2023

Analyzing Veterans Affairs Telehealth Services Between Rural and Urban Centers in West Virginia

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Walden University

College of Management and Human Potential

This is to certify that the doctoral study by

Vicki Dix

has been found to be complete and satisfactory in all respects,
and that all revisions required by
the review committee have been made.

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Walden University
2023

Abstract

Analyzing Veterans Affairs Telehealth Services Between Rural and Urban Centers

in West Virginia

by

Vicki Dix

EMBA, Walden University, 2014

MSN, Walden University, 2012

BSN, Alderson Broaddus University, 2006

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Healthcare Administration

Walden University

May 2023

Abstract

Veterans often have difficulty accessing health care within the Veterans Affairs (VA) system, contributing to the growing need for health care services in rural communities. The increasing demand for health care services in rural communities is driven by the aging population, an increase in life expectancy, and an increase in chronic disease. This quantitative study aimed to explore the relationship between the type of appointment and patient location on initial primary care and telehealth primary care wait times for veterans in West Virginia. The two research questions addressed the independent variables, type of appointment (telehealth or face to face) and patient location (urban vs. rural), and the impact, if any, on the dependent variables, initial primary care and telehealth primary care wait time. The independent t test and the Mann-Whitney U test analyzed the data. Secondary data were obtained from VA Informatics and Computing Infrastructure. Donabedian's 1966 framework on structural, process, and outcomes standards applies to access to care and provided the theoretical framework for this quantitative study. Analyses indicated a significant relationship between the type of appointment and the average wait time, as well as patient location and type of appointment. The F2F initial primary care visits were higher than telehealth conducted via telephone visits, and the average wait time was lower in the F2F visits than in those conducted via telehealth/telephone. Also, the wait times were higher for rural patients than for urban patients. The results of this study may lead to positive social change by contributing to a more focused allocation of health care resources through considerations of innovative telehealth services in rural communities.

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Dedication

I dedicate this project to my wonderful husband; whose support and encouragement gave me the strength I needed to complete this journey. I also dedicate this study to my daughter and granddaughter, Tricia and Gianna, who supported me and encouraged me to achieve this goal.

Acknowledgments

I want to thank God; all the glory belongs to Him for leading me, guiding me, and giving me the spiritual strength needed to make my DHA dream come true. I want to give a special thanks to Dr. Miriam Ross, who always knew when to reach out and call and give the extra encouragement needed to get through each section. Also, I would like to acknowledge that Walden University genuinely wants to ensure every student is successful and offers support and guidance throughout every step.

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Section 1: Foundation of the Study and Literature Review

The Department of Veterans Affairs (VA) and Veterans Health Administration (VHA) operate one of the largest health care systems in the nation, with 172 medical centers and more than 1,000 outpatient facilities (Government Accountability Office, 2018; Massarweh et al., 2020). The VA Office of Rural Health (ORH) estimates that there are 2.8 million rural veterans who are enrolled in and rely on the VA's health care system (Bowser & Washington, 2020). Many veterans live in rural areas, where it may be challenging to provide comprehensive, high-quality health care to them. As mentioned by Massarweh et al. (2020) and Rural Health Information Hub (RHIhub, 2020), veterans choose rural communities for various reasons, such as closer proximity to family, friends, and community; open space for recreation; more privacy; lower cost of living; and less crowded towns and schools, and they may find that resources for health care are limited.

West Virginia was the chosen state for this study due to its rurality. West Virginia is number three of the top 10 most rural states in the United States and the only state that lies entirely within Appalachia (Kennedy-Rea et al., 2021; World Population Review, 2022a). West Virginia's population is 1,755,715, with 895,414 of the population living in rural communities (World Population Review, 2022b). West Virginia continues to perform poorly across key health measures, including diabetes, heart disease, cancer, and drug overdose mortality (Kennedy-Rea et al., 2021). West Virginia has the nation's highest prevalence of poor physical and mental health (Kennedy-Rea et al., 2021; West Virginia Health Statistics Center, 2019). A variety of complex factors drive these health

rankings and disparate perceptions, including deficits in health access and lack of emphasis on preventative care (Kennedy-Rea et al., 2021).

Military veterans in the United States are more likely than the general population to live in rural areas and often have limited geographic access to VHA facilities (Ohl et al., 2018; Shayman et al., 2019). To improve access for veterans living far from VHA facilities, the recently enacted Veterans Choice Act directed VHA to purchase care from non-VHA providers for veterans who live more than 40 miles from the nearest VHA facility (Gordon et al., 2021; Ohl et al., 2018; Pettey et al., 2021). The goal of the Choice Act was to increase timely access to health services, including primary care, when barriers prevented access within a VA facility (Gordon et al., 2021; Pettey et al., 2021). However, the initiative may not significantly improve their access to care, as these areas are underserved by non-VHA providers (Gordon et al., 2021; Ohl et al., 2018; Pettey et al., 2021).

This study focused on primary care access for veterans in West Virginia because it is explicitly referenced in the Choice Act but has received less attention than specialty services in the literature (Gordon et al., 2021; Gurewich et al., 2021). Existing studies are generally limited by their focus on a single type of service (e.g., mental health) and reliance on small, nonrandom samples and access to primary care data (Gordon et al., 2021; Gurewich et al., 2021).

The following section provides the background and states the study's research problem, purpose, and relevance. In addition, the section contains the research questions (RQs) and hypotheses, theoretical framework, study variables, and gap in the literature

that the study was conducted to address. Definitions and assumptions, scope, delimitations, limitations, and significance are also included in this section.

Background

As state spending on health care increases, policymakers look for ways to assess care cost-effectively to improve their constituents' health (Enlund, 2019). Enhancing and increasing access to health care services through telehealth is widely viewed as one strategy to help address workforce shortages and reach patients in rural areas (Enlund, 2019). Many veterans struggle to access needed services in a timely fashion (Me et al., 2018; Wagner, 2019). Veterans aged 65 and above represent 57% of all rural veterans who are enrolled in the VHA (Lum et al., 2019). These older adults often have multiple chronic conditions and aging-related issues that require care from multiple disciplines, including primary care, and yet accessing these services at a health care facility may require extensive travel (Lum et al., 2019). Preliminary evidence suggests that distance due to rurality can lead to delays in accessing care and greater morbidity and mortality (Me et al., 2018; Wagner, 2019). Telehealth gives veterans in rural areas access to more providers and allows them to receive care in their communities instead of traveling long distances (Enlund, 2019; Heyworth et al., 2020).

Nevertheless, in envisioning a telehealth-enabled future, one must remember that many clinical conditions require physical examinations or interventions, and that care is human and relational (Blandford et al., 2020). To date, investment has been insufficient in developing technologies that work for clinicians and patients and adapting health care on systems and lifestyles to exploit these technologies fully (Blandford et al., 2020). To

realize the long-term benefits of telehealth, organizations need to collaborate and learn what works well, where, when, why, and how (Blandford et al., 2020). Governments need to support the health technology industry in developing and testing novel telehealth solutions that are simultaneously safe and agile (Blandford et al., 2020). By exploring the impact, if any, of the type of appointment and patient location on initial primary care and telehealth primary care for veterans in West Virginia, the results may support researchers and health care leaders in addressing telehealth and access to care in ways that will improve the quality of rural health care. With continued emphasis in the VHA on expanding care, it is important that the effects on timely access to care, particularly for vulnerable groups such as rural veterans, are carefully evaluated (Gordon et al., 2021; Gurewich et al., 2021).

Problem Statement

Access to health care is essential for maintaining good health, but people in rural areas often face specific barriers to access, including in primary care (Lahr et al., 2021). Factors contributing to health care barriers in rural areas include workforce shortages and transportation challenges (Lahr et al., 2021). Studies have shown that for rural patients, there is a higher prevalence of chronic disease and lung cancer, higher mortality, a significant gap in life expectancy, and lack of access to health care (Coughlin et al., 2019). Primary care workforce shortages and difficulty accessing needed specialty services result in unnecessary emergency room trips and hospital readmissions (Council on Graduate Medical Education, 2020).

To address pressing rural health concerns in the United States, continued policy development and policy-oriented health services research are needed (Coughlin et al., 2019). Addressing rural health concerns will also assist providers and decision/policymakers at the federal, state, and local levels in understanding problems faced by rural communities and provide information that can be applied to improve health care access and population health (Coughlin et al., 2019).

VA recognizes the need to provide accessible care to rural veterans and allocates 32% of its health care budget to rural veteran care (RHIhub, 2020). However, the ability of VHA to deliver care in a timely fashion came under increased scrutiny during the 1990s, and according to the Centers for Disease Control and Prevention (CDC), those living in rural neighborhoods have more significant difficulties accessing telehealth services than those in more urban neighborhoods (CDC, 2019; Wong et al., 2017). There may be less technological or remote access in rural locations, making it either impossible or extremely slow to run the Internet; this significantly disrupts the ability to utilize telehealth tools such as videoconferencing (VC). Furthermore, not all VA offices may have the necessary equipment, which becomes an administrative problem within the VA as administrators must find ways to surmount these issues (CDC, 2019).

CDC (2019) and the National Center for Chronic Disease Prevention and Health Promotion (2019) work to improve health care in these areas by

- measuring how many Americans have chronic diseases or disease risk factors and reporting data down to the county level

- studying and reporting on rural health disparities and innovative programs to reduce those disparities

- funding and guiding states, territories, and tribes to reach rural populations through proven interventions and innovative programs

- developing programs and promoting care through digital formats, such as online classes or "telehealth" approaches to reduce health care access barriers for rural residents

Examining the differences between telehealth services in rural and urban areas may provide information to health care administrators, organizations, and providers about ways to expand access to care and improve the quality of rural health care (RHIhub, 2021). This study focused on the type of appointment (telehealth or face to face [F2F]), patient location (urban vs. rural), and the impact, if any, on the initial primary care and initial telehealth primary care wait times for veterans in West Virginia. The American Hospital Association (AHA, 2016) reported that telehealth was associated with a 25 percent reduction in bed days of care and a 19 percent reduction in hospital admissions across all VHA patients utilizing telehealth. Leung et al. (2019) conducted a study concerning primary care access to care. The study results indicated that although the VA is trying to strengthen services in some areas, more is needed and may be difficult to access due to the costs. In a study by Ortiz-Velez and Garcia-Baran (2019), veterans mentioned that their care is hindered by a lack of access to care due to location, long wait times to see specialists, and poor communication with staff. Finding ways to improve

access through innovative means such as telehealth services could improve health outcomes for veterans (Leung et al., 2019; Ortiz-Velez & Garcia-Baran, 2019).

