing to the disparities were also investigated. This was a one-year follow-up study on the mental health of HIV-positive individuals newly diagnosed with the virus. At baseline and one year later, participants rated their depression, anxiety, stress, and social support levels (Luo et al., 2020). Data on mental healthcare utilization and ART initiation after diagnosis were collected at the one-year follow-up. The mental health of gay males who are HIV-positive requires special attention (Luo et al., 2020). Promoting HIV-positive sexual minority men's access to mental health services and ART may be crucial for the mental health of these populations. Enhancing social support and minimizing stress levels may also be required for HIV-positive sexual minority groups that are vulnerable (Luo et al., 2020).

Opportunistic infections (OIs) are more common and severe illnesses in HIV patients. This is because their immune systems have been compromised. OIs are less common in people with HIV today due to effective HIV treatment, but some people with HIV still develop OIs because they do not know they have HIV, are not on HIV treatment, or their HIV treatment is not working correctly (CDC, 2021).

The research was conducted to show that early ART in HIV-infected patients with acute OIs reduces death and AIDS progression compared to ART initiation after one month. An HIV simulation model contrasted two methods for patients with acute OIs: early ART intervention and deferred ART (Sax et al., 2010). Early ART reduced projected 1-year mortality to 8.2% and improved life expectancy from 10.07 to 10.39 QALYs. Lifetime costs rose from $385,220 with deferred ART to $397,500 with early ART, owing to an increase in life expectancy, resulting in an ICER of $38,600/QALY (Sax et al., 2010). In patients with acute OIs, an intervention to start ART early increases survival. It was recommended that programs should be created to adopt an early ART strategy in locations where HIV-infected patients present with OIs (Sax et al., 2010).

Barriers to Utilization

Dasgupta et al. (2021) conducted a study on the unmet need for HIV ancillary care services to report their findings to the RWHAPA (Ryan White HIV/AIDS Program Assistance). They kept in mind the critical role of viral suppression in ensuring the health and well-being of people living with HIV (PWH) and reducing the risk of HIV transmission to others (Dasgupta et al., 2021). Participation in HIV care and antiretroviral therapy (ART) adherence are two factors that have been shown to impact the ability to reduce viral replication significantly. However, there are obstacles to each that could prevent people from achieving viral suppression (Dasgupta et al., 2021). These obstacles include structural concerns, such as access to HIV care, payment for services, and the stigma associated with HIV. The National HIV/AIDS Strategic Plan (NHAS) of the United States of America is a national road plan for ending the HIV epidemic (Dasgupta et al., 2021). Increasing patient retention in care and adherence to antiretroviral therapy (ART), and consequently viral suppression, is one of the primary areas of focus in the NHAS. A particular emphasis is placed on health equity and reducing disparities in treatment outcomes among those disproportionately affected by HIV (Dasgupta et al., 2021).

Among PWH, HIV secondary care services are those that assist retention in HIV care and viral suppression, particularly among people who have complicated medical requirements (Dasgupta et al., 2021). These services, which include HIV clinical support services such as case management, other medical services such as dental care and mental health services, and subsistence services such as assistance with transportation, assistance with food, and shelter, are not fully covered by traditional healthcare coverage plans and are therefore not widely available (Dasgupta et al., 2021). To offer comprehensive HIV treatment, support services, drugs, and healthcare coverage help to low-income PWH, the RWHAP, and its ADAP give funding to local authorities and community-based groups. Although the RWHAP plays an essential part in the national public health response to HIV, unmet demands for HIV ancillary care services continue to exist and are associated with unfavorable outcomes along the HIV treatment continuum (Dasgupta et al., 2021).

Even though a large proportion of people who are pregnant or parenting while homeless have access to some form of medical coverage, a significant number of PWH continue to lack coverage, particularly those who reside in states that have chosen not to expand their Medicaid programs (Dasgupta et al., 2021). More than half of adult patients diagnosed with HIV rely on the RWHAP for access to outpatient medical and support services, coverage of drugs, or assistance with healthcare coverage. Traditional health insurance and coverage plans do not often include reimbursement for many of these services (Dasgupta et al., 2021). Data from the CDC Medical Monitoring Project (MMP) was used to evaluate disparities in unmet demands for ancillary care services among persons with confirmed HIV based on their kind of healthcare coverage (Dasgupta et al., 2021). HIV clinical support services, additional medical care services, and subsistence services are all part of these programs. HIV case management, HIV adherence support services, HIV peer support, and HIV patient navigation services were all included in HIV clinical support services (Dasgupta et al., 2021). Dental care, mental health treatments, and counseling or treatment for substance abuse or alcoholism are other medical services offered. The Supplemental Nutrition Assistance Program (SNAP) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provided some of the subsistence services. Other subsistence services included assistance with transportation, meal or food services, shelter or housing services, and supplemental nutrition programs (Dasgupta et al., 2021).

