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Publication Date

2022

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UNIVERSITY OF CALIFORNIA, IRVINE

Telehealth Education for Seniors During the Covid-19 Pandemic

DNP Scholarly Project Paper

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF NURSING PRACTICE

in Nursing Science

by

Lucetta Waiying Chiu

DNP Project Team:

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2022

DEDICATION

To

my loving husband

for his endless love, encouragement, and sacrifices
and always believing in me

And to my parents

for giving me life, literally and figuratively
and always pushing me to do my best
even though we are always far apart

And to my son

for coming into my life
with whom I wish to inspire to strive for nothing less than greatness

Be strong and courageous. Do not be afraid; do not be discouraged, for the Lord your God will be with you wherever you go.

-Joshua 1:9

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ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my project chair, Dr. Jung-Ah Lee, who has been kind, patient, and endlessly supportive throughout my DNP journey over the course of the last three years. I cannot thank her enough for all the guidance and nurturing she has given me, inside and outside of the project. Her guidance provided me with a clear direction on my approach for my DNP project, and her knowledge and experience nurtured my own growth as a nurse. Moreover, her uplifting words of encouragement provided me with moral support when I needed it the most. Without her, my project would not have come to fruition.

I would also like to express my most sincere appreciation to my project co-chair and site mentor, Dr. Julie Rousseau, who has not only been my mentor, but also a role model throughout my DNP project. Her hard work and passionate dedication to nursing and research is an inspiration and has shown me a glimpse of how far one can go in nursing. As a role model, I have the utmost respect for her taking on so many different roles, from her volunteer work as a faculty member at UCI, to being a nurse scientist, and still finding the time to offer me support. Her genius approach and thinking were a great inspiration to me as well. My project would not have been possible without her, either.

In addition, thank you to the entire “ASSIST” research team, including Dr. Lisa Gibbs and Dr. Sonia Sehgal, as well as the rest of the ASSIST team members. Without their support in allowing me to be a part of the study and their professional collaboration, I would not have been able to complete my project.

As a funding Acknowledgement, the DNP Scholarly Project is part of a parent study, ‘Cares ASSIST’ supported by the Health and Resources Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under U1QHP28724-04-00, Technology Advanced Geriatrics: Together Educating, Advocating, and Mentoring, TAG-TEAM (PI: Lisa Gibbs, MD).

Note: This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.

Last but not least, a big thank you and many hugs to all my family and friends for their unwavering love and support. I am forever grateful.

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Doctor of Nursing Practice, Family Nurse Practitioner in Nursing Science

ABSTRACT OF THE DNP SCHOLARLY PROJECT PAPER

Telehealth Education for Seniors During the Covid-19 Pandemic

by

Lucetta Waiying Chiu

Doctor of Nursing Practice, Family Nurse Practitioner in Nursing Science

University of California, Irvine, 2022

Associate Professor Jung-Ah Lee, Co-Chair & Associate Clinical Professor Julie Rousseau, Co-Chair

The Covid-19 pandemic has propelled the use of telehealth rather than in-person visits driven forward by the California state-mandated Stay-home-orders and social distancing guidelines. During this public health crisis, high-risk older adult populations faced many barriers preventing them from utilizing telehealth to the full extent and maximizing their potential to obtain better health outcomes. This DNP scholarly project is a quality improvement project and feasibility study that aims to reduce these barriers to the adoption of telehealth in older adults, with the goal of improving digital literacy through an intervention of telehealth education. Building upon the parent study “Assisting and Supporting Socially Isolated Seniors Through Telehealth in the Covid-19 Pandemic,” a group of 21 older adult participants from a geriatrics specialty clinic was recruited and provided with the latest technology to self-monitor their vital signs (blood pressure and weight) in the comfort and safety of their own home. As an intervention, these participants were provided with 1) senior-friendly education materials; 2) in-person hands-on teaching session by Registered Nurse (RN) or DNP educators; 3) weekly check-in phone calls by RN educators and medical student volunteers to help improve digital literacy and boost telehealth utilization. A survey was collected immediate post-intervention to determine the efficacy of the intervention, and an interview was conducted with the RN educators who were involved in the education

process. In the end, it was found that the RN educators were successful in educating the older adult participants. Post-intervention, participants were able to overcome their physical challenges that hindered their use of telehealth through personalized teaching. They were also able to navigate through technology with greater confidence and competence, leading to better management of their own health. Moreover, these socially isolated older adults reported significant benefits from the social connection and ongoing support that they received from the research team. In the end, the intervention was deemed successful in engaging and facilitating the participants' utilization of technology as well as improving their digital literacy.

CHAPTER 1: INTRODUCTION

Telehealth Education for Seniors During the Covid-19 Pandemic

During the Covid-19 pandemic, the use of telehealth has increased as a means for patients to obtain healthcare safely in the comfort of their own home. However, the use of telehealth may not be an easy task for the older adult population. This DNP project will explore the barriers to the usage of telehealth and provide patient education targeted to reducing those barriers to increase digital literacy in the older adult population.