Purpose of the Study

The purpose of this quantitative study was to explore the relationship between the type of appointment (telehealth or face to face) and patient location (urban vs. rural) on initial primary care and initial telehealth primary care wait times. Since the emergence of COVID-19, several studies have been conducted on telehealth; however, no known research has been done to compare the primary care wait times within veterans' health care facilities in West Virginia for patients who used telehealth services. The independent variable was type of appointment (telehealth or F2F) and patient residence (urban vs. rural), while the dependent variables were primary care wait times and telehealth primary care wait times. Rural geographic locations were Clarksburg and Beckley, while Huntington and Martinsburg represented urban regions, as determined by Rural Urban Commuting Area (RUCA) and the ORH (2021).

Within the VA system, access to care is measured by veteran satisfaction surveys (quality of care) and wait times for veterans' appointments completed over the month (National Academies of Sciences, Engineering, and Medicine, 2018; Zhenzhen & Calvin, 2017). Measuring wait time from the date an appointment was requested until the date the appointment was completed is the most accurate measure for new veterans because it indicates the actual average number of days that veterans have waited for an appointment (Access to Care, 2022). Health care administrators and professionals have determined that wait times for patients' first appointments are important when measuring access to

care, and this was studied for veterans living in West Virginia (Access to Care, 2019;

Zhenzhen & Calvin, 2017). This research could inform hospital administrations and

federal agencies about the need to address barriers to support the expansion of telehealth

to address rural health disparities. Table 1 and Table 2 show the relationships for the

independent and dependent variables and the type of analysis that was performed.

Table 1

Variables and Population for Research Question 1

Independent variable	Dependent variable	Population	Analysis
Type of appointment (telehealth or face to face)	Primary care wait time	West Virginia veterans	Independent-samples t test / Mann U because the wait times are counted in days

Table 2

Variables and Population for Research Question 2

Independent variable	Dependent variable	Population	Analysis
Patient residence (urban vs. rural)	Telehealth primary care wait time	West Virginia veterans	Independent-samples t test/Mann U because the wait times are counted in days

Research Questions and Hypotheses

RQ1: Is there a significant difference in the initial primary care wait time (time

between appointment schedule and appointment) between VA telehealth

appointments and face-to-face appointments scheduled in 2020?

H_01:   There is not a significant difference in the initial primary care wait

time (time between appointment schedule and appointment)

between VA telehealth appointments and face-to-face

appointments scheduled in 2020.

H_11:   There is a significant difference in the initial primary care wait

time (time between appointment schedule and appointment)

between VA telehealth appointments and face-to-face

appointments scheduled in 2020.

RQ2:   Is there a significant difference in telehealth initial primary care wait time

(time between appointment schedule and appointment) between urban

patients and rural patients who had a telehealth visit with the VA in West

Virginia in 2020?

H_02:   There is not a significant difference in telehealth initial primary

care wait time (time between appointment schedule and

appointment) between urban patients and rural patients who had a

telehealth visit with the VA in West Virginia in 2020.

H_12:   There is a significant difference in telehealth initial primary care

wait time (time between appointment schedule and appointment)

between urban patients and rural patients who had a telehealth visit

with the VA in West Virginia in 2020.

Theoretical Foundation

The theory that grounded this study was Donabedian's 1966 framework on structural, process, and outcomes standards related to access to care (Ayanian & Markel, 2016; Donabedian, 1966). This framework outlines the challenges of access to quality health care, including the need for a broader approach to quality measurements beyond the technical management of illness, incorporating assessments of prevention, economic efficiency, and societal values (Ayanian & Markel, 2016; Moore et al., 2015). There are six core aims for the 21st century's health care system, delivering safe, effective, patient-centered, timely, efficient, and equitable health care (Ayanian & Markel, 2016).

The VA measures patient-level wait times for more than a decade by calculating the interval between a patient's request for an appointment and when the meeting occurs. This measure indicates whether there is success in meeting Donabedian's six goals in relation to access to care; it incorporates timely and efficient goals and patient-centered aims (Ayanian & Markel, 2016; Moore et al., 2015). Analyzing access to care within rural communities involves exploring telehealth and its capabilities, including the bandwidth, policies, and practices in each VA center; a systematic, data-driven process is used to evaluate these measures.

Figure 1

Donabedian Model for Assessment of Quality of Care
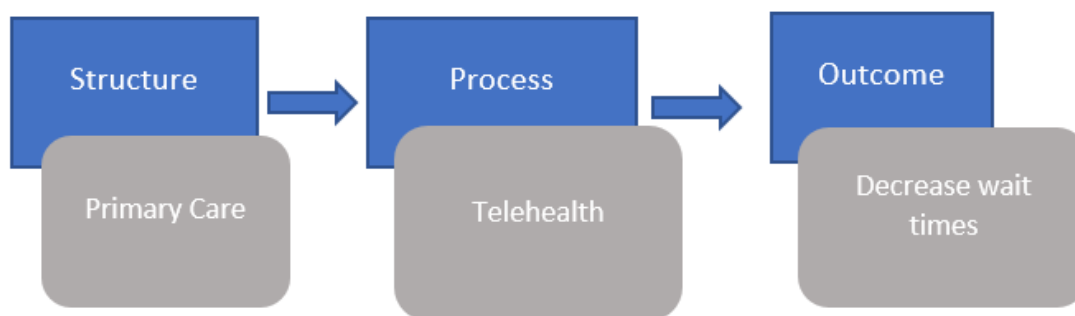
"Structured" measures describe the physical and organizational setting in which health care is delivered, including health care facilities, personnel, and equipment that supports medical care (Donabedian, 1966; Nocella et al., 2016). For this study, the operational definition of *structure* is primary care, with the setting being urban and rural communities. Primary care wait times measured in days from the day the veteran requested the appointment to the actual appointment represent structure. "Process," which relies on "structure" to provide the mechanism for patient care, describes the actions that allow for the adequate delivery of health care (Donabedian, 1966; Nocella et al., 2016). Telehealth is the focus and is measured by the veterans who utilize telehealth for the initial primary care visit. "Outcome" describes the effect of health care on patient and population health status, which is the desired result of the care process (Donabedian, 1966; Nocella et al., 2016). For this study, decreased wait times represented the outcome.

The logical connections between the framework presented and the nature of this study include looking at the Donabedian framework to evaluate the structure, process,

and outcome of telehealth, specifically comparing type of appointment (telehealth or F2F) and patient residence (urban vs. rural) on the initial primary care and initial telehealth primary care wait times.

Literature review and data demonstrate that Donabedian's structure elements are related to access to care and telehealth, including how the telehealth system's features, such as its resources, promote health care service delivery in geographic locations and improve health outcomes amongst veterans.

Nature of the Study

In this research, I used the quantitative method, using secondary data from the VA Informatics and Computing Infrastructure (VINCI) database to examine the relationship between the independent variables, type of appointment (telehealth or F2F) and patient residence (urban vs. rural), on the dependent variables, initial primary care and telehealth wait times, for veterans in West Virginia in 2020. VINCI is an Office of Research & Development (ORD) resource that provides researchers a nationwide view of high-value VA patient data (VINCI, 2021). VA research projects utilizing the VINCI database include those pertaining to mental health, quality improvement, chronic disease, women veterans, access, COVID-19, suicide, innovation, telehealth, and posttraumatic stress disorder (PTSD; VINCI, 2021).

The independent and dependent variables were measured using the Current Procedural Technology (CPT) and Clinic Stop Codes from the VINCI database. SPSS is used to perform two statistical analyses for the RQs. Independent-samples t tests are used when there are two different (independent) groups of people (males and females) and one

is interested in comparing their scores (Pallant, 2020). The Mann-Whitney U test is often

presented as the nonparametric alternative to the independent-samples t-test, with the

former used when data fail the assumptions of the independent-samples t-test (Laerd,

n.d.). For RQ1, the independent-samples t-test and the Mann-Whitney U test were used to

determine if there is a statistically significant difference in the type of appointment

(telehealth or F2F) in primary care wait times. The test showed whether the appointment

type decreases initial primary care wait time. For RQ2, the independent-samples t-test

and the Mann-Whitney U test were used to determine if there is a statistically significant

difference in patient residence (urban vs. rural) in the initial telehealth primary care wait

time. The test showed if the patient's residence (urban vs. rural) impacted the telehealth

primary care wait time.

Literature Search Strategy

The reviewed articles were found primarily through a digital search of scholarly

databases, including Medline, PsycINFO, ProQuest, Ovid Medline, PubMed,

EBSCOhost, ABI/INFORM, Veterans Office of Research and Development, ProQuest

Dissertations & Theses Global, CINAHL, Google Scholar, and the World Health

Organization (WHO). The search was performed for 2017–2021 and used the following

keywords individually and in combination: *rural*, *urban*, *access to care*, *hospital*,

admissions, *wait times*, *telehealth*, *telemedicine*, *barriers*, *primary care*, *veterans*, and

COVID. The following resource utilizes the Walden University Library, Google Scholar,

and Princeton University Library.

The literature review includes access to care, a review of rural and urban, a discussion about wait times for primary care, a review of hospitalization and telehealth services for veterans, and a discussion on COVID-19 and telehealth.

Literature Review Related to Key Variables

Access to Care

The U.S. Government Accountability Office (2018) designated VA health care as a high-risk area in 2015 due to five areas of concern regarding the VA's ability to provide timely access to safe, high-quality care for veterans The VHA ORH advances the VHA's commitment to improving veterans' health and well-being in rural areas (Lum et al., 2020). Access to health care services is a critical issue in the health care sector (Centers for Medicare and Medicaid Services [CMS], 2018). Lack of access can result in unmet health needs, delays in receiving the appropriate care, and preventable hospitalizations (CMS, 2018).

