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Impact of Healthcare Providers' Perception on Telehealth Implementation

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
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Walden University
2022

Abstract

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MBA, University of Phoenix, 2016

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Abstract

Telehealth has been proven to have a significant impact on patient outcomes; however, the use of telehealth in both rural and urban areas is sporadic and inconsistent. Although researchers have investigated this issue, there is little literature on the understanding of the impact healthcare provider (HCP) perception plays in this sporadic usage. The purpose of this quantitative research study was to understand how perception and behavioral intention of HCPs impacted the use of telehealth in rural and urban areas. The unified theory of acceptance and technology (UTAUT) was used to structure this research to facilitate determining the correlation between perception and behavioral intention to use telehealth. This theory was used to determine how each of the theory constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) impacted HCPs' behavioral intention to use telehealth. Data were collected through a questionnaire developed from the UTAUT model that was sent to HCPs in California with a total of 45 responses. The study revealed a correlation between performance expectancy and behavioral intention ($F(6,38) = 6.526$, $P < .001$, $R^2 = .507$), indicating that a higher performance expectancy was positively related to behavioral intention. Results of both the ANOVA and independent samples *t* test indicated that neither provider type nor location correlated with behavioral intention. Findings may result in positive social change through the increase of telehealth use through addressing HCPs concerns with performance expectations and thus increase the health of communities lacking lack access to care.

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Dedication

I dedicate this dissertation to my family. This process was years in the making and without their support, I would not have had the motivation to keep going. To my children and grandchildren, I hope that I have shown you what hard work and commitment can accomplish. To my mother, Betsy Williams, without you I would not be where I am today. To my husband, you have been supportive, patient, and understanding and I could not have done this without you.

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I would like to thank Dr. Abra Greenberg my Walden University chair. Without your Saturday morning meetings, I would still be working on narrowing a topic. Thank you for your time and commitment to my success.

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Chapter 1: Introduction to the Study

Healthcare in the United States is not an inalienable right. Access to care is one of the key social determinants of health according to the Agency for Healthcare Research and Quality (AHRQ). Access to care is made up of four areas: insurance/coverage, services, timeliness, and workforce (AHRQ, n. d.). Without regular access to care, the number of mortalities for preventable illnesses and chronic diseases will continue to rise. Reiners et al. (2019) found 71% of deaths are due to chronic disease and increasing as most of the population is aging. This is especially concerning in rural areas of the United States where the health profile has decreased over the past 40 years (Jensen et al., 2020, p. 1328). Over 48 years of analyzed data, James et al. (2018) identified a high mortality disparity between rural and urban America. The disproportionate share of medical professionals in rural areas is a large piece of the barrier to access (Cherry et al., 2018; Madden & Khan, 2017; Miller & Vasan, 2020).

Telehealth platforms are an important method for addressing three of the four key areas of access to care. Even with the continued regulatory barriers, telehealth has grown from 35% usage in U.S. hospitals in 2010 to 76% using some form of telehealth in 2017 (American Heart Association [AHA], 2019). With the COVID-19 pandemic and the requirement for social distancing, this percentage is even higher. From the start of COVID-19 there was an increase of 15 times the use in a 3-week period (Barr, 2020). According to Ghaddar et al. (2020), telehealth is important for addressing the unique access challenges that may be faced by ethnic and racial minorities, as well as expansion

of services in rural areas. This allows for quicker specialty care consultations and provide additional healthcare professionals.

Background of the Study

Telemedicine, in different forms, has been used since the early 1900s from the invention of the electrocardiogram in 1906, the use of radios to provide medical advice to ships in the 1920s, to new healthcare apps for professionals and patients to diagnose and track important health information. The most influential of these was the electronic medical record (EMR). With the signing of the Health Information Technology for Economic and Clinical Health (HITECH) act in 2009, financial support was provided to allow organizations to deploy and implement EMRs. There was an increase in use of EMR's from 5% of healthcare practices in 1991 to 96% in 2016 (Madden et al., 2017). However, the use of telehealth has been sporadic and inconsistent across the United States.

Researchers have found that a common driver for patient's use of telehealth was their HCPs' perception of telehealth (Bradford et al., 2015; Cimperman et al., 2016; Gagnon et al., 2012; Gurupur et al., 2017; Helou et al., 2020). Patients look to their HCPs to guide their care, without HCPs encouraging and supporting telehealth, patients are less likely to use telehealth even if it is offered. Telehealth use for specialty care (e.g., cardiac, ICU, and diabetes management) showed the improvement in quality outcomes and decrease in healthcare complications that drive an increased risk of mortality (Madden et al., 2017; Nye, 2017; Rush et al., 2019; Vranas et al., 2018). This focused research on telehealth over the last 10 years has provided knowledge and support for the use of

telehealth, a better understanding of patient perception and satisfaction with telehealth platforms, and a better understanding of the regulatory, technological, and educational barriers to using telehealth.

Problem Statement

Telehealth has been proven to provide increased access to care, shorter lengths of stay in hospitals, and decreased mortality (Crowley, et al., 2020; El-Miedany at al., 2017; Madden et al., 2017; Nye, 2017; Rush et al., 2019; Vranas et al., 2018;). Even with this validation, there are barriers preventing the adoption of telehealth. Many researchers such as Kho et al. (2020), Kruse et al., (2016), and Luciano et al., (2020), have investigated this issue from the regulatory, equipment, and patient perspective. As technology has enhanced the capability and accessibility of telehealth, there is a gap in the research focused on the understanding of the impact HCPs have on the implementation of telehealth programs in rural and urban areas. This gap is supported by the research performed by Helou et al. (2020), Hosseini et al. (2019), and Seto et al. (2019), who identified one of the primary factors in expanding telehealth is buy-in and communication by the HCPs. In addition, Gurupur et al. (2017); Jong et al. (2018), Kemp et al. (2021), and Kruse et al (2018) indicated the need for focus on HCPs' perceptions of telehealth and reluctance to change. This becomes important due to the research by Belcher et al. (2020), Cimperman et al. (2016), Gurupur et al. (2017), Higa et al. (2018), and Kissi et al. (2020), who identified HCPs' perception as a key enabler to patients' perception and use of telehealth.

Purpose Statement

The purpose of this quantitative research was to understand how perception and behavioral intention (BI) of HCPs impacted their use of telehealth in rural and urban areas. Using a quantitative research method, a questionnaire based on the unified theory of acceptance and use of technology (UTAUT) model was distributed to the HCPs in California. The collected data was analyzed to understand perception and BI of several types of HCPs in rural and urban areas based on the four key constructs of perception: performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). Each of these four constructs were analyzed to understand the impact on HCPs' perception and BI. This analysis was used to fill the gap in understanding the elements of HCPs' perception that may be a barrier to HCPs' BI to implement telehealth.

Research Questions and Hypotheses

Research Question 1: If location and provider type are controlled, are PE, EE, SI. and FC (4 constructs) able to predict a significant amount of variance in BI?

$H_0$1: There is no statistically significant relationship between the four constructs and BI, controlling for location and provider type.

H_a1: There is a statistically significant relationship between the four constructs and BI, controlling for location and provider type.

Research Question 2: To what extent does location (urban vs. rural) impact BI?

$H_0$2: There is no difference in BI between rural and urban settings.

H_a2: There are differences in BI between rural and urban settings

Research Question 3: Does provider type statistically impact BI?

$H_0$3: There is no difference in BI between MD, DO, NP, & PA

H_a3: There are differences in BI between MD, DO, NP, & PA

Theoretical Foundation

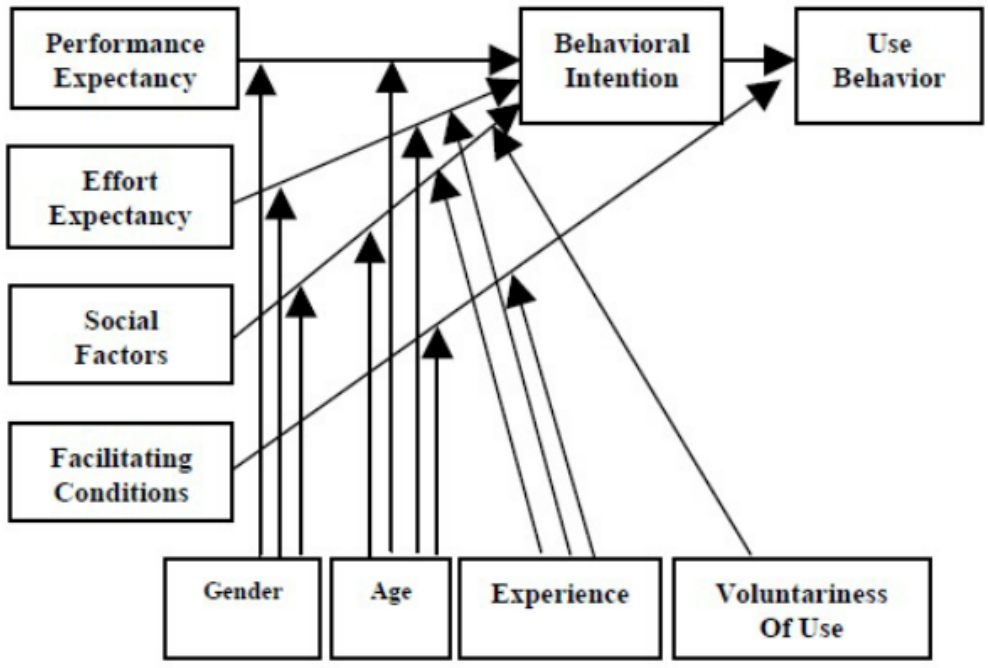
The UTAUT developed by Venkatesh et al. (2003), was the guiding theory for this study. The UTAUT model focused on how intention and behavior evolve over time and what key aspects affect this evolution (Venkatesh et al., 2003). The UTAUT model adapted scales from the theory of reasoned action (TRA), the technology acceptance model (TAM), and synthesized eight different technology acceptance models: TRA, TAM, the model of PC utilization (MPCU), the innovation diffusion theory (IDT), and the social cognitive theory (SCT). Venkatesh et al. performed a longitudinal study across four organizations using the constructs from the eight different models and identified the conceptual and empirical similarities of these constructs to formulate the UTAUT model p. 467. From the eight different models, the UTAUT model proposed that there are four constructs that determine intention and actual behavior: PE, EE, SI, and FC. Harst et al. (2019) found the UTAUT model to be valuable as it incorporated concepts of organizational infrastructure, technical infrastructure, and individual adoption.

