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The Association Between Telemedicine and Patient Satisfaction Among Older Patients in Dallas–Fort Worth, Texas

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Walden University

College of Management and Human Potential

This is to certify that the doctoral study by

Mimi Byrd

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

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Walden University
2024

Abstract

The Association Between Telemedicine and Patient Satisfaction Among Older Patients in Dallas–Fort Worth, Texas

by

Mimi Byrd

MBA, Troy University, 2006

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Healthcare Administration

Walden University

May 2024

Abstract

Understanding effective provider communication may help improve shared decision-making and overall patient satisfaction using telemedicine among older patients. Using Donabedian's lasting framework for healthcare quality as the theoretical framework, the purpose of this quantitative study was to examine the association between effective provider communication and shared decision-making and overall patient satisfaction with the healthcare system among older patients aged 65 years and older who were treated with telemedicine in Dallas–Fort Worth, Texas. Although researchers have studied patient satisfaction, the literature on the role of patient satisfaction in telemedicine is limited, and healthcare organizations have little evidence relating to how effective provider communication impacts healthcare quality measures: shared decision-making and overall patient satisfaction with the healthcare system. Patient satisfaction information was obtained through a secondary dataset consisting of 4,700 patient surveys. Data were analyzed using simple linear regression. While the results indicated that effective provider communication had a strongly positive relationship to both shared decision-making and overall patient satisfaction, researchers should judge the results with caution as several assumptions for the linear regression analyses were violated. The study may contribute to positive social change by arming healthcare administrators, providers, and health educators with knowledge to make targeted interventions regarding provider communication. This may lead to improvements in quality healthcare to meet the needs of older patients using telemedicine and improve overall patient satisfaction.

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Dedication

I would like to dedicate my doctoral study to my family. I truly thank God who graced me with the strength and perseverance to finish this journey. To my husband, Demetric, thank you for being so supportive, being by my side, and setting me up for success. To our beautiful daughters, Sarah, Moriah, Hannah, and Nevaeh, you make me so proud, and I thank God always for you. To my mom, you have been my biggest cheerleader throughout the years, and I appreciate all of your love and encouragement.

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I would like to thank my committee members who provided me with guidance and motivation that kept me moving forward, especially when I felt overwhelmed. I am immensely thankful to Dr. Fawzi Awad, my committee chair, for his steady mentorship throughout this process. I would also like to thank Dr. Eboni Green for her support.

There have been many friends and family members that offered their love, prayers, and kind words of encouragement along the way. I thank all of you for believing in me, and uplifting me in so many ways as I steadily worked towards this achievement.

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Section 1: Foundation of the Study and Literature Review

Introduction

Researchers have suggested that effective provider communication in healthcare promotes the provision of patient-centered care where healthcare providers relay simple explanations to patients, avoid complicated clinical jargon, take sufficient time to explain health issues, and ensure that patients understand the instructions provided (Platonova et al., 2019). With an aging population and the increased use of technology in healthcare, healthcare organizations and professionals can leverage effective provider communication in telemedicine to improve the quality of healthcare to meet the needs of older patients.

Effective provider communication has been linked to many benefits including higher patient satisfaction (Kumah, 2019). Healthcare has traditionally been provided through face-to-face means between a provider and a patient. The coronavirus disease 2019 (COVID-19) pandemic accelerated the need to rapidly adapt to the changing landscape of healthcare to protect both patients and healthcare workers, necessitating a transition to incorporate telemedicine (Hoffman, 2020).

Telemedicine is an emerging tool that healthcare organizations use to provide care to patients outside of traditional face-to-face visits. While it can benefit all populations, attention should be given to the older population as older adults may have negative attitudes towards the adoption and use of technology (Frishammar et al., 2023). Healthcare organizations can assess the attitudes of older patients using measures such as

patient satisfaction, and take necessary actions to enable the provision of high-quality care using telemedicine.

Patient satisfaction is an outcome measure resulting from patients' experiences with care. According to Ramaswamy et al. (2020), patient satisfaction is a critical factor in how successful telemedicine initiatives are, and is a valid outcome measure for quality of care. For this study, I examined the association between effective provider communication and patient satisfaction among older patients treated with telemedicine in primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas.

The use of telemedicine has the potential to result in improved healthcare costs, effectiveness, and quality of care (Granja et al., 2018). Identifying whether effective provider communication translates into quality measures such as patient satisfaction might contribute to improving patient care for older adults using telemedicine.

The following will be addressed in Section 1: background, problem statement, purpose of the study, research questions and hypotheses, theoretical framework, nature of the study, literature search strategy, literature review related to key variables, definitions, scope and delimitations, limitations, significance, summary, and conclusions.

Background

Healthcare has traditionally been delivered face-to-face between a provider and a patient in a physical location, historically in rural or institutional settings (Ramaswamy et al., 2020). The use of telehealth has risen dramatically due to the COVID-19 pandemic and is expected to be a regular part of patient care moving forward (Hoff & Lee, 2022).

The pandemic accelerated the need to rapidly adapt to the changing landscape of healthcare delivery. Healthcare organizations were required to find alternate means to continue to deliver healthcare services while ensuring the safety and protection of patients and healthcare workers, thus necessitating a transition to the increased use of telemedicine (Hoffman, 2020). The widespread implementation of telemedicine decreased the stress on the healthcare system as it enabled remote healthcare delivery, minimizing contact between patients and providers (Ramaswamy et al., 2020).

According to the World Health Organization (WHO), telemedicine enables the delivery of healthcare services, by all healthcare professionals, in instances where distance is a critical factor, for the purposes of information exchange to provide a diagnosis, disease and injury, and disease prevention. These actions are taken to improve individual as well as community health. With telemedicine becoming more widely used, the WHO issued the "Consolidated Telemedicine Implementation Guide" as a resource to optimize telemedicine implementation and realize its benefits (World Health Organization [WHO], 2022).

The Centers for Medicare and Medicaid Services (CMS) defines telemedicine as a mechanism that allows two-way communication between a patient and a physician that is remotely located; communication is in real-time and interactive (Medicaid.gov, 2022). While the term *telemedicine* is sometimes used interchangeably with *telehealth*, there is a difference. Telehealth has a broader application as it encompasses telemedicine delivery of clinical care, in addition to nonclinical, administrative activities such as meetings, provider training, and continuing medical education. Telemedicine is a subset of

telehealth, where telecommunications technology is used in the providers' delivery of services to a patient separately located from the provider (Hoffman, 2020). Synonymous with telemedicine is *ehealth*, the use of information and communication technology in healthcare (Granja et al., 2018), and *virtual health* or *virtual care*, which also refers to the remote delivery of healthcare services through digital avenues and technologies (WHO, 2022).

While telemedicine has brought forth many benefits, attention must be given to the preferences and attitudes of the older population, who typically fall behind younger generations in digital maturity. This is commonly referred to as the digital divide (Frishammar et al., 2023). Stachteas et al. (2022) asserted that the digital divide is not a basis to avoid using telemedicine; it is an opportunity to optimize its use, enable access to care at a low cost, and provide high-quality services.

Assessing outcome measures such as patient satisfaction with provider communication (i.e., the provider explaining things in a way that is easy to understand, taking the time to listen and show they care, and being able to answer health questions or concerns), and shared decision-making (i.e., the provider partnering with the patient in making decisions about their health and treatment, and spending sufficient time with the patient) might help inform healthcare organizations and providers on the attitudes of older patients towards telemedicine (Frishammar et al., 2023) and strategies to improve healthcare quality. Little is known about how satisfied older patients are with provider communication using telemedicine in primary care settings. This research is needed as it may help inform targeted interventions to improve patient experiences of care with

telemedicine for adults aged 65 years and older relating to provider communication and shared decision-making.

For this research, telemedicine means remote delivery of healthcare services through digital means and technologies, where the provider and patient are not in the same location. While telemedicine can be delivered through a variety of remote methods (Stachteas et al., 2022), this research focused on care delivery using video visits for primary care, where the healthcare providers' delivery of services to a patient uses telecommunications technology, and the provider and the patient are in separate locations (Hoffman, 2020). This research did not address technical issues or barriers with the use of video visits such as issues with access to the internet, software, or video cameras.

Problem Statement

The United States is experiencing a demographic shift and older adults are living longer (Iancu & Iancu, 2020). Increases in life expectancy, a growing population, and requirements for an independent living require the healthcare system to make adjustments to ensure adequate care for older patients (Iancu & Iancu, 2020). The United Nations Department of Economic and Social Affairs has estimated that the number of people aged 65 years and older in the United States will increase from 54.5 million to approximately 88.7 million, from 2020 to 2050. Expressed as a percentage of the total U.S. population, these numbers represent 16.2% of the population measured in 2020, and 23.6% of the estimated population for 2050 (United Nations, 2023). Improving the health and well-being for older adults is highlighted as a main goal in the U.S. Department of Health and

Human Services' *Healthy People 2030* report, as older adults are at a higher risk of experiencing chronic disease (Office of Disease Prevention and Health Promotion, n.d.).

With the increase in the aging population and rising use of telemedicine due to the COVID-19 pandemic, healthcare leaders must make the necessary adjustments to ensure that quality healthcare is being delivered to older individuals using telemedicine. Assessing patient experiences with telemedicine in healthcare (i.e., satisfaction with provider communication, shared decision making, and overall satisfaction with the healthcare system) for older patients may provide indicators of healthcare quality.

This research focused on older patients aged 65 years and older. A strategy that healthcare organizations and healthcare providers may use to help meet the needs of these older patients treated with telemedicine is to promote effective provider communication. Effective provider communication in the healthcare setting is defined as bidirectional communication between the patient and provider, where information is clearly understood by both parties. The communication can be delivered using verbal speech or other means (Ratna, 2019). It is critically important for patients to comprehend what they are being told. Otherwise, communication is ineffective therefore undermining the provision of care (Ratna, 2019).

Kumah (2019) highlighted the need for providers to develop relational aspects of care, such as provider–patient communication to improve patient experience and satisfaction. In a survey conducted in a tertiary care academic hospital in the United States, only an approximately 33% of clinicians received an excellent rating on their relationship behaviors (Kumah, 2019). Healthcare professionals can be educated on the

skill of effective patient–professional interactions such as communication. This levies a responsibility on healthcare administrators and health educators to equip providers with the skills needed for their practice to include an environment that is conducive to continuous learning of knowledge, skills, and abilities relating to the interpersonal aspects of communication. This is also applicable to providers at the student level to arm them with the requisite interpersonal skills.

According to Platonova et al. (2019), effective provider communication is vital to the provision of patient-centered medical care, which promotes the physician–patient relationship. Patient-centered communication, among several elements, involves checking with the patients to determine if they understand the information that was provided, active listening, not interrupting patients, and promoting patient participation in their decision-making. Patients value primary care providers who demonstrate an interest in them, are good listeners, avoid complicated medical terminology, take the necessary time to explain their health issues, and ensure they understand what is being communicated to them (Platonova et al., 2019). Effective provider communication can promote positive outcomes such as improvement in diagnosis and treatment, resulting in improved patient health and well-being as well as management of illness.

Although researchers have substantially investigated patient satisfaction, the literature on the role of patient satisfaction in telemedicine is limited (Ramaswamy et al., 2020). Healthcare organizations have little research and data on how effective provider communication impacts patient satisfaction among older individuals using telemedicine.

Purpose of the Study

The purpose of this quantitative research was to examine the association between effective provider communication, shared decision-making, and overall patient satisfaction for older patients aged 65 years and older who were treated with telemedicine. This research focused on primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas. Patient satisfaction with shared decision making and overall satisfaction with the healthcare system are indications of patient experiences and represent quality outcome measures.

With an increasingly aging population, healthcare organizations and providers must ensure that telemedicine in primary care meets the needs of older individuals. The results of this study may help healthcare professionals determine what interventions are required in virtual care to improve patient satisfaction as well as healthcare quality for older patients.

In this study, I used patient satisfaction survey data from primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas for the calendar year 2021. Results were assessed for adult patients aged 65 years and older, who completed a video visit with a primary care provider. To obtain patient responses, patients were provided a survey after their telemedicine visit via postal mail or electronic mail (email) requesting feedback about their experiences with the virtual healthcare they received.

The independent variable was effective provider communication. The dependent variables consisted of indicators of patient experience that assessed patient satisfaction

after a telemedicine visit (i.e., shared decision-making and overall satisfaction with the healthcare system).

Research Questions and Hypotheses

The research questions and hypotheses for this quantitative research are the following:

RQ1: What is the association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021?