A shortage of health care professionals in rural areas of the United States can restrict access to health care by limiting the supply of available services (RHIhub, 2021). As of March 2021, 61.47% of primary care health professional shortage areas (HPSAs) were located in rural areas (RHIhub, 2021). Across the country, there are more than 17 million people who live in rural counties without a rural health clinic (RHC), more than 15 million in rural counties without a federally qualified health center (FQHC), and nearly 4.5 million in rural counties without an acute hospital (Clawar et al., 2018). Ohl et al. (2018) combined 2013 administrative data on VHA users with country-level data on rurality, non-VHA provider availability, population, and population health status. The

results showed that most (77.9%) of the 416,338 VHA users eligible for purchased care based on distance lived in rural counties, and approximately 16% of these veterans lived in primary care shortage areas (Ohl et al., 2018).

Initiatives to improve care are essential for the entire VA health care system to transform the VA into a veteran-centered service organization by incorporating goals such as same-day access to mental health and primary care services for veterans (U.S. Department of Veterans Affairs, 2016). Physicians within the VA system emphasize that the opportunities to improve wait times should include telehealth and virtual physician visits (U.S. Department of Veterans Affairs, 2016). Access to care is about more than wait times because the quality of services is equally essential (CMS, 2018).

To measure patient experiences, the VA uses the Consumer Assessment of Healthcare Providers and Systems (CAHPS) family of surveys, which was developed by the Agency for Healthcare Research and Quality (AHRQ) and is considered the industry standard for measuring patient experiences (U.S. Department of Veterans Affairs, 2020). Improving the timeliness of service is one of five current priorities for the VA, and a comprehensive access measure grounded in veterans' experiences is essential to support the VA's efforts to improve access (Pyne et al., 2020).

Struminger and Arora (2019) found that successful efforts to improve access to care in underserved geographic regions may require a comprehensive approach including more efficient telemedicine use. Telehealth is cited as providing patient care and outcomes which are comparable to standard care delivery (Enlund, 2019). However, much of the research on telehealth's effectiveness is still evolving (Enlund, 2019).

Improved access can increase the use of health care services, and most agree that the services would be more appropriate and less costly (e.g., primary care visits are less expensive than emergency room care; Enlund, 2019). Studies have shown the potential benefits that telehealth holds for addressing rural health disparities but identifying the use of telehealth and evaluating patient outcomes are also essential (American Academy of Family Physicians [AAFP], 2020).

Veterans' Rural Versus Urban Health Care

The VHA leads the nation in caring for rural veterans (ORH, 2015). The VHA changed how it defines urban and rural areas and uses the Rural-Urban Commuting Areas (RUCA) system to define rurality (ORH, n.d.). RUCA is based on how the U.S. Census Bureau counts citizens and considers population density and how closely a community is linked socioeconomically to larger urban centers (ORH, n.d.).

Lum et al. (2020) conducted a study investigating telehealth access among rural and urban veterans. Lum used quantitative methodology and data from national databases, including the Geriatric Research Education and Clinical Centers, which gather data centered on rural America. The rationale for selecting the variables included establishing rural veterans whose information is contained in the database to promote data uniformity. The focus of the study involved a quantitative method investigating how telehealth improved access to geriatric consultative care. The advantages of telehealth services were evident in the results, which indicated that patient loads were reduced in each clinic after telehealth services were initiated, resulting in reduced workflows per caregiver (Lum et al., 2020).

Padala et al. (2020) also conducted a similar study to investigate the effects of telehealth integration in rural regions among veterans during the COVID-19 pandemic and concluded that access to health care improved by using telemedicine. The researchers investigated whether telemedicine promotes quality care, including how it reduces distance barriers limiting veterans' abilities to access timely health care services. A cross-sectional methodology was utilized with 118 participants whose data were collected through video and phone interviews. The study's variable selection rationale included the following parameters concerning ensuring the availability of the internet, email access, and cameras among the selected participants and representing more than 30% Caucasian and 30% African American veterans. The other requirement was that the participants needed to be competent with VA Video Connect (VVC; Padala et al., 2020).

Adams et al. (2019) conducted an observational study like the Padala et al. (2020) research, with urban geographic locations as an independent variable and Clinical Video Telehealth (CVT) as a dependent variable. The results noted that CVT increased access to health care among urban veterans, with the research forecasting increased telehealth demand in the future. Similarly, Slightam et al. (2020) used a multivariate logistic regression study to identify patient characteristics associated with telemedicine preferences and examined qualitative themes. A baseline survey was sent to study participants using a tablet, and a follow-up survey was sent to the same participants 3 to 6 months later (Slightam et al., 2020). The study's dependent variables included wait times, with independent variables comprised of established telehealth systems in health care institutions and rural and urban locations. The results suggested that video-based care in

urban and rural centers improved patient outcomes among veterans supplied with telehealth tablets, reducing wait times in health care institutions and allowing them to have immediate access to medical treatments, which reduced the access barriers these veterans had experienced previously (Slightam et al., 2020). Pimentel et al. (2019) also conducted a study investigating geriatric telehealth's impact on rural veterans, indicating that the Geriatric Clinical Centers improved the relationship between geriatric caregivers and rural veterans. The study's independent variables were rural health care and the Geriatric Research Education and Clinical Centers.

Across these studies, there is consistent evidence that rural and urban access to care is positively influenced by telehealth. Nonetheless, there is a lack of research on telehealth infrastructure, capability, and willingness to participate in telehealth among the elderly and health care providers. There is substantial evidence that health care resources are limited in rural areas, and that access to services is problematic (MacQuest Consulting, 1999; Slightam et al., 2020). The delivery of health care services in rural areas differs from those in urban areas due to limited resources and decreased access to the internet and internet services (Slightam et al., 2020). However, despite the benefits that have been shown with telehealth, lack of broadband access continues to be a barrier, and solving the issue of limited broadband access should be a priority (Hirko et al., 2020).

West Virginia Information

West Virginia is 24,320 square miles and is bordered by Pennsylvania, Virginia, Ohio, Kentucky, and Maryland. It is the only state located entirely in the area known as

Appalachia (West Virginia Health and Human Resource Bureau, 2018). According to the West Virginia Department of Transportation, only 30 of the 55 counties in the state have access to public transit systems, and only 33 counties have taxi services (West Virginia Health and Human Resource Bureau, 2018). According to the U.S. Census Bureau, West Virginia is the third most rural state in the nation, with 51.8% of its population living in rural areas and 34 of its 55 counties considered rural (West Virginia Health and Human Resource Bureau, 2018).

Rural patients often travel greater distances to receive health care services, but it is not just the physical distance that is a barrier; weather conditions, environmental barriers, challenging roads, lack of personal transportation, lack of public transportation, and costs associated with transportation also interfere with access. Barriers to health care access in West Virginia include low health literacy, societal acceptance, quality of care, self-reliance, religion, bias, and mistrust (Jensen, 2018; Newins et al., 2019).

Wait Times for Primary Care Appointments

Peterson et al. (2014) the Institute of Medicine (IOM) Committee on the Quality of Health Care in America called for a redesign of the U.S. health care delivery system and appealed to all health care constituencies to commit to reducing delays as one of six specific aims for improvements. IOM reported that timeliness is an essential characteristic of any service and is a legitimate and valued focus of improvement in health care and other industries (Peterson et al., 2014). The VA health care system has collected data on wait times and has tried to decrease primary and specialty wait times for established patients by using advanced access and priority access strategies, telemedicine,

colocation of primary care and mental health services, and other strategies (Peterson et al., 2014).

Wong et al. (2018) conducted an observational study examining 13,595 VHA patients who were also enrolled in fee-for-service Medicare. Data sources used in the study included the Survey of Healthcare Experience of Patients (SHEP), with data indicating how wait times for a VHA appointment with primary care providers were determined. The study used fractional logistic regression to examine the relationship between wait times and reliance on VHA services (Wong et al., 2018). The study results suggested that patients who reported longer than usual wait times for immediate VHA care exhibited lower future reliance on VHA primary care (Wong et al., 2018).

In contrast, Lampman et al. (2019) conducted a multiple-linear regression analysis to examine the relationships between patient perceptions of access and average actual patient wait times, telephone visits, and rural residence. The researchers examined whether self-reported access to primary care is associated with actual wait times and use of telephone visits and whether this relationship differs by rural residence (Lampman et al., 2019). The results showed that as the wait time for routine appointments increased, veterans served by clinics with a higher percentage of rural veterans perceived telephone visits more positively (Lampman et al., 2019). Access to primary care in rural communities and the shortage of primary care providers continued to be a challenge that created risks for worsening health care problems (Healthy People, 2020; Warshaw, 2017). The studies demonstrated that access to primary care continued to be an issue and was influenced by barriers that required further research.

Hospitalizations and Telehealth Services for Veterans

New technologies are revolutionizing health care, and the VHA is recognized as an advocate for telehealth development and use (Schulz-Heik et al., 2017). The VHA started telehealth services in 2003 and pioneered the testing and implementation of telehealth on a national scale, with several programs within VHA contributing to this effort (Myers et al., 2021). Ortholive (2019) conducted a study using electronic health records (EHR) that tracked telehealth initiatives at three comprehensive VA clinical facilities to determine the effects on revenue cycle and patient experiences. The study looked closely at the recorded metrics and found that telehealth services successfully reduced inpatient costs for patients with chronic diseases, reduced hospital admissions, and raised patient satisfaction scores by 85% (Ortholive, 2019).

Ryskina et al. (2021) used multivariable logistic regression to measure the frequency of being seen by telemedicine versus in-person services when barriers related to demographics and comorbidities existed. The results showed that 60.3% of patients accessed primary care via telemedicine and had lower ambulatory-sensitive hospitalization (Ryskina et al., 2021). In contrast with primary care, Peters et al. (2021) conducted a study to evaluate the effect of telehealth on the use of hospital services and compare the outcomes between telehealth types and health conditions. The meta-analysis study included 127 peer-reviewed randomized controlled trials. Results revealed high-quality evidence that telehealth reduces mean all-cause and condition-related hospitalizations, with 50 or fewer hospitalizations per 100 patients (Peters et al., 2021).

Across these studies, there is consistent evidence that hospitalization and access to primary care issues are influenced by telehealth usage.

Systematic review and meta-analysis performed by Peters et al. (2021) on the effect of telehealth interventions on hospital service showed evidence that telehealth reduces the risk of all-cause or condition-related hospitalization by 18 (95% Cl 0-30) and 37 (95% Cl 20-60) per 1,000 patients. Although telehealth showed a slight reduction in hospital services, Peters et al. suggested that there are uncertainties around the magnitude of effects, and not all effects are statistically significant.

