Healthcare Professional's Perspective on Telemedicine - Individuals Living with HIV/AIDS

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Abstract

Background: With the outcome of the pandemic, telemedicine has become a popular healthcare delivery service across multiple organizations and providers over the past couple of years. This study examines the influences telemedicine has on those living with HIV/AIDS.

Objective: To resolve the initiative to end the ongoing HIV/AIDS epidemic, organizations and healthcare professionals need to continue to identify ways to maintain care for those living with HIV/AIDS. The perspective that health care professionals have on how the use of telemedicine affects patients' living with HIV/AIDS will help provide more insight into what they believe about telemedicine, as well as if it can help improve patient outcomes.

Methods: This study involved the use of a seven-question survey, which was administered electronically to healthcare professionals at three selected HIV/AIDS agencies in Rhode Island: AGAPE, ACOs, and APRI.

Results: The sample (N=14) consisted of healthcare professionals. The data collected from the survey responses revealed three distinct themes: accountability, healthcare outcomes and satisfaction rates.

Discussion: This study explored the perspectives of healthcare professionals and how it relates to the influence of telemedicine, utilization and satisfaction rates and improvement of health outcomes.

Conclusion: The participants who took part in the survey provided insight and knowledge into a topic with very limited data.

Keywords: [HIV, AIDS, Telemedicine, Healthcare Professional Perspectives, Health Outcomes]

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Chapter 1: Introduction

Over the course of the past four decades, organizations, medical practices, healthcare professionals and communities have teamed together to focus on the continued prevention, treatment, and care of those living with Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS). Providing access and delivering high quality patient-centered care are trending topics and major obstacles in our current healthcare system. With today's advancements in technology, telemedicine has become a popular and expanding healthcare delivery service for all individuals, especially due to the aftermath of the COVID-19 pandemic. The Covid pandemic encouraged the use of telemedicine in all fields of medicine, including those living with HIV/AIDS. The objective of this research paper is to determine if healthcare professionals consider telemedicine to be an efficient and beneficial form of care for the HIV/AIDS population. To build on existing research, my research question will aim to further examine the perspective that healthcare professionals have on how the utilization of telemedicine affects individuals living with HIV/AIDS.

Background/History

Approximately forty years ago, on June 5, 1981, a new and unfamiliar disease outbreak emerged in California. This disease was originally thought to be a form of pneumonia, which was reported simultaneously in a handful of previously healthy gay men in Los Angeles, CA. Additionally, one month later, a rare cancer known as Kaposi's Sarcoma (KS), which was later linked to AIDS, was also reported in twenty-six healthy middle-aged gay men throughout the state of California. These initial cases were subsequently known as the first instances of HIV/AIDS in the United States. After numerous reports and incessant research on this unfamiliar

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disease, approximately one year later, on September 24, 1982, the Centers for Disease Control and Prevention (CDC) coined the term "HIV" and "AIDS" for the first time (CDC, 2022).

After the discovery of HIV/AIDS, non-profit organizations, such as the San Francisco AIDS Foundation and health care professionals at the San Francisco General Hospital (SFGH), instantly devoted their adept services to assist those newly diagnosed with HIV/AIDS and soon took on the vast obligation and responsibility to put an end to the epidemic (Cisneros, 2021). "From June 1981 to September 1982, the CDC received reports of 593 cases of AIDS and out of these cases, death occurred in 243 individuals (41%)" (CDC, 2022).

Roughly two years later, in December 1984, a 13-year-old boy, Ryan White, became a national spokesperson and the face of the struggle against the HIV/AIDS virus when he became infected with HIV after an adulterated blood treatment (Cisneros, 2021). With only being given 6 months to live at the time of his diagnosis, he surprisingly lived 5 years longer than his doctors and care team expected. Months before his high school graduation, Ryan White passed away from AIDS in April 1990. In August 1990, Congress passed the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act in his name. To this day, The Ryan White Program provides services and assistance to all of those living with HIV and AIDS throughout the United States (HRSA Ryan White HIV/AIDS Program, 2021).

Throughout the previous decades, many organizations have and continue to commence strategies, actions and polices to assist in ending the HIV/AIDS epidemic. In recent times, the federal government released an initiative in 2019 to reinforce ending the HIV epidemic. As illustrated below, the plan depicts a four-step process to diagnose, treat, protect and respond (CDC, 2022).



Image from: Centers for Disease Control and Prevention, 2022

Whereas HIV mortality and infection rates have declined considerably over past couple decades, "HIV remains a leading cause of death for certain age groups in America. In 2019, HIV was the 9th leading cause of death for those ages 25-34, and the 10th cause of death for those aged 35-44" (Kaiser Family Foundation, 2021). With this pertinent information, it is essential to continue to spread awareness of HIV/AIDS as well as emphasize the importance of continued care and treatment.

What is HIV/AIDS?

According to the CDC, HIV is an overly complex chronic virus that attacks cells within the human body, that helps fight infection. The virus makes an individual more susceptible to other infections and/or diseases and overall weakens an individual's immune system. HIV is mainly spread by an individual who is infected with HIV through bodily fluids, such as through unprotected sex or by sharing needles to inject drugs. Some main symptoms include fever, chills, rash, night sweats, muscle aches, sore throat, fatigue, swollen lymph nodes and mouth ulcers (CDC, 2022).

There are three stages of infection. Stage 1 is categorized as Acute HIV Infection. In this stage, individuals have a high amount of HIV, or contain a high viral load, in their blood. They are extremely contagious, and some individuals exhibit flu-like symptoms.

Stage 2 is categorized as Chronic HIV Infection of Asymptomatic HIV Infection. In this stage HIV levels are lower (the viral load emulates at very low levels); however, it is still infectious and transmittable. It is common for individuals to not feel as sick or display as many symptoms at this stage. If HIV is left untreated, it can lead to AIDS, where the body's immune system becomes severely damaged.

AIDS is the third and most severe stage of the virus. Since the immune system is critically damaged at this point, individuals in this stage encounter multiple severe infections and illnesses. Individuals still have a high viral load and are still contagious in this stage. The prognosis without treatment is a survival rate of three years.

Unfortunately, to this day, there is no known cure for HIV or AIDS, however, it can be managed and treated with medications, such as Active anti-Retroviral Therapy (ART) (CDC, 2022). With the increased use of ART among individuals with HIV/AIDS, it has led to a decline in new infections along with a 43% reduction in deaths associated with HIV since 2003 (Coombes & Gregory, 2019). Today, individuals with an HIV/AIDS diagnosis can live long, healthy lives (CDC, 2022).

Prevalence and Incidence

Based off data collected in 2019, there are currently more than 1 million people living with HIV/AIDS in the United States. Furthermore, there are approximately 35,000 new cases

reported each year (AIDSVu, 2020).



Image from: Local Data, AIDSVu.org

In the northeastern region of the Unites States, there were 236,247 individuals reported living with HIV/AIDS and over 5,000 individuals were newly diagnosed (AIDSVu, 2020).



Image from: Local Data, AIDSVu.org

Locally, in Rhode Island there were 2,653 individuals documented living with HIV/AIDS. Additionally, there were 72 people newly diagnosed with HIV/AIDS in 2019. As the graph depicts below, the northern Rhode Island region has the highest rates of individuals living with HIV/AIDS. Most individuals living with HIV/AIDS in RI are white (43.6%), male (73.2%), and aged 55 years or higher (41.3%). In comparison with national prevalence rates in the US, most individuals living with HIV in the US are black (39.8%), male (76.6%), and aged 55 years or higher (37.4%) (AIDSVu, 2020).