The UTAUT model, as seen in Figure 1, implies that behavioral intention to use technology can be predicted by understanding the four constructs (Venkatesh et al., 2003). In addition, the model looks at four key moderators: gender, age, experience, and voluntariness of use to understand how these influenced each of the constructs. This model provided a method for assessing drivers of perception and acceptance of

innovative technology and how different moderators will affect the acceptance. This theory is a great tool in identifying the perception barriers that may be limiting full implementation of telehealth. Researchers such as Binyamin and Zafar (2021) and Cranen et al. (2012), have used this theory to evaluate factors that drive patient's perception. Other researchers, such as Cimperman et al. (2016), used this theory structure to evaluate older populations and what influenced their use of telehealth. Shiferaw et al. (2021), used this theory to evaluate physician perception and predict BI in Ethiopia. The UTAUT model was used in this research to expand the body of research and focus on the perception of HCPs in both rural and urban settings and their BI to use telehealth.

Figure 1

UTAUT Model



Note. From "User Acceptance of Information Technology: Toward a Unified View," by V. Venkatesh, M. Morris, G. Davis, & F. Davis, 2003, *MIS Quarterly*, *27*(3), p. 447 (https://doi/10.2307/30036540).

Nature of the Study

The nature of this study was a quantitative design, using a survey research approach. Quantitative design focuses on understanding the statistical relationship between variables (Creswell & Creswell, 2018). A survey developed from the UTAUT model was distributed to HCPs in the California. Using this survey, I obtained a quantitative description of HCPs' opinions that was then used to interpret the statistical significance each of the four constructs of perception had on HCPs' BI to use telehealth. This data was then run through a hierarchical multiple regression analysis to understand if the independent variables of PE, EE, SI, and FC were a significant predictor of BI while controlling for provider type and location. HCPs' perception as defined by each of the four constructs and BI were evaluated on a 7-point Likert scale with one being at the negative end and seven being at the positive end of the scale. The covariates were practice location and provider type which were both categorical variables.

Definitions

This section provides definitions for key terms used in this research study.

Behavioral Intention: plan to use the telehealth

*Chronic Disease: "*Conditions that last 1 year or more and require ongoing medical attention or limit daily living or both" (Centers for Disease Control and Prevention [CDC], 2021)

COVID-19: "Infectious disease caused by the SARS-CoV-2 virus" (World Health Organization, 2022).

Effort Expectancy: "the degree of ease associated with the use of the system" (Venkatesh et al., 2003, p. 450).

Facilitating Conditions: "the degree to which an individual believes that an organizational and technical infrastructure exits to support use of the system" (Venkatesh et al., 2003, p. 453).

Facility location: rural or urban

Performance Expectation: "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003, p. 447).

HCPs': This is a group made up of Medical Doctors (MD), Doctors of Osteopathy (DO), Nurse Practitioner (NP) and Physician Assistant (PA).

HCPs' Perception: The four constructs, PE, EE, SI, and FC, make up perception

Provider Type: MD, DO, NP, PA

Rural: "All population, housing, and territory not included within an urban area" (United States Census Bureau, 2021).

Social Influence: "the degree to which an individual perceives that important other believe he or she should use the new system" (Venkatesh et al., 2003, p. 451).

Urban: "Densely developed territory, and encompass residential, commercial, and other non-residential urban land uses" (United States Census Bureau, 2021)

UTAUT: Unified Theory of acceptance and use of Technology

Assumptions

This study was based on assumptions that:

1. There are barriers to the implementation of telehealth services.
2. The HCPs completing the survey were aware of what telehealth was and had some knowledge of its use.
3. California HCPs had access to the use of telehealth as a platform for providing care.
4. The use of telehealth was similar across practitioner's licensure (MD, DO, PA, & NP).

Scope of Delimitations

The scope of this research included primary data collected from HCPs in the state of California. HCPs in one state were used to limit regulatory differences. The initial plan was to use one organization in the state of California to decrease variation in access and practice, however, the response rate of low and thus after approval from Walden IRB, the survey was posted to social media to gain participation of all California providers. These data were collected over a three-month period to allow HCPs time to complete the survey and increase the number of respondents. The data were collected through SurveyMonkey and imported into SPSS for analysis. Variables for this study include the four constructs of the UTAUT model, the type of practitioner, and the location (rural versus urban) of operations.

Limitations

The primary limitation was the potential sample size of returned questionnaires by HCPs as many of the participating healthcare locations were still experiencing a COVID-19 surge. In addition, I worked for one of the healthcare systems as an executive for a period during the survey. To address this potential concern, a statement of clarity in the questionnaire request was added to indicate that this was being asked of them from a doctoral student not an executive of this healthcare system.

Significance of Study

The results of this study provided insight into HCPs' BI to use telehealth and the potential perception barriers to expand telehealth as viewed by different licensure types and locations. This study provides important data because the use of telehealth is becoming more prominent and is an invaluable resource in meeting the access to care issues in California. The lack of information currently around the constructs of HCPs' perception and BI is one potential barrier preventing the expansion and implementation of telehealth. Evaluating and understanding the barriers for HCPs of all licensure type and location will assist in creating the appropriate steps for implementation of telehealth. The findings in this study will assist in identifying HCPs' key perception barriers that prevent the implementation of telehealth.

Significance of Theory

The results of this study will enhance how the UTAUT model is used in identifying perception barriers to program implementation, like telehealth, and help increase access to care for patients. My research is focused on understanding HCPs' BI

and the perception barriers that affect HCPs use of telehealth. The UTAUT model used in this study provides insight into four constructs that affect the behavior of users toward a particular technology.

Significance of Practice

There remains a lack of understanding of how to apply and leverage telehealth to meet the concerns with access to care (Vranas et al., 2018). Research regarding the constructs of HCPs' perception, BI, and the barriers they experience is important in expanding the use of telehealth. The findings of this study will identify the variation among provider types, facility locations, and provide an understanding of what barriers to remove to increase telehealth use and access to care for patients.

Significance of Social Change

This study is significant in that it addresses the lack of understanding of HCPs' behavioral and perception barriers to implementing telehealth systems. Understanding HCPs' behavioral and perception barriers and how they affect their intention to use telehealth provides valuable information in how to implement telehealth more effectively. Additionally, the findings from this study will help in expansion of telehealth to combat, access to care, one of the key social determinants of health (AHRQ, n. d.).

Summary and Transition

According to the CDC, the leading cause of death in the United States is chronic disease. The CDC indicated that 6 out of 10 Americans have some type of chronic disease. To effectively prevent and or manage any disease, patients need access to the appropriate healthcare. In the United States, access to care is one of the key social

determents of health and a barrier to a high percentage of patients (AHRQ, n.d.). Telehealth is an important technology platform in addressing access to care. Identifying and understanding perception and BI of HCPs is a vital component in addressing the implementation of telehealth technologies. This will allow for expansion of telehealth. Telehealth will increase access to care and help in preventing and managing many chronic diseases and decrease mortality rates in the United States.

Chapter 2: Literature Review

Introduction

Chapter 2 provides an understanding of the literature search performed from peer-reviewed research of telehealth barriers to implementations, research on perception, and methods for measuring BI. After explaining the search strategy, databases, and search terms used, details surrounding the theoretical foundation that supported this study are provided. In the conceptual framework section, the concepts and barriers identified in the literature provide the foundation for the need to understand how perception and BI of HCPs affects the implementation of telehealth.

Literature Search Strategy

A search of the following databases and websites was performed to locate research focused on telehealth or telemedicine and the barriers that affect the implementation strategies or methods: Medline, CINHAL Plus, ProQuest, EBSCO, PubMed, Academic Search, APA psych info, & Complimentary Index. This literature search narrowed the focus to the effects of perception on the implementation of telehealth which decreased the number of articles significantly down from eight million plus to 927 articles spread between the above databases. The key search terms used were *"telehealth or telemedicine and barriers or obstacles or challenges and perspectives or views or perception or attitudes or opinion or understanding or experience and HCPs or physicians and strategies or implementation methods*." The literature review focused on peer-reviewed articles published between 2016 and 2022. This date range was chosen due

to the increasing development of telehealth technology, the regulatory changes allowing the use of telehealth, and to incorporate articles during the COVID-19 pandemic. During the pandemic, many of the regulatory elements were relaxed to allow for access to care and therefore provide information regarding the uptake of telehealth with removal of regulatory barriers. Reference lists from many of the identified articles were also reviewed and incorporated where appropriate during my review. This search provided a comprehensive review of the barriers of telehealth implementation related to perception, technology, and regulatory.

Theoretical Foundation

In this study, I adopted the User Acceptance of Information Technology (UTAUT) model. This theory is a culmination of eight different user acceptance theories:

1. TRA (Fishbein & Ajzen, 1975)
2. TAM (Venkatesh & Davis, 1996)
3. MM (Davis, et al., 1992)
4. TPB (Ajzen, 1985)
5. Combined TAM and TPB (C-TAM-TPB) (Taylor & Todd, 1995a)
6. MPCU (Thompson et al., 1991)
7. IDT (Rogers, 1995)
8. SCT (Compeau & Higgins, 1995b ; Davis et al., 1989)

The UTAUT model identified and adapted elements from the eight other models to provide a structured approach to understanding the drivers of BI when implementing new

technology platforms. The UTAUT model has been used as the foundation in research to understand patient perception, HCPs' perception, and consumer perception.