COVID-19 and Telehealth Services for Veterans

Myers et al. (2020) conducted a study during the COVID-19 pandemic and found that expanding telehealth services had become the most prominently employed access strategy across most health care systems. The VA is a leading provider of telehealth, and studies have also indicted that those disparities may exist in reaching older veterans living in rural areas (Padala et al., 2020). Baum et al. (2021) analyzed data from the VA Corporate Data Warehouse, which is a national repository of electronic health records. Data are gathered from visits to any VA facility, and the data are updated nightly for purposes of reliability and accuracy. The study population included a cohort of adults who visited any VA health care facility between 2008 and 2018 (Baum et al., 2021). The results revealed that decreases of in-person visits and increases in telehealth visits were observed in 92.8% of VA clinics.

Monaghesh and Hajizadeh (2020) conducted a systematic literature review on the role of telehealth during the COVID-19 outbreak. Inclusion criteria included telehealth

services for all aspects of health care during the COVID-19 pandemic. The study's conclusion showed that telehealth improved health services and was essential for keeping patients and health providers safer during the COVID-19 outbreak (Monaghesh & Hajizadeh, 2020).

Doraiswamy et al. (2020) systematically searched PubMed and Embase databases with specific inclusions of telehealth services and treatments. Out of 543 articles published across 331 different journals, 461 of the articles expressed positive sentiment about the use of telehealth. The conclusion suggested that telehealth may significantly improve health care in the future (Doraiswamy et al., 2020). More research surrounding telehealth in resource-limited settings and low-and middle-income areas needs to be established to promote its potential; along with a global consensus on the definition, boundaries, protocols, monitoring, evaluation, and data privacy that is needed to ensure the safe use of telemedicine services (Doraiswamy et al., 2020).

The COVID-19 pandemic and the accompanying social distance measures have hastened the implementation of telehealth programs in hospital systems around the globe (Connolly et al., 2021; Hirko et al., 2020). Telehealth initiatives are proving essential in efforts to mitigate the spread of COVID-19 among patients and providers and will continue to mitigate distance and access challenges in rural and remote settings long after the pandemic has abated (Hirko et al., 2020). Nevertheless, Hirko et al. (2020) suggest that to ensure telehealth remains a viable option following the pandemic, rural health systems must develop a strategy that includes lobbying for continued third-party reimbursement of telehealth services. COVID-19 led to rapidly expanding telehealth

infrastructure and a shift in mental health service delivery (Page et al., 2021). The known barriers faced by underserved populations are addressed with telehealth, Page et al. (2021) suggest other barriers, such as digital literacy, are exacerbated. Leveraging ongoing political momentum responding to the COVID-19 pandemic affords opportunities to improve digital connectivity and reduce the digital divide for diverse populations (Page et al., 2021).

Many lessons will inevitably be learned from the COVID-19 crisis by exposing underlying health disparities and fostering innovative solutions to address health needs in these trying times (Hirko et al., 2020; Page et al., 2020). Nevertheless, AAFP (2020) suggests that more research is needed to determine whether telehealth has produced any unintended consequences concerning the pandemic. Such research would ensure that telehealth does not accidentally increase the health disparities of those who live in rural areas (AAFP, 2020).

Der-Martirosian et al. (2021) used a parallel mixed method including simultaneous quantitative and qualitative approaches to compare services used at a VA Medical Center, Greater Los Angeles, across three clinics (primary care, cardiology, and home-based primary care [HBPC]) 12 months before and 12 months after the onset of COVID-19 in March 2020. The study showed that telehealth use was minimal at all three clinics, but at the start of COVID-19, telehealth use increased substantially at all three clinics (Der-Martirosian et al., 2021). Although the study showed an increase in telehealth, several barriers were noted. Multiple steps for videoconferencing, creation of new scheduling girds, limited access to the internet and facilitators (flexibility in using

different video-capable platforms, technical support for patients, identification of staff telehealth champions, and development of workflows to help incorporate telehealth into treatment plans) (Dre-Martirosian et al., 2021). However, telehealth benefits during the COVID-19 pandemic and for the rural communities' technological issues must be addressed at the forefront of telehealth evolution to achieve access for all patient populations with different socioeconomic backgrounds, living situations and locations, and health conditions (Dre-Martirosian et al., 2021). The unprecedented expansion of telehealth during COVID-19 provides opportunities to create lasting telehealth solutions to improve access to care beyond the pandemic (Dre-Martirosia et al., 2021).

Literature Review Summary

A thorough review of the literature focused on the variables of this study and the effects of telehealth services associated with Veterans in rural and urban West Virginia. Study results provided information about Veterans' access to care and whether the differences in telemedicine services have been a positive addition to health care programs and wait times for primary care appointments (Lampman et al., 2019; Myers et al., 2020; Schulz-Heik et al., 2017). Rural patients often travel greater distances to receive health care services, but it is not only the physical distance that is a barrier because there are also weather conditions, environmental barriers, challenging roads, lack of transportation, and costs associated with transportation (Jensen, 2018; Newins et al., 2019). A final overview of telehealth services concerns the studies written in 2020 and 2021 which conveyed an increasing acceptance of telehealth services due to the Covid-19 epidemic (Doraiswamy et al., 2020; Myers et al., 2020).

Definitions

Access to care: Access to care involves achieving the necessary care in a timely manner for patient needs based on geographical location and available infrastructure, health literacy, and information (Mattocks et al., 2017). Access to health care consists of four components: Coverage, Services, Timeliness and Workforce (Healthy People 2020).

Clinical Video Telehealth (CVT): CVT involves the use of interactive videoconferencing and attached peripheral medical technologies to provide care and support care delivery between clinics and hospitals, and hospital to other hospitals. The patient site and provider site encounter are separated by location only (VSSC, 2021).

Clinic Stop Code: The clinic stop class identifies the type of service provided by an encounter (VHA Handbook, 2013).

Encounter: An encounter is a professional contact between a patient and a practitioner vested with responsibility for diagnosing, evaluating, and treating the patient's condition (VHA Handbook, 2013).

Health Services Research and Development Services (HSR&D): The VA HSR&D is an integral part of VA's quest for innovative solutions to today's health care challenges. HSR&D supports research that encompasses all aspects of VA health care, focusing on patient care, cost, and quality (Office of Research and Development, 2018).

Rural: VA uses the Rural-Urban Commuting Areas (RUCA) system to define rurality. Developed by the Department of Agriculture (USDA) and the Department of Human Services (HHS), the RUCA system considers population density and how closely

a community is linked socio-economically to larger urban centers. RUCA is based on how the U.S. Census Bureau counts citizens (RHIhub, 2021).

Urban areas: Census tracts with at least 30 % of the population residing in an urbanized area defined by the Census Bureau.

Rural areas: Land areas not defined as urban or highly rural.

Telehealth: This term refers broadly to electronic, and telecommunications technologies and services used to provide care and services at-a-distance (AAFP, 2020).

Telemedicine: This type of program involves the practice of medicine using technology to deliver care from a distance. A physician located at one location uses a telecommunication infrastructure to deliver care to a patient at another site (AAFP, 2020).

Urban: The Census Bureau defines an urban area wherever it finds a nucleus of 50,000 or more people, the area must have a core with a population density of 1,000 persons per square mile and may contain adjoining territory with at least 500 persons per square mile (USDA, 2019).

VA Informatics and Computing Infrastructure (VINCI): A VA program which is an initiative to improve researchers' access to VA data and to facilitate the analysis of those data while ensuring Veterans' privacy and data security. VINCI is a partner with the Corporate Data Warehouse (CDW).

Veterans' Health Administration (VHA): The United States most extensive integrated health care system, the VHA (VA hospitals) delivers a variety of medical

service to veterans and their families who are enrolled in the VA health care system

(O'Hanlon et al., 2017).

VHA Support Service Center Capital Assets (VSSC): A web-based project

application and tracking database. The program is used for capital project application

submission and capital project tracking for the VHA Minor, Clinical Specific Initiative

(CSI) and Non-recurring Maintenance (NRM) Programs (AmeriGEO, n.d.).

Wait times: Based on actual times veterans have waited for appointments, based

on completed appointments from the prior month. Measuring wait times from the date

the appointment was requested until the date the appointment is completed is the most

accurate measure for new Veterans because it is the actual average number of days

Veterans have waited for an appointment (Access to care, 2020). Wait times are for new

enrollees and return for appointments.

Assumptions

This research has three assumptions. The first assumption is that the secondary

data collected from VINCI is a valid and reliable data source. Another assumption is that

the data is accurate and ethically obtained. The third assumption is that I am categorizing

urban and rural accurately.

Scope and Delimitations

The first delimitation of the study concerned the lack of primary data collection

and the need to use secondary data which was obtained from the VHA Support Service

Center Capital Assets (VSSC). The VSSC is a web-based project application and tracking

database. This is used for capital project application submission and capital project

tracking for the VHA Minor, Clinical Specific Initiative (CSI) and Non-recurring Maintenance (NRM) Programs (Data.Gov, 2019). Secondary data was also collected from accesstocare.va.gov which is a public site. Both the VSSC and the Accesstocare collected data through the Veterans Hospital Administration. The VSSC monitors the coding, workload, provides and veteran is using telehealth by specific telehealth clinic codes and encounters. The secondary data included veterans that are enrolled within the VHA in the cities of Beckley, Clarksburg, Huntington, and Martinsburg, West Virginia that used the telehealth modularity.

Limitations

The sampling procedure decreased the generalizability of findings. This study did not capture all Veterans who used telehealth for their initial primary care appointment due to the Veterans who see non-VA providers. By using an objective measure of wait time, this study was not able to account for Veterans' preference or capture their perceptions of access.

Significance

This research is significant because the information could support further research and health care administrators concerns related to expanding and sustaining telehealth services in rural communities. This research is also significant because it focuses on access to care for rural and urban Veterans who will benefit from timely treatment in the VA health system. The results may provide information about ways to reduce barriers to telehealth, like bandwidth for internet services. The results of this study could inform

health care administrators about the importance of telehealth, along with availability and integration of data, when examining system reforms.

Summary and Conclusions

This section reviewed literature related to the RQs about the associations, if any, between the type of appointment and patient residence on initial primary and telehealth primary care wait times. Telehealth services have the potential to reduce infectious exposures and the strain on health care systems, minimizing the increased patient demand placed on health care facilities (CDC, 2020). Studies have shown the benefits, but barriers still need to be overcome for telehealth to be sustained after the pandemic. This study examined whether telehealth relates to rural veterans' access to care. Section 2 provides the research design and methodology for the study.