Image from: Local Data, AIDSVu.org

In addition to the prevalence and incidence rates in Rhode Island, below depicts a histogram and line graph from a Journal article published through the Infectious Diseases Society of America from 1984-2020. The blue line on the graph illustrates the number of newly diagnosed cases each year in Rhode Island and the red line exhibits individuals living with HIV/AIDS who are receiving care in Rhode Island. The blue shaded bars on the histogram represent the proportion of people with HIV in Rhode Island. Sociodemographic characteristics of the data below are majority white (60%) males (77%) aged 25–44 years old (56%) (Novitsky, Steingrimsson, Gillani, Howison, Aung, Solomon, Won, Brotherton, Shah, Dunn, Fulton, Bertrand, Civitarese, Howe, Marak, Chan, Bandy, Alexander-Scott, Hogan, Kantor, 2021).





Image from: Infectious Diseases Society of America, 2021

In essence, HIV/AIDS is a virus that initially emerged in the United States in the early 1980's and became a nationwide epidemic. It primarily affects an individual's immune system and without treatment or care, it can be fatal. Whereas the virus mainly affects males, it can be transmitted to men, women and children. Luckily the prevalence of HIV/AIDS has greatly diminished over the years, however, new positive cases of HIV/AIDS are still common and being recorded throughout the US today.

Chapter 2: Literature Review

To sustain a healthy lifestyle and to reduce transmission rates, retention in HIV medical care is crucial. A recent article published at the beginning of 2022 by AIDS and Behavior Journal concluded that only 50% of individuals with HIV/AIDS are in continued care (Boshara, Patton, Hunt, Glick, Johnson, 2022). In addition, an article published by the journal of AIDS Patient Care and STDs concluded that 80% of HIV infections are transmitted from individuals who are not receiving HIV care and treatment (Dandachi, et al., 2020). To carry out the initiative

to end the HIV/AIDS epidemic, our society needs to continue to identify ways to promote maintaining care for those living with HIV/AIDS. Especially after the aftermath of Covid, the use of telemedicine may be a fundamental component in providing increased access to healthcare and in improving health outcomes for the HIV/AIDS population.

What is Telemedicine?

Telemedicine is an extensive topic surrounding the method of healthcare. According to the United States Health Resources and Service Administration (HRSA), telemedicine is defined as "the use of electronic information and telecommunications technologies to support and promote long-distance clinical health care, patient, and professional health-related education, public health, and health administration" (Budak, Scott, Dhanireddy, Wood, 2021). To coincide, the American Telehealth Assocation defines telemedicine "as use of audio and/or video technologies to improve patient health by facilitating interactions between patients and clinicians or between two or more clinicians through videoconferencing, transmission of still images, e-health (including patient portals), remote monitoring of vital signs, continuing medical education, and medical call centers" (American Telemedicine Association, 2022). Telemedicine became a widely recognized form of care at the start of the Covid-19 pandemic. Telemedicine services used by individuals living with HIV/AIDS have the capability to address numerous obstacles by improving provider-patient and provider-provider communication and care (Phan, Kim, Linh, Cosimi, Pollack, 2022).

Telemedicine as a Form of HIV care

Research surrounding medical care in the form of telemedicine for those living with HIV/AIDS is extremely limited, however, past research indicates that telemedicine has actually been used for those living with infectious diseases since the 1990s. Former research reveals that

telemedicine was first used to focus on the treatment of hepatitis C, tuberculosis and HIV/AIDS (Coombes & Gregory, 2019). Studies involving the use of telemedicine over the past decade or so have shown advantageous benefits including positive patient outcomes, improved patient satisfaction, and increased accessibility to health care related services (Kichloo, Albosta, Dettloff, Wani, El-Amir, Singh, Aljadah, Chakinala, Kanugula, Solanki, Chugh, 2020).

Various strategies are essential to continue to improve access to telemedicine and promote continuity of care. The fundamental goal for all individuals living with HIV/AIDS is to sustain a healthy lifestyle, manage achieving HIV viral suppression, reduce transmission rates, and maintain recurrent medical care. A recent article published at the beginning of 2022 by AIDS and Behavior concluded that only 50% of individuals with HIV/AIDS are in continued care (Boshara, Patton, Hunt, Glick, Johnson, 2022). In addition, an article published by the journal of AIDS Patient Care and STDs concluded that 80% of HIV infections are transmitted from individuals who are not receiving HIV care and treatment (Dandachi, et al., 2020). To carry out the initiative to end the HIV/AIDS epidemic discussed above, our society needs to continue to identify ways to promote maintaining care for those living with HIV/AIDS. Telemedicine may be a momentous component in providing increased access to healthcare and in improving health outcomes.

Previously, telemedicine was not extensively implemented in all states due to regulatory laws and the absence of supportive reimbursement payment systems. However, during the COVID-19 pandemic, telemedicine was publicized as a primary form of care for nearly all individuals throughout the nation. Many health care providers and organizations were compelled to increase their utilization of telemedicine services instead of the traditional face-to-face patient encounters at the start of the pandemic (Kichloo, et, al., 2020). With increased telemedicine

services being offered by providers, and with more health insurance companies accepting telemedicine as a covered entity, more individuals living with various health conditions, such as HIV/AIDS, have access to these useful health care services (Smith & Badowski, 2021). "According to a survey of directly funded Ryan White providers, nearly 99% of medical providers reported offering telehealth services at the start of the pandemic to retain HIV/AIDS patients in care while keeping them socially distanced" (Smith & Badowski, 2021).

As previously mentioned, with most chronic health conditions, retention in medical care for those living with HIV/AIDS is critical in maintaining optimal health (Dandachi, Dang, Lucari, Teti, Giordano, 2020). It is important that new solutions, such as telemedicine services, are developed to strengthen connections and maintain this retention in HIV care to curb the HIV epidemic in the United States (Dandachi, et al., 2020). According to the Current HIV/AIDS Reports, many HIV clinics have adopted the use telemedicine through telephone and videoconferencing as part of their delivery model of care to screen and counsel patients, along with the objective to promote retention in care (Phan, et. al., 2022).

Though limited, current research in HIV medical care also suggests that telemedicine services may enhance appointment adherence, lower the viral suppression/load, prevent transmission of the virus, and ultimately further develop positive health outcomes among people living with HIV/AIDS (Boshara, et. al., 2022). In 2019, the Journal of Current Infectious Disease Reports published an article regarding the current and future use of telemedicine in infectious diseases, including HIV/AIDS. This article also correspondingly reported that the use of telemedicine services greatly improved clinic attendance rates. They also noticed improved adherence to ART. One of the earliest operations of telemedicine regarding HIV/AIDS care was reinforcing the use and compliance with ART (Coombes & Gregory, 2019). In addition, an

article that focuses on telemedicine interventions for those living with HIV/AIDS stresses individuals living in settings with limited resources can present restrictions in access to care, such as ART medication maintenance. The article discussed many clinics have adopted supplementary models, such as a multi-month dispensing of ART and community-based ART medication pickup points to aim to enhance treatment access along with reducing avoidable burdens of the health care system. Clients were given the opportunity to have a virtual 2-week follow-up, during which they received laboratory or test results (if applicable), an examination, and ART side effect assessment and management. "Providers and patients who engaged in these virtual visits reported increased service access, saved time and cost, improved confidentiality, and reduced stigma" (Phan, et. al., 2022).