H_o1: There is no statistically significant association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

H_a1: There is a statistically significant association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

RQ2: What is the association between effective provider communication and patients' overall satisfaction using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021?

H_o2: There is no statistically significant association between effective provider communication and patients' overall satisfaction using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

H_a2: There is a statistically significant association between effective provider communication and patients' overall satisfaction using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

Theoretical Foundation for the Study

The theoretical framework used was Donabedian's (1988) lasting framework for healthcare quality. Avedis Donabedian's lasting framework describes three components that comprise healthcare quality: structure, process, and outcome. *Structure* refers to the features of healthcare professionals such as their qualifications, *process* refers to the actions taken in the provision of healthcare such as shared decision-making with patients, and *outcome* refers to the impact of the care provided such as patient satisfaction. Donabedian posits that structure drives process, and process drives outcomes (Donabedian, 1988). The theory is related to the study approach and research questions as I assessed whether there was an association between effective provider communication, satisfaction with shared decision-making, and overall satisfaction with the healthcare system.

The logical connections among the key elements of the theory are using the three-pronged approach of structure, process, and outcome to measure healthcare quality. In the context of this research good structure (effective provider communication) promotes good process (shared decision-making), which, in turn, promotes good outcomes (patient satisfaction). The framework relates to the study approach in that a linear regression analysis was used to examine if there was an association between the independent and dependent variables.

Further application of Donabedian's theory is the importance of providers' management of the interpersonal relationship with patients to communicate, collaborate, and make decisions that support the provision of quality care.

Figure 1

Structure, Process, and Outcome and the Healthcare System Survey

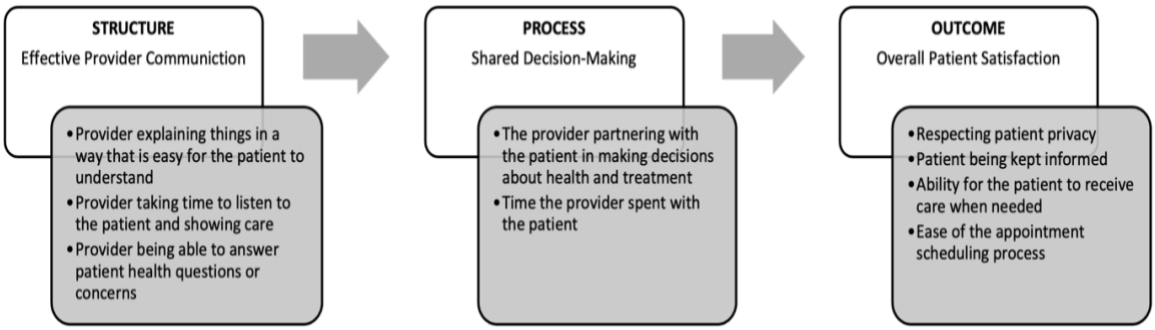


Figure 1 depicts the application of the three components of Donabedian's framework for healthcare quality: effective provider communication (structure), shared decision-making (process), and overall patient satisfaction (outcome). Each component works together to form the basis of the provision of high-quality care. The structure represents the characteristics of the provider or the healthcare system, such as provider communication. The process is how the care is accomplished, such as shared decision-making. The outcome is the result of the patients' overall experiences with the healthcare system. Donabedian's model highlights that these three components form the basis for the provision of quality healthcare.

Nature of the Study

I used a quantitative study to examine the association between effective provider communication, shared decision-making, and overall patient satisfaction using survey

data from primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas. These secondary data were used to explore whether there was an association between effective provider communication and healthcare system quality outcome measures (i.e., satisfaction with shared decision-making and overall patient satisfaction with the healthcare system). Shared decision-making represents the provider partnering with the patients in making decisions about their health and treatment. Overall patient satisfaction represents an outcome measure, resulting from the patients' overall experiences with the healthcare system. Donabedian's lasting framework was used as the framework to assess patient satisfaction with shared decision-making and patients' overall satisfaction with the healthcare system. Patient experiences and patient satisfaction are two measures of patient-centered care; both are vital to the provision of quality healthcare (Larson et al., 2019).

To measure patient satisfaction with provider communication, I used three survey questions that asked how patients would rate their satisfaction with the provider (a) explaining things in a way that is easy to understand; (b) taking the time to listen and showing care; and (c) being able to answer health questions or concerns Satisfaction scores used a response scale from 0 to 10 (0 = *very dissatisfied* to 10 = *very satisfied*). When analyzing the data for provider communication, I created a composite score from the responses to the three survey questions. Higher scores represented higher effective provider communication scores (i.e., a score of 9 or 10). As there were three questions in the provider communication measure, a maximum score of 30 could be assessed per patient.

To measure patient satisfaction with shared decision-making, I used two survey question that asked how patients would rate their satisfaction with the provider (a) partnering with them in making decisions about their health and treatment and (b) the time the provider spent with the patient. Satisfaction scores used a response scale from 0 to 10 (0 = *very dissatisfied* to 10 = *very satisfied*). When analyzing the data for shared decision-making, I created a composite score from the responses to the two survey questions. Higher scores (i.e., a score of 9 or 10) represented higher satisfaction with shared decision-making. As there were two questions in the shared decision-making measure, a maximum score of 20 could be assessed per patient.

To measure overall patient satisfaction with the healthcare system, I used four survey questions that asked how patients would rate their satisfaction with the healthcare system relating to: (a) respect for privacy (of personal information); (b) being kept informed (about what to expect throughout the visit including if there are any delays); (c) access to care (ability to receive care when needed); and (d) appointment scheduling (ease of the scheduling process). When analyzing the data for overall patient satisfaction with the healthcare system, I created a composite score from the responses to the four survey questions. Patients chose from a scale of 0 (*very dissatisfied*) to 10 (*very satisfied*). Higher scores (i.e., a score of 9 or 10) represented higher overall patient satisfaction with the healthcare system. As there were four questions in the overall patient satisfaction measure, a maximum score of 40 could be assessed per patient.

The target population comprised of primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas. The patient population included adult

patients aged 65 years old and older who were provided outpatient primary care via telemedicine and completed a survey about their virtual health visit. Survey responses received by the healthcare system between January 2021 and December 2021 were included. The data were obtained from primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas and permission was obtained to use the data for research purposes.

Literature Search Strategy

A systematic literature search was conducted in PubMed, Google Scholar, and Emerald databases between 2018 and 2023 using the keywords patient satisfaction, shared decision-making, provider communication, telemedicine, virtual health or telehealth, primary care, and older people or the elderly. I used peer-reviewed articles and journals to focus on patient satisfaction and factors that impacted patient satisfaction which included provider communication and shared decision-making. The theoretical framework dates back to 1988. Examples of Donabedian's model were searched through Google Scholar.

Literature Review Related to Key Variables and Concepts

Telemedicine has traditionally been used to provide care in rural or limited health systems. Prior to the COVID-19 pandemic, telemedicine was mainly used to manage care for older adults with chronic illnesses but was not widely regarded as an alternative to in-person care (Bhatia et al., 2022). The COVID-19 pandemic catapulted telemedicine into broader public usage as a more feasible option for healthcare delivery as it enabled the

remote provision of care while ensuring the safety of staff as well as patients due to limited contact.

Approximately 76% of hospitals in the United States utilize one form or another of telemedicine to connect with patients (Hyder & Razzak, 2020). While Ramaswamy et al. (2020) contended that telemedicine can be an alternative to traditional in-person visits, Garattini et al. (2021) noted that it should be a complement instead of a full replacement. They also noted that telemedicine can be more effectively utilized when there is a solid patient–physician relationship, which promotes patient-centered care, allowing patient preferences to be considered regarding use of technology for their care. Telemedicine should not be a one-size-fits-all solution, and user preferences must be taken into consideration with implementation. Such preferences can be garnered using satisfaction surveys. Telemedicine can also disproportionately impact certain populations such as older adults who may be less skilled with the use of information technology. The use of telemedicine can improve care for those patients who have an established relationship with their provider. An aging population can be impacted by cognitive, sensory, and motor problems; therefore, understanding the challenges impacting older adults and incorporating them when using technology will help to better fulfill their needs (Iancu & Iancu, 2020).

An estimated 40% of adults suffer hearing loss that negatively impacts certain parts of their lives such as social interaction by the age of 65. Additionally, approximately 20% of adults older than 65 suffer from vision loss that has a negative impact on their daily activities. The use of telemedicine must be approached while

keeping an aging population in mind to ensure that the needs of older patients are met. These needs can be evaluated with patient satisfaction surveys that capture patient attitudes and perceptions about the experiences of care. Providers must ensure they employ a patient-centered approach to care by adequately explaining health issues, and including patients in health decisions.

Patient experience is a process measure comprising several domains which encapsulate interpersonal aspects of the quality of care received. These domains include effective communication, respect, and dignity. Patient satisfaction represents an outcome measure, resulting from their experiences with care such as health outcomes, and the confidence they have in the health system. Patient experiences, as well as patient satisfaction, are two measures of patient-centered care, a vital element to the provision of quality healthcare (Larson et al., 2019). In this research, patient experiences with communication with the provider and shared decision-making were the influencers on overall patient satisfaction with the healthcare system.

Platonova et al. (2019) noted that over 90% of the studies they analyzed reported negative experiences with provider communication. Most commonly, patients were dissatisfied with providers who did not listen to them, interrupted or ignored them, and were dismissive. Additional dissatisfaction was associated with providers who were rushing, did not appear interested, or left patients feeling as if they did not have enough time to ask questions or share their stories.

Kane and Gillis (2018) analyzed data from the American Medical Association's 2016 Physician Practice Benchmark Survey. They found that 11.8% of family physicians

in the United States worked in a practice that used telemedicine. They also provided utilization rates for three modalities of telemedicine, one of which is videoconferencing. The results of Kane and Gillis' research captured the first nationally representative estimates of the use of telemedicine by physicians, providing historical background of the use of telemedicine in primary care. Orrange et al. (2021) studied the relationship between patient satisfaction and trust in their provider using telemedicine during a crisis. They found that most patients were either very satisfied or satisfied with their telemedicine visit, and higher physician trust was associated with higher patient satisfaction.

Healthcare leaders must ensure attention is paid to patient satisfaction measures as patients typically rely on recommendations from their friends and family members when selecting a hospital or provider. Favorable interactions with a provider by the patient promote a higher level of satisfaction with the healthcare provider (Mehra & Mishra, 2021).

In a study of Consumer Assessment of Healthcare Providers and Systems (CAHPS) Survey data, Kumah (2019) assessed data for 151,296 individual patients, from 254 CAHPS survey participating hospitals where communication with doctors was rated among the top four domains most strongly correlated to patient satisfaction. While the CAHPS survey instrument is applicable to inpatient visits, applicability to this research might show whether patients in other care settings (i.e., primary care, outpatient settings), also appreciate the same areas of satisfaction measures.

History of Telemedicine in the United States

The origins of telemedicine can be traced back to 1960, when it was used by the National Aeronautics Space Association (NASA) to research and document the environmental effect of outer space on the human body. In addition to evaluation and documentation of the astronauts' condition, the medical teams rendered medical advice when required. This project consisted of medical provider teams spanning 18 locations across North America, Australia, Africa, and Europe. NASA's use of telemedicine proffered a demonstration of the capability and reach of telemedicine as a means of connecting patients with the provider, enabling increased access to care and availability to providers, which before this project was beyond the realm of what was imagined to be possible. In 1966, realizing that telemedicine proffered increased potential, the U.S. Library of Medicine allocated $42 million for projects that would benefit suburban, rural, and inner-city areas that were medically isolated (Hyder & Razzak, 2020).

Kane and Gillis (2018) surveyed 3,500 physicians to gauge physician use of telemedicine using data from the American Medical Association's 2016 Physician Practice Benchmark Survey. They highlighted that telemedicine was most frequently used in specialty services; radiology (39.5%), psychiatry (27.8%), and cardiology (24.2%). They also identified that overall, 15% of physicians worked in a practice that used telemedicine to interact with patients and 11% used telemedicine for interactions between healthcare professionals such as instances for getting a second opinion, or getting a specialty consultation.

Telemedicine During COVID

The use of telemedicine increased dramatically due to the COVID-19 pandemic. Due to concerns for safety and transmission, the Centers for Disease Control and Prevention (CDC), along with other medical bodies, issued guidance for social distancing as well as other health protocols to promote safety and mitigate risks from unnecessary exposure. With this guidance came recommendations to maximize the use of digital means in the provision of care, ushering in the increased use of telemedicine (Stachteas et al., 2022). Many hospitals and practices implemented telemedicine to conduct non-emergency, routine care. This enabled healthcare delivery to continue while minimizing exposure of disease to staff and patients. According to the CDC, the number of visits accomplished using telemedicine increased by 50% during the first quarter of 2020, in comparison to the same time frame in 2019. Most of these visits were for non-COVID-19 related illnesses (Stachteas et al., 2022).