Section 2: Research Design and Data Collection

The purpose of this quantitative study was to explore the relationship between the type of appointment (telehealth or face to face) and patient location (urban vs. rural) on the initial primary care and initial telehealth primary care wait times. The population was veterans in West Virginia who lived in specific rural and urban areas. The independent variables were the appointment type and patient location, and the dependent variables were initial primary care and initial telehealth primary care wait time. This research could inform hospital administrators, policymakers, and other federal agencies about the need to address barriers to support the expansion and sustainment of telehealth. In this section, I explain the study's research design and rationale, the target population, sampling procedures, instrumentation and operationalization of constructs, power analysis used to calculate the sample size, data analysis plan, threats to validity, and ethical procedures.

Research Design and Rationale

I used a quantitative method using secondary data from VINCI, a HSR & D Resource Center. A quantitative method is the best method to statistically test numeric data because it focuses on numeric and unchanging data and detailed, convergent reasoning rather than divergent reasoning (i.e., the generation of a variety of ideas about a research problem in a spontaneous, accessible, flowing manner; Bhandari, 2022). The independent variable, type of appointment (telehealth or face to face), and patient location (urban vs. rural) were measured using the VINCI data. VINCI pulls the data from the Corporate Data Warehouse (CDW), where the VHA information is stored. VINCI gathers the data based on the CPT codes used for telehealth visits by location. In

addition to VINCI data for location, the location is further defined by rural and urban, based on the RUCA system. The rural geographic locations were Clarksburg and Beckley. At the same time, Huntington and Martinsburg represent urban regions, as determined by the RUCA and the ORH (2021). The dependent variables were initial primary care wait time and telehealth primary care. The wait times can be viewed at https://accesstocare.va.gov, a public site that only gives information for the past month, whereas VINCI can pull information for the past 5 years.

The data include veterans seen as outpatients in the West Virginia cities of Beckley, Clarksburg, Huntington, and Martinsburg. Further criteria for inclusion required that the veterans have telehealth appointments in 2020. In 2019, the COVID epidemic emerged, which impacted telehealth and the data that were collected because COVID-19 resulted in a massive increase in telehealth utilization. Secondary data can save time, money, and resources, and sharing, compiling, and storage have become faster and easier (Tripathy, 2013).

Methodology

I used the independent-samples *t*-test and the Mann-Whitney *U* test to examine if there is a difference between the type of appointment (telehealth or face to face) and patient location (urban vs. rural) on the initial primary care and telehealth primary care wait times. An independent-samples *t*-test is used when a researcher wants to compare the mean score on some continuous variable for two different groups of participants (Pallant, 2020). The independent-samples *t*-test compares the values for continuous variables (initial primary care and initial telehealth primary care wait times) for two

groups—patient location (urban vs. rural) and type of appointment (telehealth or face to face; Pallant, 2020).

I used the Descriptive Statistics—Explore and the Kolmogorov-Smirnov test to check the distribution for each group of the independent variables. The results indicated that the data were not normally distributed for the locations (i.e., urban and rural) and type of primary care appointment (F2F, telephone). For this reason, the Mann-Whitney U test was used. Mann-Whitney U test is the nonparametric alternative often used instead of the independent-samples t-test when the data fail the assumption of the independent-samples t-test (Laerd Statistics, 2013).

Population

The population for this research was veterans living in West Virginia in Beckley, Clarksburg, Huntington, and Martinsburg who had an outpatient visit in the year 2020. In 2020, the number of veterans who had an outpatient visit equaled 101,792, with 14,701 of those appointments being by telehealth. Based on the RUCA, Clarksburg's rurality is 88% and Beckley's is 69%, with Huntington being 51% and Martinsburg 49%. The VINCI dataset was categorized into appointment type (telehealth and face to face), patient location (urban vs. rural), and initial primary care and initial telehealth primary care wait times.

Sampling and Sampling Procedures Used to Collect Data

In this research, I analyzed existing secondary data from VINCI. I used VINCI because VINCI's mission is to improve veterans' health care by providing researchers access to integrated national datasets and tools for analysis in a secure, high performance

computing environment (VA Information Resource Center [VIRec], 2018). The VINCI

data center is a secure, virtual computing environment that provides the resources and

tools necessary to conduct studies and analyze data (VIRec, 2018). The VINCI works

with the Office of Health Information (OHI), National Data Systems (NDS), Veterans

Information Resource Center (VIRC), and the VHA Privacy Office to establish

standardized procedures for authorizing the use of VHA data (HSR&D, 2018).

VA Informatics and Computing Infrastructure Sampling

VINCI is transparent with its sampling process. VINCI partners with the VA

CDW. The data are stored in a relational database (VINCI, 2022). Multiple VA data

sources are being merged so that cohorts are defined by attributes such as ICD-9, ICD-19,

and CPT codes from outpatient encounter within a target period—in this study, 2020

(VINCI, 2022). Data are kept current by refreshing on a nightly basis and are available

beginning October 1, 1999 (VINCI, 2022). CDW is considered the best model data

(VINCI, 2022). VINCI collected the data based on the CPT codes of the veterans who

utilized telehealth during 2020 in West Virginia. Wait times were collected by primary

care CPT codes and measured in days, from the date the appointment was requested until

the date the appointment was completed.

Sampling Plan

Sampling is a principle used to select members of the population to be included in

a study. See Figure 2, which shows an example of sampling.

Figure 2

Population, Sample, and Individual Cases Example
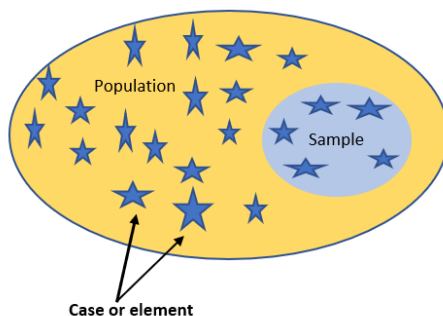
In statistics, sampling bias may cause some of the population to be less likely to be included than others, resulting in a biased or nonrandom sample (Business Research Methodology, n.d.). I used probability sampling, precisely simple random. Simple random sampling is considered the most unbiased population representation (Business Research Methodology, n.d.). The inclusion data were for the veterans in West Virginia who had an initial primary care appointment or initial telehealth primary care appointment. The exclusion data were for the nonveterans.

The statistical procedure for RQ1 and RQ2 was the independent-samples *t*-test. GPower 3.0 priori power analysis was used to compute the sample size using the *t*-test family, the difference between two independent means (two groups), and the type of power analysis being the a priori: compute required sample size. Given the statistical power level (0.80) and significance level (0.05), the recommended size was 24 for RQ1 and 88 for RQ2. The independent variables for this study were the type of appointment

(telehealth and face to face). The dependent variable was patient location (urban vs. rural). The results of the power analysis are shown in Table 3.

Table 3

Sample Size Power Analysis (Independent-Sample t Test)

RQ	Effect size	Statistical power level	Significance level	Sample size
1	1.9	0.80	0.05	24
2	0.6	0.80	0.05	88

Instrumentation and Operationalization of Constructs

The data from veterans' health care facilities was obtained from VINCI at https://vinciccentral.vinci.med.va.gov, which partners with the CDW and hosts all data available through CDW. The data obtained from VINCI were based on the type of appointment (telehealth and face to face), patients' location (urban vs. rural) and initial primary care and telehealth primary care wait times.

In 2008, VA Research funded VINCI, and since then, thousands of research projects have depended on VINCI for success; maintaining a reliable, sustainable infrastructure is vital (VINCI, 2022). VINCI is a key resource to help researchers navigate VA's complex data environment. It plays a significant role in VA's Electronic Health Record Modernization (EHRM) effort to migrate its EHR to Cerner Millennium

(VINCI, 2022). VINCI data sets have been used in previous studies around telehealth, virtual care, wait times, cancer, and suicide, to name a few.

Operationalization for Each Variable

VINCI collects data based on each facility's workload entered into the VA system—drilling down by the encounters with any primary stop codes or a secondary stop code of telehealth and primary care in West Virginia—Beckley, Clarksburg, Huntington, and Martinsburg VAs—from 2016–2020. Telehealth codes that were used included 136,137, 179, 440, 444, 445, 446, 447, 490, 491, 644, 645, 648, 679, 690, 692, 693, 699, 708, 723, and 724.

- Type of appointment is a categorical variable that indicates that veterans had an initial primary care appointment either face to face or by the telehealth modality. The number of primary care visits are recorded in VistA and VSSC by the encounter and CPT codes.

- Patient location is a categorical variable with the classification of rural or urban. The geographic rurality was based on the ORH definitions and census of the locations in West Virginia. Geographic location is considered an independent variable and includes the locations of West Virginia cities Beckley, Clarksburg, Huntington, and Martinsburg. The two facilities considered rural are Clarksburg, with a percentage of 81%, and Beckley at 69%. Huntington and Martinsburg are primarily urban, with a rurality percentage of 49 to 51.

- Wait times is a dependent variable that considered access to care, was measured in days, and was broken down by type of appointment—telehealth and face to face.

The operational definitions summary of the variables for this study is depicted in Table 4.

Table 4

Operational Definitions of Variables

Name	Measurement	Values of variables
Type of appointment	Categorical	Telehealth (1) Face to face (2)
Patient location	Categorical	Rural/Urban (1/2)
Primary care wait times	Continuous—Scale	Number
Telehealth primary care wait time	Continuous—Scale	Number

Data Analysis Plan

The Statistical Package for the Social Sciences (SPSS) Version 27 data editor assessed the analysis and interpreted the overall outcome of the tables and charts produced due to the research. The aggregated data from VINCI are possible through a monitored, audited, and controlled data transfer environment. VINCI can allow data to be moved for decision support while preventing the removal of sensitive information (HSR&D, 2018). Collecting is complex, with issues on data collection surrounding threats to validity and bias during the process. The primary independent and dependent variables as the focus of this study were not adjusted.