Telemedicine has been found to be an auspicious, well-positioned delivery method to help support and address some factors identified as barriers to HIV care (Anderson, et al., 2017). Especially with the expansion of technology, current research that has been conducted suggests that "telemedicine could be an acceptable, safe, feasible, cost-effective, and effective alternative to in-clinic visits to manage HIV" (Dandachi, et al., 2020). In addition, "telemedicine visits have several advantages beyond promoting physical distancing, including convenience; decreased travel time, expenses, or time away from work; helping individuals who fear stigma when attending clinic visits; and, importantly, helping individuals stay safe and healthy, particularly if they have risk factors for serious viruses such as, COVID-19" (Budak, et. al., 2021). Telemedicine may be an extraordinary public health opportunity, especially in relation to reducing barriers of care for those living with HIV/AIDS.

Barries to Care for Those Living with HIV/AIDS

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Ongoing research highlights three common barriers to care for the HIV/AIDS population. They have been identified as housing, substance use and transportation issues (Boshara, et. al., 2022). The use of telemedicine for those living with HIV/AIDS may aid in reducing these obstacles to care.

Minimal research has been conducted regarding access to telemedicine and housing insecurity. Certainly, those with housing insecurities have "limited access to technology, low telehealth literacy, and financial constraints" concerning the utilization of telemedicine (Yarger, Hopkins, Elmes, Rossetto, Melena, McCulloch, White, Harper, 2022). Previous research indicates those with housing disparities are highly likely to postpone and reschedule medical care. With proper access, the use of telemedicine may assist with deferring individuals having to postpone appointments. One study published by the Journal of General Internal Medicine focused on contraception use and housing insecurity. From the data collected in this study they concluded that those experiencing housing insecurities were much more likely to declare that it would be difficult to have a telemedicine appointment. However, the study also identified that only 25% of participants felt uncomfortable or did not have access to telemedicine services (Yarger, et. al., 2022).

Substance use is another common barrier to care for the HIV/AIDS population. "Approximately twenty-one million Americans have a substance use disorder (SUD) related to alcohol, opioids, or other drugs" (Huskamp, Busch, Souza, Uscher-Pines, Rose, Wilcock, Landon, Mehrotra, 2018). According to the National Institue on Drug Abuse, since the 1980s, drug use and HIV have been significantly correlated (National Institutes of Health, 2022). Unfortunately, individuals living with HIV/AIDS are disproportionately troubled by and are more vulnerable to mental illnesses and SUDs. Poor mental and physical health are both strong factors associated to SUDs (Hochstatter, Akhtar, Dietz, Pe-Romashko, Gustafson, Shah, Krechel, Liebert, Miller, El-Bassel, Westergaard, 2020). A study that took place in Wisconsin found that during the Covid pandemic, those living with HIV/AIDS had increased their use of illicit drug use. It was also noted that they found a significant increase in individuals missing doses of their ART medications. "Intravenous drug use continues to be a risk factor for transmission of the virus, accounting for approximately 6 percent of HIV diagnoses in 2015" (National Institutes of Health, 2022). With the rapid growth of telemedicine and its proven efficacy, it has been found in multiple studies, relating specifically to SUDs, to be comparable and even preferable to inperson care. In addition, the use of telemedicine for SUDs may increase healthcare access in rural or restricted areas and assist those lacking transportation. It also may help address privacy and stigma concerns (Huskamp, et. al., 2018). Furthermore, according to the article Telemedicine for HIV Care, researchers also observed lower rates of missed appointments when telemedicine services were utilized (Smith & Badowski, 2021).

According to the article AIDS Patient Care and STDs, those living with HIV/AIDS also frequently report concerns surrounding transportation, such as transportation costs, unreliable public transportation, and travel distance. Individuals that have difficulty in attending appointment visits find that telemedicine services provide more flexibility along with the ability to better integrate the appointment in their schedule (Dandachi, et al., 2020). The AIDS and Behavior Journal published an article stating telemedicine in fact expanded HIV care, particularly for those living in rural areas as well as "hard-to-reach populations," such as those who are imprisoned (Rogers, Coats, Adams, Murphy, Stewart, Arnold, Chan, Nunn, 2020). This journal also published another article in 2021 that indicated a large decrease in individual's attending or scheduling their next HIV appointment in the office. It was noted that due to Covid,

some providers were pushing back non-urgent face to face appointments and/or provided virtual appointment options instead. Unfortunately, the study was not able to determine whether an individual's willingness to attend a telehealth appointment differed from in office appointments (Huskamp, et. al., 2018). The AIDS Behavior journal also concluded telemedicine decreased travel time and expenses for those living with HIV/AIDS. Furthermore, they found telemedicine assisted in reducing stigmatizing clinic experiences and minimized infectious risk/social contact (Mgbako, 2020).

Overall, telemedicine may be a constructive approach to reducing some of the barriers to care, such as transportation challenges, along with increasing access to HIV medical care (Boshara, et. al., 2022). Moreover, many individuals living with HIV are immunocompromised. The alternative option of telemedicine services can support expanding health care more safely (Smith & Badowski, 2021).

Policys Surrounding Telemedicine

Another prevalent challenge with extending and retaining telemedicine services throughout the United States are pay parities regarding health insurance reimbursement rates (Rogers, et. al., 2020). Prior to 2020, as touched on above, many reimbursement barriers and regulation issues prohibited the national implementation of telemedicine. To help expand telemedicine services, a bill was passed at the start of the pandemic that allowed the Department of Health and Human Services (DHHS) to waive certain restrictions for a limited time. Additionally, the Centers for Medicare & Medicaid Services (CMS) authorized waivers to ease the expansion of telemedicine services to those needing medical care (Budak, et. al., 2021). In Rhode Island, when the health commissioner and governor inaugurated a policy change surrounding telemedicine a couple years ago, it allowed many RI facilities and organizations to

bill telemedicine services at more sustainable rates (Rogers, et. al., 2020). "To exemplify the significant shift, in February 2020, 0.1% of Medicare visits were conducted electronically, versus 43.5% in April 2020" (Budak, et. al., 2021). Additionally, a community health center in Boston, MA caring for those living with HIV/AIDS documented in March and April 2020, the number of in-person visits dropped and the number of telemedicine visits increased from 263 to 751 telemedicine appointments over the course of one month (Budak, et. al., 2021). Furthermore, payers, along with the Ryan White HIV program, have allowed individuals living with HIV/AIDS to obtain a 3-month supply of HIV medications, such as Antiretroviral Therapy (ART) and Pre-Exposure Prophylaxis (PrEP) (Rogers, et. al., 2020). These increases in telemedicine services were mainly sustained by reimbursement and policy changes throughout the country.

Currently, it is difficult to predict whether telemedicine for HIV services will be continued. It may be largely determined by whether or not payers continue to sufficiently reimbursement providers after the pandemic ends (Rogers, et. al., 2020).