In a study conducted by New York University Langone Health, there was an 80% decrease in in-person visits, and a 683% increase in telemedicine visits between March 2 and April 14, 2020 (Hyder & Razzak, 2020). Ramaswamy et al. (2020) conducted a retrospective observational cohort study where they examined 38,609 patient satisfaction survey outcomes of clinic encounters from a single-institution, academic medical center in New York City (620 of these visits were video visits). The study covered the period of April 2019 to March 2020, which was categorized as pre-COVID-19, as well as during COVID-19 (i.e., before vs. after March 4, 2020). Their research examined whether patient satisfaction differed between video and in-person visits. They found that

satisfaction with video visits was higher (94.9%) compared to in-person visits (92.5%) and did not pose a barrier to the shift from in-person visits during the COVID-19 pandemic.

Telemedicine Delivery

Telemedicine care can be delivered using a variety of methods, including the following:

- *Store and front*: This refers to storing and sending information remotely. This type of telemedicine is mainly used for non-emergency scenarios, where time is not of the essence. This is a type of asynchronous delivery and is most often used in situations where health data and images are transmitted digitally for future analysis, usually by a specialist (WHO, 2022).
- *Interactive services*: This type of delivery is conducted in real time, or synchronously, where there is communication between two or more participants (WHO, 2022).
- *Remote client/patient monitoring*: This is also known as telemonitoring. With telemonitoring, health workers can monitor a patient's health condition remotely with the use of medical devices, and sensors connected to the technology platform, which also enable communication with the healthcare team and alerts as designated. Most often, this is used for patients with chronic conditions (WHO, 2022).

Telemedicine may be used for interactions between patients and healthcare workers (patient-to-health worker) or between various health workers (provider-to-

provider). Means of delivery include video, telephone, text messaging, applications on a smartphone, and picture archive and communication systems; however, this is not an exhaustive list due to the rapid pace of technological advances and potential evolutions in the future (WHO, 2022). While telemedicine may be conducted in a variety of settings and through a variety of channels, the primary focus of the present study was on interactive/synchronous means of teleconsultation using video visits. *Teleconsultation* means that patients were provided remote services (WHO, 2022).

There are several benefits to using telemedicine to include reduction of healthcare costs, reduced travel time for patients, and overall improvement in healthcare and health outcomes (Hyder & Razzak, 2020). In addition to these benefits, Jiang (2020) noted that leveraging communication technologies provides patients with greater access to doctors. Advancements in telemedicine may also lead to better preparedness in dealing with future pandemics as the infrastructure and use will already be in place in the healthcare system.

Effective Provider Communication (Independent Variable)

Platonova et al. (2019) investigated the relationship between provider communication and patient satisfaction. The authors noted that effective provider communication is essential to the provision of patient-centered care, which considers patient perspectives and promotes the physician–patient relationship. Their research found that patients felt devalued when providers conveyed disinterest or that they were in a hurry. Additionally, negative associations were made when patients did not feel that they had adequate time to share their input or ask questions.

Kumah (2019) noted that physicians' interpersonal communication skills versus their clinical competency has a greater impact on patient satisfaction. These communication skills encompassed attitude, the way they provided explanations, and respect for the preferences of their patients. Jiang (2020) noted that patient satisfaction is a critical indicator of the quality of medical care. Patients feel more satisfied with the provider when they receive patient-centered communication, can obtain the information they desire, and participate in shared decision-making. This has the benefit of the patient having a greater tendency to adhere to treatment and a greater motivation in self-care (Jiang, 2020).

Shared Decision-Making (Dependent Variable)

Shared decision-making requires consideration of the priorities of the patients relating to health outcomes, not just a focus on treating specific health conditions. This leads to guided discussions relating to the decisions and the options for care and treatment. Assessing the personal preferences of older patients requires a relationship between the provider and the patient that enables the provider to solicit information and build patient confidence in their ability to meaningfully contribute to health decisions, as older patients may sometimes shy away from participating in their health decisions due to feeling like they have inadequate knowledge, feeling as if they are not invited to participate in shared decision-making, or perceiving that the provider would not value their expertise as a patient. An important element to building this partnership is the establishment of the patient–provider relationship; the provider should take the time to get the know the patient, invite them to participate in decision-making and take the time

to get to know them. This will better equip the provider to assess barriers such as cognitive issues and discomfort with decision-making. Providers can them facilitate shared decision-making by fostering patients' motivation and self-confidence to participate (Pel-Littel et al., 2021).

Pel-Littel et al. (2021) asserted that providers must invite patients to participate in shared decision-making; and this is particularly important with older adults. Good communication skills are required for the provider to develop an individualized approach for patient care. There are several key elements to effectively implementing a shared decision-making approach. This includes diagnosing the situation, ensuring patients are aware of their choices, providing clarification of options, discussing benefits and harms, considering the preferences of the patient, and finally, making the decision (Wieringa et al., 2019). With this comprehensive approach, the provider must allocate sufficient time with the patient, as time pressures create a barrier to shared decision-making (Pel-Littel et al., 2021). Additional barriers include providing insufficient information about conditions, options, and outcomes. Conversely, shared decision-making is facilitated by providing sufficient information to patients, so they can make informed decisions, and seeking patient preferences in order to tailor care to the individual patient. Considering that there are some patients who may be hesitant to participate in shared decision-making for various reasons (e.g., lack of desire to participate, not feeling empowered to participate, or feeling that the provider may be the only expert), it is important for providers to facilitate shared decision-making by taking the time to communicate with the patient, seek out patient preferences, and exhibit positive interpersonal skills, such as

listening to patients concerns. These actions foster a good patient–provider relationship (Pel-Littel et al., 2021).

Overall Patient Satisfaction (Dependent Variable)

Mehra and Mishra (2021) studied the relationship between provider communication and patient satisfaction. They found that patients' satisfaction as well as the recommendation of the physician can be impacted by physician communication. The authors highlighted that when patients are seeking to find a physician, they lean on the recommendations of their relatives or friends, and how patients perceive the communication with their provider has an impact on this recommendation. A higher level of satisfaction with the provider is achieved when the provider communicates in a manner that conveys empathy, understanding, and other such attributes.

Manzoor et al. (2019) investigated patient satisfaction with healthcare services and noted that physician behavior is a key component of patient satisfaction. When patients interact with their provider, the expectation is for the provider to be technically competent, and provide sufficient information about their condition.

Moslehpour et al. (2022) examined several articles to identify determinants of patient satisfaction. They found that many factors positively impact satisfaction which includes the amount of time spent with the patients, verbal, and nonverbal indirect interpersonal communication, and understanding the demands of patients. It is important for healthcare providers to ensure patients are heard, kept informed, and provided ample time during their healthcare encounter. Additionally, information should be presented in a

manner that is non-technical, which fosters patients' understanding of their medical condition (Kumah, 2019).

Definitions

Effective communication: Communication in healthcare that promotes the provision of patient-centered care where providers relay simplistic explanations to patients while avoiding clinical jargon, take sufficient time to explain health issues, and ensure that patients understand the instructions given (Platonova et al., 2019). The independent variable was effective provider communication. I used a composite score from responses to three questions on the patient survey. This was measured after the patients' telemedicine visit by assessing the patients' satisfaction with the provider as follows: (a) explanation of care (the provider explaining things in a way that is easy to understand); (b) listening and showing care (the provider taking the time to listen and showing that they care); and (c) answering health questions (the provider being able to answer questions or concerns about the patients' health.

Patient experience: A process indicator that encompasses interpersonal elements of the quality of care received. This embodies a patient's total interactions with the health system (Larson et al., 2019).

Patient satisfaction: An outcome measure of patient experience which indicates the patients' assessment of the care provided. Overall patient satisfaction was measured after the patients' telemedicine visit by assessing the patients' satisfaction with the healthcare system as follows: (a) respect for privacy (respecting the privacy of patients' personal information); (b) being kept informed (the patient being kept informed about

what to expect throughout the visit, including if there are any delays); (c) access to care (the ability to receive care when needed); and (d) appointment scheduling (the ease of the scheduling process).

Primary care: A range of health services that cover wellness, prevention, and treatment for common illnesses. Primary care providers include doctors, nurses, nurse practitioners, and physician assistants. They typically maintain long-term relationships with patients, advise, treat, and may also coordinate patients' care with specialists (CMS, n.d.).

Shared decision-making: Partnering with patients in making health and treatment decisions. This is a patient-centered approach to healthcare where the provider and patient work together to identify and select the best individualized course of action for the patients' specific situation (Wieringa et al., 2019). This was measured after the patients' telemedicine visit. I used the participant responses from two questions that addressed satisfaction with the provider (a) partnering with the patient in making decisions about health and treatment and (b) time with provider (i.e., the time that the provider spent with the patient).

Telehealth: A broad set of services that includes telemedicine delivery of clinical care, which also includes non-clinical activities such as administrative meetings, continuing medical education and provider training (Hoffman, 2020).

Telemedicine: A subset of telehealth (Hoffman, 2020). It is a mechanism that uses technology to enable two-way communication between a patient and a physician that is remotely located; communication is real-time and interactive (Medicaid.gov, 2022).

Assumptions

The patient survey was completed by patients who received outpatient primary care via telemedicine (i.e., video visits). It was assumed that patients understood what they were being asked, provided honest answers to the survey questions, and were not pressured to respond one way or another. These assumptions were necessary in the context of the research to proceed with the notion that the survey results reflected true and accurate representations of the patients' experiences with care. It was assumed that responses were free of social desirability bias where there is a tendency for patients to provide more favorable ratings due to surveys being completed in an on-site setting, face-to-face, or via telephone survey. Using methods such as postal and e-mail delivery does not involve direct human interaction, permitting patients more latitude to share negative feedback. This helps avoid ceiling effects where patients give high ratings that are not representative of their true experiences with the healthcare system (Kumah, 2019). Another assumption is that provider communication impacted shared decision-making with patients, as well as patients' overall satisfaction with the healthcare system. This assumption was important because it was the basis of this study. If provider communication has no influence on shared decision-making and overall patient satisfaction, statistically significant findings would not be obtained.

Scope and Delimitations

The scope of this research was limited to survey data from primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas. The target population was limited to adult patients aged 65 years and older that received outpatient primary care

using video visits. Patients under the age of 65 years old, pediatric patients, patients treated for specialty services, and patients who were treated in person were not investigated in this research.

This research can potentially be generalized to other healthcare systems that use telemedicine to provide outpatient primary care to older patients aged 65 years and older as well as other patient populations. This research focused on a large healthcare system in a large metropolitan area; however, any healthcare system that uses telemedicine and solicits feedback from patients can use the research to examine patient attitudes regarding their experiences with telemedicine from their healthcare system.

The specific aspects of the research problem that were addressed in the study involved determining patient satisfaction with healthcare delivered via telemedicine to ensure the needs of older patients are being met to provide high quality care, and to promote the health and well-being of the older population. The specific focus area was chosen due to changing demographics in the United States that include an increasingly aging population, coupled with the growing use of telemedicine in healthcare delivery.

Limitations

The research was conducted using secondary data from primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas, a large metropolitan area. The research did not factor in whether patients had chronic illnesses, comorbidities, or other health challenges and/or limitations such as cognitive, sensory, or motor problems. Additionally, data were not reported on providers to gauge their opinions on the use of telemedicine as this would more fully inform patient–provider communication

input within the healthcare setting. A potential bias to study outcomes is the extreme response style. This occurs when there is a tendency to answer questions on the extreme ends of a scale (Zijlstra et al., 2011). To overcome this bias, I assumed that patient responses accurately represented the care experienced by the patients.

The potential implications for positive social change involve opportunities for healthcare leaders, healthcare providers, and health educators to improve effective provider communication skills, implement patient satisfaction measures, and improve the quality of healthcare for older patients aged 65 years and older using telemedicine.

Significance

Effective provider communication in healthcare is needed to support the provision of quality healthcare to an increasingly aging population. Identifying if effective provider communication translates into quality measures might contribute to improving patient care for older adults using telemedicine. This research might help inform targeted interventions to improve patient experiences of care with telemedicine for adults aged 65 years and older relating to provider communication and shared decision-making. The findings from the research might help inform provider education to boost communication and bolster patient satisfaction. Potential contributions that might advance practice and/or policy might involve targeted health policies for older patients using telemedicine involving provider communication skills and shared decision-making during video visits. Patient satisfaction data can also support the utilization of video visits as a feasible alternative to traditional in-person visits (Ramaswamy et al., 2020). This research might

also benefit healthcare practices and procedures for application during a future public health emergency or crisis (Stachteas et al., 2022).