Background

The Covid-19 pandemic has dramatically changed the healthcare delivery system in unprecedented ways and propelled the use of technology. In fact, during the first quarter of 2020, the number of telehealth visits seeking care for conditions other than Covid-19 increased by 154% compared with the same time period in 2019 (Koonin et al., 2020). As a result of the California state-mandated Stay Home Order and social distancing guidelines at the height of the outbreak, the usage of telehealth became the predominant way for patients to obtain healthcare remotely and communicate with their health care practitioners (HCPs) virtually through the use of electronic devices to limit the risk of exposure and infection and (Office of Governor Gavin Newsom, 2020). Prior to the pandemic, research documented the slow adaptation of telehealth by healthcare providers themselves, and the persistence of age-based disparities in access to broadband access and the use of digital health. Against this background, using technology presents specific challenges for the older adult population and can turn a meaningful telehealth experience into a stressful one, discouraging its use and leading to poor health outcomes.

Significance

Telehealth Pre-covid-19.

Despite the rapid growth of technology in recent years, research found that the use of telehealth was merely 8% of Americans in 2019 (Mann et al., 2020). At an academic cancer center alone, the proportion of video visits increased from 7%-18% to 54%-72% between the pre- and post-Covid-19 periods from January to March 2020 without any disparity based on race/ethnicity, primary language, or

insurance (Loneragan et al., 2020). These statistics demonstrate that the beginning of the COVID-19 pandemic in the early months of sparked a rapid increase in the utilization of telehealth.

Research has found multiple barriers contributing to the slow adoption of telehealth pre-covid. First, there was a lack of national telehealth policy before the Covid-19 emergency. Under the Centers for Medicare & Medicaid Services (CMS) telehealth policy, there was a lack of reimbursement, licensing restrictions, and Health Insurance Portability and Accountability Act (HIPAA) compliance issues that became roadblocks for HCPs in providing telehealth for Medicare patients (Lee et al., 2020). Second, financial barriers also became a major reason many outpatient practices did not invest in telehealth. Initiating a telemedicine program prior to the Covid pandemic required a significant financial and personnel investment such as the costs to hire programmers to create a telemedicine platform that integrates into an existing electronic health record (Weigel et al., 2020). Third, there was a lack of comfort and interest with telemedicine in HCPs due to concerns about security, workflow integration, and effectiveness compared against in-person visits (Bestsennyy et al., 2020). Fourth, there was a lack of access for telehealth in patients, especially for low-income patients and those from rural areas, who may not have reliable access to internet through smartphones or computers (Weigel et al., 2020). Fifth, older adults may not feel comfortable or be able to use these technologies. According to Pew Research Center, 27% of U.S. adults aged 65 and older reported they did not use the internet in 2019, even though nearly seven in ten adults 65 and older say they have a computer, smart phone, or tablet with internet access at home (Weigel et al., 2020). This demonstrates that even if older adults have access to technology, they may not be comfortable using it, which can heighten the barrier to utilizing telehealth. This issue will be further discussed in the “clinical problem” section.

Telehealth during Covid-19 Pandemic.

The Covid-19 pandemic has driven a rapid push in the utilization of telehealth and has changed the way that health care is being delivered, helping to reduce transmission risk of Covid-19 to HCPs and patients (Centers for Disease Control and Prevention [CDC], 2020). In addition, telehealth services during Covid-19 helped to maintain continuity of care, prevent delays in care, and reduce the strain on healthcare

systems by minimizing the surge of patient demand on facilities and reducing the use of PPE by healthcare workers (CDC, 2020). As aforementioned, there was a slow adoption of telehealth among HCPs and patients before Covid-19 due to the previously discussed complex barriers. However, recent healthcare policy changes have dramatically helped to reduce these barriers and promote the use of telehealth. On March 17, 2020, CMS issued a 1135 Waiver and expanded telehealth coverage for Medicare patients during the pandemic (Lee et al., 2020). For example, synchronous E-visit (provider to patients) may now be reimbursed at the same amount as in-person visits, permitting real-time communication between distant site and patient at home (Lee et al., 2020). Providers also have the flexibility in reducing or waiving out-of-pocket costs for patients (Lee et al., 2020). Provisions of the U.S. Coronavirus Air, Relief, and Economic Security (CARES) Act have also enabled federally qualified health centers or rural health clinics to offer telehealth services. (Koonin et al., 2020). With the aid of these policy changes, along with the ultimate push for the utilization of telehealth due to the Covid-19 emergency, there was a drastic increase in the usage of telehealth. It was found that 69% of patients who had a telehealth encounter during the early pandemic period in 2020 were managed at home; 26% of those patients were advised to seek follow-up from the HCP as needed or seek care in the ED or urgent care setting if their condition worsened or did not improve (Koonin et al., 2020). Providers have also become more comfortable and interested in telehealth. A recent survey shows that 57% of providers now view telehealth more favorably than they did before Covid-19 and 64% are more comfortable using it (Bestsenny et al., 2020). Moreover, data shows that one in four older Americans (aged 50-80) had a virtual medical visit in the first three months of the Covid-19 pandemic, much higher than the 4% in a similar poll taken in 2019 (Buis & Kullgren, n.d.). Even though the number of telehealth visits have increased from 2019 to 2020, there are still a large population of older adults who were unable to utilize telehealth- a reflection of the digital divide that still exists in this patient population. This is especially important to highlight, as older adults are more likely to get severely ill from Covid-19, and more than 80% of Covid-19 deaths occur in people over age 65 (CDC, 2021).

