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A NEEDS ASSESSMENT TOOL TO EVALUATE HIV CARE IN SOUTH CAROLINA:
UTILIZING A TELEHEALTH MODEL DURING COVID-19

BY

Tawana Philpott Brown

A doctoral project submitted to the faculty of the Medical University of South Carolina in partial
fulfillment of the requirement for the degree

Doctor of Health Administration in the College of Health Professions

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UTILIZING A TELEHEALTH MODEL DURING COVID-19

BY

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Abstract

A newly identified virus coronavirus, SARS-CoV-2 caused a worldwide pandemic named COVID-19. This pandemic caused an interruption in the way medical care was traditionally delivered to People Living With HIV/AIDS (PLWHA). To meet the ongoing medical needs of PLWHA, HIV medical care was expanded to telehealth (i.e., telephone calls, video chat). Telehealth was implemented to keep patients engaged in care and treatment adherent. This study explores patients' feelings and attitudes around their HIV care during the COVID-19 pandemic. A one-time survey was administered to patients who received care at an outpatient Ryan White HIV/AIDS Program funded HIV clinic in the Southeastern part of the United States from March-August 2020. The survey items collected demographic information and explored patients' thoughts and feelings toward telehealth. There were 137 participants that completed the survey with the median age of 52, 76% were male, 22% were female, and 48% identified as African American. For patients who utilized the telehealth option (n=99), 68% agreed that they would utilize telehealth option for their care if it was offered again in the future. The main benefit to using telehealth as reported by patients was the ability for telehealth to fit better with their schedules. There was no significant difference in age of telehealth users. The results of this study indicate that this telehealth model can be applied to the HIV care continuum moving forward with participants reporting overall satisfaction with their HIV care during COVID-19. Telehealth programs in HIV care can improve retention in care and medication adherence for PLWHA.

Keywords: COVID-19, Ryan White HIV/AIDS Program, PLWHA, HIV, telehealth, adherence

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Chapter 1: INTRODUCTION

Background and Need

South Carolina is a high incident state for the number of new cases of HIV ranking 9th in the nation (SCDHEC, 2018). As of 2016, there was an estimated 18, 998 people living with HIV/AIDS in the state of South Carolina (SCDHEC, 2018), representing 0.37% of the total population living in South Carolina. African Americans are disproportionately affected and the rate of incidence of new infections have increased by 10% from 2015 to 2016 (SCDHEC, 2018). With South Carolina being a high incidence state, viral suppression is key in lowering the number of new cases. Viral suppression is the duplication of the HIV virus in the body which is achieved by medication adherence and access to care. Research shows that if a person has an undetected viral load, they will likely not pass the HIV virus onto their sexual partners which can lead to an AIDS-free generation (Hull & Montaner, 2013).

Prior to Coronavirus 2019 (COVID-19) some health systems adopted a HIV telehealth model for their rural patients However, telehealth was not a commonly used practice in HIV care. Three Veteran Administration (VA) health systems found that there was improved HIV care management when veterans could utilize a telehealth platform (Wicklund, 2019). The COVID-19 epidemic presented a unique challenge for patients and providers to engage in medical care. The COVID-19 epidemic caused an immediate interruption in the way HIV care is delivered all over the U. S. (Mgbako et al., 2020). As a result, telehealth services had to be put in place to meet the demand of medical care and medication adherence within the HIV infected populations. COVID-19 has changed the society, economy, and healthcare system which has caused a rapid adoption of telehealth services and activities to deliver care remotely (Wosik, et al., 2020). However, previous studies of HIV medical care in-person office visits have shown

that high quality communication from providers (i.e. active listening, providing feedback) and strong patient-provider relationship leads to improved outcomes (Mgbako, et al., 2020). Further research needs to be conducted to determine if this would remain true for virtual telehealth visits.

Macro Policy Implications

According to the Health Resources and Service Administration (HRSA), the National HIV/AIDS Strategy (NHAS) first proposed in 2010 and updated in 2020 is to end the HIV epidemic (HRSA Ryan White HIV/AIDS Program, 2020). The four primary goals are to reduce the number of new HIV infections, increase access to care for people living with HIV (PLWH), reduce HIV health disparities and health inequities, and achieve more national response to the HIV epidemic (HRSA Ryan White HIV/AIDS Program, 2020). In alignment with the National HIV AIDS Strategy, telehealth could be the bridge to assist in ending the HIV epidemic. Furthermore, telehealth is essential to the healthcare delivery in rural and remote areas that lack access to adequate health care services and other specialty care (HRSA, 2020). Telehealth use has expanded over the past decades with traditional models of telehealth involving care delivery from an originating site from a specialist working at a hub site (HRSA, 2020).

At the onset of the Trump administration the Office of National AIDS Policy and The Presidential Advisory Council on HIV/AIDS (PACHA) went through a difficult transition. Several members resigned, quit, or were fired stating that President Trump lacked compassion for people who were living with HIV/AIDS and the council was deactivated (Finnega, 2019). The council was reactivated after President Trump proposed $291 million to the federal budget to ending the HIV epidemic by year 2020 (Finnega, 2019). Simultaneously, President Trump cut funding for the Department of Health and Human Services, which funds many of the HIV programs including the Ryan White HIV/AIDS Program. The goal of President Trump's

program was to reduce the number of new HIV infections by 75% within the next five years and 90% by the next decade (Minemyer, 2019). Under President Trump's leadership, The Centers for Medicare and Medicaid Services (CMS) expanded access to Medicare telehealth services so that participants could receive a wider range of services from their healthcare providers without having to travel to a healthcare facility (Centers for Medicare and Medicaid Services, 2020). These changes in policy were granted under the President's emergency declaration as a temporary and emergency benefit based under the 1135 waiver authority and Coronavirus Preparedness and Response Supplemental Appropriations Act (Centers for Medicare and Medicaid Services, 2020).

Micro Policy Implications

The South Carolina Department of Health and Environmental Control (SC DHEC) STD/HIV division has used the Statewide Coordinated Statement of Need (SCSN) process to identify the unique issues that South Carolinians face that are at risk for HIV (SCDHEC, 2016). SC DHEC uses the National HIV/AIDS Strategy goals for 2020 as a benchmark for the SC HIV/AIDS strategy, 2017-2021 (SCDHEC, 2016). Table 1 illustrates the room for improvement between 2020 benchmarks and the 2014 SC HIV data.