Summary and Conclusions

Traditionally, healthcare delivery has been delivered face-to-face between a provider and a patient. The COVID-19 pandemic led to a surge in the implementation of telemedicine to ensure the safety of patients and staff. Older patients were traditionally seen for the management of chronic illnesses such as diabetes, versus primary care. Telemedicine provides many benefits to include improved quality of care (Kane & Gillis, 2018). To assess the quality of care delivered using telemedicine, this research assessed patient satisfaction survey data from a large healthcare system in Dallas–Fort Worth, Texas. Although researchers have substantially investigated patient satisfaction, the literature on the role of patient satisfaction in telemedicine is limited (Ramaswamy et al., 2020). Several researchers noted that telemedicine should be a compliment to face-to-face care rather than a replacement. Identifying if effective provider communication translates into quality measures might contribute to improving patient care for older adults using telemedicine. Section 2 will address the research design and rationale, methodology, data analysis, threats to validity, and ethical procedures.

Section 2: Research Design and Data Collection

Introduction

The purpose of this quantitative research was to examine the association between effective provider communication, shared decision-making, and overall patient satisfaction using telemedicine for older patients aged 65 years and older. Patient satisfaction with shared decision-making, and overall patient satisfaction with the healthcare system are indications of patient experience and represent quality outcome measures. With an increasingly aging population, the attitudes and perceptions of older patients must be assessed to determine if telemedicine meets their needs. This might be accomplished by measuring satisfaction with patient experiences.

This research was intended to explore the association between effective provider communication and health system quality outcome measures. The next section will provide details on the research design, the patient survey, data collection, and design construct for the research.

Research Design and Rationale

This research used a quantitative design to explore the association between effective provider communication and health system quality outcome measures (i.e., patients' satisfaction with shared decision-making, and overall patient satisfaction with the healthcare system). The analysis was conducted using a secondary dataset. The use of secondary data eliminated time and resource constraints relating to data gathering. I used a simple linear regression to examine the association between effective provider communication and health system quality outcome measures. Linear regression analysis

assesses the association of an independent variable on the value of a dependent variable. Regression also uses an independent variable to predict the value of a dependent variable (Frankfort-Nachmias & Leon-Guerrero, 2018).

The independent variable for this research was effective provider communication (scale). The dependent variables were indicators of patient experience: shared decision-making (scale) and overall patient satisfaction with the healthcare system (scale). The regression analysis links RQ1 and RQ2, as the purpose was to determine whether there was an association between effective provider communication, shared decision-making, and overall patient satisfaction with the healthcare system, as measured by the patient surveys.

Methodology

Population

The target population for this research was primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas. This quantitative research investigated healthcare quality outcome measures of a sample population of patients aged 65 years and older who received virtual healthcare via video visits from primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas. The target population for this research was drawn from over 4,000 patient survey responses.

Sampling and Sampling Procedures

Data were collected from all patients who responded to the survey regarding their experiences with virtual healthcare provided by the healthcare system. The data for this research were derived from responses collected by an external vendor that sent surveys

via e-mail or postal mail to the patients on the healthcare system's behalf. Feedback was solicited from patients who received outpatient primary care using video visits. Survey results were recorded for patients who returned the survey to the healthcare system between January 2021 and December 2021. Data received outside of this timeframe were not used for this research. The surveys were designed to assess patient experiences with virtual healthcare received and gauge overall satisfaction with the healthcare system.

The sampling frame for this research included primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas that met the inclusion criteria: (a) patients aged 65 years and older; (b) patients participated in a video visit with a primary care provider; (c) completed the patient satisfaction survey and (d) the healthcare system received the survey between January 2021 and December 2021. The exclusion criteria were (a) patients under the age of 65 years old; (b) specialty care or pediatric care, and (c) in-person visits. The data were obtained from the healthcare system's Patient Experience department.

The sampling procedures for inclusion included the following: surveys received via email, and surveys received by postal mail. Survey questions regarding provider communication, shared decision-making, and overall satisfaction with the healthcare system were utilized.

According to Creswell and Creswell (2018), several free online calculators such as G*Power are available commercially to aid with completing a power analysis, which is used to estimate a target sample size when seeking to discover an association between

variables. For this research, I downloaded the G*Power tool (Version 3.1), the version designed for the Mac operating system.

The type of power analysis used was an a priori analysis. An a priori analysis is accomplished prior to a study taking place (Mayr et al., 2007). The type of research design was simple linear regression. I used a small effect size of 0.02, alpha of 0.05, and a power of 0.80. These values were chosen based on guidance proffered by Mayr et al. (2007) and Faul et al. (2007) regarding behavioral research methods. I used the G*Power tool, the statistical test of linear regression, and a priori type of power analysis to determine the minimum sample size of 395 patients for this research. The secondary dataset contained over 4,000 responses from patients aged 65 years and older, which is more than the minimum required sample size for this research. I used more than the minimum sample size (i.e., all available data from the survey responses in the dataset that met the inclusion criteria).

Instrumentation and Operationalization of Constructs

The authorized data obtained from the healthcare system contained identifying characteristics and measurable data collected from participating patients in Dallas–Fort Worth, Texas, for the period of January 2021 to December 2021. Surveys were conducted specifically for patients who received virtual healthcare using telemedicine and provided responses about their experiences with the virtual healthcare. Survey responses were included if they were received by the healthcare system during this period, even if the patient visit occurred outside of the data collection window. The patient satisfaction survey was assessed to determine results from the questions on provider communication

(structure), which was the independent variable. The dependent variables were patient satisfaction with shared decision-making (process), and overall patient satisfaction with the healthcare system (outcome). The process measure, as well as the overall satisfaction outcome feedback represent the quality outcome measures for the healthcare system, and were used to answer the research questions.

Healthcare System Survey

The healthcare system survey consisted of a 9-item survey measuring patients' perceptions of their experiences with telemedicine care with the healthcare system. The survey reported results for patient satisfaction with their experiences with telemedicine care. The patient survey was available in both English and Spanish. All patients for this research completed their survey in English.

The survey used by the healthcare system was more specific to the research topic as it measured patients' perceptions of their experiences with telemedicine care with the healthcare system. The survey topics that applied to this research were (a) provider communication and (b) overall experience with the healthcare system.

Operationalization of Variables

The survey covered patients' experiences of care with the healthcare system in the secondary dataset. For the analysis of RQ1 (What is the association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021?) and RQ2 (What is the association between effective provider communication and patients' overall satisfaction using telemedicine for older patients in Dallas– Fort Worth, Texas in 2021?),

I used the provider communication scores to compare with the healthcare system quality measures: satisfaction with shared decision-making, and overall satisfaction with the healthcare system. The independent variable (effective provider communication) and dependent variables (shared decision-making and overall patient satisfaction) were all assessed using composite scores.

Of the 9-item patient satisfaction survey questions, two elements of the patients' experiences with the healthcare system were explored for this research. This research focused on the provider communication measure and healthcare system quality measures related to shared decision-making and overall satisfaction with the healthcare system. Patient satisfaction scores were recorded using a scale from 0 (*very dissatisfied*) to 10 (*very satisfied*), where higher scores represented higher patient satisfaction.

The questions relating to patient satisfaction with provider communication were used for the independent variable in this research. These questions addressed how the patient would rate their satisfaction with the provider in the following areas: (a) explanation of care, (b) listening and showing care, and (c) answering health questions. Satisfaction scores used a response scale from 0 to 10 (0 = *very dissatisfied* to 10 = *very satisfied*). When analyzing the data for provider communication, I created a composite score for the responses from the survey questions. Higher scores represented higher effective provider communication.

Questions relating to shared decision-making, and overall patient satisfaction with the healthcare system were used to measure the dependent variables. To measure patient satisfaction with shared decision-making, I used the survey questions that addressed how

patients would rate their satisfaction with the provider (a) partnering with them in making decisions about their health and treatment, and (b) time with the provider. Patients chose from a scale of 0 (*very dissatisfied*) to 10 (*very satisfied*). Higher scores represented higher satisfaction with shared decision-making.

To measure overall patient satisfaction with the healthcare system, I used the questions that addressed how patients would rate their satisfaction with the healthcare system relating to: (a) respect for privacy; (b) being informed; (c) access to care; and (d) appointment scheduling. Satisfaction scores used a response scale from 0 (*very dissatisfied*) to 10 (*very satisfied*). Higher scores represented higher overall patient satisfaction with the healthcare system.

For RQ1 and RQ2, a simple linear regression analysis was used to explore whether there was an association between effective provider communication and healthcare system quality outcome measures of shared decision-making (process), and overall patient satisfaction with the healthcare system (outcome). The secondary data were derived from patients who responded to the patient survey.

Effective Provider Communication (Independent Variable)

In this research, the independent variable was effective provider communication which represented the structural component of the qualifications and capabilities of healthcare providers (Donabedian, 1988). For RQ1 and RQ2, I used the independent variable in a simple linear regression to assess whether there was an association between the healthcare system quality outcome measures: shared decision-making and overall

patient satisfaction with the healthcare system. I determined whether there was statistical significance between the variables using the *p*-value.

Table 1 depicts the healthcare system survey question for effective provider communication (independent variable). The determination of whether provider communication is effective was based on a composite score of patients who responded. Higher patient satisfaction was represented by higher scores (i.e., a score of 9 or 10 represented higher effective provider communication).

Table 1

Healthcare System Survey Question (Independent Variable)

Provider communication question on Healthcare System Survey	Response options
How the patient would rate satisfaction with the provider in the following areas: (a) Explanation of care (b) Listening and showing care (c) Answering health questions	0 - Very dissatisfied 1 2 3 4 5 6 7 8 9 10 -Very satisfied

The selection of provider communication was chosen as a variable as numerous studies have indicated that provider communication impacts patient satisfaction and healthcare quality.

Shared Decision-Making (Dependent Variable)

From the patient survey, patient responses regarding experiences with the provider ranged from very dissatisfied to very satisfied. Shared decision-making

represented the provider partnering with the patient in making decisions about their health and treatment and the time the provider spent with the patient. Table 2 depicts the healthcare system survey question for shared decision-making (dependent variable).

Table 2

Healthcare System Survey Question (Dependent Variable)

Shared decision-making question on Healthcare System Survey	Response options
How the patient would rate satisfaction with the provider in the following areas: (a) Partnering in decisions (b) Time with provider	0 - Very dissatisfied 1 2 3 4 5 6 7 8 9 10-Very satisfied

Overall Patient Satisfaction (Dependent Variable)

From the patient survey, patients' overall satisfaction with their experience with the healthcare system encompassed four elements. The range of responses was from 0 to 10, where 0 = *very dissatisfied* and 10 = *very satisfied*. Table 3 depicts the healthcare system survey question for overall satisfaction with the healthcare system (dependent variable).

Table 3

Healthcare System Survey Question (Dependent Variable)

Overall satisfaction with the healthcare system	Response options
How the patient would rate satisfaction with the healthcare system in the following areas: (a) Respect for privacy (b) Being kept informed (c) Access to care (d) Appointment scheduling	0 - Very dissatisfied 1 2 3 4 5 6 7 8 9 10 - Very satisfied

Data Analysis Plan

The software I used to analyze the data for this research was IBM SPSS Statistics (Version 28). This software was used to conduct a simple linear regression statistical test using the independent variable (effective provider communication) with two dependent variables that are unrelated (shared decision-making, and overall satisfaction with the healthcare system).

The results were interpreted to determine whether the independent variable (effective provider communication) had a statistically significant effect on the dependent variables (shared decision-making, and overall patient satisfaction with the healthcare system). The data were cleaned to include only the components that would be studied for the research using the questions related to effective provider communication, shared decision-making, and overall satisfaction with the healthcare system. Survey questions

not used were excluded from the study. Personal information for the patients was excluded from the study (e.g., personal health issues) to maintain patients' privacy.

After the data were cleaned, the statistical test was accomplished and analyzed, checking for statistical assumptions for the relationship between the variables: linearity, independence of observations, outliers, homoscedasticity, and normality.

Research Questions and Hypotheses

The research questions and hypotheses for this quantitative study are:

RQ1: What is the association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021?

