A CONTENT ANALYSIS STUDY TO DETERMINE:

TELEMEDICINE: THE FUTURE OF HEALTH CARE DELIVERY SYSTEMS?

By

Melissa D. Costelloe

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A Content Analysis Study

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Telemedicine: The Future of Health Care Delivery Systems?

By Melissa D. Costelloe

This thesis has been accepted on behalf of the Department of Public Policy & Administration by their supervisory committee:

Jinping Sun

Jinping Sun, Ph.D.

5/27/2014

Date

BJ Moore

BJ Moore, Ph.D.

May 27, 2014

Date

Dedication

To all those who said I was never smart enough and to those who have always encouraged me. This journey could not have been successful without the support of my husband and my parents, I love you.

Executive Summary

Healthcare in rural locations in America continues to draw disparities due to a myriad of issues including access issues, lack of physicians, and lack of facilities in rural locations. It is a pivotal time in the healthcare industry to ensure that these health disparities do not continue. According to U.S. census data, approximately 21% of the U.S. population lives in rural or medically undeserved locations. Physician shortage, poor access to care, and rural–urban disparities in availability of subspecialty care are important issues that require the attention of health care providers and health policy makers (Raza, Joshi, Schapira, & Agha, 2009). As advances in technology have come to light, what are the impacts of Telemedicine in rural communities in America? This research paper will attempt to answer this hypothesis. The methods used for this research paper are non-experimental research design based on qualitative information using a content analysis method. The limitations to this research project include time available to complete the study. The results based on this research include confirmation that Telemedicine provides more timely access for populations living in both rural and urban locations in America. Other results include better health outcomes and comfort for families and caregivers who can travel less due to Telemedicine access. The three recommendations include healthcare providers creating mandatory Telemedicine access; additional training and education to those who help deliver Telemedicine and create grants or subsidies for healthcare providers to offset startup costs.

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Chapter 1

Introduction

Background of the Problem

The health care delivery system of the United States continues to be confronted with many problems. One of those problems is access to healthcare in all living areas, including metropolitan, inner city, and rural locations. This project will focus towards healthcare access in rural locations. The term "access" in the medical field is defined as: ability of patients to see their health care providers in a timely fashion (Taber's, 2014). Potentially, millions of Americans suffer from inadequate access to health care. About 44 million people in this country have no health insurance, and another 38 million have inadequate health insurance. This means that nearly one-third of Americans face each day without the security of knowing that, if and when they need it, medical care is available to them and their families (Public Broadcast System, 2000).

In an attempt to curb this issue, the use of Telemedicine has increased and can potentially close the healthcare access gap. On the smallest scale, patients are left wondering how they are going to get to their weekly medical appointments when they live miles away from a medical epicenter. On a larger scale, the rural hospital who needs a specialized physician consult could take two days for that physician to arrive for a face to face appointment which faces a daunting task for patients and health care groups. In an attempt to curb this issue the use of Telemedicine has increased and can be a tool to potentially close the healthcare access gap. Telemedicine is the use of medical information exchanged from one site to another via electronic communications to improve a patient's clinical health status. Telemedicine includes a growing

variety of applications and services using two-way video, email, smart phones, wireless tools and other forms of telecommunications technology (American Telemedicine Association, 2012).

According to U.S. census data, approximately 21% of the U.S. population lives in rural or medically undeserved localities. Physician shortage, poor access to care, and rural–urban disparities in availability of subspecialty care are important issues that require the attention of health care providers and health policy makers (Raza, Joshi, Schapira, & Agha, 2009). Poor access to rural healthcare takes place on a myriad of levels which include physician office visits, hospitalization, urgent and emergency departments, and even within behavior health services. The United States Department of Agriculture Economic Research Service (2013) speaks to rural locations as: study conditions in nonmetropolitan (non-metro) areas, defined on the basis of counties. Counties are the standard building block for collecting economic data and for conducting research to track and explain regional population and economic trends. Non-metro counties include some combination of: open countryside, rural towns (places with fewer than 2,500 people) and urban areas with populations ranging from 2,500 to 49,000. Imagine living in a rural city where the nearest specialized physician that you need to see is one and a half hours away and 100 plus miles by car. You must make the trip twice a month to ensure your care is at its best. That turns into 400 plus miles a month and over four hours in the car, which can not he healthy for any medical condition. If a Telemedicine hub was available, this patient would have to go thru minimal travel to receive the same physician treatment they are receiving hours away.

Telemedicine is not a new frontier. This type of healthcare delivery has been around for half a century, but the use of Telemedicine has grown tremendously over the past ten years, and is now part of day to day operations in health care organizations, even on a local level. One such example is Kern Medical Center, Kern County's teaching hospital, introduced Telemedicine

back in 2012 due to a large majority of cities within the county in rural settings, the Kern County Board of Supervisors approved a plan to use remote high-resolution video and audio technology at Kern Medical Center to bring the expertise of distant specialists into examination rooms at KMC and elsewhere. Telemedicine, can transport the eyes and ears of specialists into local hospitals or remote clinics, without bringing them physically into Kern County. Approved by a unanimous vote, the agreement with the California Telehealth Network will provide a lot of privacy-protected, medical-quality broadband connectivity at a low cost thanks to some grant funding, said former KMC Chief Executive Officer Paul Hensler (Mayer, 2012). Another potential use of Telemedicine involves the possibility of providing health care to uninsured and impoverished Americans. Telemedicine could potentially provide an affordable means to diagnose and treat common conditions, and identify more serious symptoms. For those who already have Internet service at home, many services could be provided without leaving the house. For those without Internet service, a public medical facility could provide the needed service, without long waiting times or a staff of doctors (Tul. J. Tech. & Intell. Prop. 307). At the root of this issue is the inadequate access to doctors, hospitals, and other medical services that those who live in more populous area have an easier time obtaining verses those who live in rural areas. While one fifth of US residents live in rural communities, these rural residents are faced with significant inequities in access to health care compared with those living in urban and suburban communities. Residents of rural communities have inferior health care status in several measures of health and are faced with a relative physician shortage, with only 9% of our nation's physicians working in these communities (Nesbitt, Marcin, Daschbach, & Cole, 2005).

Statement of the Problem

As Telemedicine begins to become more main stream in America, the clear fact is areas in rural America continue to suffer from poor health care access. What are the impacts of Telemedicine in rural communities in America?

Methods

The research for this project will be a qualitative context research paper to examine the impacts of Telemedicine in rural locations in America. The researcher will research the literature and other available resources to discover the impacts of Telemedicine in rural locations in America. The type of research will be based on the following factors of cost effectiveness, quality, and access to test the hypothesis as stated above.