Health Outcomes and Telemedicine for the HIV Population

As formerly discussed, it is crucial to develop and implement innovative solutions to enhance care to promote positive health outcomes and to overcome the current HIV/AIDS epidemic in the United States. Whereas there is limited research, a narrative review published approximately one year ago through the Journal of HIV/AIDS, included an analysis of individuals receiving care for HIV through telemedicine services prior and during the COVID-19 pandemic. It included reports of clinical outcomes that utilized telemedicine for HIV care. The main goal of the study was to evaluate future expectations of HIV care via telemedicine prepandemic, during the pandemic and beyond. The study evaluated viral load suppression among

HIV individuals and overall concluded lower rates of viral load suppression (along with lower rates of missed appointments). Remarkably, the data also concluded that prior to the start of the pandemic, videoconferencing for clinical visits had higher rates of viral suppression compared to traditional in-office visits. During the pandemic, contrarily, individuals were reported to have a slightly higher viral load. The researchers attributed the increase in the detectable viral load to a lack of access to social support services, the economic impact, housing instability, and COVID-19 outbreaks, which all could have had adverse effects on individual's health outcomes. The article also touched on the challenges revolving around homelessness among the HIV population. As mentioned previously, homelessness and housing insecurity are noted as a frequent barrier to healthcare. Researchers stated that homelessness is three times higher for those living with HIV compared to the general population. They believed this may have contributed to increased viral loads. Overall, the study determined that the use of telemedicine for the HIV population is considered to be successful in achieving viral suppression among those living with HIV (Smith & Badowski, 2021).

Additionally, in Iowa, telemedicine services were expanded for Preexposure Prophylaxis (PrEP) care (Smith & Badowski, 2021). PrEP is another common HIV/AIDS preventative medication that reduces the transmission of HIV when taken daily. "Taking PrEP medication as prescribed reduces the risk of getting HIV via sexual contact by about 99% and reduces the risk of getting HIV by at least 74% among persons who inject drugs" (CDC, 2022). Prior to COVID, telemedicine for PrEP care was found to be a success. A study reported that after a 6-month time frame, approximately 60% of patients remained in HIV medical care. Of the patients not retained in care, 18 of them had at least a documented plan for transition of care. The study also concluded that there was a 100% adherence to HIV testing. In comparison, traditional in-person

appointments only found 77% adherence to HIV testing (Smith & Badowski, 2021). Another study found telemedicine to be favorable for HIV/ AIDS treatment, such as PrEP, due to increased privacy. This article found some traditional barriers to PrEP included confidentiality, accessibility, and stigma. These barriers may also be reduced by the use of telemedicine and could increase PrEP adherence (Coombes & Gregory, 2019).

Telemedicine and HIV Care in Rhode Island

Throughout the United States, many organizations have taken the initiative to support those living with HIV/AIDS through telemedicine. Locally, in Rhode Island, Open Door Health (ODH) opened its doors on March 2, 2020, right at the start of the COVID-19 pandemic. The clinic offers multiple services to Rhode Island residents such as treatment and prevention services, adolescent and adult primary care, gender affirming care, Hepatitis C screening and management, STI screening and treatment and HIV screening. In addition, this is the first clinic in RI that provides sexual health care to the LGBTQ + community. Most of the clinic's services transitioned to telemedicine shortly after opening. Face-to-face appointments were offered only when medically necessary. They use an electronic medical record patient portal along with a zoom platform called *Zoom for Healthcare*. They also offer telephone visits for those who have difficulty with videoconferencing. Overall, a study conducted by ODH concluded their clients/patients were propitious regarding the benefits of telemedicine. They expressed their appreciation for greater accessibility to their healthcare providers and overall convenient access to healthcare in general (Rogers, et. al., 2020).

Patient Perspective and Satisfaction Rates

Patient and client satisfaction rates are an essential part of the healthcare system across all fields in medicine. As specified, quality and retention of care are imperative. There are multiple

ways patient and client perspective(s), and satisfaction rates can be measured. One organization administered a patient satisfaction and exit survey for their patients to complete after their HIV telemedicine medical care visits. Out of the twenty-two individuals that responded to the survey, over 75% reported interest in utilizing telemedicine beyond the COVID-19 pandemic. In addition, approximately 25% reported interest in receiving HIV care via telemedicine, and 50% were interested in Sexually Transmitted Infection (STI) screening and treatment via telemedicine (Rogers, et. al., 2020).

Secondly, another study conducted at a clinic in Missouri found that "90% of patients using telemedicine reported liking it and ranked it as better, or just as good, as traditional inclinic visits" (Smith & Badowski, 2021). As seen in similar studies, they also saw higher retention rates with their patients after the implementation of telemedicine. It was noted that this clinic in Missouri was one of the only clinics that provided HIV medical care in the state where many individuals spent hours driving to attend their appointment.

Comparably, In Houston, Texas another study found that "patients reported several benefits of using telemedicine, including telemedicine being a better fit for their life schedule (69%), not needing to travel to a clinic (63%) and having more privacy at home (62%)" (Smith & Badowski, 2021). Many individuals also expressed being highly satisfied with care and were interested in continuing utilizing telemedicine, even after the pandemic is over (Smith & Badowski, 2021).

Moreover, a journal article from AIDS Patient Care and STDs concluded 57% of study participants indicated they would be more likely to use telehealth for their HIV care if available versus face-to-face in-person care (Dandachi, et al, 2020). The article also concluded that "more than half of participants were likely to use telemedicine when available and almost a third of the participants were willing to replace face-to-face clinic visits by telehealth frequently or always" (Dandachi, et al, 2020).

From a different setting, a retrospective study was performed at a correctional facility, where healthcare researchers monitored individuals for HIV care through telemedicine. The services were compared with an onsite correctional primary care physician (PCP). For the proportion of individuals who used telemedicine, they were found to have a significantly higher rate of viral suppression achieved when managed through telemedicine and data revealed high rates of positive patient outcomes (Anderson, et al., 2017).

Lastly, a study published in May of 2020 focused on patient empowerment in HIV care. Undoubtedly, the use of telemedicine has increased over the past decade and results from this study indicated that, "57% of respondents were more likely to use telemedicine for their HIV care compared to in-person" (Mgbako, Miller, Santoro, Remien, Shalev, Olender, Gordon, Sobieszcyk, 2020).

In all of these studies, interest and/or attitudes in telehealth services were not related to health status, or other factors, such age, sex, race, and income, among individuals living with HIV/AIDS. It is essential to continue to further examine efforts to optimize telemedicine and satisfaction rates for HIV care (Harsono, Deng, Chung, Barakat, Friedland, Meyer, Porter, Villanueva, Wolf, Yager, & Edelman, 2022).

Healthcare Professional Perspective

As specified, from a patient perspective, research has proposed that telemedicine provides comfort, convenience and privacy and reduces stigma for patients who receive HIV care. However, little is known about what healthcare professionals providing HIV care think about telemedicine. In general, an article published in January of 2022 from the International

Journal of Telemedicine and Applications, focused on physicians' perspectives on the use of telemedicine from a total of six hospitals. 110 physicians were given a self-administered questionnaire examining physicians' perception of telemedicine over a 7-month period August 2019 to March 2020). Most of the participants were male (61%) and were in the aged 35 to 44 years (46%). Results concluded that 84% of physicians believed telemedicine to complement face-to-face care and 70% agreed that messaging and healthcare application will improve physician-patient communication. Furthermore, approximately 51% were satisfied with their use of telemedicine and 71% believed the use of telemedicine will not reduce the quality of their health care delivery methods. Contrastingly, 84% of the study participants still proclaimed face-to-face services to be the best form for healthcare and 52% stated they believed telemedicine may unfortunately increase their workload (El Kheir, Alnufaili, Alsaffar, Assad, Alkhalifah, 2022).