H_o1: There is no statistically significant association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

H_a1: There is a statistically significant association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

RQ2: What is the association between effective provider communication and patients' overall satisfaction using telemedicine for older patients in Dallas– Fort Worth, Texas in 2021?

H_o2: There is no statistically significant association between effective provider communication and patients' overall satisfaction using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

H_a2: There is a statistically significant association between effective provider communication and patients' overall satisfaction using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

Threats to Validity

To reduce the threat of external validity, I selected a large enough sample size from the population in the data. The participant selection of all primary care clinics within the healthcare system in Dallas–Fort Worth, Texas, was applied; however, the respondents were limited to adult patients aged 65 years and older. Additionally, the research excluded any specialty or pediatric services, and in-person patient visits.

Maturation is a threat that may have impacted the internal validity of the research due to the amount of time that may have elapsed between when virtual healthcare was rendered and when the patients completed the survey. Patient responses may not be as accurate or reflective of the patients' actual experiences if too much time had elapsed between the care being rendered and survey completion due to diminished recall or memory. This may prevent me from concluding with certainty that the patients' overall satisfaction with virtual healthcare is accurately reflected in the survey.

Ethical Procedures

In this research, measures were taken to protect patients' personal information (i.e., patient identification number, age, and specific health issues) in accordance with patient privacy and protection measures. The strategy that was used to keep the information confidential was to remove identifying information from the dataset before proceeding with the analysis. I also protected the information in accordance with the

Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule. HIPAA is a federal law that requires the protection of patients' health information to avoid inadvertent disclosure. This information was safeguarded on a password-protected computer, maintained, and accessed solely by me on my home computer. I will store the data for only as long as needed then delete all files pertaining to the data when no longer required. Institutional Review Board (IRB) approval was obtained prior to performing any statistical analysis for this research (IRB Approval number: 10-23-23-0729010).

I obtained consent from the healthcare system to use the data in the research and did not have personal contact information or personal knowledge of any of the patients from the secondary data. The computer system was equipped with SPSS, downloaded specifically for the purpose of the research. All raw data were handled in accordance with privacy regulations and research guidelines.

Summary

The quantitative research design was used to examine two research questions for this research pertaining to effective provider communication (structure), shared decision-making (process), and overall patient satisfaction with the healthcare system (outcome). A simple linear regression analysis was used to address the two research questions. The results of the simple linear regression analysis will be discussed in Section 3.

Section 3: Presentation of the Results and Findings

Introduction

The purpose of this quantitative study was to explore whether there was an association between effective provider communication, shared decision-making, and overall patient satisfaction for older patients aged 65 years and older who were treated with telemedicine. This research focused on primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas. In this section, I describe the secondary dataset and provide details on the data collection and analysis conducted to address the research questions and hypotheses. The statistical analyses and the assumptions (linearity, independence of observations, outliers, homoscedasticity, and normality) were addressed utilizing the results of the analyses for the research questions. Interpretation of the results was conducted to determine whether the results yielded statistical significance, whether the null hypotheses should be rejected, or whether the alternative hypotheses should be accepted.

Research Questions and Hypotheses

The research questions and hypotheses for this quantitative study were as following:

RQ1: What is the association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021?

H_o1: There is no statistically significant association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

H_a1: There is a statistically significant association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

RQ2: What is the association between effective provider communication and patients' overall satisfaction using telemedicine for older patients in Dallas– Fort Worth, Texas in 2021?

H_o2: There is no statistically significant association between effective provider communication and patients' overall satisfaction using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

H_a2: There is a statistically significant association between effective provider communication and patients' overall satisfaction using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021.

Data Collection of Secondary Dataset

The secondary dataset from the healthcare organization covered primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas for data collected from January 2021 to December 2021. The data for this research were derived from surveys collected by an external vendor that sent surveys via e-mail or postal mail to the patients on the healthcare system's behalf. Feedback was solicited from patients who received outpatient primary care using video visits. Survey results were recorded for

patients who returned the survey to the healthcare system between January 2021 and December 2021. Data received outside of this timeframe were not used for this research.

In this study, the total number of patients that provided responses was 4,770. The final dataset contained 4,770 patients as no patients were removed. The data analysis consisted of three variables and missing data existed within each of the three variables. This dataset included all patients who provided a response to the survey, therefore, the sample population included in the dataset was appropriate for this study.

Results

Descriptive Statistics

The descriptive statistics, depicted in Table 4, include a population of older patients, aged 65 years and older, from primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas, for data collected from January 2021 to December 2021. This population included sufficient information for the variables of interest.

There was a total of 4,770 patient responses in the dataset. For effective communication, there were 4,134 valid responses and 636 missing. Patient responses ranged from 0 to 30, with an average of 29.08 (*SD* = 2.83). For shared decision-making, there were 4,151valid responses and 619 missing. Patient responses ranged from 0 to 20, with an average of 19.32 (*SD* = 2.08). For overall patient satisfaction, there were 4,109 valid responses and 661 missing. Patient responses ranged from 0 to 40, with an average of 37.13 (*SD* = 5.01).

Table 4

Descriptive Statistics for Effective Provider Communication, Shared Decision-Making, and Overall Patient Satisfaction

Measure	*N*	*Min*	*Max*	*M*	*SD*
Effective provider communication	4,134	0	30	29.08	2.83
Shared decision-making	4,151	0	20	19.32	2.08
Overall patient satisfaction	4,109	0	40	37.13	5.01

Demographics

The total number of the investigated patients was 4,770. Results showed that most were female (*n* = 2,747, 57.6%), whereas 2,023 (42.4%) were male. Their age range was between 65 and 95 years, with an average age of 73.71 years. In terms of race, most of the patients were White (*n* = 3,705, 77.7%), whereas 811 (17%) were Other/Unknown, 178 (3.7%) were Black or African American, 72 (1.5%) were Asian, and 4 (0.1%) were American Indian/Alaska Native. The results also showed most of the investigated patients were Not Hispanic or Latino (*n* = 3,829, 80.3%), whereas 804 (16.9%) were Unknown and 137 (2.9%) were Hispanic or Latino. These demographic results are depicted in Appendix A.

When compared to general population, according to the United Health Foundation (2022), 55.1% of adults aged 65 years and older were female, and 44.9% were male. Additionally, the United Health Foundation (2022) reported ethnicity/race as follows: White (74.9%); Black (9.4%); Hispanic (9.1%); Asian (4.9%); American Indian/Alaska Native (0.6%); and Other (0.9%). The sample population is proportional to the larger population of older patients aged 65 years and older in the United States.

Results for Shared Decision-Making (RQ1)

A simple linear regression analysis was conducted to evaluate the prediction of shared decision-making from effective provider communication scores. The predictor variable was effective provider communication, and the outcome variable was shared decision-making. Preliminary analyses were conducted to assess the assumptions of linearity, independence of observations, outliers, normality, and homoscedasticity. The assumptions for linearity and independence of observations were met. The assumptions for outliers, normality, and homoscedasticity were not met. Although outliers were found, I decided to keep the outliers in the data. Table 5 shows the descriptive statistics for shared decision-making and effective provider communication.

Table 5

Descriptive Statistics for RQ1, Shared Decision-Making and Effective Provider Communication

Measure	*N*	*M*	*SD*
Shared decision-making	4048	19.32	2.07
Effective provider communication	4048	29.09	2.84

Table 6 shows the results for the simple linear regression analysis for effective provider communication and shared decision-making.

Table 6

Simple Linear Regression Analysis for Shared Decision-Making

Measure	B	95% CI	R^2	F	*p*
Effective provider communication	0.68	[0.67, 0.68]	0.86	24479.63	.000

Note. CI = confidence interval.

The results of the simple linear regression analysis revealed a statistically significant association between effective provider communication and shared decision-making, $F(1, 4046) = 24, 479.63$, $p < .001$, $R^2 = .86$. The p-value results (<.001), which were below the selected threshold value of 0.05, reflect that the independent variable, effective provider communication, had a statistically significant effect on the dependent variable, shared decision-making. Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted for shared decision-making.

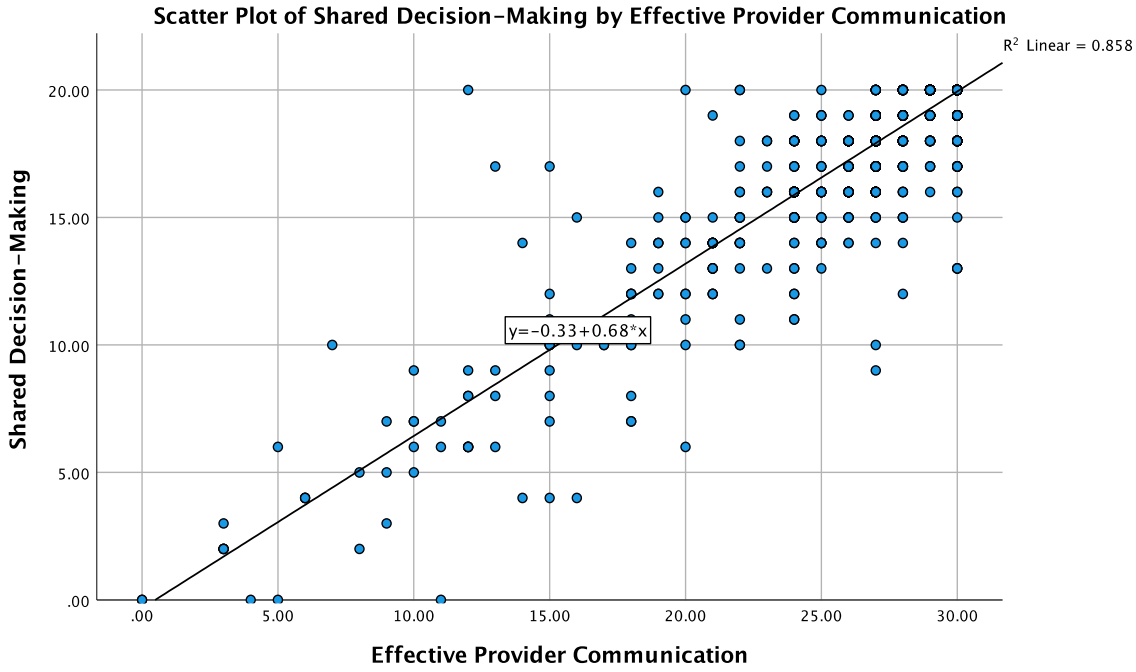
The regression coefficients indicated a significant and strongly positive association between effective provider communication scores and shared decision-making. The regression coefficients, B = 0.68., 95% CI [0.67, 0.68], associated with effective provider communication scores suggest that with each additional unit increase in the effective provider communication score, the shared decision-making score increased by approximately 0.68 units. The R^2 value of 0.86 associated with the regression model suggests that effective provider communication accounts for 86% of the variance in shared decision-making (see Appendix B, Table B2). This means that 14% of the variance in shared decision-making cannot be explained by effective provider communication alone. The confidence interval associated with the regression analysis does not contain 0, which means the null hypothesis, that there is no statistically significant association between effective provider communication and patient satisfaction with shared decision-making using telemedicine for older patients in Dallas–Fort Worth, Texas, in 2021, can be rejected.

Prior to conducting the analyses, the assumptions for the linear regression were checked. The assumptions for linearity and independence of observations were met. The assumptions for outliers, normality, and homoscedasticity were not met.

For the assumption of linearity, as shown in Figure 2, a scatterplot of shared decision-making versus effective provider communication with a best fit linear line was plotted. Visual inspection of these two plots indicated a linear relationship between the variables, and the assumption was met. The two variables are linearly related, such that as the effective provider communication scores increase, shared decision-making increases as shown in the scatter plot in Figure 2. The regression equation for predicting shared decision making was $y = -0.33 + 0.68$ (effective provider communication). The 95% confidence interval for the slope, 0.67 to 0.68, did not contain the value of zero; therefore, effective provider communication was significantly related to shared decision-making.

Figure 2

Simple Scatter Plot of Shared Decision-Making versus Effective Provider Communication



There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.97 (see Appendix B, Table B2), which is within the acceptable range (1.5 to 2.5). Therefore, the assumption of independence of residuals was met.

The assumption for outliers was not met. According to Zijlstra et al. (2011), the presence of outliers in statistical analysis may bias results from statistical analysis, which may lead to the wrong conclusions. Although outliers were found, I determined to keep the outliers in the data. The initial assessment for outliers yielded 84 outliers. After removal of the outliers and re-running the linear regression, the analysis regenerated an approximately equal number of outliers. Therefore, the decision was made to keep the outliers as it was assumed that this was the nature of the data. I also assumed that the

responses represented the true nature of the patient responses. With the large sample size of 4,770 patients, the decision was to keep the outliers in the data; even if the outliers were removed, there would still be over 3K patient responses to evaluate. Casson and Farmer (2014) posited that unless there is a strong reason for concluding that outliers represent errors in the data, the data should be included.