Importance of the Study

The importance of this study is multifaceted. Although there may not be direct correlation from this research project to implementation of Telemedicine, it is important for current and future health care workers, educators, and students to move in a forward thinking direction and attempt to focus on the health care disparities in America. It is apparent that the current health care delivery models are not working and Telemedicine may be able to help correct this issue.

Chapter 2

Literature Review

This section will discuss the past, present, and future of Telemedicine. The initial part will review the literature regarding Telemedicine to include access, cost effectiveness, and quality.

History of Telemedicine

Imagine bypassing the coughs, sniffles, and germs of a doctor's office and being able to have the same interaction with nurses and physicians from the comfort of your home. This type of healthcare delivery system is known as Telemedicine. The American Telemedicine Association (2012) (ATA) defines Telemedicine as the use of medical information exchanged from one site to another via electronic communications to improve a patient's clinical health status. Telemedicine includes a growing variety of applications and services using two-way video, email, smart phones, wireless tools and other forms of telecommunications technology. The term and idea of Telemedicine is becoming better known, not only to healthcare companies, but by healthcare consumers alike. Telemedicine is utilized for treatment of a myriad of healthcare platforms, including diabetes, dermatology, medication, heart, education, monitoring, and wound management. The two most basic items needed for Telemedicine to work between a patient and a medical practitioner is a computer based device (laptop, cellular phone, personal computer) and an internet connection. The American Association for Telemedicine (2012) defines what delivery mechanisms can be used:

- **Networked programs** link tertiary care hospitals and clinics with outlying clinics and community health centers in rural or suburban areas. The links may use dedicated high-speed lines or the Internet for telecommunication links between sites. ATA estimates the

number of existing telemedicine networks in the United States at roughly 200 providing connectivity to over 3,000 sites.

- **Point-to-point connections** using private high speed networks are used by hospitals and clinics that deliver services directly or outsource specialty services to independent medical service providers. Such outsourced services include radiology, stroke assessment, mental health and intensive care services.

- **Monitoring center links** are used for cardiac, pulmonary or fetal monitoring, home care and related services that provide care to patients in the home. Often normal land-line or wireless connections are used to communicate directly between the patient and the center although some systems use the Internet.

- **Web-based e-health patient service sites** provide direct consumer outreach and services over the Internet. Under telemedicine, these include those sites that provide direct patient care.

In summary, telemedicine is the use of medical information exchanged from one site to another via electronic communications to improve the status of a patient's health. Interactive videoconferencing allows a physician and a patient to communicate with each other from distant sites while simultaneously viewing and listening to each other (Rajan, Seidmann, & Dorsey, 2013). Thus, telemedicine helps bring medical specialists to patients who would not otherwise have access to such high-quality, disease-specific care, including to your local grocery store – more on that to come later.

Right now and for many previous years, health care in America is not, and has not been effective. There have been many instances over the past few decades that one could easily point out where health care in America is really an abomination for the most developed country in the

world. What could become more effective within health care is stepping outside the box and beginning to utilize programs such as Telemedicine to help delivery healthcare that is accessible, cost effective and quality.

Access to Telemedicine

The partnership of pairing telemedicine with those who need better access to healthcare is a must as rural residents are at a disadvantage when it comes to getting proper healthcare. Rural residents are 10-20% less likely than urban residents to receive regular medical check-ups and preventive screening. In general, they are less likely than urban residents to have visited a health professional in the past year (Kaiser Family Foundation, 2003). If there is a percent of the population who are not getting regular medical check-ups, imagine the percentage of the population who are bypassing more important check-ups as well. One of the most transcending ideas with Telemedicine is that it can provide healthcare access to a larger group of patients. Those patients could include persons living in rural locations, those who are homebound, and even those with a different psychological and mental health perspective – those who are unwilling to leave their residence such as mothers, and young people. The drive to and from a physician's office, clinic, or hospital could potentially be a drive that takes hours, on top of the medical visit itself. If you live in rural Alaska, where the basic items of water and food are a hot commodity, and you have been diagnosed with diabetes, getting care and guidance from a qualified healthcare provider could be difficult.

However, with Telemedicine, you can start to incorporate healthcare in your daily life. In attesting to diabetes care in rural areas, Toledo, Triola, Ruppert, & Siminerio (2012) state that the emerging field of telemedicine has great potential to mitigate this problem by obviating geographical barriers to care. From working in the health care field, this is an issue here locally

in Kern County where physician attraction and attainment will always be an issue with bringing in the best physicians to provide care. Such healthcare providers like Kaiser Permanente can utilize Telemedicine by using these specialty providers who do not live in the area. Advances in videoconferencing now make it possible to attend diabetes expertise to rural communities, thus helping patients get the proper care they need. This is an obvious strength with Telemedicine that cannot be duplicated currently by other means of health care delivery systems. In this specific setting, the group asked 25 individuals to participate in the telemedicine consultation, all with Type II Diabetes, in the state of Pennsylvania. The mileage range the group used was 95 miles away from a metro area to received Diabetes telemedicine services. The group had a trained RN at the rural site for patient interaction and if any technology issues arose. However, this test group could have easily used a group of participants even closer than 95 miles away.

 In Kern County for instance, we have a large need for medical services in our rural areas, including locations such as the Lake Isabella area, which is only 43 miles away, but a poor two-lane road and a growing older population requires medical services that could potentially be improved with the use of Telemedicine. One of the strengths of this research is that the group involved primary care physicians, seven of them to be exact. For Telemedicine to succeed, it will take buy in from primary care physicians in order to help convince their patients that this can be an effective to piece their medical care. Another strength of this research is that the outcomes across the board were positive, even in the area of no malfunctions with the internet technology.

In addition to pairing traditional medical care services with telemedicine, access to mental health services has also seen an increase with the use of telemedicine. As Neufeld, Case, and Serricchio (2012) state that in 2009, the Indiana Rural Health Association applied for and

received grant funding to improve access to mental health services for rural residents of Indiana. The goal of the project was to increase access to mental health care in rural part of Indiana through forming an information "peer-to-peer" telemedicine network among rural mental health service providers and other healthcare entities. One of the three main pieces that this group narrowed in on included access, quality and cost. Interestingly enough, when this research group speaks about "quality," it is in the context of "the mean time between appointments" – meaning shorter time frames between appointments equaled better quality, instead of focusing on the actual quality of the telemedicine visit. An interesting fact of this research is that according to the billable amount of minutes when you compare the telemedicine visit versus an in person visit, the telemedicine visit had a difference of 25% between the two. This could be positive for insurance companies and bad for physicians who may be expecting to cash in on in person visits. Limitations in this research included most of the patients being seen for medication management services not necessarily for psychological or actual mental health services. The use of telemedicine for mental health services could be a large turning point, not only for individuals battling this disease, but for our society as a whole.