Table 1: National *HIV/AIDS Strategy Vs. South Carolina HIV/AIDS Continuum Care Data*

National HIV/AIDS (NHAS) Strategy Indicators by 2020	South Carolina HIV Care Continuum Data CY 2014
Reduce the number of new HIV diagnoses by at least 25 percent.	773 new infections in 2014
Increase the percentage of people living with HIV who know their serostatus to at least 90 percent.	79.66%
Increase the percentage of newly diagnosed persons linked to HIV medical care within one month of their HIV diagnosis to at least 85%	75%
Increase the percentage of persons with diagnosed HIV infection who are retained in HIV medical care to at least 90%	54%
Reduce the percentage of person in HIV medical are who are homeless to no more than 5%.	Data not available outside of Ryan White/HOPWA reports.
Increase the percentage of persons with diagnosed HIV-infection who are virally suppressed to at least 80%.	53%

The SCSN began meeting in late 2015 with representatives from off all the Ryan White

HIV/AIDS Program providers in the state of South Carolina including Housing Opportunities for

Persons living with AIDS (HOPWA) grantees and SC DHEC staff (SCDHEC, 2016). The HIV

Planning Council (HPC) is a combined prevention and care planning body established in 2005

and closely involved in all phases of the SC HIV/AIDS strategy (SCDHEC, 2016). The HPC

consists of 34 members including 17 people living with HIV/AIDS in the state of South

Carolina.   South Carolina was one of the first states to combine a care and prevention planning

body. To address access to care concerns, the SC HIV/AIDS strategy proposed an objective to

increase the percentage of newly diagnosed HIV infected persons linked to HIV medical care

within one month of their diagnosis to at least 85% by the end of year 2020 (SCDHEC, 2016).

One of the strategies in this objective is to increase the use of telehealth to decrease barriers to

care such as transportation by the end of year 2019. An indicator of this success will be the number of clinics that provide telehealth services (SCDHEC, 2016). The hope desired outcome is that access to care in all forms will improve adherence to medical care.

The South Carolina Telehealth Alliance (SCTA) is a statewide collaboration of many organizations across the state to expand telehealth services (South Carolina Telehealth Alliance, 2020). The 2020 SCTA strategic plan includes the eight following objectives: open access, rural focus, service development, mental health, education and training, SCTA collaboration, outcomes, and promotion and sustainability. With the arrival of COVID-19 in South Carolina, many organizations across the state used the opportunity to accelerate and/or establish telehealth strategic objectives to quickly respond to patient and provider needs (South Carolina Telehealth Alliance, 2020).

Problem Statement

The onset of COVID-19, facilitated an immediate need to transition from in-person to telehealth for HIV care (Dandachi, Freytag, & Dang, 2020). As a result of the COVID-19 epidemic, practitioners and providers have rapidly implemented telehealth initiatives in order provide HIV care and keep patients medically compliant. There have been very little published studies to ascertain the effects of medical compliance with the use of telehealth as a method for staying engaged in HIV care. It is vital that telehealth be explored in terms of the patient-provider relationship as previous studies conducted on HIV care have found that the patient-provider relationship is paramount in a HIV infected person remaining in care. Furthermore, since the onset of the HIV epidemic, rural communities have been plagued with the burden of traveling more than 30 miles one-way for a doctor's appointment which has led to non-compliance in many rural communities (Cross, 2016).

Population and Study Setting

   The setting of this study will be a clinic in the South Eastern United States. This clinic serves patients from seven counties yet accessible open to any adult (ages 18 and older) that lives in South Carolina.

Chapter 2: Literature Review

This chapter explores the literature available on the use of telehealth in HIV care and the building blocks of survey research. The literature review falls into two main categories: the first category includes what has been written and studied concerning telehealth and telemedicine focusing on HIV care and retention in HIV care, the second category includes information on survey research methods.

Literature Review Methodology

Searches were conducted using relevant academic databases such as Google Scholar, PubMed, and Medline. PubMed was determined to be the most reliable and updated information on the subject. An initial review of the literature included an extensive search of telemedicine and telehealth care in HIV. However, with the onset of the COVID-19 epidemic the literature review became ongoing as treatment and disease state of the COVID-19 virus are everchanging. The initial rounds of literature search included key terms such as: telehealth in HIV care, telemedicine in HIV care, and HIV care in rural communities. This allowed the researcher to focus on research that was conducted prior to the onset of COVID-19. With the shift to focusing on COVID-19 and HIV care, the literature search included the following key terms: COVID-19 and telehealth and COVID-19 and HIV and telehealth. The COVID-19 and telehealth literature search yielded nine results between March 2020 and August 2020.

Telemedicine and Telehealth in HIV Care

Telemedicine and telehealth have been used to engage patients in healthcare at a distance. Although both terms have been used interchangeably, for administrative purposes telemedicine and telehealth have different meanings (Chaet, Clearfield, Sabin, & Skimming, 2017). Telemedicine is the exchange of information remotely from one site to another by electronic means for the purposes of patient care (Qubty, Patniyot, & Gelfand, 2018). CMS also defines telemedicine, for the purposes of reimbursement, as a "two way" real time communication between patient and practitioner at a distant site (Chaet, Clearfield, Sabin, & Skimming, 2017). HRSA defines telehealth as involving telecommunications and electronic technologies to "support and promote long distance clinical health care, patient and professional health-related education and public health and administration" (Chaet, Clearfield, Sabin, & Skimming, 2017). Prior to the onset of COVID-19, many organizations and places around the globe have initiated a telehealth initiative as it relates to HIV care. With the Veterans Health Administration (VHA) being the largest provider of HIV care in the United States, there have been several opportunities to conduct studies on telehealth programs (Ohl M. E., et al., 2019). The VHA has a progam called the Telehealth Collaborative Care for Rural HIV patients that connects them virtually with HIV/AIDS healthcare providers (RHIhub, 2002-2019). Devi and colleagues (2015) evaluated the utilization of mobile phone technology for treatment adherence and prevention of HIV/AIDS and tuberculosis (TB) patients of already published studies. Out of the 90 articles published, they found that mobile phone technology is an effective tool for HIV/AIDS and TB long term with most of the studies being done in underdeveloped countries. When looking at different health systems who have decided to develop a telehealth model for HIV infected patients, VHA has taken a leadership role by investing in telemedicine to serve the 20% of veterans who reside in rural areas (Saifu, et al., 2012). Saifu and colleagues (2012) evaluated the impact of the HIV