The UTAUT model has four key constructs that have been used throughout the literature to better understand perception and how that perception impacts BI and use of key technologies. In research focused on telehealth adoption during the COVID-19 pandemic, end users were more likely to adopt telehealth when there was focus on improving PE and EE (Rahi, 2022). While Connolly et al. (2020) used the UTAUT model in performing and aligning information from 86 studies focused on HCPs' BI to use tele-mental health. They found PE as the most significant predictor of BI across the 86 studies. The model was used again in research to understand the relationship between health locus of control (HLOC) and mobile health (mHealth) use. They found PE, EE, and SI were key drivers of BI to adopt mHealth (Ahadzadeh et al., 2021). The use of technology to treat health conditions is on the rise and yet, there is still a lack of widespread implementation. In this study, I used the UTAUT model to better understand how perception impacts HCPs' BI to use telehealth.

The UTAUT model provides a structure for evaluating perception and testing the elements of perception that have the highest impact on BI. Each of the theories that were used to comprise the UTAUT model attempted to predict the behavior of the end-user in the use of innovative technology and the elements that affect this behavior (Lai, 2007; Venkatesh et al., 2003). Venkatesh et al. found that the UTAUT model accounted for 70% of the variance in usage intention. UTAUT model provides structure for

understanding the key elements of perception when developing or deploying new technologies.

The UTAUT model, for this study, will be used to understand the implications of perception on HCPs' BI to use telehealth. In alignment with research performed by Shiferaw, et al. (2021) and Wei et al. (2021), the use of the four key constructs of PE, EE, SI, and FC, will provide the foundational understanding of perception of the HCPs that complete the survey. These will each be evaluated to understand how they independently impact BI of HCPs to use telehealth. The model provided the framework and validated questions that would assist in defining perception and BI.

Telehealth

Telehealth encompasses video visits, online portals, electronic medical records, telephone consultations, along with remote healthcare monitoring. With these advancements of technology comes new ways to perform, document, and track the health of patients. These modern technologies have many different titles: Telemedicine, eHealth, telehealth, telemonitoring, tele-practice, and telecare are just some of the terms. In addition, there are specific terms for different specialties: telecardiology, tele-ICU, tele-rehab, tele-psych, etc. All of these are specialties that provide healthcare with a form of technology and are not face to face visits. For this research, I will be using the term "telehealth" and the definition provided by the CDC (2019): "The use of electronic information and telecommunication technologies to support and promote long-distance clinical health care, patient and professional health-related education, public health and health administration." The CDC highly promotes telehealth as a valuable tool in

increasing access to care, decreasing health costs, and improving outcomes. Extensive research has been performed to understand the benefits of telehealth and its impact on health outcomes.

Donelan et al. (2019) investigated the quality of visits both virtually and in-person. They found that patients preferred virtual visits as they allowed for less travel and more convenience. In addition, most HCPs in this survey also found higher efficiency with virtual visits versus in-person visits. This study also found the need for additional research on telehealth and the development of models of care. Further research into the use of telehealth is important in improving quality and helping to overcome barriers in access to care (Donelan et al., 2019).

Value and Use in Rural and Specialty Areas

There is extensive health disparity between rural and urban areas of the United States. According to Jensen et al. (2020), rural areas have lower life expectancy and higher mortality rates from top causes of death as well as higher rates of most chronic diseases. Rural communities also have a 1.5 times higher rate of suicide than urban communities (Ivey-Stephenson, 2017). The leading cause of this disparity is access to care (Miller & Vasan, 2021; Summers-Gabr, 2020). Rural communities experience access to care issues due to lack of healthcare professionals, higher level of uninsured, and long distance to healthcare facilities (Miller & Vasan, 2021). Twenty percent of U.S. residents live in rural areas (Cyr et al., 2019; Miller & Vasan, 2021). While disproportionately, only 10% of HCPs practice in rural areas. This leads to limited access to ambulatory specialists along with HCPs inside the walls of rural hospitals. Gutierrez et

al. (2019), looked at 34 rural hospitals and found that 96% of these facilities had experienced provider staffing issues over the last 3 years. This research indicated that the use of tele hospitalists would be an effective way of meeting some of these staffing needs. Telehealth is a broad concept that can provide support across different settings and specialties. In the literature review of the use of telehealth, I found that much of the research performed is focused on understanding how the use of telehealth effects health outcomes and access to care in specialty areas (cardiology, intensive care, physical therapy, etc.). Telehealth has been an effective platform for specialty care, disease management, and patient education across many different research studies.

In research focused on mental health in rural Vermont, telehealth implementation showed significant improvement in enrollment, quality markers for depression, outcomes, and patient satisfaction (McDougal Ronconi et al., 2022). Telehealth rounds on ICU patients, helped decrease mortality due to sepsis and septic shock, telehealth appointments with diabetic patients increased compliance in treatment regimens, and provided missing education regarding A-fib for cardiac patients (Dietz et al., 2019; Nye, 2017; Rush et al., 2019). With a tailored telehealth approach, Rush et al. (2019) proposed an increase in self-management and compliance with care. Telehealth has also been effective in providing caregivers the necessary support and training (Bearss et al., 2018). This research not only focused on the use of telehealth for the care giver, but also to train other HCPs on how to care for autistic patients in outlying areas. These are some examples of many different studies focused on the use of telehealth to deliver specialized

care. Telehealth in each of these situations provided an increase in quality and health outcomes for the specialized groups.

Healthcare Providers and Telehealth

Patient perception and satisfaction are important indicators in telehealth application. Cimperman et al. (2016) identified that satisfaction and use by elderly populations was heavily dependent upon their HCPs' perception of telehealth and its benefits. This research focused on the use of HCPs as social agents of change. Although patients were ready for telehealth, one of the biggest barriers to the expansion of telehealth services was HCPs unfamiliarity or discomfort with telehealth (Gurupur et al., 2017; Helou et al., 2020; Jong, et al., 2018; Kemp, et al., 2021). In additional research, Gagnon et al. (2019) focused on the use of telemonitoring by HCPs and found provider acceptance as the most important element to address for a successful implementation.

Technology knowledge literacy, training, and infrastructure were identified as barriers to implementation of telehealth (Alam et al., 2021; Albarrak et al., 2021;). Albarrak et al. sought to understand HCPs' perception and the impact on telehealth implementation in Saudi Arabia. This research included 391 physicians with five key questions to determine perception. Like the UTAUT questions, perception was evaluated by telehealth being a viable approach, that it has a role in healthcare, can save money and time, it does not take much effort to use, and that they have access to the technology. This study found that 90% of the respondents had a high perception of telehealth, but a gap in knowledge about the technology. Alam et al. looked at general perception and experience

of 240 HCPs across multiple specialties in Pakistan and found a gap in technology literacy.

In a review of technology acceptance research by AlQudah et al. (2021), there was intentional work around the difference is acceptance of technologies by different types of healthcare professionals. AlQudah et al. and Zaslavsky et al. (2022) found that there was not consistency in professional type across the different technologies and thus could not identify how. the professional type affected the use of new technologies. Zaslavsky et al. not only identified the need of research across provider type, but also clinical location. HCPs were pushed outside of their comfort zone with the arrival of the COVID-19 pandemic. This pandemic led to a paradigm shift in telehealth.

COVID-19 Paradigm Shift

On March 11, 2020, the World Health Organization declared the COVID-19 virus as a global pandemic (Cucinotta & Vanelli, 2020). This pandemic has added to the current struggle with access to care in America. Many states issued stay at home orders and social distancing practices to manage and decrease the spread of disease. With this pandemic came the need to provide care in a different manner that would reduce the risk of transmission of COVID-19 and protect our healthcare HCPs (Crowley & Delargy, 2020; Vidal-Alaball et al., 2020). Telehealth was not a new platform to healthcare, but due to the limited use prior to the pandemic, it was new to many HCPs. In a study to understand the use of telehealth, Koonin et al., (2020) identified a 50% increase in the use of telehealth visits during the first quarter of 2020 in comparison to the first quarter of 2019. In a pole performed by the CDC in June 2021,15-20% of Americans indicated their

provider offered or used telehealth prior to the pandemic, whereas with the pandemic that number has increased to 31-37% (CDC, 2021). The barriers identified in the past research fall into four main buckets: regulatory policies, reimbursement models, technology, and provider's comfort. Many of these barriers were removed during the COVID-19 pandemic due to the Centers for Medicare and Medicaid Services' (CMS) healthcare waivers.

With the pandemic, CMS implemented waivers allowing expansion of telehealth service types, the use of audio-only technology to be included in providing telehealth, leniency in Emergency Medical Treatment & Labor Act (EMTALA) to allow for off campus screening, faster physician privileging, HCPs being allowed to provide care across state lines without applying for additional licensure in that state, and telemedicine became reimbursable at more comparable rates to in-person visits (CMS, 2020). In addition, these waivers allowed for expansion of services to include specialty HCPs that were not able to reimburse for services in the past (Haque, 2021). This pandemic pushed HCPs to move from in-person visits to telehealth visits to maintain care a safe distance (Aafies-van Doorn et al., 2021; Day et al., 2021; Dempsey et al., 2022).