Cost effectiveness

Telemedicine could be used as a cost effective alternate type of care in a current state where healthcare costs continue to skyrocket. In 2007, national health care expenditures in the United States totaled $2.2 trillion or 16% of its gross domestic product, a 14% increase from 2000. This represents an average of more than $7,400 per person (CDC, 2013). One of the most interesting types of Telemedicine that has been developed is concentrated within the realm of intensive care units (ICU). In most cases, the ICU floor in a hospital is easily one of the most critical areas and patients receiving treatment in this level of care tend to cost the most to a

patient, hospital, and insurance provider. According to Kumar, Merchant, and Reynolds (2013),

tele ICU intensivists provide real time services to multiple care centers regardless of their

locations. Tele ICU uses an offsite command center in which a critical care team is connected

with patients in distant ICUs through real time audio, visual, and electronic means. Similar to a

bedside team, offsite tele ICU intensivists require full access to patient data. Tele ICU is capable

of providing real time monitoring of patient instability or any abnormality in laboratory results,

ordering diagnostic tests, making diagnoses and ordering treatment, and implementing

interventions through the control of life support devices. ICU costs decreased between 25

percent and 31 percent during the intervention period, and hospital costs decreased by 12 percent

to 19 percent. This study clearly shows a cost sayings with the implementation of Telemedicine

into an ICU floor. A potential problem with this study is that the group selected 25 articles to

base their initial screening from for the methods section, divided into three categories. Based on

my own research, perhaps 25 articles were too many, thus wasting research time.

Another disease that can be used to demonstrate the ability of Telemedicine to be cost

effective is Parkinson disease. Dorsey et al. (2013) argued the burden of neurological disorders

is increasing, but access to care is limited. Providing specialty care to patients via telemedicine

could help alleviate this growing problem. In this clinical trial, this group used an in home

setting as well as a clinic for patients to receive telemedicine services. The trial period was

seven months and 20 patients took part in the study. The research found the following results:

compared with in-person visits, each telemedicine visit saved participants, on average, 100 miles

of travel and 3 hours of time (Dorsey et al., 2013). If each visit saved 100 miles of travel,

multiplied by 20 participants, which equals a travel savings of over 2,000 miles for a group of 20

individuals who did not have to go through the rigor of showing up for a medical appointment.

Those rigors included having someone take them to the medical appointment due to their condition, the drive from their home to the medical office, the stress of waiting to see your physician while in a room with people who were probably sick. Although the trial does specifically state that Telemedicine visits were cost effective on a monetary basis, I believe this trial was due to the cost savings from patients for travel. It is important to note, however, that at the conclusion of this study, the group came to the following deduction about the study: larger studies are needed to determine whether the clinical benefits are indeed comparable to those of in-person care and whether the results observed are generalizable (Dorsey et al., 2013) which is a limitation of this particular study and Telemedicine in general.

Quality

The third theme within this literature review is quality. Quality of care is defined as the degree to which health care services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (National Center for Biotechnology Information, 1996). As with any new or different avenue introduced into the health care realm, quality concerns arise. One of those reasons could be because a medical practitioner is not physically touching the patient, this lowers the quality of care that they may be receiving. However, as Miller (2009) states that technology enables health care teams to work and communicate better. Since the adoption of Tele-ICU system, they had been able to implement many quality-of-care initiatives in their ICU's and to update their quality-improving protocols much more frequently This intertwining of the technology with clinical quality improvement initiatives makes evaluating the effects of technology more challenging.

The healthcare sector in America has been dealing with a negative image for years. Health care in the United States is not as safe as it should be--and can be. At least 44,000 people, and perhaps as many as 98,000 people, die in hospitals each year (Institute of Medicine, 1999).

Knowing there is available technology could streamline quality of care initiatives. According to

NCBI (1996), clinical effects of telemedicine applications can be measured and compared at

several levels. These dimensions include:

- technical capacity—whether a technology is safe, accurate, and reliable

- diagnostic accuracy—whether a technology contributes to a correct diagnosis

- diagnostic impact—whether a technology provides diagnostic information that is useful
  in making a diagnosis

- therapeutic impact—whether a technology influences patient management or therapy

- patient outcome—whether a technology improves patients' health and well-being

    There is strong and consistent evidence of general satisfaction with telemedicine among

both providers and clients, regardless of whether satisfaction is measured in attitudinal or

behavioral terms, and this evidence is consistent with typical findings from most studies of

satisfaction with health care. There have been no strong indications of feelings of discomfort,

concerns about potential breach of confidentiality, or the impersonality of the medium on the

part of patients, as was feared, according to Bashshur, Reardon, and Shannon (2000).

International Telemedicine

    It appears America may be behind the times when utilizing the efforts of Telemedicine.

Perhaps it is the fear of the unknown, or the fact that we lose the physical face to face interaction

with Telemedicine which may not be as important in other countries. The development of

telemedicine in Europe has resulted from the implementation of collaborative programs

conducted by teaching hospitals. The added value of this new medical practice has generated a

wide variety of exchanges and cooperation links between different structures and health

professionals. European operational programs have been launched with the support of the

European Commission (Lareng, 2000). From the above literature, it appears that countries outside the United States actually work together to create a better environment for their citizens. Surely if more than a handful of European countries can get together to work together, one would think that a handful of states within the same country could work together for the betterment of our citizens. Perhaps one of the reasons Telemedicine is used more in European countries versus the United States, is due to American's capitalist views. American culture is based on supply, demand, individualism and classic liberalism which is grounded on limited government interaction. Healthcare in America has been based on individual companies with minor interference or direction from the government (until the Patient Protection and Affordable Care Act). Health in European countries on the other hand, is government driven.

Downside to Telemedicine

Because the concept and implementation of Telemedicine is still rather new within the United States, there are still large issues that Telemedicine faces if it will succeed. Some of those concerns include the cost of the technology set up, physician and patient attitudes, and ethical issues. Perhaps the biggest obstacle to overcome with Telemedicine in America is we expect the interaction on a personal level. In some instances, we would rather sit in a waiting room full of other sick people to have that interaction with our physicians rather than staying home and getting the same care. Physicians may also have issues transitioning into a role using Telemedicine for a variety of reasons including the same one that patients have and the loss of the face to face interaction.

Another downside to telemedicine is most states require physicians to be licensed as a Medical Doctor (MD) or Doctor of Osteopathic (DO) in the state that they are actually practicing in. If there is a case that needs attention in the state of Nevada, but the only qualified MD is in

Florida, this creates an issue with being able to see and treat the patient via Telemedicine if the physician is not licensed in both states. This issue could be rectified if the medical license one receives in the future becomes valid within each state.