Clinical Problem

Older adults (age 65 and older) are one of the most vulnerable patient populations in the Covid pandemic, not only due to their comorbidities and high mortality rates, but also due to the digital divide and education gap in technology that prevent them from using telehealth. Telehealth may not be easily accessible to those over the age of 65 due to multiple barriers. Wildenbos et al. (2018) have identified four key categories of aging barriers that can influence the usability of telehealth (digital health) in older adults: cognition, motivation, physical ability, and perception. Recognizing these barriers is vital, because it is through the understanding of these barriers that allows a HCP or healthcare organization to develop interventions to help combat these barriers and increase the usability of telehealth. More specifically, Lam et al. (2020) have identified six major barriers that can cause ‘unreadiness’ with technology: difficulty hearing, problems speaking or making oneself understood, dementia, difficulty seeing, owning no internet-enabled devices or lack of awareness in how to use them, and lastly, no use of email, texting, or internet in the past month. In fact, a combination of these barriers may pose a challenge for older adults to not only learn how to use electronic devices, but to also navigate through these devices that requires both physical and cognitive functions (such as hand-eye coordination). Ultimately, the barriers in cognition and physical abilities may lead to failures in the usage of electronic devices, causing frustration and decreasing motivation in the continuation of the use of telehealth.

As a way to improve the telehealth experience for high-risk older adult patients at a geriatrics specialty clinic at an academic medical center in Southern California, the ASSIST study (Assisting and Supporting Socially Isolated Seniors through Telehealth in the Covid-19 Pandemic) seeks to provide medical devices to senior participants so they can measure their vital signs and manage their own health at home. The participants will be provided with the appropriate teaching and technology support by the ASSIST team to engage in a Remote Patient Monitoring pilot. As Markert et al. (2019) finds in their scoping review, telehealth plus health coaching have been found to be effective in terms of clinical health outcomes and quality of life improvements. Therefore, incorporating health coaching via patient education and frequent check-ins in addition to remote patient monitoring may be beneficial to the participants. Prior to sending the participants home with the home digital monitoring devices, they will

also participate in a “Health Assessment Programs for Seniors” (HAPS), in which they will be evaluated by a multidisciplinary team consisting of the following members: primary care provider, psychologist , occupational therapist, pharmacist, and dietician. The goal of the pilot is to keep these high-risk participants healthy, after establishing reliable clinical baseline assessments through HAPS, and to reduce any unnecessary exposure through in-person visits at the clinics, emergency room, and hospitals during the Covid pandemic.

Problem Statement

Building upon the ASSIST study, this Doctor of Nursing Practice (DNP) scholarly project seeks to address the barriers to digital literacy through the following interventions: 1) developing senior-friendly education materials in multiple languages; 2) providing in-person hands-on teaching sessions at the geriatrics specialty clinic 3) weekly check-in phone calls by RN educators and medical student volunteers for on-going technology support, including video and phone calls. Particularly, the project seeks to explore the following: Does providing patient education via senior-friendly handouts with on-going technology support (I) to our vulnerable geriatric population (P), versus no education at all (C), facilitate the participants’ utilization of technology and improve their telehealth usage (O) during the Covid 19 pandemic (T)?

CHAPTER 2: Body of Evidence

Review of the Literature

Telehealth, is defined as the use of electronic information and telecommunication technologies to provide care when the patient and the healthcare provider are not in the same place at the same time, allowing the patient to talk to the provider live over the phone or video chat, send and receive messages online, and use remote patient monitoring (Health Resources and Services Administration, 2021). Due to social distancing guidelines during the Covid-19 pandemic, telehealth utilization rapidly expanded, creating patient demand while allowing healthcare providers to continue providing medical care to patients without disruptions. Patients were expected to self-isolate while monitoring their symptoms at home and to connect with providers through telehealth. Research has documented that telehealth may not

be as accessible or intuitive to the older adult population, which contrasts with the fundamental goal of telehealth to increase access to care. Since many older adults face multiple complex chronic conditions that can be supported by telehealth, understanding the barriers to telehealth utilization is imperative. This literature review examines the factors that contribute to the generational digital divide and the specific challenges that the older adult population faces with the use of telehealth, as well as the types of interventions that have been conducted in the past to narrow the gap between older age population and digital literacy.

Search Process

A thorough search related to the topic of telehealth and the older age was conducted on the following databases: CINAHL, PubMed, and Google Scholar. The searches included the use of Boolean operators to create multiple variations of searches. The relevant search terms that were queried for the research include telehealth, telemedicine, eHealth, mHealth, patient education, teach-back communication, handout, technology support, social isolation, aged, elderly, geriatric, seniors. Inclusion criteria consisted of the following: English language, published date from 2015 to present, varying methodologies, and a preference for studies targeting patients aged 65 years and above. Typically, expanders were used to apply related words to the search terms, search within the full text of the articles, and apply equivalent subjects. Exclusion criteria included non-English articles and articles published before 2015. Articles that were in English but not from the United States were accepted. Articles targeted toward the aged 65 and above were preferred, though not specifically excluded if the article consists of a pilot study with a telehealth intervention, especially if it related to the modality of patient education.