Consequently, individuals with Medicaid, Medicare, other forms of coverage, or no coverage at all had a greater likelihood of unmet requirements for HIV clinical support services, other medical services, and subsistence services compared to a person who received assistance from the RWHAP (Dasgupta et al., 2021). People without health insurance had much higher rates of unmet needs for ancillary care services. This contrasted with people who had private health insurance and made at least 400 percent of the federal poverty level but still had unmet requirements (Dasgupta et al., 2021). These groups also had the highest unmet needs for ancillary care services. Nearly all people with confirmed HIV who had Medicaid, Medicare, or other kinds of coverage lived at less than 400 percent of the FPL, and those who were uninsured were similarly living at less than 400 percent of the FPL (Dasgupta et al., 2021).

In his State of the Union address on February 5, 2019, President Donald J. Trump outlined the Administration's 10-year plan to end the HIV epidemic in the United States (*What is 'ending the HIV epidemic: A plan for America'?* 2019). To accomplish this objective and address the ongoing HIV-related public health crisis, the proposed Ending the HIV Epidemic: A Plan for America will utilize the robust data and tools currently available to reduce new HIV infections in the United States by 75 percent in five years and by 90 percent by 2030. The efforts will focus on four key strategies to end the HIV epidemic in the U.S.: Diagnose, Treat, Prevent, and Respond (*What is 'ending the HIV epidemic: A plan for America'?* 2019)**.**

Arkansas is a southern state that is one of the targeted areas defined by "Ending the HIV Epidemic: A Plan for America" (EtHE) due to its significant rural HIV/AIDS burden and significant health care disparities (Marshall et al., 2022). The estimated HIV incidence in Arkansas rose from 9.5 per 100,000 in 2018 to 13.1 per 100,000 in 2019. Over 40 percent of state residents live in rural areas, and nearly half of the people who are HIV positive in Arkansas live in rural areas. Compared to PWH residing in not rural locations, those living in the South and rural areas have significantly less access to HIV care (Marshall et al., 2022). In addition, evidence suggests that living in a rural area is a risk factor for lower rates of HIV testing, delayed HIV diagnosis, later adoption of advances in antiretroviral therapy (ART), and consequently, increased HIV-related mortality (Marshall et al., 2022). Additionally, rural residents who have HIV infection frequently face challenges such as stigma, social isolation, long distances to care, limited transportation, and a lack of access to providers who have expertise in HIV (Marshall et al., 2022).

Despite the effectiveness of the many treatment choices that are currently available, Arkansas still has significant holes in its HIV care continuum. Testing for HIV in Arkansas trails behind the national average (43 percent), with just 33.9 percent of people claiming they had ever been tested for HIV in 2017 (Marshall et al., 2022). At the time of their initial HIV/AIDS diagnosis in 2019, approximately 26 percent of PWH were diagnosed with AIDS stage 3. In addition, more than 80 percent of PWH in Arkansas are "out of care" (defined as not attending two HIV care visits within 12 months). Forty percent of individuals out of care are African or African American (Marshall et al., 2022).

Notably, the most common themes from this study were: previous or perceived barriers to HIV care, including extended distances to the nearest HIV clinic and transportation issues, as well as anticipating and experiencing HIV-related stigma. Facilitators of HIV care included having a helpful HIV care provider and Ryan White case manager, as well as a social support network that helped them prioritize their health regarding programs or services. Participants' perspectives were as follows: previous or perceived barriers to HIV care included participant transportation issues (Marshall et al., 2022). These findings imply that an intervention package consisting of outreach programs and support services, including hiring PWH as peer navigators or case managers, as well as offering HIV care via telemedicine, could be promising to engage or re-engage PWH in HIV care to keep them involved in care, and to help curb the rural HIV epidemic, particularly in Arkansas (Marshall et al., 2022).