Perception

To better understand the potential non-regulatory barriers to extending the use of telehealth, many literature articles focus on attempting to understand perception. When evaluating perception, the goal is to understand how HCPs perceive key elements of telehealth technology. Understanding and measuring perception has been investigated in different areas of research across the literature. Blazquez, et al. (2020) looked at

perception and how that drove purchase intention of luxury smart watches. In their research, they found function and social factors to be two key areas of influence on purchase. In research focused on how perception impacts the use of palliative care by Weng et al., (2021), found that it is important to address perception when implementing new programs. Additional research was performed by Lévin et al., (2018), where perception of junior HCPs on the use and resistance of antibiotics was performed. In this study, high perception of the HCPs was associated with a higher alignment with appropriate practice. Perception across the literature looks at attitudes, beliefs, personal gain, practices, and knowledge (Alam et al., 2021; Albarrak et al., 2021; Howard et al., 2017; Kaphzan et al., 2022; Levin et al., 2019; Weng et al., 2020; Wrzosek et al., 2020;).

Perception is used in models outside of technology to determine BI. Boslaugh (2022), in a review of the HBM, performed a cross walk that aligned the four constructs of the UTAUT with the definition of perception in the HBM. HBM, has been used by researchers to better understand how perception impacts BI. This research includes perception's role in treatment of cardiovascular diseases and compliance with preventative measures of COVID-19 (Amdemariam, et al., 2022; Nasir et al., 2021).

UTAUT, has been a foundational theory used to evaluate and determine BI of different technologies throughout the literature. In an extensive literature review performed by Rouidi et al., (2022), the UTAUT model was one of the most widely used models in predicting end user BI in studies focused on telehealth. Rouidi et al., (2022), found that studies performed on three different continents came to the same conclusion that the success of telemedicine implementation is determined by the provider. The

UTAUT model evaluates four elements of perception that can be used to predict successful or unsuccessful implementation of technology. Each of these elements have been found to be significant in different studies in understanding perception of end users.

Performance expectancy

The first construct of UTAUT model, PE, is focused on whether the new technology will lead to personal gain. PE is one of the prevalent measurements used in change management processes. It is focused on the level to which the end-user believes the technology will be useful. PE for the UTAUT model was generated from aspects of the other eight models that include perceived usefulness from the TAM/TAM2 and TPB, extrinsic motivation from MM, Job-fit from MPCU, relative advantage from IDT, and outcome expectations from SCT (Venkatesh et al., 2003). Each of these focus on an individual's perception of how the system will increase efficiency, improve performance, lead to a promotion, improve quality, the value of this technology over another, and whether it meets an individual's personal and professional expectations.

PE has been found to be a key indicator for BI. Cai et al., (2021), found this to be relevant in the implementation and use of logistics technologies. In research regarding elderly users of technology, Cimperman et al. (2016), identified PE as one of the key predictors in the change management process. Other research regarding change management and technology implementation, has established the importance of addressing PE and the importance of this predictor in BI (Ahadzadeh et al., 2021; Coeurderoy et al., 2014; Connolly et al., 2020; Engotoit et al, 2016; Kho et al., 2020; Rahi, 2022; Wang, et al., 2020; Wijaya et al., 2021).

In the food industry, Collins et al. (2019), Feindt & Poortvleit, (2020), and Youn et al., (2021), evaluated perception as an indicator of BI in food choices. They found that perceived personal advantage, leads to a favorable attitude toward certain food choices. Hegner et al. (2019), looked at this same concept when evaluating willingness of drivers to use self-driving cars. They found that driver's intention and willingness to use self-driving cars was enhanced when they could understand the personal value and pleasure it would bring. Finally, Lee et al., (2022), evaluated perceived usefulness the aligned metric of PE from the TPB theory to better understand how attitude, social acceptance, and control impact BI to seek help. It was shown through this study that the key factor in seeking help was knowledge or understanding the value and details of the service.

Effort expectancy

The second construct of perception in the UTAUT model is focused on how easy or difficult the technology is to use. This construct was generated as a culmination of perceived ease of use, complexity, and ease of use (Venkatesh, et al., 2003). In this construct, Venkatesh et al. (2003), found that EE, is a direct determinant of BI. Purwaningdyah, et al. (2021), looked at this concept in relation to online shopping during the COVID-19 pandemic. They found that consumers choice of shopping applications was significantly influenced by their perception of how easy the application was to use. In a review of literature performed by Dhingra & Mudgal, (2019), the concept of ease of use was found to be a predictor of intention in research on personal computer use, online shopping, electronic banking, educational technology, e-commerce, and many other

technological applications. Finally, Naicker & Derrick Barry Van (2018), found that ease of use is one of the key factors in adoption of mobile technology.

Binyamin & Zafar (2021) in a meta-analysis of research using different technology models including UTAUT and research conducted by Wijaya et al., (2021) comparing UTAUT and End User Computing Satisfaction, found that EE is a driver of technology use. The end users are more likely to adopt technology when they believe it will make things easier (Wijaya et al., 2021; Khan et al., 2019). Cimperman et al., (2016) found that EE played a larger role of influencing use of telehealth for older users. This aligns with the original research performed by Venkatesh et al. (2003) that indicated the moderating factors of age and gender in determining significance of EE in BI.

Social Influence

The third concept of perception in the UTAUT model is SI. SI is found in several of the identified models and refers to social pressures to conform with expectations of important people (Youn, et al., 2021). This concept looks at how important others perception is on determining an individual intention to use new technology. This concept aligns with subjective norms, social factors, and image in the TRA, TAM2, TPB/DTPB. C-TAM-TPB, MPCU, and IDT models. Izuagbe et al., (2019) research how this element of perception affected the use of social media in university libraries. They found social factors to be a significant predictor of intention. This was also true in research on adoption of mobile reading devices performed by Zhou, et al., (2021). Finally, in a review by Binyamin & Zafar (2021) and in research by Collins et al., (2021), SI was found to have a positive relationship to BI. However, in research performed by Harst et

al. (2019), they found SI to be less of a predictor of BI. Feindt & Poortvliet (2020) found that when a lack of information or a sense of uncertainty is present, people will look to others for behavioral cues.

In the development of the UTAUT model, Venkatesh et al (2003) indicated that SI was nonsignificant without inclusion of the four moderating elements of: age, gender, experience, and voluntariness of use. However, other studies found that SI has a positive influence on the adoption of modern technologies (Cao & Niu,2019;Feindt & Poortvliet, 2020; & Youn et al., 2021).

Facilitating Conditions

The final concept, FC, looks at the support that is available when implementing new technologies. This construct is focused on belief that an infrastructure, both organizationally and technically are in place. It was developed from perceived behavioral control construct in TPB/DTPB and C-TAM-TPB models along with compatibility from the IDT and FC from the MPCU model (Venkatesh et al., 2003). This measures an individuals' perception of ease or difficulty of using the system and whether they perceive they have access to support when needed (Venkatesh, et al., 2003). Venkatesh et al. (2003) found this construct to be significant when evaluated along with age and experience in influencing usage behavior.

This concept is a culmination of perceived behavioral control and compatibility. Oluyinka, et al. (2021), identified FC as a direct determinant in their research on on-line teaching during the COVID-19 pandemic. Kaphza et al., (2021) found FC, to be positively correlated with the use of telepsychiatry by HCPs. While Kooij, et al (2022),

found FC a key element of intention in their research on continuous monitoring implementation. In a study evaluating the use of Zoom performed by Wijaya et al. (2021), found that the second highest indicator of satisfaction was FC. This construct was also found to have a positive relationship with BI in the research performed by Binyamin & Zafar (2021), Cranen et al. (2012), and Wang et al. (2020). However, in research performed by Ho, et al. (2020), this concept was found to influence BI indirectly. All these research articles found FC to affect BI in varying degrees of significance.

Shiferaw et al., (2021), used the UTAUT in research on the use of telemedicine during the COVID-19 pandemic in Ethiopia and found that the four constructs were predictors at varying levels of acceptance of telehealth. Kaphzan et al. (2022), used it to evaluate the use of telepsychiatry in Israel and found FC a key contributor to BI. The model was used to structure research on patient perception (Cranen, et al., 2012 Gagnon et al., 2012; Kho et al., 2020). Finally, Howard et al. (2017) used the theory to gain insights on the development and use of new technology for the Architecture, Engineering, Construction, and Operations (AECO) industry.

Summary and Conclusion

The temporary regulatory changes helped with many of the identified barriers but did not address the comfort and level of support for HCPs. Telehealth is an important new technology that can help overcome barriers in access to care. More recent research performed on telehealth has found that with the increase of use due to COVID-19, HCPs' comfort and perception were still a barrier to effective long-term adoption. HCPs' acceptance and use of telehealth will determine the success of telehealth implementation.

The implementation of telehealth programs must address provider's needs. These needs are understood through understanding their perception. As is seen in the research, perception is a key indicator in many studies of BI. Venkatesh et al. (2003), combined the concepts of perception from eight different theories. A broad number of research articles use perception and the concepts found in the UTAUT to determine intention of use. These concepts provide a foundation in understanding the elements necessary for an effective implementation of new technology and will be key in understanding what drives HCPs to use telehealth.

Even with the extensive applications, validated healthier outcomes, and patient perception research, telehealth is still sporadically used across specialties, cultures, and geographical areas. The literature review was focused on articles related to understanding telehealth, the effect of telehealth on health outcomes, how perception is evaluated, the perception and use of telehealth by different provider types and locations, the use of telehealth to address gaps in care, and the barriers that are affecting the slow uptake of telehealth implementation. This extensive review identified gaps in the literature surrounding the varying levels of perception by provider type, clinic location, and how these levels of perception impact the implementation of telehealth.

Chapter 3: Research Method

Chapter 3 includes a description of the research methodologies, data sources, research questions and hypotheses, and data analysis. Also, the methodology in determining the population and the sampling procedures. This chapter will also include and explanation of the survey tool, how the data was collected and analyzed and the threats to the data quality.

Research Design and Rationale

This quantitative study, based on the UTAUT model and questionnaire, was performed to understand the key drivers of how the constructs of perception and BI of HCPs impacted implementation of telehealth in rural and urban areas. Surveys are a common tool used in telehealth research and provide an effective method for assessing perception (Langbecker et al., 2017). The UTAUT questionnaire was distributed to the HCPs of each of the healthcare systems' hospitals and clinics located in California via SurveyMonkey through an email and social media postings. This primary data was input in the Statistical Package for Social Sciences (SPSS) statistical software and was used to test and understand the relationship between the independent and dependent variables when controlling for the covariates.