Appraisal of Evidence

A Prisma Flow diagram was created to demonstrate to process and flow of the systematic review process, including the number of articles that were identified, included, excluded, and reasons for exclusions (see Appendix C). At the end of the search, 513 articles were retrieved, 11 were duplicates, and 12 were included for the synthesis of evidence. The evidence obtained from this search highlights the following common themes: the digital divide, barriers to telehealth, and interventions employed to

support older adults. Of the 12 articles selected, 3 were randomized control trials (RCTs), which have the highest level of evidence, according to the Evidence-Based Medicine pyramid (EBM Pyramid) (UCI Libraries, n.d.). These articles were important to consider because they incorporated various types of interventions to improve telehealth. For example, Jeong et al. (2018) examined whether weekly telephone support helped to improve health behavior, self-care, and telemonitoring for older adults. The rest of the articles were of lower level of evidence according to the EBM Pyramid, which consisted of descriptive studies, mixed-method research, non-randomized trials, case studies, and interviews. Still, these articles provided valuable information by identifying key research questions: the potential barriers to adoption of telehealth in older adults, how to facilitate and promote technology usability, previous attempts in adoptions or implementations to improve telehealth adaptation, and the various implementation challenges presented. Understanding these concepts was key to develop strategies for an appropriate intervention for the older adult population in this DNP project.

Comprehensive Synthesis of Evidence

The Digital Divide

The topic of the digital divide consistently appeared throughout the literature search (see Appendix D), highlighting the need to close the communication and technology gap in telehealth access for older adults. The term “digital divide” is defined as the gap in access to and usage of information and communication technologies between those who have access to the technology and those who do not, because of age, income, education, community type, disability, or other factors (Chung et al., 2016). As described by Chung et al., age may serve as a major barrier to maximizing the benefits of telehealth. As such, older adults with low income, disability (which is not uncommon), or those living in underserved communities may suffer the most from this digital divide. Ironically, the population of older adults is the fastest-growing group using the internet, yet research shows that those who are older, in low socioeconomic status, or live in underserved areas are more likely to lag behind in technology use, leading to a lack of access to proper health care (Chung et al., 2016). In another article that explored the reasons behind the digital divide in medically underserved communities, Mathieson et al. (2017) echoed

this revelation, highlighting the fact that education and age are the two main factors causing the digital divide. The article further emphasizes that since older and less educated patients often suffer from poorer health, the biggest challenge for HCPs is that these patients seem to be more difficult to reach via patient education and engagement efforts involving digital technology. For this reason, it may be difficult to develop specific strategies to narrow the digital divide in older adults.

Barriers to Telehealth

Multiple articles have highlighted the main barriers to telehealth for older adults, as health literacy may vary from person to person. A recent study by the Pew Research Center found that only 73% of people over 65 years old use the internet, and only 59% of people over 65 own a smartphone (Nash, n.d.). This baseline data suggests that low digital literacy is a challenge as older adults do not have the access or knowledge to use apps, smartphones, or home health monitoring devices, all important skills to have during the Covid-19 pandemic when patients are not able to see their providers face-to-face. More specifically, Williams et al. (2021) discovered that the challenges to navigating telehealth are centered around two themes: 1) difficulties using the basic functionalities of a smartphone and high-tech care devices and 2) difficulty using high-tech care devices due to connectivity issues. This qualitative research contains a large sample of 170 participants with rich, closely analyzed qualitative data from the lengthy interview. Though it does not contain the strongest level of evidence, Williams et al. provides helpful feedback from both the participant and the stakeholders to identify challenges and solutions to digital health engagement. In Arcury et al. (2020), the researchers conducted a questionnaire with 106 participants measuring eHealth literacy in lower-income and minority older adults. They found that 72% had inadequate general health literacy; 56.9% preferred to rely on the doctor's knowledge when making medical decisions; 53% of the participants use the internet; and those with higher education or income were more likely to use the Internet (Arcury et al., 2020). A strength of this study was that the researched measured eHealth literacy using a validated tool, eHEALS; the reliability and validity of eHEALS has been established in previous studies. In terms of technical barriers that the elderly population may face during the Covid 19 pandemic, the literature reports that seniors are facing many complex challenges:

inability to use technology, lack of resources, lack of literacy, and lack of assistance from others due to isolation (Elbeddini et al., 2021). Elbeddini et al. (2021) found that the negative effects of polypharmacy were amplified during the pandemic due to these barriers resulting in negative impacts on the patients' quality of life and health.

In addition to the delineated technical issues in the literature, ethical issues are also catalogued in studies as telehealth usage increases in older adults. In an integrative review by Chung et al. (2016), key ethical issues involving smart home technologies for older adults were explored. It was found that privacy and obtrusiveness issues seem to be the most important factors affecting technology adoption. The study reported other key factors limiting technology use in older adults, including stigmatization, reliability, autonomy, equal access, and reduction in human touch. Although this source was an integrative review, the findings raise important ethical and social issues necessary to consider in designing a telehealth intervention.