and Hepatitis C telemedicine model on outcomes in the rural VHA populations. Their research found that out of the 43 patients who participated in 94 telemedicine visits and 128 in-person visits, telemedicine visits garnered improved access, high patient satisfaction, and reduction in health visit-related times. Another study of three VHA health systems found that there was improved HIV care management when veterans could utilize a telehealth platform (Wicklund, 2019). This study noted that while only 13% of VHA patients used the telehealth services when available, there was still improved care. Additionally, it was found that increased monitoring of viral load improved viral suppression (Wicklund, 2019). Research found that people who live far from infectious disease specialty clinics are more likely to use primary care for their HIV care (Ohl M. E., Richardson, Kaboli, Perencevich, & Vaughn-Sarrazin, 2014). Consequently, a VHA study done to ascertain the impact of availability of HIV specialty clinics telehealth programs, found that the availability of telehealth programs did in fact improve HIV viral suppression (Ohl M. E., et al., 2019). Specialty clinics would benefit from using telehealth to provide care over distance and programs to coordinate "shared care" with distant primary care providers (Ohl M. E., Richardson, Kaboli, Perencevich, & Vaughn-Sarrazin, 2014).

Medical Advocacy and Outreach (MAO) is a community-based organization (CBO) that provides care in rural Alabama (RHIhub, 2002-2019). Services include secure video chat with primary care providers. The Louisiana Public Health Information exchange (LaPHIE) is another example of a rural telehealth initiative (RHIhub, 2002-2019). LaPHIE is an exchange that healthcare providers and organizations are using to share health information on a secure network. The network links providers electronic medical records (EMRs) with state health surveillance data that is used to diagnose, monitor, and treat a variety of chronic conditions to include HIV and Hepatitis C. In all of the above mentioned telehealth examples retention in care was improved.

As result of telehealth being the main source of HIV care at this time due to COVID-19, retention in care will prove to be a benchmarker for success in HIV care during this pandemic.

A quantitative study examined the rapid implementation of a telehealth program at a HIV clinic for adolescents and young adults in San Francisco (Barney, Buckelew, Mesheriakova, & Raymond-Flesch, 2020). Telehealth visits increased from 0 to 96% which was comparable with the in-person visits from the previous year. However, further research would need to be done to ascertain outcomes on confidentiality, quality of care, and health disparities. The first 30 days of a rapid telehealth scale-up in response to COVID-19 included an adolescent HIV clinic found that there was an 82% appointment completion rate in patient visits (Wood, et al., 2020).

As with the previous study, future studies will need to be conducted to look at health disparities within the HIV infected populations.

Chapter 3: Methodology

Telehealth Intervention Development

In March of 2020 a virtual telehealth model was developed to continue provide the same level of care prior to the onset of the COVID-19 virus. Initially, patients were provided the option to see their medical provider on the following video platforms: Facetime (iPhone app), Google Duo (Android app), Doxy (a HIPPA secured platform), or Zoom. In May of 2020, Zoom was removed as video platform option. If a patient was uncomfortable with any of the previous video platforms, they could opt for a telephone call or an in-person office visit. A week prior to a scheduled medical visit, a case manager contacted the patient to ascertain their choice for the medical appointment. Regardless of the platform chosen, patients' virtual medical visits were treated like the in-person visit format. A nurse contacted the patient by telephone 15 minutes prior to their scheduled appointment to perform a virtual check-in. After the check-in process was complete, the nurse provided the patient instructions on how their medical provider would be contacting them for their visit. Preliminary discussions with the medical director of the clinic suggested that the elderly population did not have good success utilizing telemedicine based on the technological difficulties faced during virtual medical visits; however, the younger population seem to better adapt to the use of telehealth. Additionally, the provider felt that moving forward it would be best to have at least one in-person visit a year so that a connection is established or remains between client and provider.

Research Question

This study will explore if a HIV telehealth model utilized during the COVID-19 epidemic for a HIV infected population at a Ryan White HIV/AIDS Program clinic is effective and can this model be applied across the HIV care continuum moving forward. This research question aligns with the access to care goal of the National HIV/AIDS Strategy.

Research Design

For the purposes of this study, "telehealth" will be the term used to describe the type of care that was provided. This will be a survey study to measure patients experience around telehealth care since the onset of COVID-19. Patients were asked to complete a survey in effort to gain insight on patient experience. A goal of this survey was to understand patients' experience with the clinic and to continue the same level of HIV care prior to the onset of COVID-19. This data was analyzed to understand areas of improvement within the current telehealth model being utilized.

Study Population

A random sample of every actively enrolled patient that opted to accept mail or email at initial intake was asked to complete a survey. Patients who had a valid email address were sent an electronic REDCap link (n=391). In cases where patients provided duplicate or unclear emails, they were asked to complete a pen/paper survey by mail (n=8).

Instrument Development

Surveys are frequently used in telehealth research to ascertain patient's satisfaction, experience, and attitudes when it comes to virtual care (Langbecker, Caffery, Gillespie, & Smith, 2017). When conducting survey research, it is best practice to select a previous validated instrument and conduct a literature review of the current research to choose appropriate questions (Langbecker, Caffery, Gillespie, & Smith, 2017). Qubty, Parniyot, & Gelfand (2018) prospective survey conducted on pediatric patients and their families concerning telemedicine visits, utilized a Cisco WebEx platform. Their survey included 12 questions related to patient satisfaction based on a 5-point Likert scale. The researchers did not how these questions were developed. The specific questions were excluded, but rather a table with patient and family comments regarding their telemedicine visits were included (Qubty, Patniyot, & Gelfand, 2018).

Dandachi and colleagues (2020) conducted a survey to gauge patients' attitudes towards their use of telehealth in an HIV clinic in Houston. The researchers found an overall positive response to the use of telehealth with patients reporting a better work/life balance, reduction in travel time, and more privacy with the visit. There was some concern with patients feeling they would not be able to adequately express themselves, the safety of their personal information, and concerns with not having an actual physical exam (Dandachi, Freytag, & Dang, 2020). The survey was developed based on review of the literature and validated questionnaires (Dadanchi, Bang, Lucari, Teti, & Giordano, 2020). Questions were written at a sixth-grade reading level and cognitive one-on-one interviews were used to ensure comprehension. The 5-point Likert scale was used to weigh the questions from very unlikely to very likely, never to always, strongly agree to strongly disagree, and extremely concerned to not at all concerned. The ten-item questionnaire included questions about acceptability of telehealth, benefits of telehealth for HIV care, and concerns about telehealth for HIV care. In reviewing University of Rochester's Telemedicine and Non-Telemedicine visit experience interview guide, similar questions were utilized on a 5-point Likert scale (University of Rochester, 2011).