Relating more to HIV/AIDS care, an article published a few years ago in 2017 indicated that 55% of healthcare professionals felt that telemedicine should be expanded for HIV care and 61% of healthcare professionals stated they felt patients would benefit from telemedicine services (Anderson, et al., 2017). Similarly, a more current journal article from Current HIV/AIDS Reports surveyed physicians who cared for individuals living with HIV/AIDS. Results concluded that 85% of healthcare professionals believed telemedicine could improve access and timeliness to care for those living with HIV/AIDS (Budak, et. al., 2021).

Moreover, a study conducted in Ontario, Canada, examined physician's perspectives and analyzed their thoughts on how the use of telemedicine affects HIV care. Forty-eight physicians completed a web-based, self-administered, cross-sectional survey. The survey determined current perspectives on the risks, benefits, and challenges of physicians in relation to the use of telemedicine and HIV care. The results concluded that the main challenge that physicians expressed was that they could not adequately assess the health of their patient via telemedicine. For risks, most physicians concurred that patients may not "feel adequately connected" to them as a healthcare provider via the use of telemedicine. Lastly, for benefits, most physicians stated that they believed their patients would benefit from telemedicine. Many of the physicians also agreed that the quality and efficacy of patient care could improve in HIV patients using telemedicine (Anderson, et al., 2017).

Since the future direction of telemedicine is unknown, more research is needed, especially on the perspective that healthcare professionals have surrounding telemedicine and HIV care.

In Summary

To conclude, sustention in HIV/AIDS medical care is crucial to support optimal health and to prevent further transmission of the virus. With the vast adoption of telemedicine at the start of the Covid-19 pandemic, many individuals started receiving various medical care through telemedicine services. Even with minimal research and data, the COVID-19 pandemic has demonstrated that telemedicine can be beneficial when individuals are interested in engaging with and using telemedicine (Smith & Badowski, 2021). As mentioned, it is essential to develop and implement solutions to enhance care for the HIV/AIDS population in order to promote positive health outcomes. Former research shows telemedicine has been associated with high patient satisfaction rates and positive experiences. Initially it was speculated that there would be reports of high patient satisfaction rates in utilizing telemedicine for the HIV/AIDS population from a convenience standpoint. Continued monitoring quality improvement and satisfaction measures for the HIV/AIDS population are essential for future initiatives. Some gaps

surrounding the use of telemedicine include barriers to care, such as housing insecurities, inadequate technology and low telemedicine literacy. Inadequate laws surrounding healthcare reimbursement may pose other challenges regarding the use of telemedicine. However, overall, research surrounding telemedicine has been found to be an opportune healthcare delivery method for those living with HIV/AIDS.

Chapter 3: Study Objective, Specific Aims and Hypothesis

The purpose of this research paper is to determine if healthcare professionals consider telemedicine to be an efficient and beneficial form of care for the HIV/AIDS population. After further examining previous research surrounding the perspective that healthcare professionals have on how the utilization of telemedicine affects individuals living with HIV/AIDS, many studies have concluded that both patients and healthcare professionals report constructive, positive feedback surrounding telemedicine (Rogers, et. al., 2020). Even though there is limited research on the perspectives of healthcare professionals surrounding telemedicine, current data does suggest telemedicine to be advantageous for the HIV/AIDS population.

The perspective that healthcare professionals have on how the use of telemedicine affects patients living with HIV/AIDS will supply more insight into what healthcare professionals believe about telemedicine, as well as if it can help improve patient outcomes. In conducting this research, the following aims are expected to be carried out:

Aim 1: Compare the influence that telemedicine has on HIV/AIDS patients.

Aim 2: Examine utilization and satisfaction rates for telemedicine services versus inoffice services for HIV patients/clients (face to face appointments).

Aim 3: Analyze if health outcomes have improved.

In the first aim it was hypothesized that healthcare professionals will recognize telemedicine to be an effective form of care and that it would also benefit their patients/clients. From the literature review, the current data is mixed. Most healthcare professionals agree that telemedicine is an effective form of care, but many still believe that traditional face-to-face care is a preferable delivery method for the HIV/AIDS population. Some concerns expressed included poor patient-physician connection and communication, an absence of a physical exam and an increased workload with new telemedicine platforms. From reviewing patient perspectives in previous research, most patients and clients believe telemedicine is a beneficial form of care for their HIV needs. Most patients prefer convenience, reduced travel time, and lowered stigma concerns when telemedicine services are used.

In the second aim, it was hypothesized that healthcare professionals who work with patients living with HIV/AIDS will see higher utilization and satisfaction rates from patients. According to the research, studies concluded that both patients and healthcare professionals had increased utilization rates surrounding telemedicine services. Many patients and clinicians had lower rates of cancelled, missed or rescheduling of appointments. As far as satisfaction rates are concerned, many studies concluded patients and clients reported that they favored telemedicine appointments over face-to-face office appointments and, if offered, would continue to use telemedicine even after the pandemic is over.

For the third aim, it was hypothesized healthcare professionals will see improved health outcomes with their patients/clients. In the literature review, results were also mixed. Some healthcare professionals saw a decrease in the viral load along with better ART and PrEP medication adherence while using telemedicine and some studies had shown the adverse effect.

Chapter 4: Methods

Study Design

For this mixed method study approach, qualitative data was collected and utilized. This research study used new data through primary data sources. To obtain healthcare professional's perspective on telemedicine, information was reviewed about how telemedicine (particular occurrence) and individuals living with HIV (population) coincide. A seven-question survey (see page 44 for full copy of survey) was constructed to obtain healthcare professionals' perspectives on telemedicine and HIV care. A survey was used for this research with the main benefits being a cost-efficient tool, accessibility (reached my study population quickly) and respondent anonymity. Other advantages which made this tool suitable for the research included flexibility, easy to administer and reduced pressure on participants while answering questions. Participants had the ability to complete the survey at their convenience and this may have put less pressure on how they answered the survey questions (ex. no time constraints to complete, unlimited space to express responses, etc.).

Ethical Approval

Approval to conduct the research was obtained from the Institutional Review Boards (IRB) in Feb 2022. Participants were informed there were no known risks from participating in this research. The risks were "minimal," meaning that the risk was the same as what they would experience during typical daily activities. It was also noted that there were no direct benefits from participating in the study, however, reflecting on telemedicine experiences/services may lead to a better understanding of the use of telemedicine for the HIV community. In addition, information from this study may also benefit individuals living with HIV/AIDS currently or in the future. It was also noted that no compensation would be provided for participating in this study.

Setting

Most of the questionnaires were electronically emailed to participants and were completed during a designated time during work hours provided by their employer. Other participants completed the survey in the comfort of their own home on their personal computer.

Study Population/Participants

In order to provide insights into the research question, the participants for the survey were selected through purposive sampling. It was necessary to construct a sample population that would be most useful for the purposes of the research. There are many agencies and organizations in New England that work with and care for individuals living with HIV/AIDS. Only agencies within the state of Rhode Island were used for this study. According to the prevalence map listed above (refer to page 11), Northern Rhode Island holds the highest prevalence rates of those living with HIV/AIDS. Therefore, agencies from Providence County in Rhode Island were selected. The three agencies that agreed to participate in the survey were Agape (located in Woonsocket RI), AIDS Project Rhode Island (APRI) (located in Providence, RI), and AIDS Care Ocean State (ACOS) (also located in Providence, RI). These three agencies will provide a good representation of the population regarding healthcare professionals' perspectives. See image depicted below to identify the agencies' locations.