The assumption for normality was assessed using a normal probability plot. Residuals were not normally distributed along the diagonal line as assessed by visual inspection of the normal probability plot (see Figure 3). If the assumption of normality is marked as violated, one recommendation is to transform the independent variable to shift the error residuals to normality. If accomplished, however, this may result in the relationship between the two variables no longer being linear, which may also require the independent variable to also be transformed. I determined to maintain the data without transformation as they reflected the true responses of the patients, and transformation could alter the data. The assumption of homoscedasticity was not met, as assessed by a visual inspection of a plot of standardized residuals versus standardized predicted values (see Figure 4).

Figure 3

Normal P-Plot of Shared Decision-Making

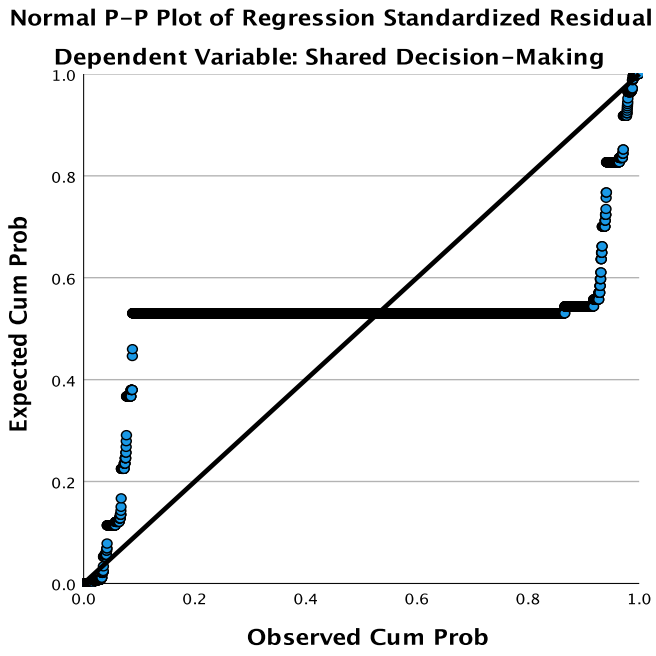
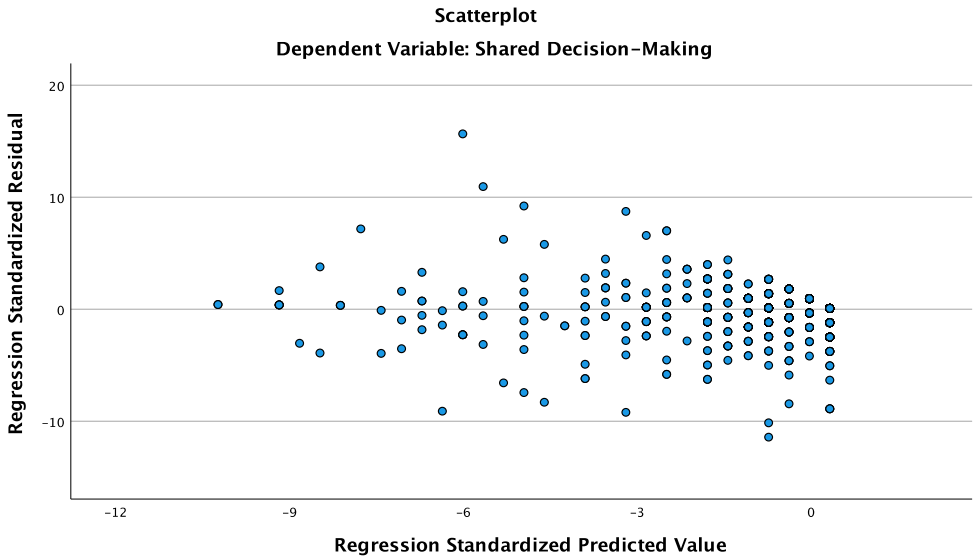


Figure 4

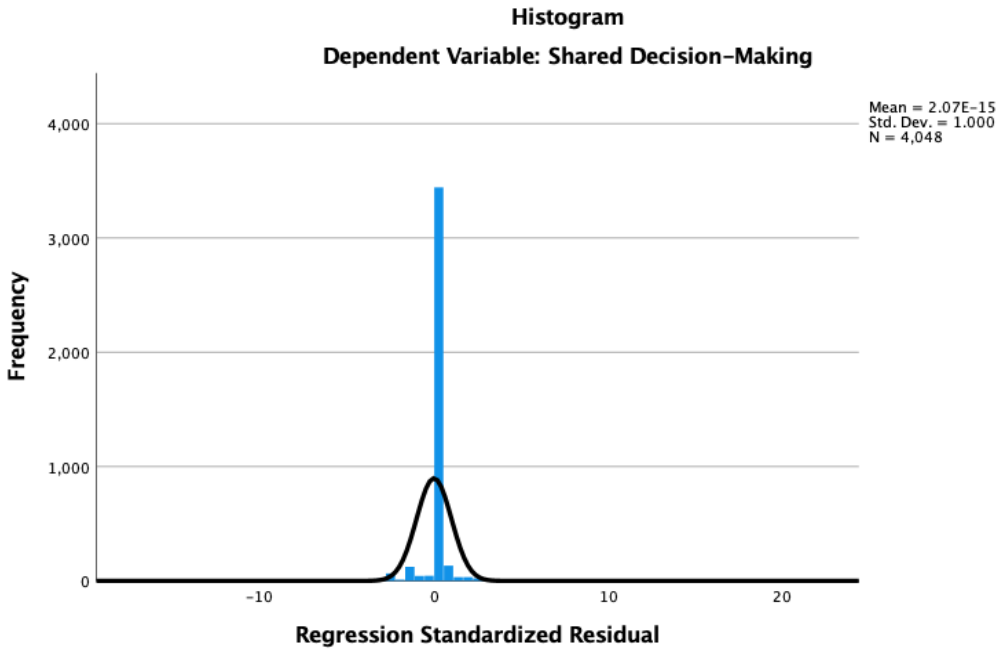
Scatterplot of the Residuals for Shared Decision-Making



Patient responses were heavily skewed towards markings of 10 = *very satisfied* (see Figure 5). While there is the potential that survey respondents may have been influenced by an extreme response style, where there is a tendency to answer on the extreme ends of a scale (Zijlstra et al. 2011), it can also be assumed that the results may mean that the patients are simply very satisfied with the telemedicine care they received.

Figure 5

Histogram of Shared Decision-Making



Results for Overall Patient Satisfaction (RQ2)

A simple linear regression analysis was conducted to evaluate the prediction of overall patient satisfaction with the healthcare system from effective provider communication scores. The predictor variable was effective provider communication, and the outcome variable was overall patient satisfaction. Preliminary analyses were

conducted to assess the assumptions of linearity, independence of observations, outliers, normality, and homoscedasticity. The assumptions for linearity and independence of observations were met. The assumptions for outliers, normality, and homoscedasticity were not met. Although outliers were found, I decided to keep the outliers in the data. Table 7 shows the descriptive statistics for overall patient satisfaction and effective provider communication.

Table 7

Descriptive Statistics for RQ2, Overall Patient Satisfaction and Effective Provider Communication

Measure	*N*	*M*	*SD*
Overall patient satisfaction	3602	37.14	4.97
Effective provider communication	3602	29.06	2.87

Table 8 shows the results for the simple linear analysis for effective provider communication and overall patient satisfaction.

Table 8

Simple Linear Regression Analysis for Overall Patient Satisfaction

Measure	B	95% CI	R^2	F	*p*
Effective provider communication	1.05	[1.01, 1.10]	0.37	2096.32	.000

Note. CI = confidence interval.

The results of the simple linear regression analysis revealed a statistically significant association between effective provider communication and overall patient satisfaction, $F(1, 3600) = 2, 096.32$, $p < .001$, $R^2 = .37$. The *p*-value results (<.001), which were below the selected threshold value of 0.05, reflect that the independent variable, effective provider communication, had a statistically significant effect on the dependent

variable, overall patient satisfaction. Therefore, the null hypothesis was rejected, and the alternative hypothesis was accepted for overall patient satisfaction.

The regression coefficients indicated a significant and strongly positive association between effective provider communication scores and overall patient satisfaction. The regression coefficients: B=1.05, 95% C.I. [1.01, 1.10] associated with the effective provider communication scores suggests that with each additional unit increase in the effective provider communication score, the overall patient satisfaction score increased by approximately 1.05 units. The R^2 value of 0.37 associated with the regression model suggests that effective provider communication accounts for 37% of the variance in overall patient satisfaction (see Appendix C, Table 2). This means that 63% of the variance in overall patient satisfaction cannot be explained by effective provider communication alone. The confidence interval associated with the regression analysis does not contain 0, which means the null hypothesis, *there is no statistically significant association between effective provider communication overall patient satisfaction using telemedicine for older patients in Dallas–Fort Worth, Texas in 2021*, can be rejected.

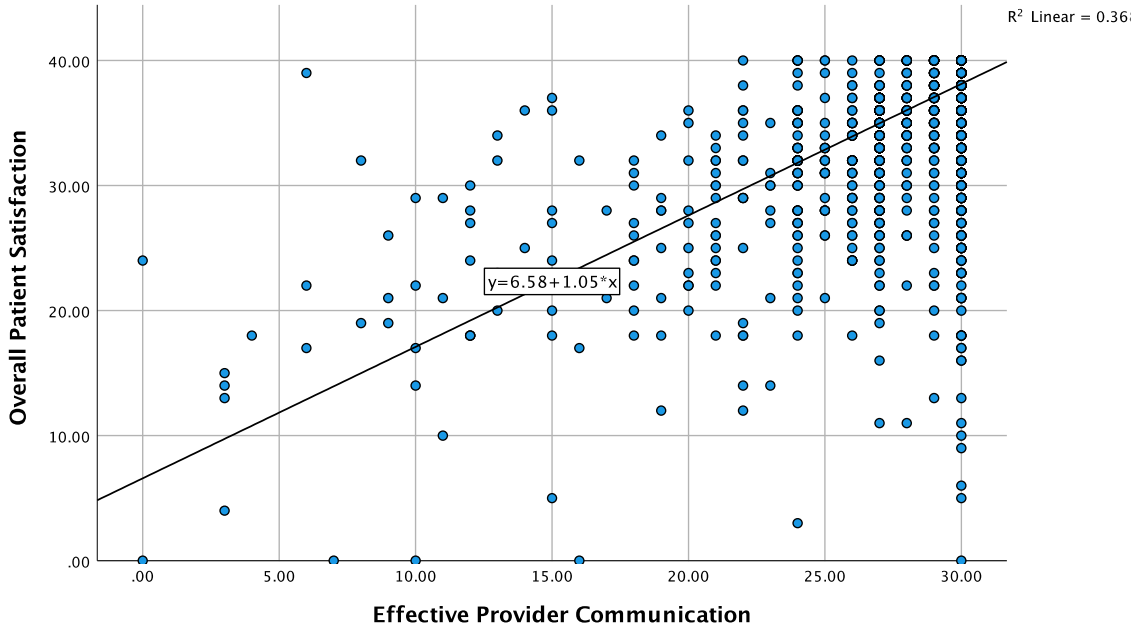
Prior to conducting the analyses, the assumptions for the linear regression were checked. The assumptions for linearity and independence of observations were met. The assumptions for outliers, normality, and homoscedasticity were not met.

For the assumption of linearity, as shown in Figure 6, a scatterplot of overall patient satisfaction versus effective provider communication with a best fit linear line was plotted. Visual inspection of these two plots indicated a linear relationship between the variables, and the assumption was met. The two variables are linearly related, such that as

the effective provider communication scores increase, overall patient satisfaction increases as shown in the scatter plot in Figure 6. The regression equation for predicting overall patient satisfaction was y = 6.58 + 1.05 (effective provider communication). The 95% confidence interval for the slope, 1.01 to 1.10, did not contain the value of zero, therefore, effective provider communication was significantly related to overall patient satisfaction.

Figure 6

Simple Scatterplot of Overall Patient Satisfaction versus Effective Provider Communication



There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.85 (see Appendix C, Table C2), which is within the acceptable range (1.5 to 2.5). Therefore, the assumption of independence of residuals was met.