With broadband capability being a barrier faced in many rural areas of South Carolina, a key informant interview was done prior to COVID-19 to ascertain providers' thoughts around access to HIV medical telehealth services to improve medical compliance and medication adherence in rural South Carolina. Prior to administering the survey, a test run was conducted and sent out to the clinic team to ensure the questions were understandable and elicited relevant data. A key informant interview coupled with provider one-on-one interviews, the program administrator, and the literature review was the baseline items used to develop survey questions. To identify a patient experience instrument, a literature search was conducted to assess the

availability of validated instruments. Various validated instruments were utilized to assist in the

development of this survey instrument (Table 2).

Table 2: Survey Development Tool

Source	Baseline Item	Category/Type	Need's Assessment Survey Item
(Dadanchi, Bang, Lucari, Teti, & Giordano, 2020)	Age/Race/Zip Code	Demographic	Age/Race/Zip Code
(Dadanchi, Bang, Lucari, Teti, & Giordano, 2020)	If you can use live video call to see and talk to your doctor instead of coming to clinic appointments, how often would you use it?	Access	1. During COVID-19, how often did you use the virtual visit option?
Provider Interview	"the elderly population did not have good success utilizing telemedicine based on the technological difficulties faced during virtual medical visits; however, the younger population seem to better adapt to the use of telehealth"	Communication	2. Which virtual platform did you use most often?
(Dadanchi, Bang, Lucari, Teti, & Giordano, 2020	This service will help me because it will fit better with my schedule.	Comfort	3. Virtual visits were better for my schedule
(Dadanchi, Bang, Lucari, Teti, & Giordano, 2020	The service will be good for me because no will see me at the HIV clinic.	Effectiveness	4. The virtual visit provided me the comfort and confidentiality needed for my medical appointments
Program Manager	"perception questions about the quality of the visit and length of the appointment"	Effectiveness	5. The quality of the visit and length of the visit was to my satisfaction

(Mgbako et al., 2020).	HIV medical care in-person office visits have shown that high quality communication from providers (i.e. active listening, providing feedback) and strong patient-provider relationship leads to improved medical and medication adherence	Communication	6. I felt a genuine connection to my provider during my virtual visit
Key Informant Interview	"The only thing I would be concerned about was if patients would have access to the telehealth materials all the way in a rural area."	Access	7. I had enough data on my phone or access to the internet to successfully complete my virtual visit
Becevic et al.	I would use telehealth to have my doctor see me again	Future Adoption	8. If I had a choice, I would you use telehealth again in the future

Survey Instrument

Survey items shown in Table 3 were administered to patients to collect information on demographics, feelings around access, communication, comfort, effectiveness, and future adoption of telehealth services. Patients were asked: "How often did you use the virtual visit option? Reponses were recorded as categorical variables: (1) never, (2) rarely, (3) some of the time, (4) most of time, and (5) always, or (1) strongly agree, (2) somewhat disagree (3) neutral (4) somewhat agree, and (5) strongly agree. The survey also included the preferred type of telehealth visit if used.

Table 3: Survey Instrument Tool

Age:
Sex: Male   Female   Transgendered   Gender Binary   Other
Ethnicity: African American   Hispanic Non-Hispanic-White Asian   Another Race
Zip Code:

Thinking about your time during COVID-19 ONLY:
1. How often did you use the virtual visit option?
    a.   1. Never
    b.   2. Rarely
    c.   3. Some of the time
    d.   4. Most of the time
    e.   5. Always
2.   Which virtual platform did you use most often?
    a.   1.None
    b.   2. Doxy
    c.   3. Facetime
    d.   4. Google Duo
    e.   5. Telephone Call

Please read through the following statements and decide how much you either agree or disagree with each.

3.   Virtual visits were better for my schedule

    a.   1. Strongly Disagree
    b.   2. Somewhat Disagree
    c.   3. Neutral
    d.   4. Somewhat Agree
    e.   5. Strongly Agree
4.   The virtual visit provided me the comfort and confidentiality needed for my medical appointments
    a.   1. Strongly Disagree
    b.   2. Somewhat Disagree
    c.   3. Neutral
    d.   4. Somewhat Agree
    e.   5. Strongly Agree
5.   The quality of the visit and length of the visit was to my satisfaction
    a.   1. Strongly Disagree
    b.   2. Somewhat Disagree
    c.   3. Neutral
    d.   4. Somewhat Agree
    e.   5. Strongly Agree
6.   I felt a genuine connection to my provider during my virtual visit
    a.   1. Strongly Disagree
    b.   2. Somewhat Disagree
    c.   3. Neutral
    d.   4. Somewhat Agree
    e.   5. Strongly Agree
7.   I had enough data on my phone or access to the internet to successfully complete my virtual visit
    a.   1. Strongly Disagree
    b.   2. Somewhat Disagree
    c.   3. Neutral
    d.   4. Somewhat Agree
    e.   5. Strongly Agree
8.   If I had a choice, I would you use telehealth again in the future
    a.   1. Strongly Disagree
    b.   2. Somewhat Disagree

c.	3. Neutral
d.	4. Somewhat Agree
e.	5. Strongly Agree

Data Analyses Approach

Descriptive statistics for variables of interest was used to categorize and examine patient experiences, utilization, and preferences. In addition, results were stratified by telehealth platform and zip code of residence to explore differences by modality and geographic location. The Institutional Review Boards for the Medical University of South Carolina and study hospital approved the study protocol.

Chapter 4: RESULTS

Between November 2020 and January 2021, 399 participants were sent surveys. Of the 399 surveys sent out, eight were by mail and 391 were sent electronically via email using a REDCap as the survey instrument. Out of the 399 surveys, four participants completed the questionnaire by mail and 133 participants completed the questionnaire electronically using REDCap, yielding a 34% response rate (Table 4). There were three incomplete surveys that were excluded from the overall results.

Table 4: Survey Response Rate

|	Mailed	Redcap	Total	Response Rate
Complete	4	133	137	34.34%
Total	8	391	399	

Out of the 137 completed responses, the age range was 20-72 years, with a standard deviation of 12 years. The median age of participants was 52 years. The majority of the participants were male (75%) and identified as African-American (48%) or Non-Hispanic White (46%) (Table 5).