The VINCI data were analyzed and cleaned by the VINCI team and sent via VA Outlook email. The information was downloaded, inputted into Excel worksheets, and transferred to IBM SPSS Statistics Version 27.0 statistical software. All data were stored on an external hard drive on a government laptop. The data unrelated to my RQs were removed. The results were interpreted using an independent-sample t-test. The results were also interpreted using probability values. The RQs and their corresponding hypotheses were as follows:

RQ1: Is there a significant difference in the initial primary care wait time (time between appointment schedule and appointment) between VA telehealth appointments and face-to-face appointments scheduled in 2020?

$H_0 1$: There is not a significant difference in the initial primary care wait time (time between appointment schedule and appointment) between VA telehealth appointments and face-to-face appointments scheduled in 2020.

$H_1 1$: There is a significant difference in the initial primary care wait time (time between appointment schedule and appointment) between VA telehealth appointments and face-to-face appointment scheduled in 2020.

RQ2: Is there a significant difference in telehealth initial primary care wait time (time between appointment schedule and appointment) between urban patients and rural patients who had a telehealth visit with the VA in West Virginia in 2020?

H_02:   There is not a significant difference in telehealth initial primary

care wait time (time between appointment schedule and

appointment) between urban patients and rural patients who had a

telehealth visit with the VA in West Virginia in 2020.

H_12:   There is a significant difference in telehealth initial primary care

wait time (time between appointment schedule and appointment)

between urban patients and rural patients who had a telehealth visit

with the VA in West Virginia in 2020.

Threats to Validity

External Threats to Validity

The data for this study were obtained from the VINCI databank. The data is

primarily based on the number of telehealth and primary care visits by veterans in the

West Virginia region. An external threat would have been the veterans who chose to use

the private sector instead of VA health care. The private sector also uses telehealth

modalities such as CVT, and those numbers were not included in this study. The process

of transporting wait times and hospital admissions from the VINCI database to the SPSS

editor may omit some potential variables that are a threat to validity.

Internal Threats to Validity

Any factor that leads to an incorrect conclusion and may affect a study outcome is

considered a threat to internal validity (Trochim et al., 2016). The data that were obtained

from VINCI were based on clinic codes, and if a provider used the wrong telehealth

clinic code, this could have posed a validity threat to the data obtained by VINCI. The

VINCI database has internal security that protects any internal threat to the validity related to data omissions. The VINCI data have standard data quality checks that conform to federal government directives and have no internal issues concerning reliability and validity (VIRec, 2018).

Ethical Procedures

There are ethical procedures to follow when conducting statistical research involving veterans. The data obtained through VINCI was de-identified, remained anonymous, and was not revealed to the researcher to minimize the risk of harm and protect anonymity. The process began when the researcher submitted a memo to VINCI stating the purpose of the study and what data would be needed. Once Walden University's Institutional Review Board and the VA's Research and Development Committee approved the study, a formal memo was sent to VINCI. Per the VHA Office of Research and Development regulatory affairs office, the study was determined to be an exempt human subject study. The next step was for the facility research and development to review the study, which also deemed it an exempt human study. VINCI provided this researcher with aggregated data needed to complete this study. Ethical considerations such as academic fraud and misrepresentation of data were minimized by following Walden University's research integrity policies.

Summary

Section 2 highlighted the study design and data collection methods used to examine the relationships between type of appointment (telehealth or F2F) and patient location (urban vs rural) on the initial primary care and telehealth primary care wait time.

The research design and rationale were presented in detail to reflect the scope of this study. The quantitative methodology consisted of the designated method for collecting secondary data information on over 101,700 veterans in the VINCI databank. An analysis was performed to establish if the variables and covariate showed a statistically significant relationship. Section 3 provides information about the statistical analysis and results.

Section 3: Presentation of the Results and Findings

The primary purpose of this quantitative study was to explore the relationship between the type of appointment (telehealth or face to face) and patient location (urban vs. rural) on the initial primary care and initial telehealth primary care wait times using Donabedian's framework for structural quality measures, processes, and outcomes to achieve quality of care. I used the VINCI data set containing information on the dependent and independent variables to analyze the difference between the appointment type and patient location on the initial primary care and telehealth primary care wait times.

The independent variables for this study were the type of appointment (telehealth or face to face) and patient location (urban vs. rural). The dependent variables were the initial primary care wait time and telehealth primary care. Telehealth could be one strategy for increasing access to health care once barriers to telehealth are addressed, such as bandwidth and policies. Understanding the role of telehealth on primary care and location could help policymakers implement strategies to address telehealth barriers (i.e., bandwidth and policies). The following RQs and hypotheses guided this study:

RQ1: Is there a significant difference in the initial primary care wait time (time between appointment schedule and appointment) between VA telehealth appointments and face-to-face appointments scheduled in 2020?

$H_0 1$: There is not a significant difference in the initial primary care wait time (time between appointment schedule and appointment)

between VA telehealth appointments and face-to-face

appointments scheduled in 2020.

  $H_1$1: There is a significant difference in the initial primary care wait

time (time between appointment schedule and appointment)

between VA telehealth appointments and face-to-face

appointments scheduled in 2020.

RQ2: Is there a significant difference in telehealth initial primary care wait time

(time between appointment schedule and appointment) between urban

patients and rural patients who had a telehealth visit with the VA in West

Virginia in 2020?

  $H_0$2: There is not a significant difference in telehealth initial primary

care wait time (time between appointment schedule and

appointment) between urban patients and rural patients who had a

telehealth visit with the VA in West Virginia in 2020.

  $H_1$2: There is a significant difference in telehealth initial primary care

wait time (time between appointment schedule and appointment)

between urban patients and rural patients who had a telehealth visit

with the VA in West Virginia in 2020.

    Section 3 of this study contains the statistical analyses conducted on the VINCI

2022 data set, namely the Mann-Whitney U and Kolmogorov-Smirnov test. In this

section, I provide the data collection, present descriptive characteristics of the sample,

test for homogeneity of variance, offer study results for the RQs, and give a summary of the RQs.

Data Collection of Secondary Data

I collected the data for this study from the VSSC appointment products report, which is classified into three primary categories for reporting purposes: pending, completed, and no show/cancellations. The pending and completed datasets are available for new and established patient appointments. Wait times are calculated from appointment to create (made) date and patient indicated date (PID) for all pending and completed appointments. A completed appointment is an appointment with a null cancel no-show code, a checkout date time, and an appointment date/time less than the refresh date/time of the dataset (VSSC, n.d.). To avoid double counting appointments, only the patient side (or provider side only) of a telehealth appointment was included in the completed appointment dataset (VSSC, n.d.). No discrepancies were observed in the data except for missing values in relation to telehealth encounters using stops codes 179, 648, and 679. I also excluded other variables in the data not relevant to this study. The G * Power analysis of sample size was 11,154, processing enough statistical power to identify small effects. The examination of the differences between small ($n = 1,302$) and medium ($n=210$) visits had 95% power to detect the effect of $d = 0.5$ with an alpha level of 0.05.

Descriptive Characteristics of Sample and Population

The data consisted of 151,827 primary care visits, with 11,156 new patients seen in Beckley, Clarksburg, Huntington, and Martinsburg, West Virginia. The rural counties were Clarksburg and Beckley, while the urban counties were Huntington and

Martinsburg. Out of the 11,154, 8,719 were seen face to face, and 2,435 were seen via

telephone. The independent variables were the location—urban versus rural—and type of

appointment—F2F and telehealth. There were over 50 types of visits in the data set,

which was narrowed down into one category, primary care, and further into new primary

care visits by F2F and telehealth. No data were shown for telehealth encounters with the

stop codes 179, 648, or 679, but there were visits conducted via telephone with the stop

code 338. The data reports the wait time from the patient-indicated date displayed by 0–7

days, 15–30 days, 31–60 days, 61–90 days, 91–120 days, and greater than 120 days, and

the results in the average wait times. For this study, the average wait time scores per

location were used. A test of normality assumption was conducted to select a suitable

statistical analysis method for the data set. Table 5 shows the breakdown of the number

of visits by type (F2F/telephone) and geographic location (rural/urban). There were more

visits conducted in urban than in rural locations and more visits conducted F2F than by

telephone.

Table 5

New Patient Visits in 2020

Type		Geographic location	
Face to face (F2F)	8,719	Urban—Huntington/Martinsburg	8,189
Telephone	2,435	Rural—Beckley/Clarksburg	2,965
Total	11,154	Total	11,154

Test for Homogeneity of Variance

An important assumption of the independent-samples *t*-test is that the two groups'

variance are equal in the population. The Levene's test provided results on whether the

variance between the groups' average wait time and type of visit (F2F, telephone) were

equal, as well as the average wait time and location (urban, rural). Table 6 shows that the

assumption of homogeneity of variance was violated, as assessed by Levene's test for

equality of variances (p = .000). Pallant (2020), IBM SPSS Statistics provides an

alternative t value, which compensates for the fact that the variances are not the same,

equal variances not assumed, which is also displayed in Table 6.

Table 6

Levene's Test for Equality of Variance

		Levene's test for		t test for equality of means							
						Significance				95% confidence	
		F	Sig.	T	df	One-sided p	Two-sided p	Mean differ-ence	Std. error differ-ence	Lower	Upper
Aver-age wait times	Equal variances assumed	1159.175	0.000	15.717	11152	0.000	0.000	2.4540	0.1561	2.1480	2.7601
	Equal variances not assumed			22.364	8107.679	0.000	0.000	2.4540	0.1097	2.2389	2.6691
Aver-age wait times	Equal variances assumed	8370.966	0.000	55.184	11154	0.000	0.000	7.2190	0.1308	6.9626	7.4754
	Equal variances not assumed			38.977	3329.014	0.000	0.000	7.2190	0.1852	6.8559	7.5822

An independent-samples t test was conducted to compare the average wait time

scores for F2F and telephone visits. There were significant differences in scores for F2F

and telephone, with t (8107) = 22.36, p = 0.000. The magnitude of the difference in the

means (mean difference = 2.45, 95% CL [2.23, 2.66]) was small (eta squared = 0.04).

There were significant differences in scores for urban and rural with t (3329) = 38.97, p =

0.000. The magnitude of the difference in the means (means difference = 7.21, 95% CL

[6.85, 7.58]) was small, 0.003.