Facilitators to Accessing Treatment

Approximately one in every five people in the United States are residents of rural areas. Compared to persons who live in non-rural regions, those who call rural places their home are more likely to be older, have lower incomes, and suffer from various illnesses (Klein et al., 2020). Likewise, the proportion of people living in rural areas is correlated with a lower life expectancy (Klein et al., 2020). It is essential to address the health inequalities between rural and non-rural populations of the United States by expanding access to healthcare in rural communities (Klein et al., 2020). Because there are significantly fewer primary healthcare practitioners, specialists, and dentists in rural locations, access to quality healthcare is restricted. In addition, rural inhabitants frequently reside at a greater distance from healthcare providers and places of service delivery than do non-rural residents (Klein et al., 2020). As a result, traveling to medical facilities and providers is a significant obstacle in gaining access to healthcare. More than 54,500 (5.9 percent) of the nearly one million persons living with confirmed HIV in the United States in 2017 dwell in rural regions. Most of these people live in the South (65.2 percent), with the highest concentration of rural HIV patients (Klein et al., 2020).

The Ryan White HIV/AIDS Program (RWHAP) is divided into five parts, each of which is statutorily defined and provides funding for the provision of medical and support services, as well as for the provision of technical assistance, clinical training, and the development of innovative models of care to cater to the requirements of various communities and populations that are impacted by HIV (Klein et al., 2020). Eligible Metropolitan Areas and Transitional Grant Areas that the HIV epidemic has hit the hardest are eligible to receive financing from the HRSA RWHAP Part A program. All fifty states, the District of Columbia, Puerto Rico, the United States Virgin Islands, and six U.S. Pacific Jurisdictions can receive financing through the HRSA RWHAP Part B program (Klein et al., 2020). Additionally, the HRSA RWHAP Part B program is responsible for distributing funds and administering those funds for the AIDS Drug Assistance Program (ADAP), which aids with prescription and insurance (Klein et al., 2020). The HRSA RWHAP Part C program funds local community-based organizations, community health centers, health departments, academic medical centers, and hospitals in the United States.

In contrast, the HRSA RWHAP Part D program provides funding to support services for low-income women, infants, children, and youth living with HIV and their affected family members (Klein et al., 2020). The HRSA administers both programs. AIDS Education and Training Centers, Special Projects of National Significance, and Dental Programs are all included in the RWHAP Part F program, the fifth statutorily specified Part of the RWHAP (Klein et al., 2020).

The RWHAP Services Report (RSR) from 2017 was the primary source of annual, client-level data for this analysis. A study was performed to see how many PWH could visit a provider based on where they lived. Of the 534,802 RWHAP clients who visited a provider in 2017, 12,414 (2.3 percent) visited only rural providers, 517,877 (96.8 percent) visited only non-rural providers, and 4,511 (0.8 percent) visited both rural and non-rural providers (Klein et al., 2020). Clients who solely visited rural providers had a somewhat older average age (61.1percent of them were 45 years old or older) compared to clients who visited either non-rural providers or both rural and non-rural providers (57.8 percent and 57.9 percent of clients visited both types of providers) (Klein et al., 2020).

Although RWHAP clients who accessed care in rural areas experienced comparable viral suppression and retention in care to RWHAP clients who accessed care in non-rural areas, the barriers that rural PLWH may face before successfully and routinely engaging in the healthcare system are not addressed (Klein et al., 2020). PLWHs who live in rural areas are more likely to put off getting tested for HIV and to acquire a diagnosis of HIV at a later stage of the disease than their counterparts who live in non-rural areas. Thirty-eight percent of all HIV transmissions are due to PLWH who are unaware of their infection, while another 42 percent of all HIV transmissions are due to PLWH who are aware of their illness but are not in care (Klein et al., 2020). Therefore, it must be made aware that nearly all PLWH accessing care from rural RWHAP are retained in care and reached viral suppression. The fact that there is a lack of access to HIV testing services or linkage to HIV care services for newly diagnosed PLWH in rural areas could contribute to continued HIV transmission within rural areas (Klein et al., 2020).

Patients who do not consistently attend their primary care appointments are less likely to adhere to ART and, as a result, are at an increased risk of mortality. Retention in care (RiC) is essential for the health of HIV patients (Kay & Westfall, 2020). There is no gold standard, even though RiC is a comprehensive HIV health indicator (Mugavero et al., 2012).