A few more downsides to Telemedicine include the simple fact that if you do not have a webcam and internet access, Telemedicine is of no help to your medical conditions. Along this same line is if there are issues with your internet connect – the connection with your physician may lead to an appointment with poor outcomes. And what happens when the MD on the other end of your webcam has already attempted to help you clear up the rash on your skin and nothing seems to be working. A face to face appointment in the future would be required, so perhaps you could have started with the face to face appointment from the beginning.

Local Services

Telemedicine services can now also be found locally within Kern County. Kaiser Permanente has recently opened a Telemedicine hub within the Walmart store located on Gosford Road. Dubbed the Kaiser Permanente Care Corner, members can check their weight, blood pressure, and even get help diagnosing and treating a number of health conditions, including Asthma, Bronchitis, Diabetes, any many more ailments (Kaiser Permanente Member and Marketing Communications, personal communication, March 2014). Bakersfield Memorial Hospital has also recently bridged the technology gap and introduced what they call "Robotic Telemedicine". The Telemedicine services at Bakersfield Memorial Hospital are specific to their Neurology Department and Stroke Center so that medical treatment can start on patients as soon as symptoms arise, without having to wait for a physician to be there in person. A third local company that has branched out into Telemedicine is The Centennial Group. The Centennial Group is a healthcare and medical practice management company created to provide a full array

of business services to the healthcare industry (2012). The Centennial Group, a full service

Private Payor Organization and medical managing group, sees the expansion of Telemedicine a

niche marketing and customer service platform.

Theory

One theory we can include in this research is Giddens' Structuration Theory.

Lehoux, Sicotte, Denis, Berg, & Lacroix, (2002) employed Giddens' Structuration Theory

(1984) to derive a theory of use framework within which we analyze physicians' views,

communications needs and referral strategies for six specialties; radiology, dermatology,

pulmonary medicine, neurology, cardiology and internal medicine. The group goes on to state

that the theory is linked to analytical tools it offers for studying the processes of institutional

change processes that combine individual and collective actions and reflections, and by which

social practices evolve over time. This theory fits Telemedicine for multiple reasons. The first

being by which social practices evolve over time; Telemedicine has indeed evolved over time

due changes with technology and ideology. 50 years ago physicians were making house calls to

their patients and in today's world, those same patients are getting house calls, just in a different

format. It is clear that Telemedicine is a social practice which has evolved over time. Once used

solely to care for individuals in small town hospitals, Telemedicine has now moved to include

locations at a super center near you.

Chapter 3

Methodology

Purpose of the Evaluation

As Telemedicine becomes more mainstream use for healthcare in America, those living in rural locations in America continue to suffer from inadequate healthcare. The purpose for this research paper is to determine if those living in rural America would benefit from using Telemedicine to create positive healthcare outcomes.

Research Design

This research will use non-experimental research design based on qualitative information by studying literature that is already available to the researcher and using the research design of hermeneutics. The critical hermeneutic tradition holds that in qualitative research, there is only interpretation no matter how vociferously many researchers may argue that the facts speak for themselves. The hermeneutic act of interpretation involves, in its most elemental articulation, making sense of what has been observed in a way that communicate understating. Not only is all research merely an act of interpretation, but, hermeneutics contends, perception itself is an act of interpretation (Denzin & Lincoln, 2008).

Sample Frame

The sample frame will be all available documentation and case studies which includes Telemedicine and rural health care in America. The information used will be gathered from a myriad of sources including electronic, books, journals, healthcare sources, scholarly works, and any other relative type of information available.

Sample Size

The sample size for this research project will be small in size and based on convenience. The researcher will pull any available material that is appropriate to this research project.

Data Collection

The referenced materials for this research project will come from internet sources, books, journals, newspapers, and any other information that is appropriate to use in a project of this scope. The words used for internet searches will include Telemedicine, Rural Health in America, Rural Health, Telehealth, and any other combination to create an adequate search.

Data Analysis

This research will use non-experimental research design based on qualitative information by studying literature that is already available to the researcher. Content analysis is used in many different areas including social sciences and health care. Content analysis is significant for social research because it classifies textual material reducing it to a more relevant, manageable bits of data. Content analysis is a research method that uses a set of procedures to make valid inferences from the text. These interferences are about the senders of the message, the message itself, or the audience of the message. It can be used for many purposes including reflect cultural patterns of groups, institution, or societies (Weber, 1990). Content analysis is divided into two main parts, rational analysis and conceptual analysis. Rational analysis explores the relationships among important concepts present in works you're considering (Chron, 2014) and will be used for this project to draw a correlation between cost effectiveness, access, quality and Telemedicine in rural locations in America to improve health outcomes

Limitations

Some of the limitations to this research project will be lack of time and access to actual Telemedicine care corners where both qualitative and quantitative studies could have been conducted. Other limitations could include the lack of surveys to those living in rural areas

whereas the researcher could have received feedback from those who have used Telemedicine in rural locations have created positive health outcomes.

Ethical Considerations

I have received approval by the CSU Bakersfield Institutional Review Board to conduct this research, which did not involve any human subjects. A copy of the approval from the Institutional Review Board communication is included in this research paper.

Chapter 4

Results

As a result of the lack of Telemedicine networks in America, individuals have limited

access to appropriate healthcare. The purpose of this section is to understand and analyze the

research found on what are the impacts of Telemedicine in rural locations in America. Textual

material analyzed included over 25 websites and included anecdotal evidence. To locate

literature about the impacts of Telemedicine in rural locations in America, individual searches

were made using multiple combinations of the following terminology: Telemedicine, rural

health, quality, cost effectiveness, access, positive health outcomes, and more.

The purpose of chapter 4 is to describe the findings, discuss the findings, and analyze the

implications of the findings by the researcher. As a result of this research project, a content

analysis, based on the research question (what are the impacts of Telemedicine in rural location

in America), the researcher has found three main categories see table:

- Benefits and Limitations of Telemedicine

- Who Provides Telemedicine Services

- Varied Telemedicine Research

Anecdotal Evidence

The researcher cites anecdotal evidence below from a visit to the local Kaiser Permanente

Telemedicine hub.

The Kaiser Permanente (KP), a local Health Maintenance Organization, opened the KP

Care Corner located inside Walmart on Gosford Road, in early 2014. The first of its kind created

by a large health care insurance provider and carrier in Bakersfield, has branched out to bring

physicians and medical care closer to its members.   As one of the main flier suggests, the

Telemedicine Care Corner is there for members to "take care of your everyday health needs without setting foot in a doctor's office."