Quantitative research allows for objectively determining if there is a correlation between the independent and dependent variables and to what degree each is correlated. To better understand how perception, location, and provider type impact telehealth implementation, I used hierarchical multiple regression, an independent-sample *t* test, and analysis of variance tests to evaluate three different research questions. The first research

question focused on evaluating the correlation between BI and the four constructs of provider perception, while controlling for provider type and provider location. Using hierarchical multiple regression analysis, I hypothesized that there was no statistical relationship between provider perception and BI when controlling for provider type and location. Provider perception was measured using the four constructs of the UTAUT model. These four constructs (PE, EE, SI, FC) made up the independent variables and are all factors that define provider perception.

The second and third research questions focused on examining whether BI was statistically different based on location and provider type. For the second research question, an independent -sample *t* test was performed. Here I hypothesized that there was no statistical difference between BI between location type. An independent *t* test was chosen because it provides a comparison of mean scores between two different groups. In this question I wanted to compare the mean score of the continuous variable BI for two different groups (Rural and Urban). This analysis will provide an understanding of whether there is a statistically significant difference in BI between HCPs in rural and urban areas.

For the third study, an analysis of variance (ANOVA) was used. Here I hypothesized that there was no statistical difference in BI between provider type. An ANOVA was chosen because it provides a comparison of variance between three or more different groups. In research questions three, the aim is to understand the variance in BI between the different provider types (MD, DO, NP, PAs).

In this study, as is shown in Table 1, the four independent continuous variables: PE, EE, SI, FC and one dependent variable (BI), were measured on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Finally, provider type and facility location were categorical variables with provider type having four categories: MD, DO, NP, and PA, and facility location having two categories: rural and urban.

Research Questions

In alignment with a multiple regression analysis, independent-sample *t* test, and an ANOVA, the three research questions and corresponding hypothesis are identified in this section. In addition, in table 5, each questions corresponding dependent, independent, and covariate are identified along with the level and measurement of each variable.

Research Question 1: If location and provider type are controlled, are PE, EE, SI, and FC (four constructs) able to predict a significant amount of variance in BI?

$H_0$1: There is no statistically significant relationship between the four constructs and BI, controlling for location and provider type.

H_a1: There is a statistically significant relationship between the four constructs and BI, controlling for location and provider type.

Research Question 2: To what extent does location (rural vs urban) impact BI?

$H_0$2: There is no difference in BI between rural and urban settings.

H_a2: There are differences in BI between rural and urban settings.

Research Question 3: Does provider type statistically impact BI?

$H_0$3: There is no difference in BI between MD, DO, NP, & PA

H_a3: There are differences in BI between MD, DO, NP, & PA

Table 1

Alignment of Research Questions with Data Variables

Research Question	Data Variable
If location and provider type are controlled, are PE, EE, SI, and FC (four constructs) able to predict a significant amount of variance in BI	IV : PE (continuos) IV : EE (continuos) IV : SI (continuos) IV : FC (continuos) DV : BI (continuos) CV: Provider Type (categorical) CV: Facility location (categorical)
To what extent does location impact BI?	IV: Facility Location (Categorical) DV: BI (Categorical)
Does provider type statistically impact BI?	IV: Provider Type (Categorical) DV: BI (Categorical)

Questionnaire Alignment

There are many different questionnaires developed from the eight synthesized models and the UTAUT model. Hajesmaeel-Gohari & Bahaadinbeigy (2021) performed an analysis of research articles and identified fifty-nine different questionnaires used to evaluate telemedicine. All the questionnaires focus on patient satisfaction, end-user usability of services, acceptability of telehealth, and satisfaction of the technology interaction; however, in the review, Hajesmaeel-Gohari and Bahaadinbeigy (2021) identified a gap in a specific questionnaire developed for understanding end-users and the implementation process.

In the research using the different questionnaires, the key terms of the questionnaire are adapted to focus on the research area being performed. For example, Cimperman et al. (2016) modified the TAM questionnaire to understand technology acceptance in older users and therefore there were key question added focused on

"Doctor's Opinion (DOC), Computer Anxiety (CA), and Perceived Security (PS)" (p. 23). Gurupur (2017), took elements of TAM and the fit between individuals, task, and technology framework (FITT) to perform research on the role patient perception plays in adoption and use of telehealth. Park (2009) used the TAM questionnaire and modified terms to fit the topic of e-learning while adding key demographic questions. While this modification considered standard in the industry and area of research, the determinants remained the same and were represented to the full extent the model describes.

The UTAUT questionnaire will be used with terminology modification to fit this research focused on how perception and BI of HCPs affects the implementation of telehealth. In the UTAUT model there are four perception predictors of BI (PE, EE, SI, FC). These along with two moderators (facility location and provider type) aligns with the UTAUT questionnaire**.**

Methodology

I met with the appropriate leadership and Institutional Review Board for the participating healthcare system and Walden University, provided a review of the data needed for this project, and obtained a data use agreement. The initial target population was identified as all HCPs in a single healthcare system in California. An email and flyer were sent to all HCPs in the defined population. Due to lack of responses, it was necessary, with IRB approval (06-27-22-0668468), to open the survey to all California HCPs. A flyer was posted to social media requesting for survey participation of HCPs in California. The flyer contained an informed consent document with the SurveyMonkey link and QR code imbedded. By clicking the link or scanning the code, the HCPs began

the survey and provided consent for use of the data. The survey, Table A1, is made up of 44 questions. Thirty-seven questions focused on PE, EE, SI, FC, and BI; while there were seven demographic questions focused on HCPs licensure, years of practice, location (rural or urban), age, gender, and a fill in the blank for medical specialty.

The respondents answered each of the key questions for the four independent variables, as seen in table 2-5. Each question was evaluated on a 7-point Likert scale and were used to understand the four constructs (PE, EE, SI, FC). The mean responses were calculated for each construct. The analysis was performed using the new variables (Mean PE, Mean EE, Mean SI, and Mean FC). In addition, they answered each of the questions regarding the dependent variable, BI, as seen in table 6 where the square root mean was calculated for the BI variable. Finally, each respondent provided an answer to provider type and facility location by answering the questions as seen in tables seven.

Table 2

Performance Expectancy

Questions	UTAUT Construct	SurveyMonkey Question #
Using Telehealth improves my performance in my job	PE	1
Using Telehealth in my job increases my productivity	PE	2
I find Telehealth to be useful in my job	PE	3
If I use the telehealth, I will increase my chances of getting a raise	PE	36
Using Telehealth enables me to accomplish tasks more quickly	PE	37

Table 3

Effort Expectancy

Questions	UTAUT Construct	SurveyMonkey Question #
My interaction with Telehealth is clear and understandable	EE	4
Interacting with Telehealth does not require a lot of my mental effort	EE	5
I find Telehealth to be easy to use	EE	6
Learning to operate telehealth is easy for me	EE	34
It would be easy for me to become skillful at using telehealth	EE	35

Table 4

Social Influence

Questions	UTAUT Construct	SurveyMonkey Question #
People who influence my behavior think that I should use Telehealth	SI	9
People who are important to me think that I should use Telehealth	SI	10
The senior management of this business has been helpful in the use of Telehealth	SI	11
In general, the organization has supported the use of Telehealth.	SI	12

Table 5

Facilitating Conditions

Questions	UTAUT Construct	SurveyMonkey Question #
I have the resources necessary to use Telehealth	FC	7
Telehealth is not compatible with other systems I use.	FC	8
A specific person (or group) is available for assistance with telehealth difficulties	FC	23
I have the knowledge necessary to use telehealth	FC	24

Table 6

Behavioral Intention

Questions	UTAUT Construct	SurveyMonkey Question #
Given that I had access to Telehealth, I predict that I would use it	BI	20
I plan to use Telehealth in the next months	BI	21
I predict I would use telehealth in the next 3-6 months	BI	22

Table 7

Provider Type and Facility Location

Questions	UTAUT Construct	SurveyMonkey Question #
My Clinical Location is considered	Facility Location	42
I am a	Provider Type	44

The UTAUT model indicates that each of the four constructs (PE, EE, SI, FC) have varying impact on BI when moderated for gender, age, experience, and voluntariness (Venkatesh et al., 2003). This same thought process was applied in evaluating HCPs' BI to use telehealth while moderating for location and provider type. I used the SPSS software to run a multiple regression analysis to assess for significant statistical variation on BI by each of the four constructs, while controlling for provider type and facility location.

Population

The population was comprised of HCPs- Medical Doctors (MD), Doctor of Osteopathic (DO), Physician's Assistants (PA), and Nurse Practitioners (NP). In an analysis performed by the California Health Care Almanac (2021) there were 123,941 MDs, 8,634 DOs, 12,033 PAs, and 24,256 NPs in California in 2020. Different states allow for different scopes of practice for NPs and PAs. California, for example, allows Nurse Practitioners to practice independently once they have practiced for a minimum of three years or 4600 hours whereas in Kansas, a responsible physician must collaborate on the medical plan for a Nurse Practitioner (NCLS, 2022). These scope differences affect the overall practice of these professionals. To prevent these differences from impacting the data, the determination was made to only survey California HCPs.

Access to healthcare varies dependent upon the location type. There is a substantial difference in telehealth adoption between rural and urban healthcare sites (Chen, et al., 2020). In addition to understanding how the constructs of HCPs' perception impacts BI; this study also analyzes the impact of rural and urban location. California has 859,372 of the 39,538,223 individuals living in rural regions of the state (Rural Health Information Hub, 2020). This in addition to the fact that the proportion of primary care providers in rural areas is 39.8:100,000 people whereas in urban areas this ratio is 53.3:100,000 people, leads to a significant gap in access to healthcare (NRHA, 2022).