Table 5: Demographics

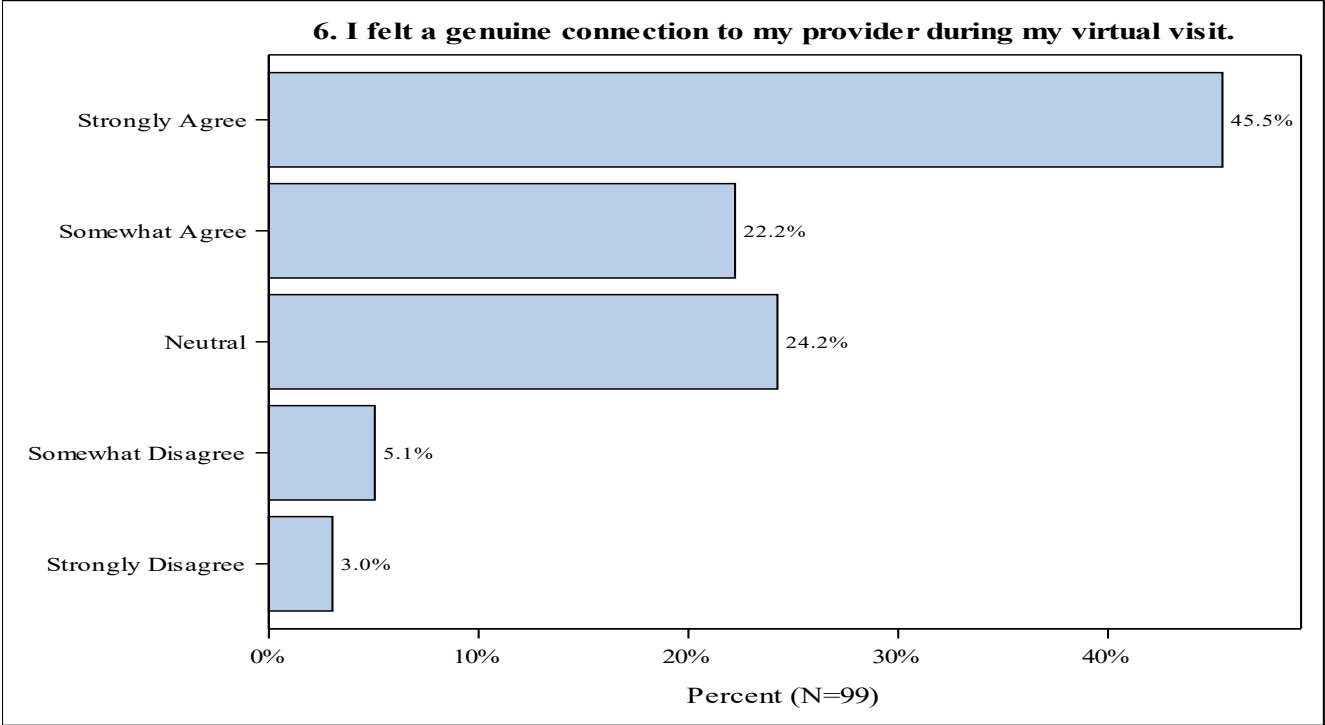| Variables	n	Mean ± SD
Demographics		
Age	137	51 ± 12.1
		Percentage (%)
Sex		
Male	104	75.9
Female	30	21.9
Transgendered	1	0.73
Gender Binary	1	0.73
Other	1	0.73
Total	137	100
Race/Ethnicity		
African-American	66	48.1
Hispanic	4	2.9
Non-Hispanic, White	63	45.9
Asian	2	1.5
Another Race	2	1.5
Total	137	100