The sample included 2,288 HIV-positive persons receiving primary care services at a prominent HIV/AIDS clinic in the southeastern United States that is academically integrated and receives money from RWHAP Parts B and C. All maintained-visit measurements were based on appointments for non-specialty regular medical care and were booked in advance (Kay & Westfall, 2020). The measurements for missing visits were based on "no-shows" for planned primary care appointments that were not rescheduled in advance. Patients who missed one or more scheduled appointments during the observation window were not retained in care for the missing visits (Kay & Westfall, 2020). In contrast, the missed visit count measure collected how many scheduled appointments the patient missed throughout the 12 months. The measure of visit adherence determined the percentage of people who went to their regularly scheduled visits (Kay & Westfall, 2020).

Most patients were male (73 percent), and most were of African or African American descent (68.9 percent). During 2016, little under half of patients, or 43.3 percent, were provided with supplemental RWHAP services. The patients in this sample had at least one kept visit in the year leading up to the observation window. The retention rates in this study may be higher than in studies that include ART-naive patients because all the patients in this sample had at least one kept visit. (Kay & Westfall, 2020).

A research study was performed on high active antiretroviral therapy (HAART) to assess the survival time projection and age-specific mortality rate comparisons of an HIV-infected population with those of the general population (Loshe et al., 2007). There were 990 HIV-positive patients and 379 872 participants from the general population who participated in the research (Loshe et al., 2007). The mortality rate for HIV-positive individuals was 43 per 1000 person-years, while the mortality rate for the overall population was only 4.7 per 1000 person-years (Loshe et al., 2007). The pre-HAART era was characterized by the most significant mortality rate, 124 deaths per every 1000 person-years (1995 to 1996). During the early HAART period (1997 to 1999), this rate dropped to 38 per 1000 person-years, and during the late HAART period, it dropped to 25 per 1000 person-years (2000 to 2005) (Loshe et al., 2007).

The mortality rate among patients receiving HAART was found to be at its highest during the first year of treatment. However, this rate decreased to 27 per 1000 person-years during the second and third years of HAART, to 26 per 1000 person-years during the fourth and fifth years of HAART, and to 26 per 1000 person-years beginning with the sixth year onward (Loshe et al., 2007). Even reduced mortality rates were seen among patients treated during the later stages of HAART's development. Although mortality rates decreased throughout calendar time, it was discovered that there was no difference in mortality rates from the first year after a diagnosis of HIV infection to the tenth year after that diagnosis (Loshe et al., 2007).

During the late HAART period (2000 to 2005), the median survival of HIV-infected patients had increased to 38.9 years, whereas the general population had a median survival of 51.1 years. Since the introduction of combination antiretroviral therapy (ART) in 1996, morbidity and mortality rates for individuals infected with the human immunodeficiency virus (HIV) have significantly decreased, and life expectancy after receiving an HIV diagnosis is getting closer to that of the general population (Loshe et al., 2007).

Nevertheless, not every PLWH in the United States has benefited to the same extent from the available treatment options. Recent estimates of PLWH at each stage of the HIV care continuum in the United States for 2006–2009 (including testing, linkage to care, retention in care, antiretroviral use, and viral suppression) have suggested that of all PLWH in the United States, 37 percent–40 percent were retained in care (Doshi et al., 2015). This includes testing, linkage to care, retention in care, antiretroviral use, and viral suppression.

According to the surveys, only 19 percent–28 percent of people living with HIV in the United States could remain in care, get ART, and achieve viral suppression (Doshi et al., 2015). In 2011, there were a total of 554,646 clients who were new to the RSR; of these, 512,911 were identified as being HIV-positive. More than two-thirds of HIV-positive patients were male; 45.6 percent of HIV+ patients were black or African American; 35.2 percent of HIV+ patients were between the ages of 45 and 54 (Doshi et al., 2015). Uninsured patients accounted for the most significant proportion of reported payer sources (25.4 percent), followed by Medicaid (24.7 percent). In 2011, 99,873 (75 percent) of the uninsured patients in the RSR got HIV medical treatment sponsored by the RWHAP (Doshi et al., 2015).

There was a total of 192,062 people who were successful in suppressing the virus. Among the population of persons who had at least one HIV medical care visit that was financed by the RWHAP throughout the year was 302,517 (Doshi et al., 2015). Over half a million people with HIV were provided care and support via the RWHAP. In 2011, 82.2 percent of clients who got HIV medical treatment sponsored by RWHAP were retained, while 72.6 percent of clients who received HIV medical care funded by RWHAP achieved viral suppression. Given that the RWHAP serves a largely impoverished community, which is expected to have severe health inequalities and worse outcomes than the total HIV-infected population, these rates are significantly higher than projected (Doshi et al., 2015).