The assumption for outliers was not met. According to Zijlstra, et al. (2011), the presence of outliers in statistical analysis may bias results from statistical analysis, which may lead to the wrong conclusions. Although outliers were found, I determined to keep the outliers in the data. The initial assessment for outliers yielded 84 outliers. The decision was made to keep the outliers as it was assumed that this was the nature of the data. I also assumed that the responses represented the true nature of the patient responses. With the large sample size of 4,770 patients, the decision was to keep the outliers in the data; even if the outliers were removed, there would still be over 3,000 patient responses to evaluate. Casson and Farmer (2014) posit that unless there is a strong reason for concluding that outliers represent errors in the data, the data should be included.

The assumption for normality was assessed using a normal probability plot. Residuals were not normally distributed along the diagonal line as assessed by visual inspection of the normal probability plot (see Figure 7). The assumption of homoscedasticity was not met, as assessed by a visual inspection of a plot of standardized residuals versus standardized predicted values (see Figure 8). If the assumption of normality is marked as violated, one recommendation is to transform the independent variable to shift the error residuals to normality. If accomplished however, this may result in the relationship between the two variables no longer being linear, which may also require the independent variable to also be transformed. I determined to maintain the data without transformation as it reflected the true responses of the patients, and transformation could alter the data.

Figure 7

Normal P-Plot for Overall Patient Satisfaction

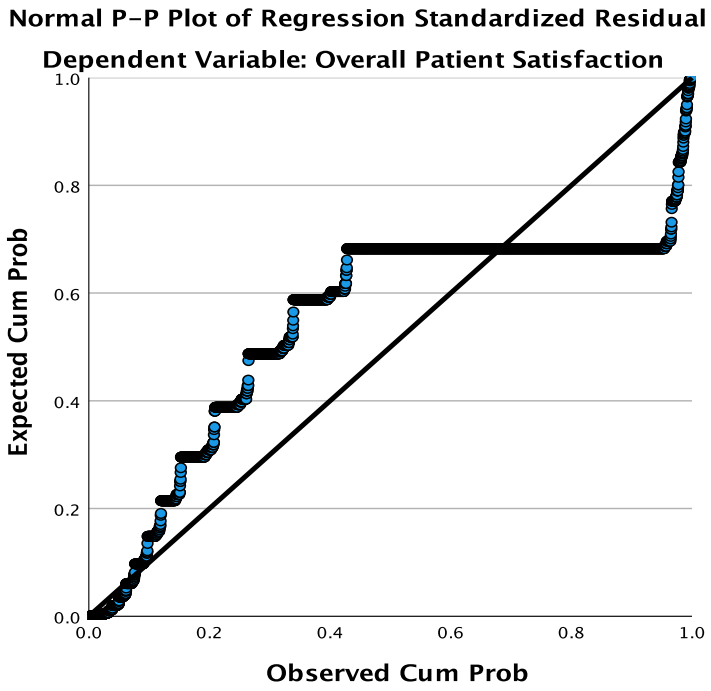
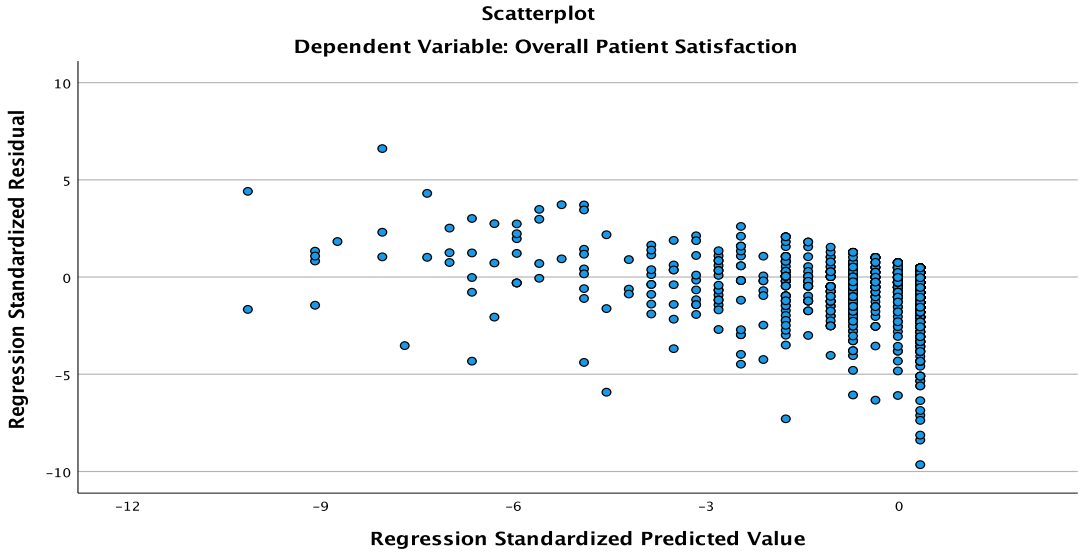


Figure 8

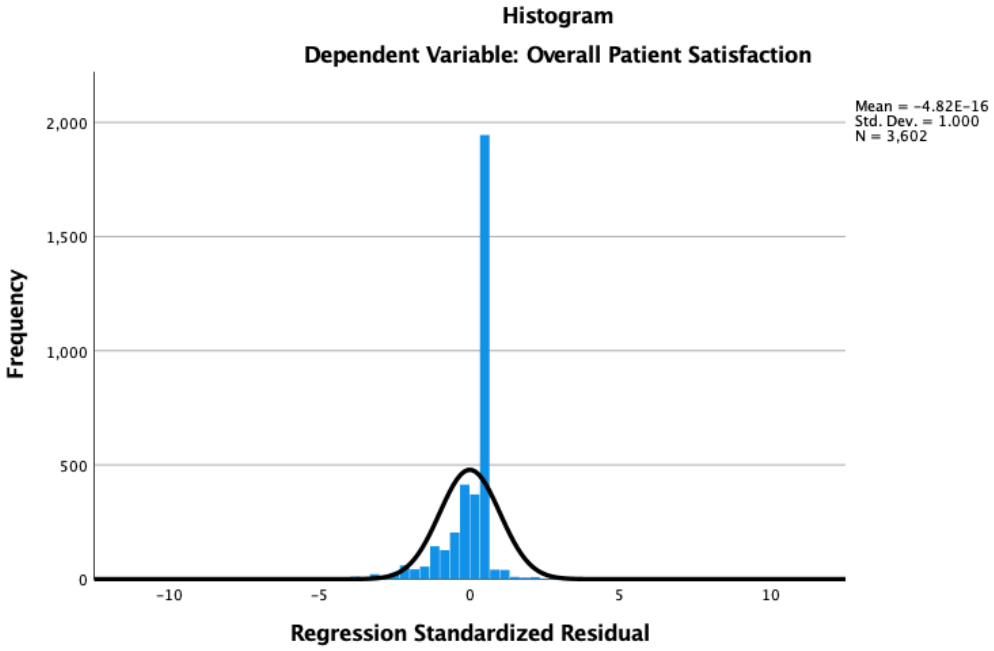
Scatterplot of the Residuals for Overall Patient Satisfaction



Patient responses were heavily skewed towards markings of 10 = *very satisfied* (see Figure 9). While there is the potential that survey respondents may have been influenced by an extreme response style, where there's a tendency to answer on the extreme ends of a scale (Zijlstra et al. 2011), it can also be assumed that the results may mean that the patients are simply very satisfied with the telemedicine care they received.

Figure 9

Histogram of Overall Patient Satisfaction



Summary

This analysis supports that a linear relationship existed between effective provider communication and both shared decision-making and overall patient satisfaction. While the results yielded a statistically significant result, the assumptions for outliers, normality, and homoscedasticity were violated; therefore, the recommendation is that the results should be judged with caution. Due to these violations, I cannot definitively reject the

null hypotheses, and accept the alternative hypotheses for shared decision-making and overall patient satisfaction using the statistical analysis test of simple linear regression. I also cannot definitively state that shared decision-making and overall patient satisfaction analyses indicated that effective provider communication scores could predict the improvement of shared decision-making, and overall patient satisfaction.

Comprehending how effective provider communication scores relate to hospital quality measures can benefit any healthcare system. Utilizing the findings from this study, healthcare administrators, providers, and health educators can execute informed policies to promote higher patient satisfaction and hospital quality outcomes. A discussion on the interpretation of findings, limitations of the study, recommendations for future research, implications for professional practice and social change are presented in Section 4.

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

This study used simple linear regression analyses to examine the relationship between effective provider communication, shared decision-making, and overall patient satisfaction with the healthcare system among older patients aged 65 years and older. Data were collected from all patients who responded to the survey regarding their experiences with virtual healthcare provided by the healthcare system. The data for this research were derived from responses collected by an external vendor that sent surveys via e-mail or postal mail to the patients on the healthcare system's behalf. Feedback was solicited from patients who received outpatient primary care using video visits. Survey results were recorded for patients who returned the survey to the healthcare system between January 2021 and December 2021. The findings from the study may inform healthcare administrators, providers, and health educators with data to support the improvement of effective provider communication in healthcare delivery for older patients using telemedicine.

The results from the shared decision-making analysis and overall patient satisfaction analyses showed that effective provider communication had a strongly positive relationship to both shared decision-making and overall patient satisfaction.

Interpretation of Findings

Effective provider communication in healthcare is needed to support the provision of quality healthcare to an increasingly aging population. Researchers suggest that effective provider communication in healthcare promotes the provision of patient-centered care where healthcare providers relay simple explanations to patients, avoid

complicated clinical jargon, take sufficient time to explain health issues, and ensure that patients understand the instructions given (Platonova et al., 2019). With an aging population and the increased use of technology in healthcare, healthcare organizations and professionals can leverage effective provider communication in telemedicine to improve the quality of healthcare to meet the needs of older patients.

Effective provider communication has been linked to many benefits including higher patient satisfaction (Kumah, 2019). Healthcare has traditionally been provided through face-to-face means between a provider and a patient. The coronavirus disease 2019 (COVID-19) accelerated the need to rapidly adapt to the changing landscape of healthcare to protect both patients and healthcare workers, necessitating a transition to incorporate telemedicine (Hoffman, 2020).

Effective provider communication is a mechanism in healthcare delivery to improve quality of care; however, little is known about how satisfied older patients are with provider communication using telemedicine in primary care settings. The results of this research showed that effective provider communication had a strongly positive relationship to both shared decision-making and overall patient satisfaction. The findings support Mehra and Mishra (2021), who found that provider communication was essential for patients' satisfaction, and that overall patient satisfaction with healthcare can be significantly improved when physicians are well trained in communication skills. The study also supported findings by Jiang (2020) who concluded that patient-centered communication heightened patients' involvement and participation in their treatment and

decision making. This translated to positive values such as increased patient adherence to treatment and improved health outcomes.

Identifying how effective provider communication translates into quality measures may contribute to optimizing patient care. This improvement yields improvements in patient involvement in their treatment (Jiang, 2020). The results of this study support the findings of past researchers and confirmed that effective provider communication works effectively together with hospital quality measures, such as satisfaction with shared decision-making and overall patient satisfaction to improve the overall quality of care. Identifying whether effective provider communication translates into quality measures might contribute to improving patient care for older adults using telemedicine.

The study used Donabedian's lasting framework for healthcare quality, using the structure, process, and outcome components to demonstrate the impact on hospital healthcare quality. In this framework, good structure drives good processes, when then drive good outcomes. The results of the study supported Donabedian's framework, which reflects that effective provider communication has a positive impact on shared decision-making as well as a positive impact on overall patient satisfaction. The study confirmed the link between the three components of structure, process, and outcome from the framework: The structural component (effective provider communication), influences the process (shared decision-making), which in turn, drives the outcome (overall patient satisfaction). As the study showed that effective provider communication has a positive impact on shared decision-making and overall patient satisfaction, the study confirms the

findings by Platonova et al. (2019) who noted that patients were dissatisfied with providers who did not listen to them, interrupted or ignored them, and were dismissive. Additional dissatisfaction was associated with providers who were rushing, did not appear interested, or left patients feeling as if they did not have enough time to ask questions or share their stories.

For the shared decision-making analysis, the results validated the structural component of Donabedian's lasting framework, in that, higher structural scores (effective provider communication) yielded higher process scores (shared decision-making). The shared decision-making analysis showed a strong amount of variance (86%) of the variability in shared decision-making) can be explained by the linear relationship with effective provider communication. As a result, effective provider communication scores can be used to predict improvements in shared decision-making scores. The findings support Pel-Littel et al. (2021), who found that poor interpersonal skills of health professionals can hamper shared decision-making. However, shared decision-making is facilitated when patients can share information about their priorities, values, and preferences. Additionally, good communication skills are required by providers, to develop an individualized approach for patient care.