Among the participants who completed the survey, 28% responded that they never used the virtual visit option and 72% of respondents reported using the virtual visit option at least once (Figure 1). Focusing on the 72% that used the telehealth option at least once for care, N=99, telephone calls (47%) was the most preferred virtual platform followed by FaceTime (26%). Many participants somewhat agreed (32%) or strongly agreed (33%) that virtual visits were better for their schedule.
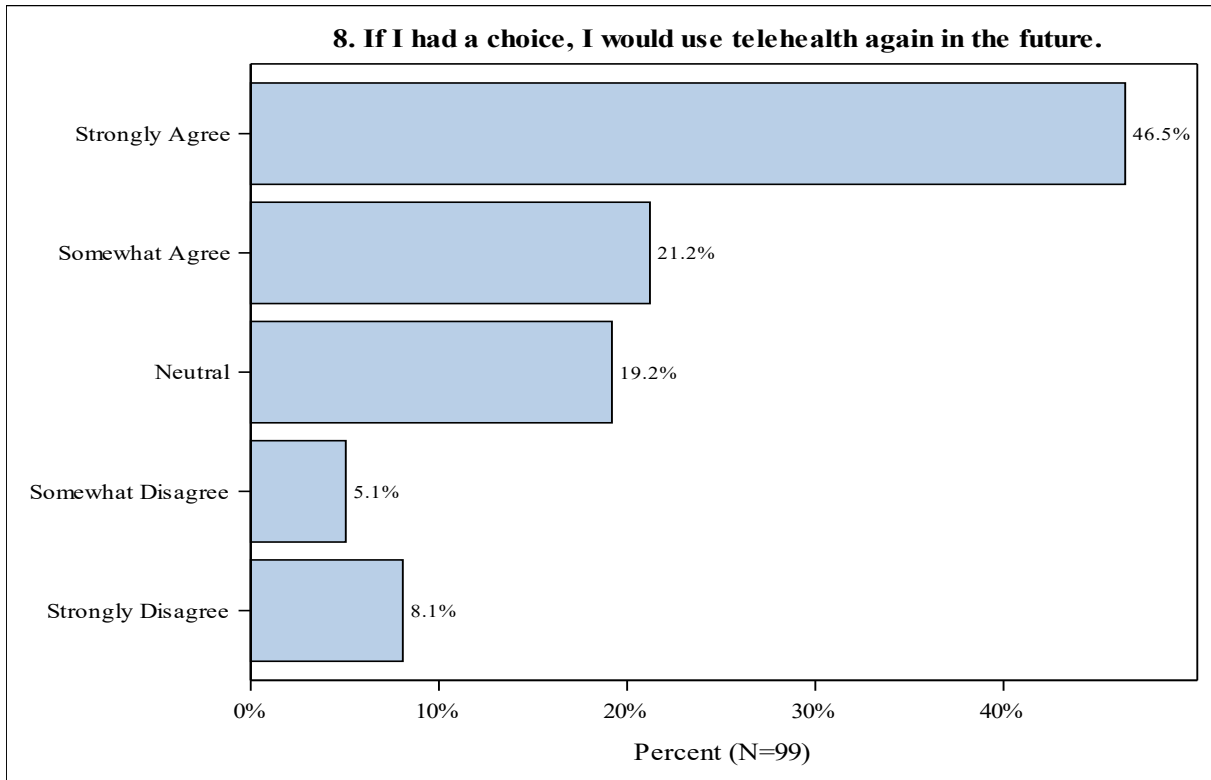
Figure 1: Rate of Telehealth Use
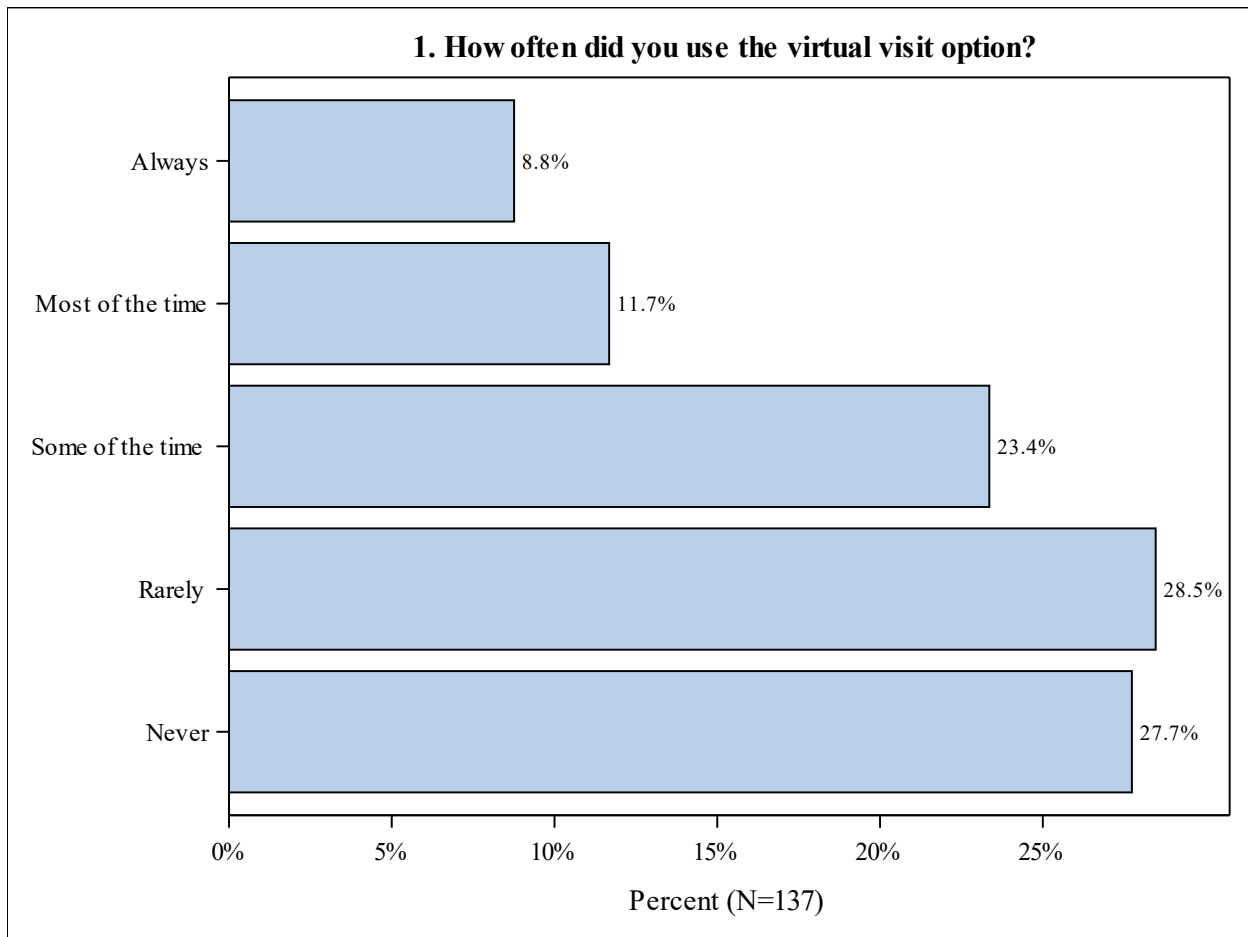
Over half of the participants (65%) agreed that virtual visits provided them with the confidentiality needed for their medical appointments. This allows patients to avoid the stigma of being seen in a HIV clinic as a benefit to telehealth services. We found that once participants were able to move pass the scheduling issues associated with telehealth visits, with only 33% strongly agreeing that the virtual visit option was better for their schedules, on average participants liked having telehealth as an option for care. Only 6% were concerned about overuse of internet data or internet service on their phones. Nearly 67% of participants reported that they felt a genuine connection to their provider during their virtual visits (Figure 2). Overall, 68% of respondents if given an option would use telehealth again in the future (Figure 3).
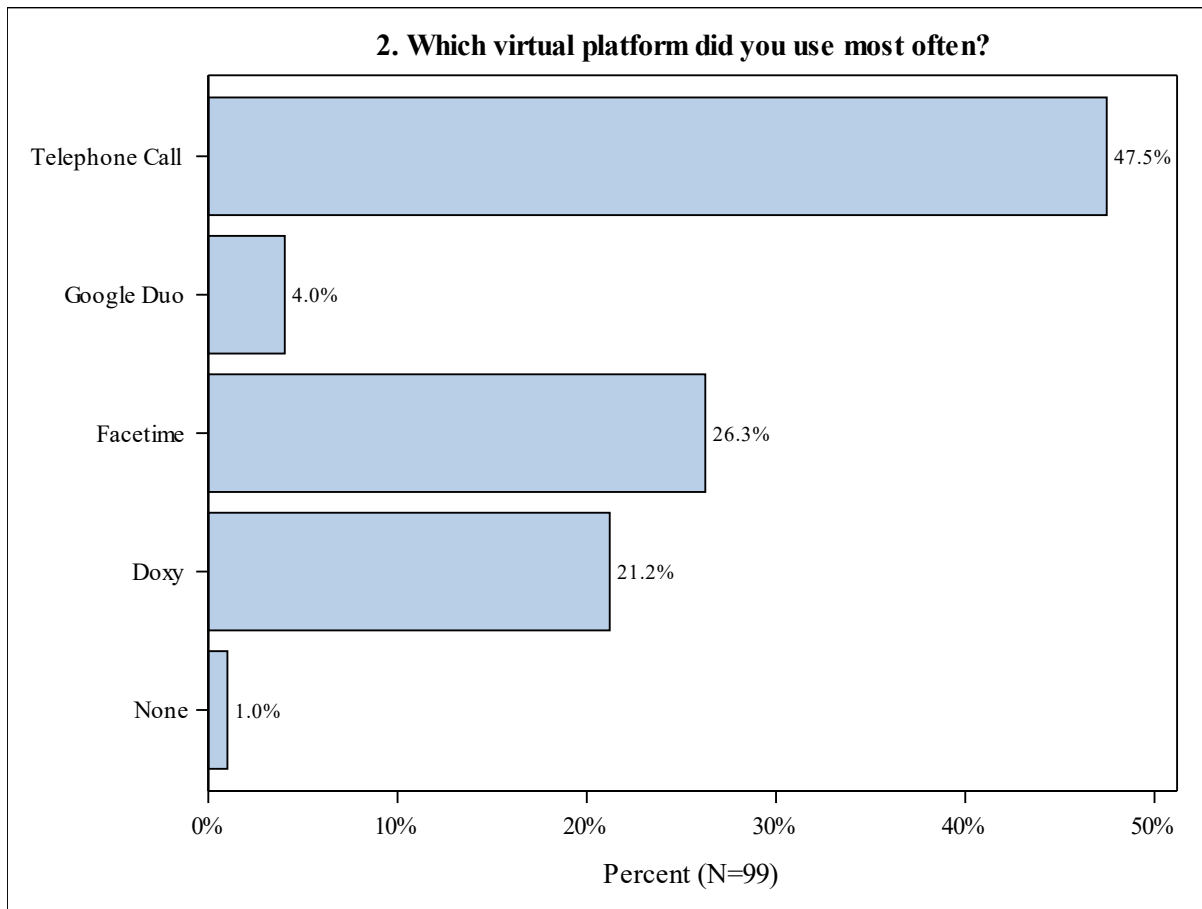
Figure 2: Q6 Results