There is an immediate and pressing need to emphasize retaining young people and young adults in HIV medical treatment and achieving positive results. Results revealed that the age groups ranging from 13 to 18 years, 19 to 24 years, and 25 to 34 years had the lowest viral suppression and retention rates. The age group from 19 to 24 years had the most considerable disparity between retention and viral suppression. It indicated that older people with HIV had a higher viral suppression rate and were more likely to remain in care (Doshi et al., 2015).

It was found that persons who identified as American Indian or Alaska Native and Black or African American had lower rates of viral suppression than those who identified as other racial or ethnic groupings. This finding is consistent with previous HIV research (Doshi et al., 2015). Achieving high levels of viral suppression is essential for multiple reasons: first, it improves morbidity and mortality for HIV-infected individuals; second, it is associated with a reduced risk of HIV transmission and population-level reductions in HIV incidence; and third, it is associated with a reduced risk of HIV transmission and increases in HIV survival (Doshi et al., 2015). Even though we discovered that most clients getting HIV medical care sponsored by RWHAP achieved viral suppression and treatment retention, it will be necessary to devote resources and attention to improve these outcomes for the clients still being treated (Doshi et al., 2015).

In summary, early intervention is critical, even for those who do not have access to healthcare within their communities. The population size and where most HIV+ patients (greater than 150 percent below the poverty level) reside are within a county that would offer medical, dental, and mental health services. Medical services are being used; however, dental or mental health services have historically been leveraged to a different degree than medical services to optimize client well-being for their benefit.

3 CHAPTER III METHODOLOGY

3.1 Research Design or Method

The proposed study design is a descriptive quantitative analysis of the program registry on 2022 patient visits to Ryan White Wellness Center 2022. This study will explore the utilization of medical, dental, and mental health services while considering the age, gender, ethnicity, zip code, poverty level, the county where the patient lives, and whether the patient is virally suppressed. The study includes a sample of patients who are already diagnosed with HIV and are not receiving PrEP.

This research aims to understand barriers to HIV treatment and care better. This study will investigate one of Ryan White clinics' patient demographics and their utilization of healthcare services. The study will address the following research objectives:

- Describe the patient demographics for those who participated in the Ryan White program between January 1 and November 30, 2022.
- Describe the types of healthcare services utilized by the patient population.
- Examine the relationship between demographic characteristics (race, gender, poverty level, age, geographic location) and healthcare utilization.

3.2 Sample Selection

The sample population includes the patients enrolled at one Ryan White Wellness Center between January – November 2022. The size includes 912 patients from their database.

3.4 Data Set Description

Data was captured in a repository by one Ryan White Wellness Center located in the Southern United States for 2022. Data were de-identified and exported into Microsoft Excel for analysis. Table 1 describes the study variables:

Table 1: Dataset Fields

Variable	**Definition**	**Categorical Options**
Race/Ethnicity	Categorical	Hispanic/Black or A.A./ More than one/White (non-Hispanic)/Asian
Age	Patient age in years	
Gender	Categorical	Male, Female, MtF, FtM, Transgender other
Zip Code	5-digit Zip	
County	County name	
Poverty Level	Percent Poverty Level	
Viral Suppression	Virally suppressed	Yes/No
Medical Visit	Medical visit in 2022	Yes/No
Mental Health	Mental health visit in 2022	Yes/No
Dental Visit	Dental health visit in 2022	Yes/No

3.7 Data Analysis

Data analysis includes a descriptive analysis evaluating total numbers and participation in program services. Chi-square/Fisher's exact and t-test will examine the relationship between patient characteristics and healthcare utilization. To avoid potential client identification, numbers smaller than 5 in a geographic area will not be reported.

3.8 Protection of Human Subjects

This project is considered non-human subjects program evaluation.

4 CHAPTER IV RESULTS

This study examined healthcare utilization and outcomes for 912 patients who participated in the Ryan White program between January to November 2022. Table 1 describes the participant's characteristics. Program participants were, on average, 48.5 years old and ranged in age from 21 to 93 years old. The majority of participants identified as male (73.4%) and included female (25.6%), transgender male to female (<1%), transgender female to male (<1%), and transgender other (<1%).