Image From: ©WorldAtlas.com

From the three agencies, a total of 20 participants agreed to take part in the study.

AGAPE had a total of 6 participants, ACOS had 6 participants and APRI had 8 participants. As mentioned, surveys were securely emailed to all healthcare professionals in March 2022. Of the 20 participants, there were 15 respondents who took part in the survey. One participant did not agree with the consent form and opted out of the survey, leaving a total of 14 survey respondents (70% response rate).

See illustrated pie chart below.



Instruments/Measures

The seven-question survey used for this research consisted of a mix of closed and openended questions, which allowed participants to provide their extensive thoughts and opinions. There was a total of five closed ended-questions and two open-ended questions. The survey helped in answering the three goals for the study which were to compare the influence that telemedicine has on HIV/AIDS patients, examine utilization and satisfaction rates for telemedicine services versus in-office services for HIV patients/clients and to analyze if health outcomes have improved from the use of telemedicine services. The survey was completely voluntary, and participants were able to skip any questions they felt uncomfortable with or preferred not to answer. Survey responses were also entirely anonymous.

Data Collection

The survey was created through a Google Form by the researcher and was sent electronically to healthcare professionals secure e-mail addresses at the three agencies listed above in March 2022. I provided them with one month to complete and submit the surveys. Participant names were not used in any reports, so no individual's identity would be exposed.

The information collected will be kept for at least three years after the study is over, after which it will be destroyed.

Efforts to prevent bias included making sure the wording of each question on the survey was clear, concise and neutral. In addition, to avoid repetitious and similar responses, the questions were listed in different formats. Some were open-ended and others were closed-ended questions, such as yes/no responses. By presenting questions this way, "it is expected to reduce the chance of respondents using their response to one item as guide to answer related question" (El Kheir, et. al., 2022). Lastly, all participants were informed their answers were anonymous and would only be used for my research purposes. This reassured respondents that that could be open and honest when answering the surveys questions. I also keep the survey short by only providing seven questions.

Consent

Prior to sending out the survey, all participants had to physically or electronically sign an informed consent form. Each participant's signed consent form is stored in a protected folder on the researcher's password protected computer. In addition, before filling out the survey electronically, participants were also asked to read and accept the informed consent form again. Participants had to select "*yes*" or "*no*" before moving forward to the survey questions. "*Yes*," indicated that they agreed to take part in the survey as well as to the terms and conditions of the consent form.

Statistical/Analytical Approach

For the statistical analysis, the use of descriptive statistics for variables of interest were applied by using Excel®. Out of the categorical variables in each survey question a bar or pie chart was generated through Excel to represent, compare and analyze each survey question. For

the open-ended questions, responses were divided and arranged into categories to openly display the participants responses in a more numerical form to determine participants degrees of opinion.

Inclusion and Exclusion Criteria

It is important to be cautious of inclusion and exclusion criteria to avoid and prevent any biases. Inclusion and exclusion criteria also help minimize error.

Inclusion criteria for this study may include the individual's technology skill level and access to technology to deliver telemedicine services. Exclusion criteria helps eliminate confounding data. Some examples may include healthcare professionals who have not used or do not utilize telemedicine services as a delivery of care with their patients. Other exclusion criteria may include healthcare professionals who do not care for those living with HIV/AIDS.

Chapter 5: Results

Participants that took part in completing the seven-question survey were healthcare professionals who worked with and cared for individuals with HIV/AIDs. Upon analysis, the data collected from the survey responses revealed three distinct themes: accountability, healthcare outcomes and satisfaction rates. These three themes provided the summary of the participants perspectives on telemedicine services for those living with HIV/AIDS. Each theme is addressed below (see graphs in Figures table on page 45).

Accountability

The first theme, accountability, revealed the healthcare professional's liability, responsibility and commitment of care towards the clients they worked with. For the first inquiry on the survey, question 1 asked, "*What thoughts, feelings, and associations come to mind about the use of telemedicine*?" This open-ended question allowed participants to share their beliefs, whether positive or negative, on telemedicine services. Many shared that telemedicine

services were more accessible and convenient for their clients, however, many of the healthcare professionals also showed concern that telemedicine may not always provide the best form of care. One participant indicated, "*Telemedicine does not allow for vital physical assessments such as auscultating lung and heart sounds*. *This can affect the plan of care if abnormal assessments are not identified*." Another respondent stated, "*Telemedicine is an inappropriate method, face-to-face appointments are still the best form of care.*" Lastly, another respondent stated, "*Telemedicine takes away from quality-of-care. Our biggest role is being a support to the client, and telemedicine can make this difficult.*"

An article published through the AIDS Behavior journal discussed the importance of face-to-face appointments and the patient-provider relationship. They acknowledged the value of human "touch," communication, trust in ongoing patient care, particularly for vulnerable populations, such as those living with HIV/AIDS. The article emphasizes that "clinicians must have a deep understanding of the important aspects of the patient-provider relationship, which is vital for positive outcomes along the HIV care continuum" (Mgbako, et. al., 2020). A physician, Abraham Verghese, who treated many HIV patients at the height of the HIV epidemic states, "In these modern times, when medical care is so fractured, a thorough exam conveys attentiveness in addition to providing comfort and reassurance. At the end of this ritual, physician and patient are no longer strangers but are bonded through touch" (Mgbako, 2020). Dr. Abraham Verghese's response in the article corresponds to many of the participants' responses in the questionnaire. When utilizing telemedicine, clinicians and healthcare professionals need to be receptive to the elements of communication and trust when caring for patients. The article also mentions that "studies have found that high quality communication from providers (e.g., active listening, clear explanation) and a strong patient-provider relationship leads to improved patient

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engagement in HIV care and better medication adherence, but it is unclear whether the same trust, connection and communication can be maintained under a telemedicine platform" (Mgbako, 2020).

It was found many individuals living with HIV/AIDs still experience a great deal of apprehension surrounding the medical system and frequently report doubt and mistrust from their providers. This is often due to stigmatizing experiences in healthcare and past events of mistreatment in medical establishments (Mgbako, et. al., 2020).

Question 5 from the survey, "In your opinion, if any, what do you believe is a main problem or concern HIV patients have with telemedicine?," also allowed participants to share their opinions on the main concerns they have with telemedicine. Of the twelve responses, three respondents pointed out the need for a patient-physician relationship. One participant declared, "Telemedicine may not receive the same face to face relationship vs being in person," another participant mentioned, "Clients/patients may not feel as though they are getting a personalized interaction by not seeing someone in person, face-to-face. However, they also may feel more comfortable interacting through a screen," and lastly, another said, "Telemedicine services can create a sense of impersonality." As touched on from question 1, other responses to Question 5 pointed out the need to be physically examined. One participant stated, "It is important for patients to be seen in person to be properly evaluated," another said, "One main concern of telemedicine is not physically being examined," and lastly another stated, "Clients may believe their doctor will not conduct a perfect examination."

Healthcare Outcomes

The second theme, healthcare outcomes, participants were able to express their opinions on whether telemedicine improved health outcomes. Question 2 on the survey asked, "*Do you*

believe telemedicine is an effective form of care for those living with HIV/AIDS?" Of the eleven responses, eight participants said "Yes," and three said, "No."