6. I felt a genuine connection to my provider during my virtual visit.

- Strongly Agree — 45.5%
- Somewhat Agree — 22.2%
- Neutral — 24.2%
- Somewhat Disagree — 5.1%
- Strongly Disagree — 3.0%

Percent (N=99)

Figure 3: Q8 Results

8. If I had a choice, I would use telehealth again in the future.

Strongly Agree — 46.5%
Somewhat Agree — 21.2%
Neutral — 19.2%
Somewhat Disagree — 5.1%
Strongly Disagree — 8.1%

Percent (N=99)

Results by Platform

We compared the 99 participants who reported that they utilized the telehealth option with the type of virtual platform used across six questions. Overall patients preferred telephone call over all available platforms (46%), followed by Facetime (26%) (Figure 4).

Figure 4: Telehealth Users by Platform

2. Which virtual platform did you use most often?

Platform	Percent
Telephone Call	47.5%
Google Duo	4.0%
Facetime	26.3%
Doxy	21.2%
None	1.0%

Percent (N=99)

We evaluated questions 3-8 when comparing the various platforms used. Participants most commonly chose "strongly agree" across questions 3-8 that used Doxy as their preferred method when compared to Facetime, Google Duo, or telephone calls. Regarding confidentiality 52% of participants strongly agreed that Doxy gave them the confidentiality needed for their appointment followed by Facetime users who agreed at 50%. In looking at quality and length of visit, Doxy had the highest rate of satisfaction overall at 62%. Provider connection saw that Doxy provided the greater connection at 52% followed by Facetime at 50% and telephone calls at 45%.

Doxy users reported more success with phone data usage and internet connection at 71%. For

patients who strongly agreed that they would use virtual visit as an option in the future Doxy

users reported 57%, followed by Facetime and telephone calls at 46%.


Results by Distance

There was a total of 40 reported zip codes by participants. Out of the 99 who indicated

that they utilized the virtual visit option, they lived between 0-143 miles away from the clinic,

with a standard deviation of 26 miles. The 38 participants that reported never using the

telehealth visit as an option lived between 0-129 miles away from the clinic, with a standard

deviation of 30 miles. Both groups had a median of 17 miles. There was no association with

distance when comparing the participants who used the telehealth option visit, versus those who

did not. Both groups had an average distance of about 25 miles (Figure 5).

Figure 5: Participants by Distance
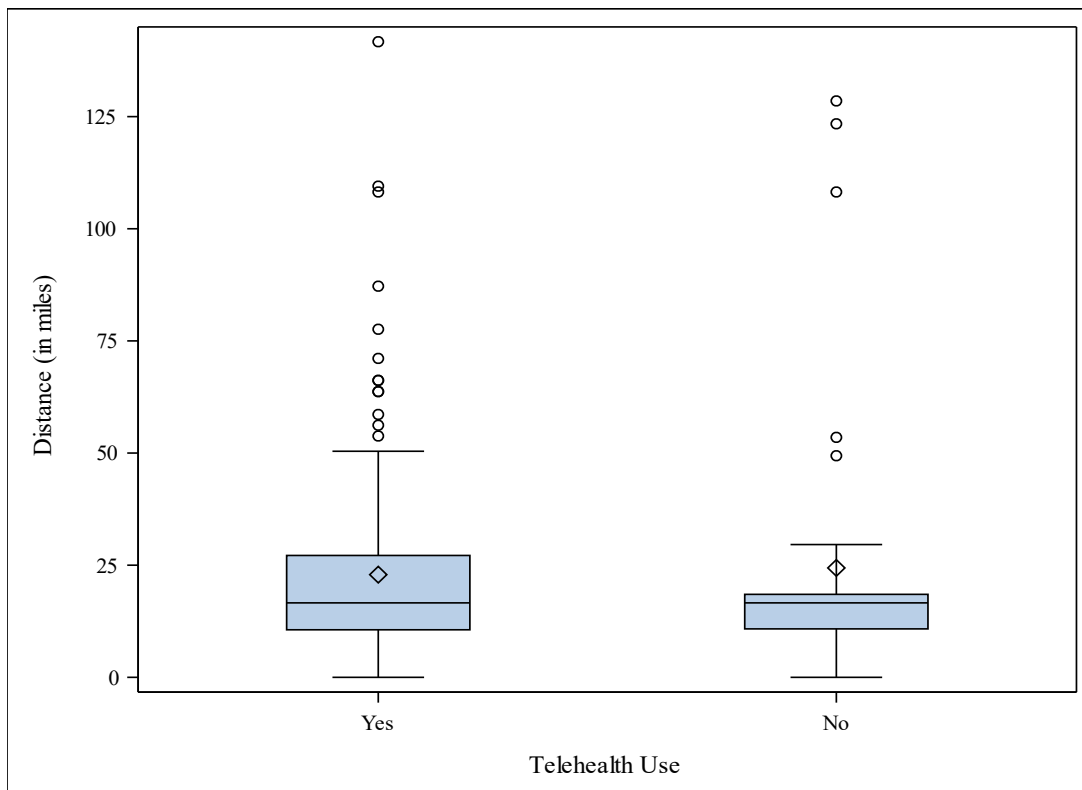
When evaluating the participants who live in the same zip code as the clinic, 85% still chose to utilize the virtual visit option at least once. Of the 99 respondents who chose the virtual visit as an option, the majority lived between 11-20 miles away from the clinic and 39% of them strongly agreed that virtual visits were better for their schedules. Only half of the patients living over 40 miles from the clinic agree that virtual visits are better for their schedules. Of the patients that live closer to the clinic, most of them disagree that virtual visits are better for their schedule compared to the participants that live farther away from the clinic. Most of the participants that live an average of at least 16 miles away from the clinic strongly agree that they would utilize telehealth in the future. Telehealth users who lived more than 10 miles away from the clinic (Figure 6) were more likely to agree that virtual visits were better for their schedules compared to telehealth users who lived less than 10 miles away from clinic ($p=0.0237$).