Table 1. Categories Researcher Found by Using Content Analysis Methodology

Benefits and Limitations of Telemedicine	Who Provides Telemedicine Services	Varied Telemedicine Research
1. Patients	1. Hospitals & Clinics	1. Costs
• Remote / Rural Access	• MD Shortage	• Set up costs
• Access to MD's	• Specialist Shortage	• Computers/ Internet Access
• Men/Women/Children	• MD Recruitment	
	• Patient Education	
2. Parents/Families/Caregivers		2. Legal & Ethics
	2. Government	
• Better Health Outcomes	• Veterans Affairs	• Laws
• Remote Delivery of Healthcare	• Centers for Medicare & Medicaid Services	• Right Way to Give Care
• Reduce Travel Times		

If you are a local Kaiser Permanente member, you were probably mailed some literature out on the new KP Telemedicine Care Corner opening up as well. One of the best parts about the KP Telemedicine Care Corner is that you do not have to be a member of Kaiser Permanente to use the services available. If you are a Blue Cross member, you can stop in to check your blood pressure and weight during the same hours that the store is open. For those who are Kaiser Permanente members, you can visit to Telemedicine hub, which is open and staffed with a Licensed Vocational Nurse (LVN) Thursday thru Monday from 12pm – 8pm. If you believe you need a consultation visit with a physician, the LVN will collect your normal office copayment, document your symptoms, call and speak with the KP Advice RN line, and based on the recommendation from the RN, will use the computer to complete a Telemedicine consultation with a physician that is merely miles away at the KP Stockdale Medical Office Building, located on Stockdale Highway, located in Urgent Care. This physician will then diagnose your

symptoms and there will be a one-time prescription fill available to pick up at the Walmart Pharmacy, just out the door to the KP Care Corner.

Another perk in the KP Care Corner is that a computer is available for members who may not have internet access at home, to log into their KP.org personal healthcare manager portal, to refill prescriptions, schedule appointments to see their physician, and a host of other items available within the healthcare application. The KP Telemedicine Care Corner was developed to bring healthcare to people, in a convenient setting.

Benefits and Limitations of Telemedicine

Patients is part the first theme based on the benefits and limitations of Telemedicine. For the past half century, the healthcare delivery model of America has been one that requires sick people to go outside of their homes to receive care. Telemedicine changes this landscape entirely by allowing patients the ability to receive care within their home or a local clinic. For patients living in remote or rural locations, Telemedicine could become one's lifeline to obtaining and retaining healthcare. Telemedicine has a great appeal and promise as a means of health care service delivery to smaller communities that are at some distance from major health facilities. Benefits may include more rapid delivery of diagnostic and other health services this sounds like the theme (Hailey, 2005). For example, if there is a people benefit sick child, living in rural Arkansas, and the nearest urgent care if 100 plus miles away. Today, the possibility exists where you can hop in your car and instead of having to drive hours for medical care, you can feel more secure driving around the corner to the local clinic and being connected with a specialist that is able to give you care that is clinically on par with the rest of the physician's in America. In the research articles reviewed, there was a strong indication that for any study which included patients getting access to healthcare by way of Telemedicine, that there was a

positive outcome which included more timely access to an initial healthcare visit and subsequent follow up visits. The literature also indicated that there was a sense of burden lifted off them once this type of healthcare delivery model became available.

Patients who are mainly part of Health Maintenance Organization's, receiving Telemedicine services, are also exposed to equitable access to physicians. In recent years, if care was needed to be delivered by a specialist physician, the patient would have to travel to the physical location of that physician. With Telemedicine, patients are able to see any physician available, assuming that the physician is practicing with the Telemedicine delivery model in mind. The intensive care unit is an example of where a specialty physician can be useful in delivering care to critically ill patients and brings board certified physicians to the bedside via Telemedicine. The literature suggests for a patient, being able to see a specialist from their hospital room or living room, gives patients more comfort and welfare knowing they are seeing the best physician available and having that physician come to them for care. The literature also advocates that this is the perfect interaction needed to leave the patient with a positive interaction with Telemedicine (Goran, 2012).

Another outcome from the literature suggests that Telemedicine does not discriminate on the basis of who it serves. Telemedicine is able to assist men, women, children, and those in hospitals, clinics, home and even at a local drug store. As long as all those involved has the means, internet access, etc., to access a Telemedicine port and the healthcare specialty is available, Telemedicine can ensure that there is a diminished line separating rich, poor, near, or far in being able to create healthcare access. This is even evident at the local Walmart where Kaiser Permanente has a Telemedicine Care Corner – if you happen to not be a Kaiser

Permanente insurance subscriber, you can still utilize the Telemedicine Care Corner to check your weight and blood pressure.

Parents, families, and caregivers is the second theme based on the benefits and limitations of Telemedicine. One of the most consistent outcomes from the literature is the benefit that Telemedicine supports patients, families, and caregivers alike.   Much of the case studies involved scenarios involving events like parents being able to save time at work and home by not having to travel hours on end to see the specialist for their child when the appointment is available via Telemedicine in the clinic around the corner. The same goes for caregivers who have loved ones living in long term facilities. Access to a Telemedicine consultation within that facility gives patients a sense of calmness about being able to see a physician without having to be transported physically to the local doctor's office and can even work in the patients favor to see patients via Telemedicine more quickly verses a regular face to face appointment. Telemedicine clinics implemented offered significantly more rapid initial access and consistently shorter wait times for fourteen follow up than traditional services available (Neufeld, Case & Serriocho, 2012).

Who Provides Telemedicine Services

Hospitals and clinics is the first theme for who provides Telemedicine services. In recent years, hospitals and clinics have had a myriad of issues relating to physician shortage, recruitment of physicians, and patient education and those results will be discussed below.

Hospitals and clinics are seeing a decline in access to top notch physicians due to location accessibility and cost. The results suggest that America has been descending down a path for many years now that has created a lack of physicians to care for sick patients in America, across all social and geographical lines. The literature implies that physicians are pulled into larger

cities due to location and income, however, such cities like a San Francisco could have a physician need that only someone in New York specializes in. As physician shortages become more acute, physician leaders will need to recognize Telemedicine's capability to solve their local needs and can utilize Telemedicine to ensure the patients that are in their care are getting the best care available, regardless of barriers associated with healthcare like location. According to the Society of Critical Care Medicine, the shortage of full-time physicians will approach nearly 125,000 by 2025. It is estimated that we will need 1.7 (million) new physicians to replace each one of our retiring physicians due to the work/life balance expectations of many new physicians (Gorman 2011). For patients and providers this means the reliance on Telemedicine will grow heavily throughout the next decade.

Another side of physician shortages is physician recruitment. Having firsthand knowledge of the work and number of employees a large health care organization uses to recruit physicians to live and work in their area, some of the research also indicates that this will change the landscape on how the recruiting takes place. Instead of recruiting physicians to move and live in the community, it will be to recruit the physician to become a partner in providing Telemedicine services to that specific area. Even in our own community, Kern County is no different in regards to physician recruitment with plenty of barriers to bringing in qualified doctors to the area. The demand for doctors and other health care professionals far outstrips the supply. That means young doctors, nurses, physician assistants and assorted technicians looking for a place to practice can and will shop around. This matters to us in Bakersfield because this area -- the whole San Joaquin Valley in fact – is seriously underserved when it comes to medical caregivers. For every doctor who decides to work in an underserved area, four opt for cities that already have plenty (Price, 2012).