Total Responses: 11	
Yes	8
No	3

Some participants expanded on their responses. For those who stated, "Yes," one

participant elaborated and said, "There was a period of time that clients were unable to see their physicians, so telemedicine was very important to them. I hope that telemedicine will be able to stay in place as many will need this for various reasons." Others provided brief statements such as, "Yes, for most of the HIV population, I believe telemedicine is an effective form of care," and "Yes, if it is limited and in certain circumstances." For some of the respondents who answered "No," they indicated, "Some clients do not have computers, so only telephone calls can be made, and these are not as useful as in person contacts. If they have computers but are not proficient in their use, a lot of time is wasted trying to set up the call, etc." Another respondent similarly said, "I do feel this option is beneficial but can also be difficult for some clients to navigate depending on their needs. Some may not have access to electronic devices or services to participate in telemedicine."

Question 3 asked, "*Do you believe HIV patients benefit from using telemedicine?*" The results were interchangeable with question 2 above. Of the eleven responses, eight participants said "Yes," and three said, "No."

Total Responses: 11	
Yes	8
No	3

Participants who stated "Yes," declared, "Yes. I have found there to be increased client engagement regarding their health" and correspondingly "When they participate, yes. Some clients have difficulty engaging through telemedicine. For example, some have limited resources or struggle with technology." Two participants who said, "No," said, "No, the feedback I have received from patients say they do not like using Telemedicine" and "No. Telemedicine is better than nothing but not as useful as face-to-face contact."

Lastly, Question 4 asked, "*Do you believe healthcare outcomes have improved for individuals with HIV/AIDS who utilized telemedicine?*" Of the nine responses, six said, "Yes," three said, "No," and three said, "Unsure." Overall, the data shows that most healthcare professionals believe that telemedicine is effective, beneficial, and improves healthcare outcomes.

Total Responses: 9	
Yes	6
No	3
Unsure	3

Two participants who indicated "Yes," included, "Yes, they attended more appointments rather than not being able to get to the appointment" and "Yes, less people cancelled their appointments." One participant who selected, "No" said, "No, I believe some clients struggled to utilize telemedicine. And I believe those who did, preferred in person meetings."

Satisfaction Rates

The last theme, satisfaction rates, alluded to how content and comfortable healthcare professionals and their clients felt about utilizing telemedicine services. Question 6 asked, "*Do you feel most of your HIV clients want to continue the use of telemedicine services*?" The responses to this question were equivalent. Of the ten responses, five said, "Yes," five said, "No."

Total Responses: 10	
Yes	5
No	5

Analogous to other survey question responses, one participant who selected "Yes" stated,

"Yes, I believe most would like to continue to use of telemedicine services for simple visits/check-

ins. However, I feel certain appointments are more effective in person in order to provide high quality care." Three participants who selected "No" elaborated further and included "*Clients/patients prefer meeting in person*" to their response.

Question 7 asked, "Do you feel your clients are satisfied with telemedicine visits?" Of the eleven responses, ten said, "Yes," one said, "No."

Total Responses: 11	
Yes	10
No	1

One participant who indicated "Yes" said, "I would say 75% of my clients are satisfied with telemedicine services. Some clients struggle with transportation, so telemedicine has been able to alleviate this challenge." Others stated, "Yes, they feel good about it" and "Yes, I think they understand that during this time it is necessary for the safety of all involved."

Chapter 6: Discussion

The main objective of this research was to analyze the perspectives of healthcare professionals on the use of telemedicine for those living with HIV/AIDS and data surrounding this topic is limited. With the rapid growth and utilization of telemedicine, more and more individuals are using this delivery method for their healthcare needs. The pandemic encouraged and rapidly advanced the use of telemedicine in all fields of medicine, including those living with HIV/AIDS. From my research and the results of the survey, much of the data connects with existing literature. Major findings from my data suggest that healthcare professionals agree that the use of telemedicine provides convenience, increased appointment adherence and reduced exposure to outside viruses (Covid, etc.). As stated, healthcare professionals saw higher retention rates with their patients with the implementation of telemedicine. Many healthcare professionals also expressed their patients provided positive feedback surrounding the use of telemedicine and noticed an increase in client engagement and satisfaction. As the data suggests, many patients

living with HIV/AIDS that utilize telemedicine express being highly satisfied with care and were interested in continuing utilizing telemedicine rather than face-to-face appointments. Yet, many healthcare professionals had concerns about telemedicine not being an effective form of care. Some believed it takes away from the quality of care and many preferred face-to-face appointments over telemedicine services.

Influence of Telemedicine

In conducting this research, I was able to further examine and answer my previously stated aims. I was able to compare the influence that telemedicine has on HIV/AIDS patients. Approximately 73% of healthcare professionals who participated in completing my survey recognized telemedicine to be an effective form of care and found telemedicine to benefit a large majority of their patients/clients, as I had previously presumed. Current data surrounding telemedicine alone indicates that it can be effective for certain populations and healthcare related concerns. However, there is very limited data on telemedicine and caring for those living with HIV/AIDS. As current data suggests, from the article, Physician's Perceptions of Telemedicine in HIV Care Provision Telemedicine, it indicated that telemedicine has been found to be an auspicious, well-positioned delivery method to help support and address some factors identified as barriers to HIV care (Anderson, et al., 2017). The Journal of AIDS Behavior also found that when telemedicine services were used, healthcare professionals reported increased access, cost savings, enhanced confidentiality, and diminished stigma (Phan, et. al., 2022). Others believe that telemedicine is an inappropriate delivery method for healthcare. An article published in the International Journal of Telemedicine and Applications found that 84% of healthcare professionals believed telemedicine to only be complementary to the traditional form of face-toface care and considered face-to-face appointments to be the best method (El Kheir, et. al.,

2022). Surrounding the topic of telemedicine and HIV/AIDS, results are currently unclear if telemedicine is proven to be an effective form of care for the HIV/AIDS population. More research needs to be performed to examine this area of interest.

Utilization and Satisfaction Rates

For my second aim, I wanted to examine utilization and satisfaction rates surrounding telemedicine services. From the survey responses, as I had speculated, healthcare professionals reported high satisfaction rates from patients who used telemedicine services. From my survey data, approximately 90% of healthcare professionals indicated that clients felt satisfied with telemedicine services. This data corresponds with patient satisfaction data from the study, Exploring the Attitude of Patients with HIV About Using Telehealth for HIV Care, the results concluded, "over half of participants were likely to use telehealth when available and about a third were willing to replace face-to-face clinic visits by telehealth frequently or always" (Dandachi, et al., 2020). I was also able to examine the aspect surrounding appointment utilization rates. Whereas healthcare professionals did not provide any direct data regarding utilization rates, some participants included that they saw an increase in appointment attendance ratios. One respondent stated, "The attendance rate seemed higher since clients were looking forward to some interaction during the lock down periods. Telemedicine keeps the clients engaged and for most, helped with their feelings of isolation." From the article, Physician's Perceptions of Telemedicine in HIV Care Provision, 85% of respondents stated that telemedicine increased the number of times physicians were able to interact with their patients (Anderson, et al., 2017). Another respondent declared, "less people cancelled their appointments." Another participant touched on resolving transportation challenges through telemedicine. They stated, "Some of my clients struggle with transportation so telemedicine services have been able to

alleviate this challenge." Lastly, another respondent said, "HIV/AIDS patients often feel embarrassed due to the stigma that surrounds the disease. Receiving care from home creates an environment that is more comfortable for the patient. Patients often feel as though they will run into someone they know while attending office visits and this helps mitigate this fear. Due to this, I have seen an increase in attendance through Telehealth." This correlates with findings from the Journal AIDS patient care and STDs Journal. Researchers concluded that 62% of participants felt they had more privacy at home and approximately 40% of participants valued not being seen coming to the HIV clinic to avoid any stigma (Dandachi, et al., 2020). The current data, as while as data collected from my survey, suggest why healthcare professionals feel there is an increase in utilization and satisfaction rates surrounding telemedicine services.