Social isolation was also identified across the literature as a major barrier to the adoption of telehealth. LaMonica et al. (2021) conducted a descriptive study to understand the use of technology in older adults. In this study, some participants referenced the importance of social connectedness, "HITS (health information technology) are not equivalent to in-person", and that "face-to-face is best, but over the phone is convenient." The authors further highlight the fact that older adults will only adopt new technologies when their apparent usefulness and usability outweigh concerns related to technological complexity and decreased social connection. Although this study consists of a small sample, the researchers were able to highlight not only the barriers, but also the facilitators to older adults' use of telehealth. Banbury et al. (2019) further supports the importance of social connectedness and finds that social support is a key determinant of health, with a role in reducing stress, social isolation, loneliness, and depression. Moreover, they found that a lack of social support has a negative effect on health comparable to other risk factors such as smoking, blood pressure, and physical activity (Banbury et al., 2020). As many older adults are already suffering from multiple chronic conditions, it becomes important

to tailor interventions for telehealth adoption that can simultaneously improve social connectivity in the older adult population in order to achieve the overall best health outcome.

Interventions

The literature search revealed multiple studies employing and designing specific interventions to boost telehealth literacy or to understand the telehealth experience itself. Across the studies, ongoing communication and support were key to technology adoption and lowering participants reported isolation. In a study by Platts-Mills et al. (2018), there was evidence that participants benefited from watching an interactive video (patient education on pain management) in the emergency department, followed up with “telecare,” or phone calls after older participants get discharge. This study has a high level of evidence because it was a randomized control trial and a pilot study with a sample of 75 patients to test an intervention. At the end of the study, Platts-Mills et al. reported that the intervention improved pain symptoms and outcomes in patients over the first month after visiting the emergency department (Platts-Mills et al., 2018). This study demonstrates that an education video combined with follow-up phone calls are a valuable education intervention promoting shared-decision-making between the participant and the HCP and improving the participants’ self-health management behaviors.

In another descriptive study by Holmström et al. (2016), older adult participants were interviewed about their experience of telehealth services provided by nurses, in terms of “patient-friendly” and “patient-unfriendly” aspects of telephone advice nursing. Based on the results, participants enjoyed being the center of attention, having supportive communication, and enjoyed the feelings of trust and confidence. On the other hand, the “unfriendly” aspects include lack of access to help, the uncertainty of the technique or technology, unsupportive communication, feeling forlorn, or having a need for follow-up (Holmström et al., 2016). The findings further reinforce the fact that supportive communication can help reduce social isolation, which is especially important during the Covid 19 pandemic when seniors are isolated at home due to social distancing rules. This study does not represent a high level of evidence since it is a qualitative content analysis with a small sample of 10 older people.

A study by Jeong et al. (2018) found that telephone support provided by nurses along with a telemonitoring system was also deemed to be helpful in improving health behaviors (self-care behaviors) in the participants and lowered blood pressure in low-income older adults who had hypertension. Although this was a randomized, controlled, single-blinded, and parallel pilot trial, the study had its limitation in that it was conducted in Korea, and the sample size was small. Moreover, the measures of health behavior and self-care were self-reported and therefore, were quite subjective. However, the outcome of this study highlighted the fact that telehealth support did help to improve health behaviors in the older adult participants and had an effect on improving health outcomes.

Summary of Evidence

Across the literature, researchers have successfully identified and reached consensus on the barriers to telehealth in older adults. A limiting factor is that much of the research is confined to certain diseases or conditions, such as diabetes, heart failure, and hypertension. In addition, more evidence in effective strategies or intervention design for improving telehealth adoption in older adults is needed since the Covid-19 pandemic is still ongoing; in fact, the social isolation and breakdown in support may have exacerbated all the barriers that the older adults are faced in utilizing telehealth beyond phone calls. The research lacks evidence of a comprehensive baseline health assessment prior to patients beginning telehealth interventions. The literature still has not established the efficacy of patient education, ongoing social support, and telemonitoring to boost health literacy and self-monitoring. As the Covid pandemic is still ongoing, further studies specifically tailored to the Covid pandemic are still needed to determine the best intervention strategies to encourage the use of telehealth while keeping older adults safe at home.

CHAPTER 3: PROJECT FRAMEWORK

Logic Model

A logic model was created to summarize the planning process for the DNP project (see Appendix F). This includes identifying the specific stakeholders, outlining the role and responsibilities of each stakeholder, identifying the target population or participants, outlining the intervention and project activities involved, and setting achievable outcomes. The evaluation portion demonstrates how the DNP

project was evaluated, specifically identifying methods, evaluation measures and tools, and approaches utilized to analyze and interpret the collected data.

Conceptual Framework

The Chronic Care Model

As this project aims to improve digital literacy and ease the use of technology in older adults, it would also be fitting to adopt the Chronic Care Model (CCM) to guide the planning and implementation of this DNP capstone project (see appendix E). The CCM model is a quality improvement model that “is an organizational approach to caring for people with chronic diseases in a primary care setting.” The system is population-based and creates practical, supportive, evidence-based interactions between an informed, activated patient and a prepared, proactive practice team” (Improving Chronic Illness Care, n.d.). Essentially, the CCM’s goal is to improve outcomes by empowering patients to manage their healthcare, while health care providers (HCPs) play the important role of frontline management through the following: effective coordination with the patient, practice based on latest evidence, and active follow-up with the patient (Improving Chronic Illness Care, n.d.). The CCM model consists of the following components as an improvement model: health systems, the community, self-management support, delivery system design, decision support, and clinical information systems.