Sampling and Sampling Procedures

For this study, HCPs that included MDs, DOs, PAs, & NPs in the participating healthcare systems' Care sites in California along with a larger request for all California

HCPs through the social media post were surveyed. The initial participating healthcare system has 23 hospitals and over 280 clinics in California. There are 3558 MDs, 363 DOs, 328 PAs, and 340 NPs in the California sites. Like California overall statistics, the largest percentage of HCPs are MDs with the second largest being DOs. However, in the participating healthcare systems distribution, there are equal PAs and NPs, whereas, California overall has double the number of NPs than PAs. This sample provides a subset of the overall population for California. By narrowing the sample down to just California sites, I was able to eliminate any variance in regulations and scope of practice in the data that could be caused by different state regulations surrounding telehealth.

Sample Size and Power Calculation

To reach a statistically significant analysis, sample size and effect size play a significant role I the ability to generalize the results of this study. When calculating multiple regression, the general rule is a minimum of five respondents per independent variable (5:1) with a preferred ratio of 15:1 or 20:1 (Hair et al., 2019). Following this logic, the minimum sample would be 30, with preferred sample of 90 to 120.

A G*Power sample size calculation for multiple regression was done by G*Power analysis calculator to estimate the effect size with each of the three sample sizes. With the $\alpha = .05$, power = .80, and six predictors set, thirty respondents 0.59, ninety provided an effect size of 0.16, and 120 provided an effect size of .012. The final number of survey responses forty-five participants which provided an effect size of 0.36 (G*Power Version 3.1.9.6, 1992-2020). The inclusion criteria for subjects were (1) licensed provider (MD, DO, NP, or a PA) and (2) practicing in California.

Data Analysis Plan

The SurveyMonkey data file was transferred directly into an IBM SPSS 25 data file that was kept on a laptop and backed up in personal Microsoft OneDrive. Once the data was downloaded into SPSS, the data was reviewed for entry errors, missing data, and outliers. A scatterplot was run on each variable to detect any outliers in the data. In addition, a Mahalanobis distances was run and evaluated for an appropriate critical value based on the number of independent variables. All cases with a critical value higher than the acceptable value of 16.27 were removed as outliers.

For this study, I proposed three research questions. Research question one was evaluated through multiple regression analysis. The dependent variable, BI, scores were calculated through the square root mean and input into the model in SPSS followed by the covariate's provider type and facility location. Then the independent variables mean (the four constructs) were entered into the second block of independent variables. Descriptive and inferential statistics were run to report means and standard deviations of the scores for the demographic and covariates.

Correlation between BI, the four constructs, and the two covariates (provider type and location) were evaluated for multicollinearity and singularity through analysis of Pearson correlation. The model summary box was used to analyze how much the variation in BI is explained by the independent variables. This data will show both the percentage of variation determined by the first block of covariates and then by the construct when controlling for the covariates. This along with the ANOVA output will allow for analysis of the statistical significance of the null hypothesis.

For the second question, an independent-sample t-test was performed to compare the square root mean of BI scores for HCPs in rural and urban locations. Descriptive statistics and inferential statistics were run to report sample size, means, and standard deviations of the variables. Histogram was run to validate normal distribution while a Levene's test was used validate homogeneity of variance and to determine whether the variation of scores for the two groups (Group 1 rural location; Group 2 urban location) were the same.

For the third question, a one-way between group ANOVA was performed to understand the impact provider type had on BI, as measured by the three questions in the UTAUT questionnaire. Similar analysis was performed for question three as for question two with some key differences. As there were four groups of provider type (Group 1: MD; Group 2 DO; Group 3 NP; Group 4 PA), the Levene's test for homogeneity was used to validate the assumption of homogeneity and to determine whether the variance in scores is the same for each of the groups. The ANOVA output table was used to determine if there was a significant difference somewhere among the four groups. Then, the multiple comparisons table was reviewed, and the mean difference was evaluated to determine which groups were statistically different. Finally, Cohen's effect size was calculated by dividing the sum of squares between groups by the total sum of squares found in the ANOVA table to determine the actual difference between groups.

Data Management

Ethical Procedures

To prevent concerns with survey completion and its impact on employment, there was a disclaimer statement added to the survey request. As I work in an executive role within the participating organization, it was imperative to differentiate this request as a student versus an employee in the organization. With the organizations IRB approval, the participants provided consent by clicking on and completing the survey. Due to a low response rate from the single organization, Walden IRB was consulted and gave approval to open the survey to all California providers via social media.

The data was collected through SurveyMonkey and saved on a password protected laptop and to a secure one drive cloud-based data storage. No personal identifiers were requested of the survey candidates. The data was transferred into SPSS to perform analysis.

Summary

Telehealth is an important innovative technology to facilitate patient access to care. Telehealth implementation has been sporadic throughout healthcare organizations. The COVID -19 pandemic, provided a unique situation that forced the use of telehealth (Barr, 2020). Despite the multiple research studies performed about telehealth, understanding the role HCPs play in the implementation process has had minimal research performed. The goal of the quantitative study was to examine the effect of PE, EE, SI, and FC on HCPs' BI to use telehealth. With the vast discrepancy between rural and urban support structures, provider to patient ratios, and technology expansion, it was

important to determine the perception differences between urban and rural HCPs and to understand the perception difference between different provider types. To address this gap, I employed quantitative analysis and data collection through the distribution of the UTAUT survey. In Chapter 4, the quantitative analysis results will be presented.

Chapter 4: Results

Introduction

The purpose of this study was to determine how perception, location, and provider type impacted HCPs' BI to use telehealth. I determined this through analyses of the mean scores of PE, EE, SI, FC, and BI calculated from the survey responses of HCPs within California.

Three research questions were addressed in this study. The first research question was focused on evaluating the foundational understanding of BI amongst all provider types in all location types. In this question, I controlled for type of provider and location and then evaluated the overall responses for PE, EE, SI, and FC and how each of these constructs impacted BI. The null hypothesis was that each of the four constructs of perception did not impact BI when controlling for location and provider type. The alternative hypothesis was that there is a statistically significant relationship between the four constructs and BI, controlling for location and provider type. The second research question was posed to evaluate the impact location had on BI. In this question, the null hypothesis was that there is no difference in BI between rural and urban settings. While the alternative hypothesis was that there is a difference in BI between rural and urban settings. Finally, the third research question was posed to evaluate the impact provider type had on BI. The null hypothesis for this question, was there is no difference in BI amongst the different provider types (MD, DO, NP, PA). While the alternative hypothesis indicated there are differences in BI among provider type.

This chapter includes a presentation of the data analysis process that was used to analyze all three questions regarding how perception, location, and provider type affect BI of HCPs use of telehealth. The procedures used to identify both inclusion and exclusion of data are delineated in this chapter along with justification for the methodology I used. Finally, I also provide details regarding the data collected, the population, and the timeframe of the data collection for this study.

Data Collection

The population of this study consisted of primary data obtained through a survey disseminated electronically. The data was a representation of the overall provider population within California. All participants were HCPs practicing within California. Data was collected using the inclusion criteria discussed in Chapter 3. There were no personal identifiers requested from the survey participants. To start, an email list was sent out by the initial participating healthcare system to their medical staff rosters. After seven weeks with minimal response, the survey, with IRB approval, was also posted on social media calling for HCPs in California to participate to facilitate an increased response rate. Each participant was asked to answer a 44-question survey they received through their email or accessed via QR code or link on social media with a request for their participation and an informed consent document that had a link to Survey Monkey. By clicking the link and completing the survey, the provider gave consent for use of the data collected. This data was stored on a password protected computer and was exported into SPSS format and uploaded in SPSS version 25 software for analysis. The data included all survey responses collected during the open survey window of eight weeks.

The data included 44 questions. Twenty-two questions focused on the four constructs (PE, EE, SI, FC) and BI which were all evaluated on a seven-point Likert scale. In addition, each respondent was asked seven demographic questions that included licensure, years of practice, location (rural or urban), age, gender, and a fill in the blank for their medical specialty. Of these demographic questions, provider clinic location and licensure type were used in the analysis to evaluate the three research questions.

Survey responses that did not answer any of the key twenty-two questions or the two key demographic questions were excluded from the analysis. Without these key questions being answered, I was unable to segregate location, provider type, or obtain a comprehensive understanding of the key constructs. Of the 45 responses, there were zero questionnaires that were excluded due to these criteria.

The outcome of the data collection was different than I anticipated. The response rate from the HCPs was much smaller than I had anticipated. There were over 900 initial survey emails sent out; however, after seven weeks and multiple follow up emails and personal conversations there were only thirty-three responses (≈3%). The final week of the survey, I utilized my social media network and asked additional California HCPs to complete the survey. As a result, I was able to secure an additional 12 surveys.

Study Results

This section includes a comprehensive description of the study and the results of key elements of HCPs' perception, location, and licensure type that play a role in HCPs' BI to implement telehealth. A total of 45 HCPs responded to the survey for a response rate of less than 5%. MDs represent the highest proportion of respondents (77.8%),

followed by NPs (13.3%), DOs (4.4%), and PAs (4.4%). There were more rural HCPs (64.4%) than urban HCPs (35.6%). Sample demographics are in Tables 8 and 9.

Table 8

Demographics

Type	Frequency	Percent
Medical Doctor	35	77.8
Doctor Osteopathy	2	4.4
Nurse Practitioner	6	13.3
Physician Assistant	2	4.4

Table 9

Descriptive Statistics by Location

Type	Frequency	Percent
Rural	29	64.4
Urban	16	35.64

Preliminary analyses were conducted to ensure assumptions of normality, linearity, multicollinearity, and homoscedasticity were not violated. The key questions for each of the elements of perception (PE, EE, SI, FC) along with BI were transformed into individual data variables for analysis. These variables were then evaluated for normality. The skewness and kurtosis for PE, EE, SI, and FC were within acceptable ranges and considered normally distributed as is seen in Table 10. BI was negatively skewed (-1.538) and leptokurtic (3.971). A reflect and square root transformation calculation was performed to create a new variable within the acceptable ranges for skewness (.694) and Kurtosis (.915) as is indicated in Table 10.