Test of Normality Assumption

When analyzing the differences between groups using the independent-samples t test, a common assumption is that the dependent variable is approximately normally distributed for each group of the independent variable (Laerd Statistics, 2013). There are two broad methods of assessing normality: numerical methods (e.g., statistical tests) or graphic methods (e.g., visual inspection of graphs). For this study, I chose to use the numerical methods using Descriptive Statistics—Explore and looked at the Kolmogorov-Smirnov test. Table 6 shows that the p values for the Kolmogorov-Smirnov test for all the variables are less than 0.05 level of significance ($p = 0.000$). This indicated that the data were not normally distributed for the locations (i.e., urban and rural) and for type of primary care appointment (F2F, telephone). The Mann-Whitney U test is often presented as the nonparametric alternative to the independent-samples t-test used when the data fail the assumptions of the independent-samples t-test (Laerd Statistics, 2013). Therefore, the Mann-Whitney U tests were used for location and type of visits. The normality test in Table 7 was not intended to establish an overall association between the variables but to justify using a nonparametric test for this study.

Table 7

Normality Test for Wait Times Between the Groups

		Kolmogorov-Smirnov		
Average wait time	Location	Statistic	*df*	*P*
	Rural	.205	2965	.000
	Urban	.178	8189	.000
Average wait time	Visit type			
	F2F	.271	8719	.000
	Telephone	.228	2435	.000

Descriptive Statistics

Data are mean $\pm$ standard deviation, unless otherwise stated (Laerd Statistics, 2013). The results are shown in Table 6. There were 8,791 F2F visits and 2,435 telephone visits. Mean F2F average wait time scores (10.51 $\pm$7.44) were higher than telephone average wait time scores (8.06 $\pm$ 3.71). Mean rural average wait time scores (15.28 $\pm$ 9.79) were higher than urban average wait time scores (8.06 $\pm$ 4.00). Table 8 displays the results of group statistics.

Table 8

Group Statistics

Location		N	Mean	Std. deviation	Std. error mean
Average wait time	Rural	2,965	15.283	9.7934	0.1799
	Urban	8,191	8.064	4.0034	0.0442
Visit type		N	Mean	Std. deviation	Std. error mean
Average wait time	F2F	8,719	10.519	7.4498	0.0798
	Telephone	2,435	8.065	3.7176	0.0753

Study Results for Research Questions and Variables

This final part of Section 3 contains statistical assumptions and the results of the statistical analysis. The study findings relating to the RQs and hypotheses are elaborated on the concluding part of this section.

Statistical Assumptions

The assumption of a nonparametric test was met using Mann-Whitney *U* analysis to examine the association between urban and rural locations and the average wait times, F2F and telephone visits, and the average wait times. The Mann-Whitney *U* test is used to test for differences between two independent groups on a continuous measure (Pallant (2020). The Mann-Whitney *U* test compares the medians and converts the scores on the continuous variable to rank across the two groups (Pallant, 2020). It then evaluates whether the ranks for the two groups differ significantly (Pallant, 2020). The distribution of the variables in this study was not normal regarding the population distribution; therefore, I considered the nonparametric test as appropriate to determine the statistical differences.

Results of Statistical Analysis for Research Question 1

I employed a Mann-Whitney U test to see if there was a significant difference in the initial primary care wait time between VA telehealth (used telephone, due to results did not yield telehealth encounters) appointments and F2F appointments scheduled in 2020 using SPSS with a 95% confidence level. As shown in Table 9, the independent variables (i.e., F2F and telephone) were statistically significant with the average wait times. The results, therefore, met the determination that a significant difference is evident in the association between average wait times and F2F and telephone visits ($p < 0.05$) and Mann-Whitney U test (U) = 11,138,369.50. The p value of .000 is less than the conventional threshold of .05; therefore, there is an association between F2F and telephone visits and the average wait times in West Virginia VA facilities.

Table 9

Mann-Whitney U Test—Average Wait Times and Type of Visits (F2F and Telephone)

| Variable	*N*	*%*	Mean rank	*U*	*P*
F2F	8,719	78	10.519	11,138,369.50	.000
Telephone	2,435	22	8.065		
Total	11,154	100			

The independent sample, Mann-Whitney U test displays the sample size, the frequency of average wait times, and the mean ranks. Figure 3 shows the sample size of 8,719 for F2F and a mean rank of 5,517.52, while telephone had a sample size of 2,435

and a mean rank of 5,792.28. These results revealed that the average wait time was greater with telephone visits than with F2F visits.

Figure 3

Independent-Samples Mann Whitney U Test for Location

Independent-Samples Mann-Whitney U Test
Visit Type

F2F — N = 8719, Mean Rank = 5517.52
Telephone — N = 2435, Mean Rank = 5792.28
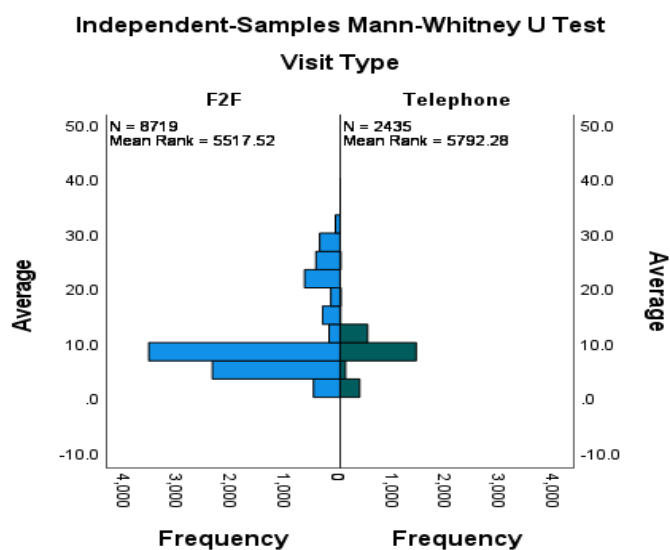
Summary Results of Research Question 1

For RQ1, I attempted to determine if there was a significant difference in the initial primary care wait time (time between appointment schedule and appointment) between VA telehealth appointments and F2F appointments scheduled in 2020. The Mann-Whitney U test with a 95% confidence level showed that the independent variable of primary care visits was statistically significant in association with the average wait time in the VA health care system in West Virginia. The p value of .000 is statistically significant and was below the conventional threshold of .05. The results indicated a

statistically significant difference between types of visits (F2F, telephone) and the average wait time; therefore, the alternative hypothesis was met, and the null hypothesis was rejected. From the analysis, the conclusion was that the average wait time was-higher in telephone visits than in F2F visits.

**Results of Statistical Analysis for Research Question 2**

I employed a Mann-Whitney U test to see if there was a significant difference in the initial primary care wait times between VA telehealth (used telephone, due to results did not yield telehealth encounters) appointments between urban and rural locations schedule in 2020 using SPSS with a 95% confidence level. As shown in Table 9, the independent variables (i.e., urban and rural) were statistically significant with the Average wait times. The results, therefore, met the determination that a significant difference was evident in the association between Average Wait times and the location urban and rural ($p < 0.05$) and Mann-Whitney U test (U) = 8,420,144.000. The p value of .000 is less than the conventional threshold of .05; therefore, there is an association between urban and rural location and the Average Wait times in West Virginia VA Facilities. From the analysis, the conclusion was that the average wait time was higher for rural patients than for urban patients.

Table 10

Mann-Whitney U Test—Average Wait Time and Location (Urban and Rural)

Variable	N	%	Mean rank	U	P
Rural	2,965	26	15.283	8,420,144.00	.000
Urban	8,191	74	8.064		
Total	11,156	100			

The independent sample, Mann-Whitney U test displays the sample size, the frequency of Average Wait Times, and the mean ranks. Figure 4 shows the sample size of 2,965 for rural and a mean rank of 6,834.15, while urban had a sample size of 8,191 and a mean rank of 5,123.98. These results revealed that the Average Wait Times was greater in the rural primary care visits than in urban primary care visits.

Figure 4

Independent-Samples Mann-Whitney U Test for Location
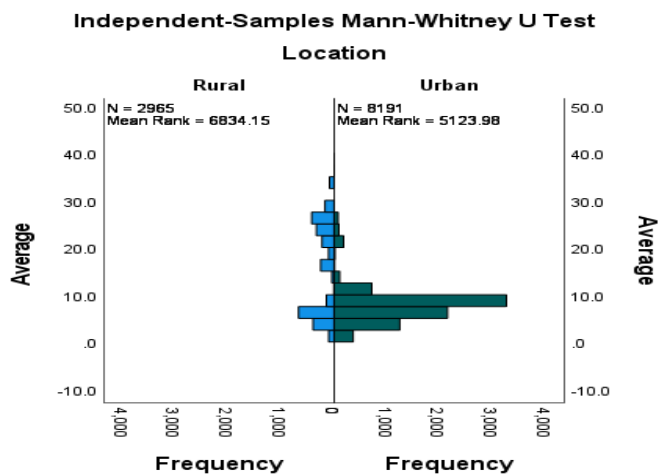
Summary Results of Research Question 2

RQ2 attempted to determine if there was a significant difference in telehealth primary care wait times (time between appointment schedule and appointment) between urban patients and rural patients who had a telehealth visit with the VA in West Virginia in 2002. The Mann-Whitney U test with a 95% confidence level showed that the independent variable of Location (urban and rural) was statistically significant in association with the Average wait time in the VA health care system in West Virginia. The p value of .000 was statistically significant and was below the conventional threshold of .05. The results indicated a statistically significant difference between rural, urban and the average wait time; the alternative hypothesis was met, and the null hypothesis was rejected. From the analysis, the conclusion was that the average wait time was higher for rural patients than for urban patients.

Summary of Research Questions Results and Hypotheses

The results of RQ1, which attempted to show if there was a significant difference in the initial primary care wait time between VA telehealth appointments and F2F appointments schedule in 2020, showed that the p value = .000 was statistically significant and was below the conventional threshold of .05. The results also indicated a statistically significant difference between type of primary care visits (telehealth/telephone, F2F) and the average wait times; therefore, the alternative hypothesis was met, and the null hypothesis was rejected. The results of RQ2, attempted to show if there was a significant difference in telehealth initial primary care wait time between urban and rural patients who had a telehealth visit with the VA in West Virginia

in 2020, showed that the *p* value =.000 was statistically significant and was below the

conventional threshold of .05. The results also indicated a statistically significant

difference between locations (rural and urban) and the average wait times; therefore, the

alternative hypothesis was met, and the null hypothesis was rejected. The conclusion was

that the average wait time was higher for rural patients than for urban patients.