Hospitals and clinics will also benefit from the use of Telemedicine when it comes to patient education. The research indicated that one of the biggest specialties for patient education is Diabetes. Patients, specifically in rural areas, are able check in on weekly basis with their health care provider to ensure that their Diabetes is in check and educate them on any changes needed, including checking blood sugar levels, and changing any dietary needs based on that interaction from their home or clinic nearby. As Toledo et al suggest, we have demonstrated that a new model combining teleconsultations by an endocrinologist and local diabetes education supported by a nurse offer a potential solution to address the needs of diabetes care expertise often lacking in rural communities. Patients and primary care providers express a high degree of satisfaction, implying that adoption of the model is unlikely to be hampered by rejection of technology in the medical office or the approach by which services are provided.

Another theme within who provides Telemedicine services includes the government. The literature suggests that the government has been delivering healthcare in America for many years and more quickly than private companies. Multiple articles within the 30 researched indicated and referenced the Veteran Affairs Department's (VA) implementation of Telemedicine, including mental health services by the VA. The results indicated that this is a very intricate system the government has set up due to the number of facilities and different locations the services provide healthcare too. The Veterans Health Administration (VHA) is the largest and most comprehensive managed healthcare system in the United States and includes approximately 150 medical centers and more than 900 outpatient clinics serving 5.1 million veterans nationwide. Given the pressures on an infrastructure with albeit still considerable-resources, for

more than a decade the VHA has explored cost-effective healthcare delivery alternatives. Since 2000, telemedicine has been a focus for VHA health service delivery funding. Telemedicine has been used to facilitate diagnosis, referral, monitoring, medical information interchange, and intervention to offset higher costs associated with hard-to-access patients (Hill, et. al, 2010).

The second major government entity that provides Telemedicine according to the research is Centers for Medicare and Medicaid (CMS). Enacted in 1965 to give older adults access to healthcare coverage, CMS has worked over the years to include Telemedicine delivery to millions of its members. Today, according to CMS, Medicare members who live in rural locations have access to Telemedicine from the following locations:

- o Offices of physicians or practitioners

- o Hospitals

- o Critical Access Hospitals

- o Rural Health Clinics

- o Hospital based-or Renal Dialysis

- o Skilled Nursing Facilities

- o Community Mental Health Centers

There are approximately 24 Telemedicine services that CMS provides including pharmacy visits, help to stop smoking, and depression screenings. The importance of CMS providing Telemedicine services to their millions of members includes providing adequate, timely access to healthcare services.

Varied Telemedicine Research

Additional themes based on the benefits and limitations of Telemedicine include costs, technology, and the legal and ethical questions surrounding Telemedicine.

One of the most difficult pieces of deciding on whether to implement Telemedicine is based on cost and is a multifaceted avenue. Based on the research, costs, for any specialty within Telemedicine, can be very expensive in the beginning, and then overtime could become cost effective. Some of the basic items needed to set up a Telemedicine network includes a confidential location, computer, and wireless connection. One of the biggest cost the research speaks to is if the infrastructure (building/location, wireless available) is already set up, the cost for implementing Telemedicine will be a much lower that having to include those costs. Some of the evidence indicates that a full on Telemedicine set up could reach nearly half a million dollars if the building and infrastructure is needed, while others discuss a measly $50,000 if the building is already there as part of a bare bones Telemedicine unit. **Face-to-face telemedicine technology can be as elaborate as a high-definition video system, like Cisco's, that can cost up to hundreds of thousands of dollars. Or it can be as simple as the Webcams available on many laptops. NuPhysicia uses equipment in the middle of that range (Freudenheim, M. 2010).** The set up costs become a limitation on Telemedicine. Almost every piece of research material regarding Telemedicine costs associated the costs in relation to the benefits of Telemedicine. That is, what is the cost benefit to create a Telemedicine network and does that become an investment on the back end with medical savings costs associated with the patient. One of the specific examples from the literature included oil rig company employees using Telemedicine to get in touch with their physicians while working from the middle of the ocean. According to Freudenheim, some of the oil rigs have saved over $500,000 by having the Telemedicine accessible to employees, saving the employee and the employer from lost sick days.

Coupled with cost as a limitation to Telemedicine, technology itself is also another limitation. For patients wanting to access Telemedicine from the comfort of their home, without

a computer, internet access, and familiarity on how to use the technology, this becomes

problematic. The research indicated that although in today's world, technology runs rampant,

there is still inequity, and especially for those patients living in rural, lower income areas in

having this technology readily available. Much of the research that spoke to this topic discussed

older adults who may not have the means to pay for a wireless connection service fee on a

monthly basis, especially if they are on a fixed income due to social security benefits. And

unlike the Generation Y or Generation X populations (those born 1977 thru today) who own a

myriad of technology items, the older generations still need to come to terms with having health

care delivered in this very unnatural way. Another issue deals with the technical delivery of

Telemedicine and having correctly trained employees to transport it adequately (Gerald &

Matusitz, 2011). Probably the most crucial hindrance to the progressive evolution of

telemedicine is a general lack of educated personnel who know how to use the equipment and

technology that comprise telemedicine. In simple terms, there is limited knowledge and

expertise in telemedicine services. This shortage of expertise and proficiency in telemedicine

also, in turn, obstructs the creative mind from thinking up more efficient and effective modalities

of telemedicine application. This paucity of knowledge also yields the inability for education of

medical practitioners. In effect, fresh physicians out of schooling are unable to learn and adopt

these innovative methods of delivering health services. As such, this dilemma has forced a

deceleration in the overall implementation of telemedicine technology and services a nasty and

an almost self-defeating route for telemedicine's future (Gerald & Matusitz, 2011).

The final limitation with Telemedicine deals with ethics and law. Is Telemedicine the

right way to deliver healthcare? Some of the literature indicates that one of the biggest obstacles

in delivery Telemedicine is the lack of interaction the physician face to face interaction and some

interpret that as being the wrong way to deliver healthcare. There are many issues of concern regarding the legal and ethical aspects of telemedicine. These include the responsibilities and potential liabilities of the health professional, the duty to maintain the confidentiality and privacy of patient records, and the jurisdictional problems associated with cross-border consultations. There is also the issue of reimbursement for care provided using a telemedicine service. Telemedicine allows the transmission of health information across the borders of nation states. Cross-border telemedicine services have begun, particularly in specialties such as teleradiology, but questions of jurisdiction and registration have yet to be answered definitively. While this may be true of many of the legal and ethical aspects of telemedicine generally, it is also the case that health-care professionals who undertake telemedicine in a prudent manner will minimize the possibility of medicolegal complications (Stanberry, 2006).