53% of the sample population resides in Charleston County, followed by Berkeley County at 21%. Black or African American (63.9%) or White (non-Hispanic). Most patients resided in the Charleston tri-county areas Charleston (52.9%), Berkeley (21.1%), and Dorchester (16.9%), with a smaller number of patients traveling from other counties across the State of South Carolina.

4.1 Results/Findings

Table 2: Patient Characteristics

Characteristic	**n**	**%**
Age mean(std)	48.5 (14.1)	
Gender		
Female	233	25.6%
Male	669	73.4%
Transgender FtM	1	0.1%
Transgender MtF	8	0.9%
Transgender Other	1	0.1%
Race/Ethnicity		
Black/AA	583	63.9%
Hispanic	50	5.5%
More than 1	13	1.4%
White	256	28.1%
Other	10	1.1%
County		
Berkeley	192	21.1%
Charleston	482	52.9%
Colleton	35	3.8%
Dorchester	154	16.9%
Georgetown	10	1.1%
Orangeburg	7	0.8%
Other	32	3.4%
Poverty Level		
Below 100%	327	35.9%
100- 150%	132	14.5%
151-400%	345	37.8%
Above 400%	108	11.8%
Virally Suppressed		
No	64	7.0%
Yes	848	93.0%

Program participants were grouped into four poverty levels, below 100 percent FPL (35.9%), 100 – 150 percent FPL (14.5%), 151 – 400 percent FPL (37.8%), and above 400 percent

(11.8%). Over a third of participants were grouped below 100 percent FPL, indicating the lowest income category, while a comparable proportion was grouped at 151 – 400 percent. This illustrates that most participants were either relatively poor or had moderate income. Lastly, the data shows that most patients (93 percent) are virally suppressed.

Health Care Utilization

We next examine the characteristics of those patients who utilized healthcare services. Those who participated in the program were given the opportunity to get dental, medical, and mental health services (Table 3).

Table 3: Health Care Utilization

Health Care Utilization	**n**	**%**
Medical Visit in 2022	853	92.5%
Mental Health Visit in 2022	61	6.7%
Dental Visit in 2022	277	30.4%

Table 3 summarizes visit types during the study. Of the 1,191 total patient visits, 853 (92.5%) patients had a medical visit; however, only 61 (6.7%) had a mental health visit, indicating underutilization. 277 (30.4%) dental visits occurred, indicating higher utilization than mental health services.

Table 4: Medical Visit by Age

	Mean Age	**Std**	p=0.0934
No	51.5	13.2	
Yes	48.3	14.1	

There were no statistically significant differences between the patients who did nor did not receive a medical visit. However, Table 4 shows the average age of patients who received a medical visit. There is a trend where those who sought care are younger. Those who had received a medical visit (average age 48.3 years) compared to those who have not (51.5 years).

Table 5: Mental Health by Age

	Mean Age	**Std**	p=0.0555
No	48.7	13.9	
Yes	45.2	15.5	

Table 5 compares the ages of those patients who received a mental health visit. On average, patients who received a mental health visit were younger (45.2 years) than those who did not (48.7 years).

Table 6: Mental Health Visit by Gender

Mental Health Visits by Gender n(%)	**Female**	**Males**	**Transgender FtM**	**Transgender MtF**	**Transgender Other**	p=0.006
No	218 (93.6%)	627 (93.7%)	1 (100%)	4 (50%)	1 (100%)	
Yes	15 (6.4%)	42 (6.3%)	0	4 (50%)	0	

Interestingly, as illustrated in Table 6 comparing the gender category, there is a statistically significant difference in who received mental healthcare. Results indicate that almost identical proportions of females (218, 93.6%) and males (627, 93.7%) did not seek a mental health visit. Neither Transgender FtM nor Transgender Other participants used the service. Half of the eight Transgender MtF participants did seek a mental health visit, while the others did not.

Table 7: Mental Health Visits by Race/Ethnicity

N(%)	**Black/AA**	**Hispanic**	**More than 1**	**White**	**Other**	**p=0.038**
No	551 (94.5%)	49 (98%)	11 (84.6%)	230 (89.8%)	10 (100%)	
Yes	32 (5.5%)	1 (2%)	2 (15.4%)	26 (10.2%)	0	

There is a statistically significant difference between the races of patients who received a mental health visit and those who did not (Table 7). White patients (10.2%) and those with more than one race (15.4%) have higher rates of mental health visits compared to other races (p=0.038).