Figure 6: Distance by Q3
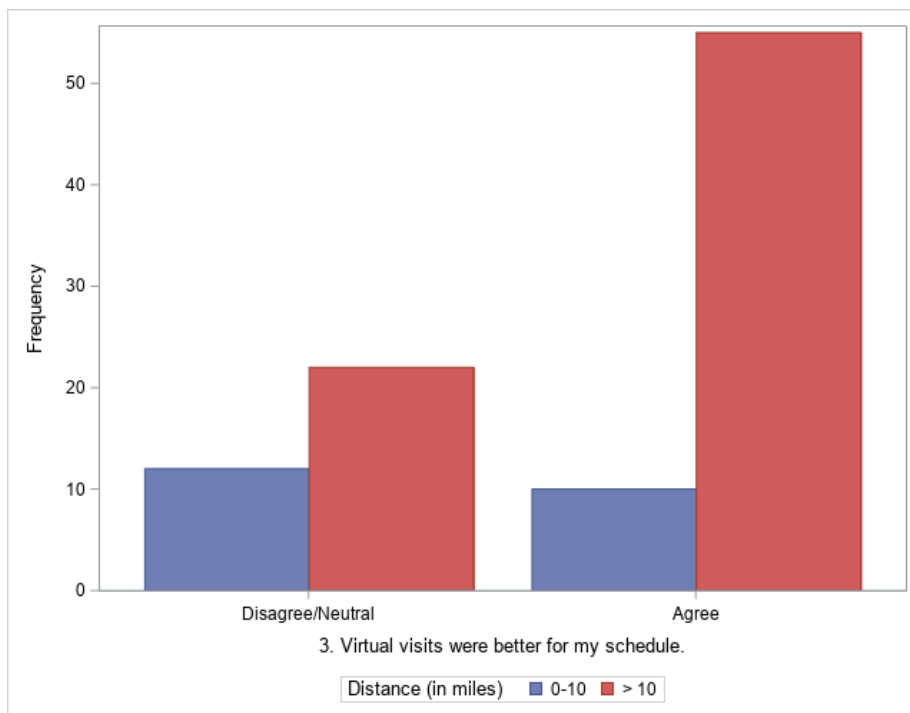
Chapter 5: Conclusion

Discussion of Results

This study indicates an overall positive experience when it comes to the use of telehealth as an option for PLWH with more than half of the participants using the virtual visit option at least once. Furthermore, almost half of the participants agreed that they would use the virtual visit option again if offered in the future. There is not a significant difference in the average age of participants who used telehealth (50 years old) compared to those who did not (53 years old). Previous provider interviews indicated that older patients were more likely not to use the telehealth option; however, this study indicates no significant difference. In this study, phone data and access to the internet did not present as a barrier to patients accessing telehealth services. Based on previous research in HIV care, the provider-patient relationship is vital to HIV infected populations remaining engaged in care (Mgbako, et al., 2020). Notably, over half of the patients reported a genuine connection with their provider, which is vital to PLWH remaining engaged in care. It appears that patients' decision to use telehealth is based on if it worked better for their schedules as there was a significant finding based on distance for patients that lived more than 10 miles away from the clinic.

As a result of the COVID-19 epidemic continuing to be an ongoing public health crisis, research should be a continuum as participants' thoughts and attitudes may change pending the length of this epidemic. Additionally, telehealth needs to be evaluated in greater detail for people living in rural communities. While this study did factor in zip codes, most of the respondents lived within 11-20 miles of the clinic which is not an accurate indication of the patients living in the rural populations that surround the clinic.

Limitations

There are several limitations to this study. First, this study was limited to a single clinic in the South Eastern part of the United States; therefore, the results of this study may not be generalizable to other regions or patient populations. Second, the Likert scale used for the purposes of this study included options strongly disagree, somewhat disagree, neutral, somewhat agree, and strongly agree. However, the more commonly used Likert scale options include, strongly disagree, disagree, neutral, agree, and strongly agree. This difference may have caused the reader some ambiguity in their responding to the survey. Third, the intent of this survey was to measure patients' experiences who are case managed and seen by the medical providers of this clinic. However, three respondents of the survey see a medical provider outside of the respective clinic that was being measured but are case managed by the clinic being measured. As a result of the survey's respondents being anonymous, those three respondents were included in the overall results of the survey. Finally, the survey relied on patient's self-report and actions. For this reason, the accuracy of the above question may be limited due to the respondents' misinterpretation or social desirability to answer the questions (Shi, 2008).

Conclusion

This study provides the foundation to explore the utilization of telehealth for HIV care management. The lessons learned are valuable, as the COVID-19 pandemic may forever change health care and the way it is delivered. For some time, HIV telehealth has been considered as an option to keep patients engaged in care and assist in medication management. However, the COVID-19 pandemic forced the upstart of telehealth and the way that it is conceptualized. The results of this study indicate that this telehealth model can be applied to the HIV care continuum

moving forward with participants reporting overall satisfaction with their HIV care during

COVID-19.   This study is just a start; however, as we move forward in this new era of medical

care, this topic will need continual revision and refinement to lead us towards an AIDS free

generation. This telehealth model can be applied to HIV telehealth care moving forward.

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