Table 10

Tests for Normality

Variable	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
PE	-.364	.354	.188	.695
EE	-.356	.354	.002	.695
SI	.486	.354	-.055	.695
FC	-.187	.354	.379	.695
BI*	-.010	.354	-.364	.695

Note: *BI reflect and square root calculation

Statistical Findings for Research Question 1

A hierarchical multiple regression was conducted to examine the relationship between each of the four control measures (PE, EE, SI, FC) and the square root of BI, after controlling for provider type (MD, DO, NP, PA) and location (rural & urban). The hierarchical multiple regression analysis was used to determine if each of the four constructs of perception significantly predicted BI while controlling for location and provider type. Two models were used. Model one included the two covariates provider type and facility location. Then, each of the four constructs were added to Model 2 to evaluate the significance between BI and PE, EE, SI, and FC while controlling for provider type and location. Results of the hierarchical multiple regression are displayed in Tables 11, 12, and 13.

Table 11

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.327[a]	.107	.064	.355	.107	2.512	2	42	.093
2	.712[b]	.507	.430	.277	.401	7.728	4	38	<.001

a. Predictors: (Constant), I am a, my clinical location is considered

b. Predictors: (Constant), I am a, my clinical location is considered, PE_MEAN, FC_MEAN, SI_MEAN, EE_MEAN

c. Dependent Variable: BI_MEAN_R_SQRT

Table 12

ANOVA Results of Hierarchical Multiple Regression

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.633	2	.317	2.512	.093[b]
	Residual	5.294	42	.126		
	Total	5.927	44			
2	Regression	3.008	6	.501	6.526	<.001[c]
	Residual	2.919	38	.077		
	Total	5.927	44			

a. Dependent Variable: BI_MEAN_R_SQRT
b. Predictors: (Constant), I am a, my clinical location is considered
c. Predictors: (Constant), I am a, my clinical location is considered, PE_MEAN, FC_MEAN, SI_MEAN, EE_MEAN

Model 1 showed the two covariates of provider type and location did not statistically contribute to the regression model ($F(2,42) = 2.512$, $P = 0.93$, $R^2 = .107$).

Model 1 predictors accounted for 10.7% of the variance in BI. Provider type (β =-.290, p =.055) and location (β =.122, p =.410) were found not to be significant predictors in this model.

Model 2 was statistically significant (F (6,38) = 6.526, P<.001, R^2 = .507). The six constructs of PE, EE, SI, FC, location, and provider type accounted for 50.7% of the variance in BI. The change in R^2 between Model 1 and Model 2 was also significant ($\triangle R^2$= .401, F (4, 38) = 7.728, p < .001), indicating the four constructs explained an additional 40.1% of variance in BI in Model 2. Adding the four constructs to the model did not change the statistically significant predictability of provider type (β =-.216, p =.110) and location (β =.144, p =.251), as they were still found not to be statistically significant in the model.

Table 13

Coefficients of Hierarchical Multiple Regression

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.538	.190		8.100	<.001
	My clinical location is considered	.093	.111	.122	.833	.410
	I am a	-.119	.060	-.290	-1.976	.055
2	(Constant)	2.380	.252		9.430	<.001
	My clinical location is considered	.109	.094	.144	1.165	.251
	I am a	-.089	.054	-.216	-1.634	.110
	PE_MEAN	-.123	.050	-.437	-2.481	.018
	EE_MEAN	-.020	.058	-.065	-.341	.735
	SI_MEAN	-.077	.057	-.245	-1.349	.185
	FC_MEAN	.017	.060	.047	.288	.775

In evaluating each of the four constructs, there is only one variable that makes a unique contribution (PE, β =-.437, p =.018), when the overlapping effects of the other variables are statistically removed. Since PE was found to have a significant predictive relationship with BI, the null hypothesis for research question one was rejected. The findings supported the alternative hypothesis that a greater score in PE was positively related to a higher BI to use telehealth.

Statistical Findings for Research Question 2

The scores of the survey were divided into two groups, Rural and Urban, to perform an independent samples t-test. This test was conducted to assess for a significant difference between locations (rural versus urban) for BI. In performing an independent

samples t-test, I considered key parametric assumptions. First assumption was the square root mean subscale score of the dependent variable (BI) was a continuous variable. The second assumption was that the independent variable was categorical (location) with two categories. The third assumption was that there was no relationship between the participants in either of the groups. This analysis was used to compare the BI scores for rural and urban HCPs. Equal variance was assumed at a sig. value of (.826) as seen in Table 14.

Table 14

Leven's Test for Equality of Variances

F	Sig	t	df	Sig. (2tailed)
.049	.826	-1.025	43	.311

There was no significant difference in scores for rural (M=1.45, SD = .381) and urban (M = 1.57, SD = .339; t (43) = -1.025, p = .311, two-tailed). The magnitude of the differences in the means (mean difference = -.117, 95% CI: -.347 to .113) was small (eta squared = .02). Thus, the BI scores of HCPs in rural areas versus urban areas was not statistically significant. Therefore, the null hypothesis, suggesting there is no difference in BI between rural and urban settings, was accepted.

Statistical Findings for Research Question 3

Finally, the third research question was analyzed using a one-way between group analysis of variance (ANOVA) to understand the correlation provider type had on BI.

Participants were divided into four groups according to their licensure type (Group 1: MD; Group 2: DO; Group 3: NP, Group 4: PA).

Table 15

One-Way Between Groups ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.804	3	.268	2.145	.109
Within Groups	5.123	41	.125		
Total	5.927	44			

Tests for homogeneity of variances was run and sig value of greater than .05 was found and thus not violated. The analysis (F (3,41) = 2.145, p = .109) produced a lack of statistically significant difference in BI for the four groups as is seen in Table 15. Therefore, the null hypothesis suggesting no difference in BI between provider type (Md, DO, NP, & PA), was accepted.

Summary

In this study, I performed a hierarchical multiple regression analysis, an independent samples t-test, and a one-way ANOVA to evaluate the relationship between each of the four constructs of perception (PE, EE, SI, & FC), provider type, and location on BI. Based on the limited sample size and the statistical analysis, there was no statistically significant findings between location and BI in RQ 2 or between provider type and BI in RQ 3. In addition, in RQ 1, based on the data output of the hierarchical analysis, provider type and location were also found not to be statistically significant. Overall, provider type and provider location were not significant predictors of BI.

In RQ 1, based on the data, PE was found to have a statistically significant positive relationship to BI. While the remaining constructs, EE, SI, and FC, were not found to have a statistically significant relationship with BI. In Chapter 5, I will discuss the limitations of this study along with the implications, and the recommendations for future research.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

Telehealth platforms are important in addressing access to care and increased health equity. Previous research studies found perception to not only be a key enabler to patients' perception and use of telehealth, but also a key component in the success of new programs and technology. Perception has been used to evaluate and understand BI in consumer affairs, change management, preventative disease management, and many other. Belcher et al. (2020), Gurupur et al. (2017), Higa et al. (2018), and Kissi et al. (2020) all identified HCPs' perception as a valuable indicator of overall telehealth use in the healthcare industry. However, there was a gap in research focused on what role HCPs' perception played on the implementation of telehealth. Telehealth exists in many different platforms and is continuously growing within the healthcare industry. Healthcare providers are an integral component in the success and expansion of telehealth services. Venkatesh's sentinel work on the UTAUT theory provided a tool for measuring perception through four key constructs PE, EE, SI, & FC. Venkatesh's research concluded that 70% of BI could be explained using the UTAUT theory (Venkatesh et al., 2003).

This study, using quantitative research method, sought to understand the correlation between providers perception and BI to use telehealth systems in both rural and urban areas. The findings support and further illuminate results of the small body of research specific to HCPs in both rural and urban settings use of telehealth. Key findings

include correlation between BI and PE. Results in the study indicate that it is important to address providers performance expectations to increase the use of telehealth.

Interpretation of Findings

This quantitative study involved primary data collection of 45 surveys completed by HCPs in California. This sample size was small and provided for a large effect size of 0.35. To obtain a more reasonable effect size of 0.15 or lower a sample size of 98 or greater is required. This is evident in the results.

The distribution of responses by each provider type, as is seen in Table 8, aligns with the larger population of California providers with a higher number of MDs and NPs over that of DOs and PAs. However, when looking at the distribution in Table 9 of rural and urban HCPs, this was disproportionate with that of the overall distribution of HCPs in California. The primary healthcare company used in the beginning of the survey distribution, has a large population of rural health clinics, which lead to the higher number of rural provider responses in the population.

The four constructs of perception (PE, EE, SI, FC) were used to analyze BI of HCPs. In accordance with the relationship between the concepts contained in Venkatesh's theory, the analysis of the data through a hierarchical multiple regression, found there is a reciprocal relationship between PE and the square root of BI among HCPs and the use of telehealth. This aligned with Connolly et al., (2020), Rahi (2022), and Venkatesh et al. (2003) who indicated PE is the strongest predictor of BI. Providers who rated PE high, were more likely to rate BI high. This result also aligns with Harst et al. (2019) who found PE an important predictor for both patients' and providers (p. 12). It

is important to conduct further research on what the important aspects of performance are for providers to successfully implement telehealth.