Altogether, the different components of the CCM serve to guide the DNP project’s continuous redesign and improvement efforts (see Appendix E). More specifically, the goal is to ensure that the project follows evidence-based guidelines, improve coordination between the participants and the research team, improve participants’ satisfaction and usability in technology, and ensure close follow-ups to close digital gaps. Ultimately, the desired outcome is that patients can improve their health outcomes by efficiently managing their chronic illness at home without needing in-person visits at urgent care or the emergency department during the Covid-19 pandemic.

CHAPTER 4: METHODS

Project Purpose

As an attempt to bridge the digital divide and boost the usage of telehealth, this DNP scholarly project seeks to trial an intervention of patient education and ongoing technology support to assist older adult participants with at-home, Bluetooth and smartphone-enabled monitoring using the latest technology and full EPIC, hospital electronic medical record (e.g., MyChart) integration. Ultimately, this project seeks to help increase digital literacy in older adults and decrease the stigma and fear of using technology to boost health outcomes. At the end of the project, the goal is to be able to increase autonomy and confidence in the participants' usage of self-monitoring devices, so they are more comfortable navigating the world of telehealth.

Project Goals

The Covid-19 pandemic exacerbated social isolation in older adults because of the state mandated stay-at-home orders, social distancing rules, and quarantine. The older adult populations are especially vulnerable due to their high risk for poor health outcomes, social isolation, and loneliness (Holt-Lunstad, 2020). As a result of the pandemic and with an increased reliance on phones and technology, the use of telehealth has also rapidly increased. This has allowed patients to continue their medical care and manage their symptoms remotely at home. However, as demonstrated in the literature review previously, older adults are facing multiple facets of challenges with the use of telehealth and telecommunication technologies, such as a lack of access or digital literacy. Research studies report that there is still a lack of comprehensive telehealth interventions that demonstrates the efficacy of patient education, ongoing social support, and telemonitoring to boost health literacy and self-monitoring in older adults. For this reason, the DNP capstone project seeks to assist older adults with telehealth through a pilot study, the ASSIST study (Assisting and Supporting Socially Isolated Seniors Through Telehealth in the Covid-19 Pandemic). This DNP project specifically aims to trial an intervention of patient education, reinforced with ongoing technology support, in order to promote home self-monitoring for chronic illness management and boost the use of telehealth. With the integration of Bluetooth and smartphone-enabled monitoring, ambulatory EPIC EMR integration, and the collaboration of the health care and research teams, this project's main

goal is to bridge the digital divide, improve digital literacy, and boost overall health engagement and self-empowerment in older adults.

Project Description

Project Type/Design

This DNP scholarly project is a Quality Improvement (QI) project and feasibility study as an attempt to improve digital literacy in the older adult population. As outlined in the Logic model (see Appendix F), this project involved key stakeholders as an interprofessional collaboration to develop and adapt various modalities of patient education as an intervention to combat barriers to digital literacy. Qualitative data was obtained in the format of surveys from the participants and interviews from the DNP students (RN educators). At the end of the DNP project, this QI project was expected to help generate new knowledge of older adults and their digital health usage, identify the barriers and needs for digital health, evaluate whether or not the intervention is successful, and identify areas for future research.

Project Setting/Population

The project took place at a geriatrics specialty clinic at an academic medical center in Southern California, a total-care center for aging adults. This clinic specializes in Geriatric Medicine & Gerontology, providing primary care, consultation, memory and health assessment programs under a group of experts: healthcare providers (geriatricians), social workers, pharmacists, nurses, neurologists, psychologists and psychiatrists. Most notably, the clinic offers a one-of-a-kind Health Assessment Programs for Seniors (HAPS) for older adults, a comprehensive evaluation of older adults with complex health concerns by a group of designated experts including a geriatrician, neuropsychologist, social worker, pharmacist, occupational therapist, and dietitian. As a part of the ASSIST study, the lead scientists and DNP students/ RN educators collaborated with these experts to recruit participants and provide a wide range of support to these older adult participants. While the medical experts provided their medical expertise, the social worker provided the social support that was needed throughout the ASSIST and DNP capstone projects. Once the participants were selected (see “Participants and recruitment” section), the DNP project focused on further supporting these participants by providing ongoing

technology support via an approximately one-hour onboarding in-person coaching on site and weekly check-ins via the telephone thereafter. As another study location, the participants were able to participate in this study at the comfort of their own homes for telehealth home-monitoring and virtual visits with the team.

Participants and Recruitment

The project commenced by collaborating with multidisciplinary team members of the ASSIST study, including the geriatric health care team, the lead researchers for the study, Geriatric Fellows, the EPIC IT team, and DNP students. Meetings were held to delineate an execution plan for the new telehealth delivery model that can improve digital literacy in older adults. Twenty-one patients from the geriatrics specialty clinic were recruited by the Geriatric team based on the inclusion criteria to participate in the ASSIST study by telephone recruitment, primarily by the social worker who schedules HAPS visits. Their participation was completely voluntary.