The summary of the above researcher indicates that Telemedicine creates opportunities for all populations in getting access to healthcare. Almost all of the articles that were researched included at least one, if not more, positive health outcomes based on access, cost effectiveness, and quality. One of the biggest outcomes that was based in the research was the positive impact Telemedicine has on families, caregivers, and patients.

Chapter 5

Conclusions and Recommendations

This purpose of this chapter is to discuss the conclusions and recommendations based on the research question: what are the impacts of Telemedicine in rural communities in America?

Based on the content analysis completed by the researcher, all of the articles researched spoke to at least one, if not more, categories where Telemedicine created positive impacts in both rural and urban areas in America. The research shows that Telemedicine is the new wave of how to deliver healthcare in America based on the following outcomes:

- Rural and urban access to healthcare

- Positive health outcomes

- Reduction in wait times for patients in rural and urban areas

- Ability for hospitals to delivery appropriate care without having physician located within their facility

- Investment costs

At the core of this research project, Telemedicine creates timely access to healthcare for millions of Americas. The researcher, based on learnings and understandings from this project, will use this information to help create and rollout additional Telemedicine specialties within Kaiser Permanente to help members and the community alike.

Recommendations

Recommendation #1: Telemedicine Implementation

- The first recommendation based on this research project would be for all healthcare providers, who serve members in rural and urban areas, to begin to implement Telemedicine into their line of business. Providers can start with just

one specialty in the beginning, but would be required to implement Telemedicine for all specialties available by 2020. This timeframe would give providers enough time to find a location that meets criteria and work out any implementation issues. This will help ensure the rollout of Telemedicine continues to move forward and help confirm that populations in all locations are getting access to healthcare in America. This will also speak to the lack of physicians and create an attempt to alleviate shortage that still exists. Providers should be required to pay for implementation of Telemedicine because it is the right thing to do. Based on the research, there was not a large percentage who relied on any other funding mechanisms except their own organization to implement these additional services.

Recommendation #2: Ensure Telemedicine Providers are Properly Trained

- The second recommendation would be for companies who use Telemedicine ensure that their physicians and employees delivering Telemedicine care are correctly trained on how to use the equipment properly. The research indicated on multiple occasions that lack of training was an issue with care received by patients. The type of training needed should include connection of technology equipment proper prep of the patient for Telemedicine services. Perhaps the organizations such as the American Telemedicine Association could work with healthcare providers to help implement the quality standards and training guides that are currently available.

Recommendation #3: Grants or Subsidies for Telemedicine Implementation

- The third recommendation would be to create grant or subsidy monies for companies who develop and implement Telemedicine programs, by the government. Based on the research, cost was a limitation in the path to create Telemedicine programs. Subsidy or grants may be a way to help alleviate those upfront costs. The research indicated that a bare bones, simple Telemedicine program would cost around $50,000. Perhaps an incentive of $100,000 to create and implement a Telemedicine program would help companies with the upfront costs to create something a little bit better than bare bones. By using the government as the director in this recommendation, it will make providers realize that Telemedicine is a healthcare delivery program that is here to stay.

Finally, due to classical liberalism and capitalism, the chance of the above recommendations coming to fruition may be small. Classical liberalism is based on freedom of individuals by limited government involvement. The above recommendations would be difficult to put into place due to the clash between what should be created for the greatest good of a population verses the greatest good for individuals. Capitalism is the economic system that America runs on with emphasis on private companies making the most money. If Telemedicine does not become a money maker, by having the costs come down where companies are in position to create a profit, Telemedicine may never become 100% invested in.

References:

American Telemedicine Association (2012). What is Telemedicine? Retrieved from

        http://www.americantelemed.org/learn/what-is-telemedicine

Bashshur, R. L., Reardon, T. G., & Shannon, G. W. (2000). Telemedicine: A new

        health care delivery system. *Annual Review of Public Health*, *21*(1), 613

Burger, J. (2012, December 10). Telemedicine to expand at Kern Medical Center. *The*

        Bakersfield Californian. Retrieved from http://www.bakersfieldcalifornian.com/

        health/x76662614/Telemedicine-to-expand-at-Kern-Medical-Center

Centers for Medicare and Medicaid Services. 2014, January 3.) Department of Health and

        Human Services. Centers for Medicare & Medicaid Services. Medicare Learning

        Network. Retrieve from http://www.cms.gov/Outreach-and-Education/Medicare-

        Learning-Network-MLN/MLNProducts/downloads/telehealthsrvcsfctsht.pdf

Denzein, N., & Lincoln, Y. (2008). The Landscape of Qualitative Research. Thousand

          Oaks, CA. Sage Publications, Inc.

E. Ray Dorsey, MD, MBA; Vinayak Venkataraman, BS; Matthew J. Grana, BA; Michael

        T. Bull, BS; Benjamin P. George, MPH; Cynthia M. Boyd, MD, MPH; Christopher A.

        Beck, PhD; Balaraman Rajan, MBA, MS; Abraham Seidmann, PhD; Kevin M. Biglan,

        MD, MPH. Randomized controlled clinical trial of "virtual house calls' for Parkinson

        Disease. *JAMA Neurol.* 2013;70(5):565-570. doi:10.1001/jamaneurol.2013.123

Freudenheim, F. (2010, May 29). The Doctor will see you now. Please log on. *The New*

        York Times.

Gamble, J. E., Icenogle, M. L., & Savage, G. T. (2004). Value-Chain Analysis of a Rural

      Health Program: Toward Understanding the Cost Benefit of Telemedicine

      Applications. *Hospital Topics*, *82*(1), 10-17.

Gerald, M.B., Matusitz, J. (2011). An evolutionary examination of Telemedicine: A

      health and computer-mediated communication perspective.

Gorman, M. (2011). Supporting Medical Staff and Patients in a New Era. Physician

      Executive, 37(5), 40-43.

Hailey, D. D. (2005). Technology and Managed Care: Is Telemedicine the Right Tool for

      Rural Communities? *Journal of Postgraduate Medicine*, *51*(4), 275-278.

Hearst Newspapers (2014). How to conduct a content analysis critique. Retrieved from

      http://smallbusiness.chron.com/conduct-content-analysis-critique-13318.html

Hill, R. D., Luptak, M. K., Rupper, R. W., Bair, B., Peterson, C., Dailey, N., & Hicken, B.

      L. (2010). Review of Veterans Health Administration Telemedicine Interventions.

      American Journal of Managed Care, *16*e302-e310.