EE, the second construct of perception, focuses on the ease of use of telehealth. This construct had varying outcomes in previous research. In the research Venkatesh's theory, EE was a key driver in BI, whereas, in this study EE did not have a statistical significance on BI. Previous research focused on end user outcomes such as online shopping, electronic banking, educational technology, and e-commerce found this construct to be a direct determinant of BI. However, in this study with the limited sample size, was found not to have a statistically significant impact on BI. Cimperman et al., (2016), Kahn et al. (2019), Venkatesh et al. (2003), and Wijaya et al. (2021), EEs effect on BI was highly moderated by age. In this study, I did not moderate for age, but for location and provider type. Further research analysis using the key moderator of age might provide better insight into HCPs' EE.

The final two constructs of perception, SI and FC, had varying results in previous research studies. Venkatesh's model found SI to be insignificant without the four moderators. Ahadzadeh et al., (2021), found SI was a key driver in mHealth, while Harst et al. (2009) found SI was more directly related to BI for patients than for HCPs. In this study, SI was not found to be a statistically significant indicator of BI.

FC looked at the concept of support during the use of telehealth. Venkatesh et al found this construct to be positively related to BI when moderated for age and experience. Ho et al. (2021) found FC to be indirectly positively related to BI. In addition, Kaphza et al. (2020) found FC to be positively correlated with HCPs' BI in

telepsychiatry. However, in this study, FC was found to be statistically insignificant in predicting providers BI of telehealth.

In previous research there has been a focus on the effect and outcomes related to the use of telehealth for specialty care in rural environments. The use of telehealth for mental health, cardiac health, and other specialties has shown a decrease in mortality in rural areas (Dietz et al., 2019; McDougal Ronconi et al., 2022; Nye, 2017; Rush et al., 2019). Zaslavsky et al., (2022) found a gap in understanding how provider type and location affected the use of new technologies. In the original theory, Venkatesh used four key moderators (age, gender, experience, and voluntariness of use), however, in this study I used the two moderators of provider type and practice location. In the hierarchical multiple regression analysis, these two moderators accounted for 10.7% of the variance in BI and were found not to be statistically significant in the models.

In RQ 2, the focus was to understand the relationship between provider location (rural or urban) and BI. In the analysis of the independent samples t-test, I found no statistically significant correlation between provider location and BI. The data analysis indicated there was no statistical difference between how rural HCPs and urban HCPs rated BI. Thus, removing this as a potential barrier to increasing the use of telehealth in rural areas and increasing access to care. With providers being excluded as the barrier to telehealth use, additional research needs to be performed to understand the key barriers that are in the way of the expansion and use of telehealth in rural areas. While the third analysis was performed to identify any difference among provider types in BI. This too was found to be statistically insignificant which aligned with the research by AlQudah et

al. (2021) and Zaslavsky et al. (2022). Both moderators were found not to be significant predictors in all three analyses.

Limitations of the study

An important limitation in this study was sample size. The limited sample size impacted the power of the study and the ability to detect an effect. Even with consistent communication both verbal and written along with posts on social media, the response rate on surveys was minimal. This limitation resulted in less reliable survey results, higher variability, and thus producing potentially invalid results. Another limitation was the disproportionate responses between rural and urban providers. The focused healthcare system had a larger number of rural health clinics in their overall population. The distribution of participants by location was disproportionate to the current California distribution. In California, there is a higher number of urban HCPs than rural, but in the sample size this was reversed.

Recommendations

The sample size of this study was not sufficient to generate generalizable results. The alternative hypothesis was supported in RQ 1, but there was no support for the alternative hypothesis in RQ 2 or 3. HCPs across the sample indicated a higher propensity in planning to use telehealth. Technology is constantly influx and healthcare are not excluded from this type of change. The use of telehealth has been shown to address some of the access concerns facing healthcare today. There are key components of perception that drive the uptake of telehealth technology. Taking the time to

understand what HCPs need and helping them see the value in telehealth is imperative in increasing the use of telehealth platforms.

A larger more balance group of participants would be recommended for further exploration of this topic. Also, additional focused research on the key elements of performance that are important to HCPs will be imperative to developing the appropriate implementation of telehealth in the healthcare setting.

Implications

Positive Social Change

The findings of this study offer impact for positive social change on multiple levels of the healthcare industry. As there is limited research focused on HCP perception and how that impacts telehealth implementation, this study could contribute towards the literature and knowledge on the impact of HCPs' perception on telehealth implementation. The findings, even with such a small sample size, support the need to understand how HCPs' perception of the performance of telehealth directly impacts their intention to use telehealth. The effects of telehealth use have been proven, by previous research, to increase the health of communities who lack access to care. Finding the key elements that drive effective implementation of telehealth by HCPs will help in addressing the current gap in access to care for many patients. Results of this study can be used to further identify key barriers of telehealth implementation.

Further research with an increase sample size could identify statistically significant areas of importance to the function of telehealth for HCPs in their intention to use telehealth. In this study, I was only able to find a correlation between performance

and BI. Also, there was no correlation between location or provider type and BI in this study. This finding, however, can be misleading as the sample size is small and is potentially negatively affecting the outcome results. Adding location and licensure type to the theoretical model could provide invaluable information in future studies.

In summary, the UTAUT theory provided a foundational construct for evaluating HCPs' perception. PE, in this small sample, was correlated with HCPs' intention to use telehealth. The need for technology to treat patients was imperative during the current COVID-19 pandemic and is increasing as patients continue to become more technologically savvy. Identifying the components of perception that directly impact HCPs' BI will allow for more effective implementation of telehealth. This research showed the value in helping HCPs see how telehealth can improve performance, accomplish tasks quicker, increase capacity, and further their career. The HCPs ability to connect the telehealth system with increased performance will increase the use of telehealth systems. The results of the hierarchical multiple regression were statistically significant in the relationship between performance expectations and BI when controlling for provider type and location. The results provided some insight into how perception can impact implementation of telehealth by HCPs. HCPs are an important component in implementation of telehealth. As research has shown, mortality rates are higher in areas where patients have limited access to care. It is important that HCPs' perceptions are taken into consideration when looking at implementing telehealth platforms.

Conclusion

The purpose of this quantitative study was to explore the relationship between perception, provider type, and location among HCPs. The findings of this study contribute towards filling the gap in the literature and knowledge regarding HCPs' perception and how that impacts telehealth implementation. The findings indicate key areas of importance to the function of telehealth for HCPs and suggest that HCPs location and licensure type is not a factor in their intention to use telehealth.

This study provided some insight into the role HCPs' perception plays in their BI to use telehealth. PE is correlated with HCPs' intention to use telehealth. The need for technology to treat patients was imperative during the current COVID-19 pandemic and is increasing as patients continue to become more technologically savvy. This research showed the value in helping HCPs see how telehealth can improve performance, accomplish tasks quicker, increase capacity, and further their career. The HCPs ability to connect the telehealth system with increased performance will increase the use of telehealth systems. Although this study had limitations in sample size, further research is recommended to better understand what barriers are still in place for HCPs in implementing telehealth.

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Appendix A: Questionnaire

Table A1

Questionnaire

SurveyMonkey Questions	Questions
1	Using Telehealth improves my performance in my job
2	Using Telehealth in my job increases my productivity
3	I find Telehealth to be useful in my job
4	My interaction with Telehealth is clear and understandable
5	Interacting with Telehealth does not require a lot of my mental effort
6	I find Telehealth to be easy to use
7	I have the resources necessary to use Telehealth
8	Telehealth is not compatible with other systems I use.
9	People who influence my behavior think that I should use Telehealth
10	People who are important to me think that I should use Telehealth.
11	The senior management of this business has been helpful in the use of Telehealth
12	In general, the organization has supported the use of Telehealth.
13	In my job, usage of Telehealth is important.
14	In my job, usage of Telehealth is relevant.
15	The use of Telehealth is pertinent to my various job-related tasks
16	The quality of the output I get from Telehealth is high
17	I have no problem with the quality of Telehealth's output
18	I rate the results from Telehealth to be excellent
19	The results of using Telehealth are apparent to me
20	Given that I had access to Telehealth, I predict that I would use it
21	I plan to use Telehealth in the next months
22	I predict I would use telehealth in the next 3-6 months
23	A specific person (or group) is available for assistance with telehealth difficulties
24	I have the knowledge necessary to use telehealth

25	I could perform a telehealth visit using telehealth equipment if there was no one around to tell me what to do
26	I could perform a telehealth visit using telehealth equipment if I had just the built-in help facility for assistance.
27	I could perform a telehealth visit using telehealth equipment if I could call someone for help if I got stuck
28	I could perform a telehealth visit using telehealth equipment if I had a lot of time to complete the job
29	Using telehealth is a bad idea
30	Using telehealth is a good idea
31	Working with telehealth is fun
32	I like working with telehealth
33	Telehealth makes working more interesting
34	Learning to operate telehealth is easy for me
35	It would be easy for me to become skillful at using telehealth
36	If I use the telehealth, I will increase my chances of getting a raise
37	Using Telehealth enables me to accomplish tasks more quickly
38	Gender
39	Age
40	Medical Specialty
41	The clinical location I work in
42	My clinical location is considered
43	I have been in clinical practice for
44	I am a

Appendix B : Instrument Permission

Dear Misty Cantrell,

My name is [redacted] and I am contacting you on behalf of Prof. Dr. Venkatesh regarding your request. Thank you for your interest.

All permissions and access to papers are typically handled through the website: http://vvenkatesh.com. However, the system is currently undergoing an update. Therefore, I am sending the permission email below on behalf of Dr. Venkatesh:

Thank you for your interest. Your permission to use content from the paper is granted. Please cite the work appropriately. Note that this permission does not exempt you from seeking the necessary permission from the copyright owner (typically, the publisher of the journal) for any reproduction of any materials contained in this paper.

Sincerely,
Viswanath Venkatesh
Eminent Scholar and Verizon Chair of Business Information Technology
Email: [redacted]
Website: [redacted]

You may also find Prof. Dr. Venkatesh's book to be of use: [redacted]

Thank you,
Carolina Reis