Summary

Section 3 displayed the results and the findings of this study detailing the data

collection process, results of descriptive statistics, and Mann-Whitney U statistical

method used to determine the association between type of primary care visits, location,

and the average wait time in the VA Facilities in West Virginia. In section 4, I discuss the

analysis of the RQs, findings in the literature, findings to theory, study limitations,

recommendations, professional practice, and positive social change.

Section 4: Application to Professional Practice and Implication for Social Change

Introduction

The purpose of this quantitative study was to explore the relationship between the type of appointment (telehealth or F2F) and patient location (urban vs. rural) on initial primary care and initial telehealth primary care wait times. Donabedian's theory was the theoretical framework for this study. Donabedian's theory is often used to examine health care services and provides a conceptual framework for evaluating health care quality (Healthcare Market Review, 2019). I employed a quantitative method using the independent-sample t-test and Mann-Whitney U test to analyze the variables. RQ1 showed a statistically significant relationship between initial primary care appointments (telehealth/telephone and F2F).

Furthermore, RQ2 showed a significant relationship between initial primary care and location (urban vs. rural). The findings reaffirmed that the wait times for primary care visits are predicated on the location and type of appointment. The results are significant because the information could support further research and health care administrators' concerns about expanding and sustaining telehealth services in rural communities.

In Section 4, I provide the interpretation of the findings, limitations of the study, and recommendations for future research. The concluding part of this section contains a discussion of the study's relevance concerning the implications for professional practice and social change.

Interpretation of the Findings

Research Question 1 Analysis

The study findings showed a significant association between the type of appointment (telehealth/telephone and F2F) with a $p = 000$, which is less than the conventional threshold of 0.05. The F2F initial primary care visits were higher than telehealth conducted via telephone visits, and the average wait time was lower in the F2F visits than in those conducted via telehealth/telephone; therefore, the null hypothesis was rejected.

The data set analyses show a significant association between the type of initial primary care visits (telehealth/telephone vs. F2F). Although no previous studies indicated an association between the type of visit for initial primary care within the VHA facilities in West Virginia, other studies have shown a significant association between telehealth and access to care. The majority of studies on telehealth, much like those conducted by Pimentel et al. (2020) and Der-Martirosia et al. (2022), have seemed to yield an increase in telehealth visits during the COVID-19 pandemic and an increase in access to care. This study aligns with the rise in telehealth visits in 2020 but shows that F2F visits had a shorter wait time than those conducted via telephone.

Research Question 2 Analysis

The findings indicated a significant association between the initial primary care visits and location (urban vs. rural), with $p = 000$, which is less than the conventional threshold of 0.05. The wait times were higher for rural patients than for urban patients. The results indicate a statistically significant difference between wait times and location

(urban and rural); therefore, the null hypothesis was rejected. This study aligns with other studies that show that access to care wait times are higher in rural communities than in urban ones. According to Cheney (2022), average physician appointment wait times are higher in rural areas. According to AMN Merritt Hawkins (2022), the average wait time to see a family medicine physician ranged from a high of 44 days in Portland, Oregon to a low of 8 days in Washington, DC. At 45.6 days, Portland, Oregon had the highest average new patient physician appointment wait time across all five specialties of the 15 large metro markets surveyed (AMN Merritt Hawkins, 2022). As Jaret (2020) reported, of the more than 7,200 federally designated health professional shortage areas, 3 out of 5 are in rural regions. And while 20% of the U.S. population lives in rural communities, only 11% of physicians practice in such areas (Jaret, 2020).

Findings to the Literature

The findings of this study reaffirmed the need for hospital administrators and the government to adopt innovative ideas to transform the delivery of rural health and human services. The rate showed a significantly higher wait time for those living in rural communities than those living in urban communities (Lampman et al., 2019; Struminger & Arora, 2019). What contradicts general studies is that the wait time for telehealth (telephone) was higher than for those with a F2F new patient appointment (Demeke et al., 2020; Lum et al., 2020). From June 26–November 6, 2020, 30.2% of weekly health center visits occurred via telehealth. Telehealth visits declined as the number of new COVID-19 cases decreased but plateaued as the number of cases increased (Demeke et al., 2021; Kirubanandan, 2023). The findings of this study are consistent with other

studies showing lower telehealth visits in rural communities than in urban communities. Health centers in the South and rural areas consistently reported the lowest average percentage of weekly telehealth visits (Adams et al., 2019; Cauwels, 2022). Developing partners from the government, community resources, health care administrators, and other stakeholders could assist with transforming health care delivery to rural communities by looking at the policies, processes, technology, and challenges faced by rural communities and designing policies or programs to improve health care access.

Findings to Theory

Various researchers have explored telehealth and access to care. However, limited studies on initial rural primary care appointments using telehealth exist. Generally, the studies are around chronic conditions such as cardiovascular, respiratory, or mental conditions. This study was based on the Donabedian structure, process, and outcome model to improve the quality of care. Health care quality is based on different aspects of the three categories in the Donabedian model and their relationships. According to LoPorto (2020), applying the Donabedian model concept, the established structure is a prerequisite to effective process, and effective processes are a prerequisite for high-quality outcomes.

Improving the quality of care in rural communities is critical to realizing cost savings associated with increased emergency room use and hospitalization due to the lack of preventable care and access to care (RHIhub, 2022). The structure variables (i.e., rural, urban, primary care facilities) employed to determine the results of this study may be used to yield processes for improvement leading to the attainment of quality of care. The

analysis of this study suggested that the wait times for primary care in rural communities are higher than for urban communities, and the use of telehealth was limited but did not decrease the wait times for those using telehealth, which provides information for health care administrators to expand the research on barriers to rural access to health care. Telehealth may not be the only answer to increase access; more research is needed looking at other avenues as well, such as home-based primary care, where a team that includes a provider, nurse, social worker, and pharmacist visit the patient in their home.

Limitations of the Study

The data set on initial new primary care visits via telehealth or F2F was assessed after the study began. Once the data set was downloaded, it became evident that the variables were not normally distributed, and the assumption for the parametric test was not met; hence, I used a nonparametric test for this study instead. Another limitation was that the data were aggregated and did not reveal demographic information, such as age and gender. By including demographic information, a researcher could gain insight into who was impacted the most by telehealth.

Another limitation, per Heyworth et al. (2020), is that while VA was an early adopter of telehealth and was the nation's first health system to employ a chief telehealth officer in 1999, the vast majority of VA outpatient care continued to be F2F visits through February 2020. Due to the VA doing more F2F visits, the coding of the telehealth visits was not widely utilized before the COVID-19 pandemic. The primary care visit might have started as a video call, lost connectivity, and was finished via telephone. Such a visit was captured as a telephone visit instead of a video visit.

Recommendations

The limitations addressed the need for future studies that would include

demographics. By 2060, the U.S. population will reach 94.7 million, and older adults will

make up nearly 25% of the U.S. population (CDC, 2020). I recommend that future

studies investigate the relationship between age groups whose members utilize telehealth

to establish barriers, if any, specifically in primary care. Identifying these barriers can

assist health care administrators in developing telehealth services or other services that

meet the older population's needs. As I conducted the literature review for this study, the

results yielded more studies on telehealth and specialties, such as mental health, than

primary care. Healthy People 2023 (2020) stated that primary care is critical for

improving population health and reducing health disparities. I recommend further studies

within the rural community with primary care to address barriers and possible solutions

to increase primary care access.

Another limitation was the period in 2020 when COVID reached West Virginia,

which did not allow for the complete capture of telehealth visits. According to previous

research, telehealth could reduce costs and improve access to care, especially for

underserved populations and residents of rural areas (Cauwels, 2022; CDC, 2022). I

recommend future studies with complete data sets, including data from all forms of

telehealth (i.e., store forward, Video Connect, Clinical Video, telephone), and both

private sector as well as VA health care for comparison to examine if private sectors have

lower initial primary care wait times in rural areas with the use of telehealth. The study

results could form a collaboration between the VA and private sectors that may lead to

increased access to primary care in rural communities. I recommend further research on telehealth post-COVID to see if telehealth continues to have an impact, if any, on health care access and cost.

Implications for Professional Practice and Social Change

Access to care is a continued concern within the United States, especially in rural communities. Access to primary care is associated with positive health outcomes (Healthy People 2030, n.d.; Slightam et al., 2020). Primary care providers offer a usual source of care, early detection and treatment of disease, chronic disease management, and preventative care (Healthy People 2030, n.d.). Barriers such as limited primary care physicians, provider hours, and geographic location decrease access to care. Enlund (2019) stated that improved access can increase the use of health care services and would be more appropriate and less costly. Collaboration between health care administrators, providers, and the government is needed to improve quality of care delivery and to increase access to care.

Professional Practice

There is longstanding evidence that high-quality primary care improves health, but within the United States, primary health care is a problem (Enlund, 2019; Thomson et al., 2022). Some reasons include barriers to accessing care and a lack of timely and quality care. Understanding the barriers to primary care within rural communities among the older population and using telehealth is critical to health care administrators in determining the best strategies to increase access to care.

Positive Social Change

In this study, I found an association between the wait times for rural communities versus urban communities and the use of telehealth versus F2F. Therefore, my recommendation for professional practice would be to continue investigating the difference in telehealth in rural communities concerning primary care. Health care leaders and policymakers should consider strategies to boost the cellular signal and cellular and broadband expansion so that everyone can receive care from home, increasing access to care. Increasing access to primary care can lead to positive social change in health care by supporting the triple aim of health care of providing better-quality care, decreasing health care costs, and improving patient experiences (Nelson, 2022).

Conclusion

This study revealed a statistically significant association between initial primary care visits via telehealth/telephone versus F2F and within the rural and urban communities. The study did have limitations, such as the initial primary care visits being coded via phone, and there were none coded with video-telehealth. This study was aligned with other studies regarding wait times for primary care in rural areas being higher than in urban communities. This study differs from other studies concerning increased access to care using telehealth, as the results showed longer wait times for the rural community using telehealth compared to those who had a F2F visit. The current study may serve as a guide for health care administrators to understand the barriers to health care that still exist within rural communities leading to more technology infrastructure to support virtual care. Health care is taking a past approach by bringing

care into homes. During the COVID-19 pandemic, technology such as telehealth has been increasing this model of care. Health care administrators and future researchers on telehealth and barriers may yield results showing that telehealth alone is not the only strategy to increase access and find other models of home care that will work with telehealth, allowing more effective access to improve health care.

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