The inclusion criteria were that the participants must: be a current patient at the geriatrics specialty clinic, be aged 65 years old or above, have completed or will complete a HAPS evaluation, speak English (caregivers who speak English are acceptable), have no significant vision or hearing loss or any cognitive or communication deficits that would affect the use of home-monitoring devices, be willing to take blood pressure and weight measurements at home consistently, be willing to engage in telehealth visits with the Geriatric team as needed, and allow the assigned DNP students and student volunteers to provide weekly or daily check-ins as needed.

The exclusion criteria included participants who were: younger than 65 years old, unable to understand English, have a serious, advanced health condition that would affect their abilities to participate in the study, cognitively impaired and unable to consent or perform home self-monitoring, or unwilling to agree to the terms of the study. There was no cost to participate in the study. As an incentive, the participants completed all the surveys and activities of the ASSIST study would receive a \$50 gift card upon the completion of the study. The participants were free to withdraw from the study at any time for any reasons.

Description of Intervention

After verbal consent was obtained from the participants by phone, they were scheduled to meet with an interdisciplinary health care team for the HAPS assessment at the geriatrics specialty clinic. During the half-day assessments, the Geriatric Fellows provided the consent materials, answered any questions, and then obtained written IRB-approved consent (see Appendix B) by having the participants sign the participant consent form. According to the IRB protocol, the participants also signed a HIPPA waiver (see Appendix B) prior to being enrolled in the research project. After this, participants were escorted to the designated Digital Health Learning Center at the geriatrics specialty clinic where they received training by the RN educators on how to use smart phones, MyChart (app), and the provided digital devices for home-monitoring.

A senior-friendly patient education material in a pamphlet format (see appendix H) was created and provided to patients based on the recommended health literacy tools as outlined by the National Institutes of Aging (National Institute of Aging, 2007) and U.S. Department of Health and Human Services (U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotions, 2015). This education pamphlet aimed to improve digital literacy by providing simplified and easy-to-read instructions on how to use the technology and devices that were provided to the participants. It was meant to teach accurate clinical health measurements, encourage the use of telehealth and to facilitate the participants' continued usage of the devices at home.

Afterwards, RN educators followed-up with the participants daily to weekly to provide technology support and to ensure that the data collection was successful and uninterrupted, whether it was by telephone or videocall. The RN educators kept a log and took notes of any technological issues that arose during their interactions with the participants. Medical student volunteers also collaborated with the RN educators by checking-in with the participants daily initially, then spacing out to weekly to provide further social support. The volunteers also kept a log detailing the interactions with the participants. Each check-in phone call or video call was recommended to keep within fifteen minutes long. This data collection process took place over the course of two months.

Measurements/Instruments

Participants were provided with Bluetooth-enabled devices: a Withings blood pressure cuff, an Apple iPhone, and in some cases a Withings smart scale (as indicated by the participants' medical diagnosis and up to the researchers' discretion). These devices were provided to the participants to self-monitor their vital signs at home (blood pressure and/or weight). Through our IT team's collaboration, the collected data and vital signs were automatically transmitted from the devices onto the MyChart app on the iPhone, as well as the EPIC the EMR system via Bluetooth, a first for our academic medical center. This way, the HCPs and RN educators could monitor the participants' vital signs remotely and track the participants' progress or participation. The participants were asked to collect their blood pressure using the Withings blood pressure cuff twice a day, before breakfast upon waking up, and before bedtime. For those provided with the Withings scale, the participants were asked to measure their weights once every morning.

Data Collection Procedures

Surveys were conducted to assess the following: the older adult participants' utilization of the provided technology, the perceptions of their utilization of the provided technology, their perceptions on the coordination and support from the healthcare team (Geriatric team, ASSIST team support and the geriatrics specialty clinic), and the perceptions of their own health. These surveys (see Appendix G) were collected by RN educators over the phone after telehealth education was provided to the participants as an immediate post-intervention using validated tools, and at the end of the study post-intervention. The survey was developed by two researchers and reviewed by a geriatric clinician to include 5-point Likert scale questions, as well as open-ended questions. The survey data was "deidentified" and stored electronically on RedCap on a secure server of UCI Health, accessible to UCI authorized persons only.

The data collected by the participants (vital signs) were automatically transmitted via Bluetooth onto the EPIC EMR system for further analysis. This took place over a two-month period. Throughout this time, the RN educators and student volunteers conducted regular check-ins with the participant to

minimize interruptions and resolve any technological issues that arose. The EPIC data was accessible to HCPs and authorized personnel of the study only.

For both types of data collection, all identifiable information of the participants was removed and replaced with a code. The list that consisted of the code and the participants' identifiable information was kept separately from the research data to protect the participants' privacy and anonymity.

An interview with the RN educators who assisted with technology support was conducted via Zoom. During this interview, the author posed specific open-ended questions that were targeted toward identifying challenges that occurred during the patient education process (see Appendix G). The interview was meant to help identify education gaps or needs as discovered throughout the weekly check-in phone calls or the onboarding process at the Digital Health Learning Center.