The strong relationship between effective provider communication and shared decision-making suggests that researchers should continue to study what other aspects of provider communication may impact shared decision-making.

As with the shared decision-making analysis, the results for overall patient satisfaction also yielded a strong amount of variance (37% of the variance in overall

patient satisfaction) could be explained by the linear relationship with effective provider communication. The results indicated that effective provider communication could predict improvements of overall patient satisfaction. The results indicated that higher effective provider communication scores had a positive impact on shared decision-making and overall patient satisfaction. Similarly, Moslehpour et al. (2022) found that many factors positively impact satisfaction which includes the amount of time spent with the patients, verbal, and nonverbal indirect interpersonal communication, and understanding the demands of patients. It is important for healthcare providers to ensure patients are heard, kept informed, and provided ample time during their healthcare encounter. Additionally, information should be presented in a manner that is non-technical, which fosters patients' understanding of their medical condition (Kumah, 2019).

Overall, the results of the study support current literature, which finds that higher satisfaction with the provider results in overall patient satisfaction. While the results suggested that higher effective provider communication scores had a positive effect on both shared decision-making and overall patient satisfaction, researchers should judge the results with caution due to the assumptions that were violated. Potential contributions that might advance practice and/or policy might involve targeted health policies for older patients using telemedicine involving provider communication skills and shared decision-making during video visits. Patient satisfaction data can also support the utilization of video visits as a feasible alternative to traditional in-person visits (Ramaswamy et al.,

2020). This research might also benefit healthcare practices and procedures for application during a future public health emergency or crisis (Stachteas et al., 2022).

Limitations of the Study

There were several limitations to the study. The research was conducted using data from primary care outpatient clinics from a large healthcare system in Dallas–Fort Worth, Texas, which is a large metropolitan area. The research did not factor in whether patients had chronic illnesses, comorbidities, or other health challenges and/or limitations such as cognitive, sensory, or motor problems. Additionally, data were not reported on providers to gauge their opinions on the use of telemedicine as this would more fully inform patient–provider communication input within the healthcare setting. The dataset was limited to primary care clinics, and to older patients aged 65 years and older.

To reduce the threat of external validity, I selected a large enough sample size from the population in the data. The participant selection of all primary care clinics within the healthcare system in Dallas–Fort Worth was applied; however, the respondents were limited to adult patients aged 65 years and older. Additionally, the research excluded any specialty or pediatric services, and in-person patient visits.

Maturation is a threat that might impact the internal validity of the research due to the amount of time that may have elapsed between when virtual healthcare was rendered and when the patients completed the survey. Patient responses may not be as accurate or reflective of the patients' actual experiences if too much time had elapsed between the care being rendered and survey completion due to diminished recall or memory. This

prevented me from concluding with certainty that the patients' overall satisfaction with virtual healthcare is accurately reflected in the survey.

Recommendations

Recommendations based on the results of this research are for researchers to continue to explore the impact of effective provider communication using telemedicine on quality outcome measures. This study was limited to older patients aged 65 years and older. The study can expand to other age categories. The study did not factor in health challenges or limitations. The study can expand to specialty services. And expansion even within the older population could be to study the impact of communication using telemedicine in patients with comorbidities, health challenges, or identified challenges with use of technology. By diversifying the patient populations, healthcare administrators may be better poised to identify more targeted interventions to benefit overall hospital quality outcomes.

Implications for Professional Practice and Social Change

With an increasingly aging population, healthcare administrators must ensure they are reviewing the delivery of healthcare to the older population. The shift to the increasing use of telehealth after the COVID-19 pandemic suggests that this method of healthcare delivery will continue to be utilized. Older patients may experience greater challenges using telemedicine, than younger generations due to the digital divide. Therefore, healthcare administrators an invest in ensuring providers are trained to recognize this unique population and employ communication methods that enhance the quality of their healthcare such as ensuring they provide adequate time to patients,

communicate in language that is easy to understand, and promote patient participation in decision-making about health and treatment.

The results of this study inform healthcare administrators, healthcare providers, and health educators on the positive impact of effective provider communication on hospital healthcare quality outcomes such as shared decision-making and overall patient satisfaction. Comprehending how effective provider communication supports the achievement of improved healthcare system quality measures informs methods that are geared towards promoting and improving effective provider communication, ultimately benefitting patients through increased satisfaction with shared decision-making and overall patient satisfaction with telemedicine. Telemedicine has the potential to increase access to care, improve the quality of care provided, and reduce health care costs (Kane & Gillis, 2018). Jiang (2020) also noted that leveraging communication technologies can potentially reduce the inconvenience associated with travel for medical visits.

Conclusion

The purpose of this quantitative research was to examine the association between effective provider communication, shared decision-making, and overall patient satisfaction for older patients aged 65 years and older who were treated with telemedicine. With an increasingly aging population, healthcare organizations and providers must ensure that telemedicine in primary care meets the needs of older patients. While the results showed a statistically significant association between effective provider communication, shared decision-making, and overall patient satisfaction, the assumptions for normality, homoscedasticity, outliers were violated.

The results showed that there was a significant relationship between effective provider communication and shared decision-making ($p < .001$) as well as between effective provider communication and overall patient satisfaction ($p < .001$). The direction of the relationship was positive, meaning that increased effective provider communication is associated with increased shared decision-making and vice versa. The results of the simple linear regression analyses showed that effective provider communication had a positive relationship to both shared decision-making and overall patient satisfaction. With these findings, researchers, hospital administrators, health educators can be better informed on the impact of effective provider communication on hospital quality measures.

The results of this research are in line with those of the research conducted by (Granja et al., 2018), who noted that care provided via telemedicine can improve the healthcare quality. The results of this study indicated that the effective provider communication is a predictor of healthcare quality outcome measures (i.e., patient satisfaction with shared decision-making and overall patient satisfaction with the healthcare system).

The findings from this study reflected a positive association between effective provider communication, shared decision-making, and overall patient satisfaction. Using Donabedian's lasting framework for healthcare quality, the framework of structure, process, and outcome is supported. This study informs healthcare administrators, providers, and health educators on the positive association of effective provider communication on hospital quality measures. These leaders can make informed

decisions, and implement targeted interventions to increase effective provider communication to drive positive impacts on hospital quality measures such as shared decision-making and overall patient satisfaction. There are several benefits to using telemedicine to include reduction of healthcare costs, reduced travel time for patients, and overall improvement in healthcare and health outcomes (Hyder & Razzak, 2020). Advancements in telemedicine may also lead to better preparedness in dealing with future pandemics as the infrastructure and use will already be in place in the healthcare system.

Mehra and Mishra (2021) studied the relationship between provider communication and patient satisfaction. They found that patients' satisfaction as well as the recommendation of the physician can be impacted by physician communication. The authors highlighted that when patients are seeking to find a physician, they lean on the recommendations of their relatives or friends, and how patients perceive the communication with their provider has an impact on this recommendation. A higher level of satisfaction with the provider is achieved when the provider communicates in a manner that conveys empathy, understanding, and so forth.

Manzoor et al. (2019) investigated patient satisfaction with healthcare services and noted that physician behavior is a key component of patient satisfaction. When patients interact with their provider, the expectation is for the provider to be technically competent, and provide sufficient information about their condition.

Moslehpour et al. (2022) examined several articles to identify determinants of patient satisfaction. They found that many factors positively impact satisfaction which

includes the amount of time spent with the patients, verbal, and nonverbal indirect interpersonal communication, and understanding the demands of patients.

This study adds to the body of research by recognizing that effective provider communication is a predictor of patient satisfaction with shared decision-making as well as a predictor of overall patient satisfaction in healthcare. Ultimately, improving patient care via patient-centered communication can lead to increased satisfaction, increased patient participation in decisions about their health and treatment, and increased adherence to treatment (Jiang, 2020). While the results indicated that effective provider communication had a strongly positive relationship to both shared decision-making and overall patient satisfaction, researchers should judge the results with caution as several assumptions for the linear regression analyses were violated.

The study may contribute to positive social change by arming healthcare administrators, providers, and health educators with knowledge to make targeted interventions regarding provider communication. This may help healthcare professionals determine what interventions are required in telemedicine to meet the needs of older patients, which can help improve overall patient satisfaction as well as healthcare quality for the older population. Additionally, this study can support the use of telemedicine as a viable option for healthcare delivery.

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Appendix A: Demographics

Table A1

Frequency Distribution for Sex

Sex	Frequency	Percent
Female	2,747	57.6
Male	2,023	42.4

Table A2

Descriptive Statistics for Age

N	Min	Max	*M*	*SD*
4,770	65	95	73.71	6.03

Table A3

Frequency Distribution for Race

Race	Frequency	Percent
American Indian/Alaska Native	4	.1
Asian	72	1.5
Black or African American	178	3.7
Other/Unknown	811	17.0
White	3,705	77.7

Table A4

Frequency Distribution for Ethnicity

Ethnicity	Frequency	Percent
Hispanic or Latino	137	2.9
Not Hispanic or Latino	3,829	80.3
Unknown	804	16.9

Table A5

Frequency Distribution for Provider Type

Provider type	Frequency	Percent
Nurse practitioner	318	6.7
Physician (MD, PhD, etc.)	3,975	83.3
Physician assistant	477	10.0

Appendix B: Results of Shared Decision-Making

Table B1

Simple Linear Regression Residuals Statistics for Shared Decision-Making

	Min	Max	*M*	*SD*	*N*
Predicted value	-.3256	19.9407	19.3241	1.91945	4048
Residual	-8.91411	12.21908	.00000	.78035	4048
Standard predicted value	-10.237	.321	.000	1.000	4048
Standard residual	-11.422	15.657	.000	1.000	4048

Note. Dependent Variable: Shared Decision-Making

Table B2

Simple Linear Regression Model Summary for Shared Decision-Making

Model	*R*	R^2	Adjusted R^2	*SE* of the Estimate	Durbin-Watson
1	.926	.858	.858	.78044	1.97

Note. Predictors: (Constant), Effective Provider Communication. Dependent Variable: Shared Decision-Making.

Table B3

Simple Linear Regression Correlations for Shared Decision-Making

		Shared decision-making	Effective provider communication
Pearson correlation	Shared decision-making	1.000	.926
	Effective provider communication	.926	1.000
Sig. (1-tailed)	Shared decision-making	.	.000
	Effective provider communication	.000	.
N	Shared decision-making	4048	4048
	Effective provider communication	4048	4048

Table B4

Simple Linear Regression ANOVA for Shared Decision-Making

	Model	*SS*	*df*	*MS*	*F*	Sig.
1	Regression	14910.38	1	14910.38	24479.63	.000
	Residual	2464.39	4046	.609		
	Total	17374.77	4047			

Note. Dependent Variable: Shared Decision-Making. Predictors: (Constant), Effective Provider Communication.

Appendix C: Results of Overall Patient Satisfaction

Table C1

Simple Linear Regression Residuals Statistics for Overall Patient Satisfaction

	Min	Max	*M*	*SD*	*N*
Predicted value	6.5835	38.1245	37.1383	3.01479	3602
Residual	-38.12453	26.10830	.00000	3.95075	3602
Standard predicted value	-10.135	.327	.000	1.000	3602
Standard residual	-9.649	6.608	.000	1.000	3602

Note. Dependent Variable: Overall Patient Satisfaction.

Table C2

Simple Linear Regression Model Summary for Overall Patient Satisfaction

Model	*R*	R^2	Adjusted R^2	*SE* of the estimate	Durbin-Watson
1	.607	.368	.368	3.95130	1.85

Note. Predictors: (Constant), Effective Provider Communication. Dependent Variable: Overall Patient Satisfaction.

Table C3

Simple Linear Regression Correlations for Overall Patient Satisfaction

		Overall patient satisfaction	Effective provider communication
Pearson correlation	Overall patient satisfaction	1.000	.607
	Effective provider communication	.607	1.000
Sig. (1-tailed)	Overall patient satisfaction	.	.000
	Effective provider communication	.000	.
N	Overall patient satisfaction	3602	3602
	Effective provider communication	3602	3602

Table C4

Simple Linear Regression ANOVA for Overall Patient Satisfaction

	Model	*SS*	*df*	*MS*	*F*	Sig.
1	Regression	32729.273	1	32729.273	2096.318	.000
	Residual	56205.875	3600	15.613		
	Total	88935.148	3601			

Note. Dependent Variable: Overall Patient Satisfaction. Predictors: (Constant), Effective Provider Communication.