Institute of Medicine (1999). To Err is Human: Building a Safer Health System. Retrieved from

      http://www.iom.edu/~/media/Files/Report%20Files/1999/To-Err-is-

      Human/To%20Err%20is%20Human%201999%20%20report%20brief.pdf

Kaiser Family Foundations (2003). The Uninsured in Rural America. Retrieved from

      http://kaiserfamilyfoundation.files.wordpress.com/2013/01/the-uninsured-in-rural-

      america-update-pdf.pdf.

Kaiser Permanente Member and Marketing Communications, March 2014

Lehoux, P. P., Sicotte, C. C., Denis, J. L., Berg, M. M., & Lacroix, A. A. (2002). The theory of

      Use Behind Telemedicine: How Compatible with Physicians Clinical Routines? *Social

      Science & Medicine*, *54*(6), 889.

Mayer, S. (2012, December 10). Telemedicine to expand at Kern Medical Center. *The Bakersfield Californian.* Retrieved from

http://www.bakersfieldcalifornian.com/health/x76662614/

Miller, M. D. (2009). Tele-ICU and clinical quality. *Health Affairs*, *28*(6), 1858-1859.

National Center for Biotechnology Information (1996). Evaluating the Effects of

Telemedicine on Quality, Access, and Cost. Retrieved from

http://www.ncbi.nlm.nih.gov/books/NBK45438/

Nesbitt, T., Marcin, J., Daschbach, M., & Cole, S. (2005). Perceptions of local health care

quality in 7 rural communities with telemedicine. *Journal of Rural Health*, *21*(1), 79-85

Neufeld, J., Case, R., & Serricchio, M. (2012). Walk-in Telemedicine Clinics Improve

Access and Efficiency: A Program Evaluation from the Perspective of a Rural

community Mental Health Center. *Journal of Rural Mental Health*, *36*(2), 33-37.

Price, R. (2012, December 8). How to bring more doctors to Bakersfield. *The Bakersfield Californian.*

Public Broadcast System (2000). Healthcare Crisis. Who's at Risk? Retrieved from

http://www.pbs.org/healthcarecrisis/uninsured.html

Rajan, B., Seidmann, A., & Dorsey, E. R. (2013). The Competitive Business Impact of Using

Telemedicine for the Treatment of Patients with Chronic Conditions. *Journal of Management Information Systems*, *30*(2), 127-158. doi:10.2753/MIS0742-1222300205

Raza, T., Joshi, M., Schapira, R. M., & Agha, Z. (2009). Pulmonary telemedicine—A model to

access the subspecialist services in underserved rural areas. *International Journal of Medical Informatics*, *78*(1), 53-59. doi:10.1016/j.ijmedinf.2008.07.010

Sajeesh Kumar, PhD; Shezana Merchant, MD; and Rebecca Reynolds (2013). Tele-ICU:

Efficacy and Cost-Effectiveness of Remotely Managing Critical Care. *Journal of*

Perspective in Health Information Management. Doi: http://perspectives.ahima.org/tele-

icu-efficacy-and-cost-effectiveness-of-remotely-managing-critical-care/#.UnG6xhDjN0Q

Stanberry, B. (2006). Legal and ethical aspects of telemedicine. Retrieved from

http://www.ncbi.nlm.nih.gov/pubmed/16774696

Taber's Medical Dictionary (2014). Definition of Access. Retrieved from

http://www.tabers.com/tabersonline/view/Tabers-Dictionary/759888/0/access?q=access

The Centennial Group (2007). Professional Services for Healthcare. Retrieved from

http://www.thecentennialgroup.com/tcg_services.html

Thielke, S., Harniss, M., Thompson, H., Patel, S., Demiris, G., & Johnson, K. (2012). Maslow's

Hierarchy of Human Needs and the Adoption of Health-Related Technologies for Older

Adults. *Ageing International*, *37*(4), 470-488. doi:10.1007/s12126-011-9121-4

Toledo, F. G., Triola, A., Ruppert, K., & Siminerio, L. M. (2012). Telemedicine

Consultations: An alternative model to increase access to diabetes specialist care in

underserved rural communities. *Journal of Medical Internet Research*, *14*(6), 7.

doi:10.2196/resprot.2235

Tul. J. Tech. & Intell. Prop. 307. Retrieved from www.lexisnexis.com/hottopics/lnacademic

United States Department of Agriculture Economic Research Services (2013). Rural

Classifications. Retrieved from http://www.ers.usda.gov/topics/rural-economy-

population/rural-classifications.aspx

Weber, R.P. (1990). *Basic content analysis*. Newberry Park, CA. Sage Publications, Inc.

Williams, L., Hubbard, K. E., Daye, O., & Barden, C. (2012). Tele-ICU enhancements.

Telenursing in the Intensive Care Unit: Transforming Nursing Practice. *Critical Care Nurse*, *32*(6), 62-69. doi:10.4037/ccn2012525

Zapka, J., Simpson, K., Hiott, L., Langston, L., Fakhry, S., & Ford, D. (2013). A mixed methods descriptive investigation of readiness to change in rural hospitals participating in a tele-critical care intervention. *BMC Health Services Research*, *13*(1), 1-11. doi:10.1186/1472-6963-13-33

Appendix

CSU Bakersfield

Academic Affairs

Office of the Grants, Research, and Sponsored Programs (GRaSP)

Mail Stop: 24 DDH Room 108
9001 Stockdale Highway
Bakersfield, California 93311-1022

(661) 654-2231
(661) 654-3342 FAX
www.csub.edu

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Nonscientific/Humanistic Concerns

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Department of Psychology
Research Ethics Review Coordinator
and IRB/HSR Secretary

Date: 05 February 2014

To: Melissa D. Costelloe, PPA Student

    cc: Jinping Sun, Public Policy and Administration
         Paul Newberry, IRB Chair

From: Steve Suter, Research Ethics Review Coordinator

Subject: Protocol 14-11: Not Human Subjects Research

Thank you for bringing your protocol, **"Telemedicine: The Future of Health Care Delivery systems?"**, to the attention of the IRB/HSR. On the form, *"Is My Project Human Subjects Research?"*, received on February 5th, 2014, you indicated the following:

I want to interview, survey, systematically observe, or collect other data from human subjects, for example, students in the educational setting. **NO**

I want to access data about specific persons that have already been collected by others [such as test scores or demographic information]. Those data can be linked to specific persons [regardless of whether I will link data and persons in my research or reveal anyone's identities]. **NO**

Given this, your proposed project will not constitute human subjects research. Therefore, it does not fall within the purview of the CSUB IRB/HSR. Good luck with your project.

If you have any questions, or there are any changes that might bring these activities within the purview of the IRB/HSR, please notify me immediately at 654-2373. Thank you.

Steve Suter, University Research Ethics Review Coordinator