Improvement of Health Outcomes

For my last objective, I wanted to analyze if healthcare professionals believed health outcomes to improve by using telemedicine services. I hypothesized that healthcare professionals would see improved health outcomes with their patients/clients, yet my results were mixed. Of the survey respondents, 50% of participants stated that they saw improved health outcomes, 25% stated they did not see improved outcomes, and 25% said they were unsure.

As previously discussed, healthcare professionals from my research indicated a concern of patient-physician relationship. According to the National Library of Medicine, "65% of physicians agreed that patients may not feel adequately connected to them as a provider if they used telemedicine" (Anderson, et al., 2017). Other responses from my data collection indicated the concern of not having a physical examination through telemedicine services. Both factors may correlate as to why healthcare professionals believe telemedicine may not improve health outcomes. The article, Telemedicine for HIV Care: Current Status and Future Prospects, concluded lower rates of viral load suppression for those using telemedicine services prior to the pandemic, however, during the pandemic, contrarily, individuals using telemedicine were reported to have a slightly higher viral load (Smith, & Badowski, 2021). On the other hand, alternative studies found higher adherence rates to HIV testing, along with higher medication adherence to PrEP and ART while utilizing telemedicine versus face-to-face appointments (Coombes & Gregory, 2019).

In general, healthcare should always be tailored to an individual by assessing their specific needs and limitations and sometimes telemedicine may not be the best form of care. It is however very promising that patients are interested in using telemedicine as part of their healthcare (Smith, & Badowski, 2021). Whereas data is very limited, there are many studies that have concluded that both patients and healthcare professionals report constructive, positive feedback surrounding telemedicine (Rogers, et. al., 2020).

Limitations

A limitation of this study would be that the sample population was only in Northern Rhode Island. To add, only three agencies took part in this study. If time allowed, it would have been favorable to include more agencies throughout the state, or nearby states, to participate in the study to obtain a larger sample size as well as to be able to make more comparisons and generate more systematic and rigorous results among healthcare professional perspectives. It would also be beneficial to further look into what forms of telemedicine were used to decipher which form of delivery is more advantageous (video, audio, etc.). Another limitation to this study would relate to participants answering survey questions untruthfully. Some participants may feel obligated to answer questions the way they think that they should be answered and may not give

their true honest opinion or response. Lastly, another limitation to this study is non-response bias. Since participants were able to skip questions, some questions were left blank and there was a lack of response lowering the response rate for some questions.

Future Recommendations

Caring for individuals remotely has numerous advantages including convenience, decreased travel time, expenses, helping individuals who fear stigma, and, most importantly, helping individuals stay safe and healthy (Budak, et. al., 2021). Aside from the indicated benefits, for further advancement in our public health care system, especially surrounding telemedicine, there is a considerable amount of research that still needs to be performed. Many healthcare organizations utilize telemedicine services and many frequently contemplate if telemedicine is here to stay. For future recommendations, the need to investigate the disparities regarding technological and economic barriers needs further examination. Not all healthcare professionals and/or patients have the tools or access to technological resources. Some also do not have the knowledge base to use the required systems and platforms that come along with telemedicine services. On study found the "expansion of telemedicine into HIV care had the potential to worsen disparities in access for those with certain social disadvantages, such as low health literacy or those without internet or adequate phone or computer-based technology" (Mgbako, 2020). With the development of telemedicine, those with low health or technology literacy need to be taken into consideration. Another future recommendation is centered around the legislation of telemedicine. Telemedicine reimbursement rates currently vary depending on federal and state laws. Future challenges include modifications and alterations of telemedicine policies. Even though it seems telemedicine is here to stay, the United States needs to focus on establishing adequate policies to enact and regulate the use of telemedicine for individuals who

deem fit for this healthcare delivery method. The future of telemedicine requires advocacy for policies to allow the use of telemedicine for populations such as the HIV/AIDS community. For example, providing and expanding access to the internet for underprivileged populations and to those who live in rural areas, to help provide access to telemedicine services. Furthermore, future research should also focus on the foundation of HIV care and aim to improve telemedicine for the benefit of the individual. Healthcare surrounding the HIV population should always be tailored to the individual by evaluating their specific needs, concerns and limitations.

Conclusion

Even though the COVID-19 pandemic complicated and disrupted many normal daily activities, especially surrounding how our country delivered healthcare, it also led to the advancement and utilization of telemedicine (Smith, & Badowski, 2021). According to the American Telemedicine Association, they declare that "telemedicine isn't just a novelty-it's become a necessity" (American Telemedicine Association, 2022). Today, telemedicine yields a unique opportunity to create a model in HIV care that entrusts and empowers patients (Mgbako, 2020). Exclusively after the COVID-19 pandemic there are numerous prospective public health research questions that are being challenged by researchers and health care professionals, to attempt to solve the many nationwide health concerns. With the continuation and advancement in technology, the ways in which we deliver healthcare are continuously evolving and changing. For instance, although telemedicine is transforming health by providing increased access to care, improved healthcare outcomes and reduced costs, as mentioned, there are still constraints and gaps that need to be considered. Some reservations can include not having access to technology (i.e., no computer, internet access), the ability and/or willingness to use technology, and privacy of individuals who live in communal homes or areas (Smith, & Badowski, 2021). In addition,

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healthcare professionals who care for individuals living with HIV may worry about fully assessing the health of their patients through video or telephone calls. However, despite these challenges, from the perspective of healthcare professionals, telemedicine for HIV care shows promising results if used adequately. As previously stated, I hope my research is effective in providing further insight into telemedicine and individuals living with HIV.

Figures and Tables

Survey Questions

1. What thoughts, feelings, and associations come to mind regarding the utilization of

telemedicine?

2. Do you believe telemedicine is an effective form of care for those living with HIV/AIDS?

3. Do you believe HIV patients benefit from using telemedicine?

4. Do you believe healthcare outcomes have improved for individuals with HIV/AIDS who utilized telemedicine?

5. In your opinion, if any, what do you believe is a main problem or concern HIV patients have with telemedicine?

6. Do you feel most of your HIV clients want to continue the use of telemedicine services?

7. Do you feel your clients are satisfied with telemedicine visits?

Graphs

Question 1: What thoughts, feelings, and associations come to mind about the use of telemedicine?

Question 1: What thoughts, feelings, and associations come to mind regarding the utilization of telemedicine?



Question 2: Do you believe telemedicine is an effective form of care for those living with





Question 3: Do you believe HIV patients benefit from using telemedicine?



Question 3: Do you believe HIV patients benefit from using telemedicine?

Question 4: Do you believe healthcare outcomes have improved for individuals with

HIV/AIDS who utilized telemedicine?



Question 5: In your opinion, if any, what do you believe is a main problem or concern?

Yes No Unsure

HIV patients have with telemedicine?





telemedicine services?



Question 7: Do you feel your clients are satisfied with telemedicine visits?



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