Table 8: Dental Visit by Age

	Mean Age	**Std**	p=0.00063
No	47.7	14.3	
Yes	50.4	13.4	

There were no significant differences between gender or race and utilization of dental services. Table 8 summarizes the mean age of those patients who did or did not receive a dental visit. On average, participants who did not seek a dental visit were 47.7 years of age, while those who did were 50.4 (p=0.00063).

Table 9: Dental Visits by Federal Poverty Level

Dental Visits by FPL n(%)	**Below 100%**	**100- 150%**	**151-400%**	**Above 400%**	p=0.082
No	242 (74.0%)	84 (63.6%)	231 (67%)	78 (72.2%)	
Yes	85 (26%)	48 (36.4%)	114 (33%)	30 (27.8%)	

There was no statistically significant income difference between those who did or did not receive a dental visit. However, patients between 100% - 400% poverty level had higher rates of dental visits (Table 9).

Viral Suppression

Next, we examined the relationship between patient characteristics and our primary outcome of viral suppression.

Table 10: Virally Suppressed by Age

Virally Suppressed by Age			
	Mean Age	**Std**	p<0.0001
No	41.4	12.8	
Yes	49	14	

While there was no statistically significant relationship between gender or race and viral suppression, Table 10 examines the relationship between age and viral suppression. There is a statistically significant difference, where the average age of virally suppressed patients was 49 years versus patients the average age of those who are not (41.4 years).

Table 11: Dental Visits by Viral Suppression

Dental Visits by Viral Suppression n(%)	**Viral Suppression No**	**Viral Suppression Yes**	p=0.008
No	54 (84.4%)	581 (68.5%)	
Yes	10 (15.6%)	267 (31.5%)	

There is a statistically significant difference between the viral suppression of those patients who did or did not receive a dental visit (p=0.008). 31.5% of virally suppressed patients receive dental care, compared to 15.6% of patients who are not virally suppressed (Table 11).

5 CHAPTER V DISCUSSION

5.1 Discussion of Results

The outcome of looking into one of the Ryan White Wellness Clinics shows a need for significant improvement across the board for disadvantaged patients. Remembering, we aimed to:

1. Describe the patient demographics for those who participated in a Ryan White program between January 1 and November 30, 2022.
2. Describe the types of healthcare services utilized by the patient population.
3. Examine the relationship between demographic characteristics (race, gender, poverty level, age, geographic location) and healthcare utilization.

We hypothesize that vulnerable or disadvantaged patients will have lower utilization of healthcare services compared to patients with more significant resources. Looking at the results in chapter four, the hypothesis is proven to be true. Patients with a lower income below 100 percent of the FPL have not been to a dental visit. Charleston County had the most populated county where Black/AA are HIV positive (482). The research from the literature review coincides with the data that more people are being diagnosed but are not being virally suppressed. Most patients who had a dental visit were not virally suppressed (68.5%) but had not been to a dental visit. While medical visits were high in 2022, the older participants (51.5) were the majority.

On the contrary, mental health among the participants was significantly low in utilization, with 851 patients did not have a mental health visit in 2022, while Black/AA was tier at number one, followed by White. Dental utilization has been widely used by the older population who had an appointment versus the younger. A vast majority were virally suppressed, and those living below FPL.

Most participants had a medical visit followed by dental and mental health. FPL suggested that the patient might have had insurance due to the more below 100 percent FPL and little in between 100 to 151 percent.

5.2 Limitations

There are several limitations to this study. First, the study was limited to a single site in the southeastern part of the United States; therefore, the study cannot speak to most or all of the southeastern region of the U.S. In addition, the data only captured part of one year rather than an entire year or additional years to capture more data. Future research would include broadening the scope of whom to capture and doing multiple sites instead of a single site. Lastly, future research should conduct interviews for participants to explain the why part of being part of the clinic program and how it led to them getting there.

5.3 Conclusions

In conclusion, HIV is still an epidemic that must be contained. While there are an ample number of preventable, there needs to continually be an equal amount of treatment that goes into it. HIV is continually a topic of discussion in the lower-poverty population among black and brown communities. This project was designed to investigate a sample population further to make a generalized hypothesis of whether HIV-positive patients are taking advantage of the services offered. While Black/AA patients are yet at the top, it shows there is still more work to be done past ethnicity and race. We can take this a step further in expanding the sample data and target certain counties lacking in health care utilization that the Ryan White Program can offer.

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