Data Analysis

The surveys collected on RedCap were analyzed at the end of the ASSIST study. The responses from the open-ended questions (qualitative data) were extracted and categorized into groups on an Excel spreadsheet. The number of times each topic was mentioned in the phone interview surveys was tallied and coded manually as themes and subthemes. Focusing on the immediate post educational intervention surveys, these themes were extracted to explore the effectiveness of patient education on telehealth to these older adult participants. The intervention to be evaluated includes: the hands-on onboarding training at the Digital Health Learning Center, teach-back methodology with standardized directions to the participants, and the patient education pamphlet as a standardized teaching tool in the initial onboarding process. As quantitative data, the average means were calculated based on the participant's responses from the surveys that assess the following topics on a scale of 1 through 6: illness management, home monitoring, devices, telehealth visits, and overall. These numeric findings obtained immediate post-intervention are important in that they help to indicate the participants' overall evaluation of the telehealth education.

The responses from the group interview with the RN educators were transcribed and sorted into themes on an Excel spreadsheet. Specifically, RN educators would discuss any gaps in digital literacy and

barriers in teaching that were noted throughout the study. Furthermore, the group discussed if there were any further education needs based on these barriers or gaps, as well as any strategies or skills that particularly made the education process successful or unsuccessful.

Ethical Considerations

As detailed earlier, IRB approval was obtained prior to the start of this project. The specific protocols delineated in the IRB were followed, including written consent of the participants. In addition, the IRB included the signed waiver of Health Insurance Portability and Accountability Act of 1996 (HIPPA). Each participant signed the IRB consent and the HIPPA waiver prior to enrollment in the study. Data collection in the form of surveys was deidentified and stored electronically on a secured server on RedCap (password protected), as well as a secure and encrypted computer network of the university. None of the patient identifiers were used throughout the study; instead, all identifiable information was replaced with a code. The code linked to the participants' information was kept separately from the research data in a secured server that is only accessible to the ASSIST research team and the DNP students. The privacy of the participants' information on EPIC the EMR system was maintained the same way it is routinely respected with every patient within the academic medical center EMR system.

In addition, as a Remote Patient Monitoring pilot study, the ASSIST study provided a Compliance and Legal approved form explaining that the data was not being monitored 24/7, so reading outside of a designated range required the participant to take specific actions. This safety document was reviewed with each participant and signatures were obtained. In addition to the forms, the patients were provided with wallet cards with QR codes and contact information for the 24/7 on-call healthcare team, and the DNP student and ASSIST student's names.

Stakeholders

Major stakeholders for this DNP project included members of the ASSIST study: lead physician researcher and other researchers from the geriatrics specialty clinic. Permission was obtained from the ASSIST research team for the author to conduct the DNP project as a subproject of the ASSIST study.

As a part of the expert team for the HAPS assessment, the collaboration with the following members at the geriatrics specialty clinic was equally essential: neuropsychologist, social worker, pharmacist, occupational therapist, and dietitian. As a unique aspect of this study, IT specialists were included to help develop the EPIC platform and MyChart mobile app so the results of home-monitoring performed by the participants could be linked to the EPIC EMR system from the home-monitoring devices. The IT department also assisted with further technology support as needed for the ASSIST study in the case that an instrument had failed to function properly, or to troubleshoot any other issues that arose throughout the data design or collection process. The IT team also helped to ensure sustainability through building the EMR-integration platform and through collaboratively designing EPIC-integration of educational materials for future use. Medical and nursing students were also involved in the project to assist with providing regular social check-ins with the participants to address social isolation and loneliness.

Formative Process Evaluation

Formative evaluations were conducted multiple times after implementing telehealth education as an intervention for my DNP capstone project to determine the effectiveness of the intervention. In fact, weekly meetings were held during the participants' data collection period with the site mentor and the ASSIST research team to provide weekly updates on the progress of the intervention and resolves any issues that arose. It was important to resolve these issues as early as possible to improve the quality of the intervention through modifications, and to ensure that the intervention would continue to be successful for the ongoing research and subsequent participants.

During the weekly meetings and formative evaluations, some of the questions that frequently came to light were: What were the barriers to the participants' adherence or participation to the study despite on-going telehealth education? What were the specific technological needs from the participant? How can we better assist them via patient education? Like the findings discovered from the literature review, there were multiple barriers to telehealth usage that were discovered among these participants: physical challenges, technology barriers, telehealth knowledge deficits, lack of experience with telehealth

or digital equipment use, etc. As a result, the DNP student and ASSIST team collaborated to come up with a plan to tailor to each participant's needs and provide the extra assistance for that participant. This was done via first identifying the barrier that the participant was experiencing, then the DNP student would target those barriers by providing the specific type of telehealth education needed for that participant. For example, extra time was spent to explain to the participant on how to use the provided self-monitoring equipment. Whenever the patient felt discouraged to do the intervention, the DNP student would emphasize on the benefits of said intervention to boost adherence. Such benefits may include being able to manage own health, the convenience of home-monitoring, and avoiding in-person Covid-19 exposure by going to the clinic or emergency department.

Other questions that were frequently explored were: Which teaching strategies were successful and not successful for the participants? What kind of teaching modality is best for this participant? It was discovered that while some participants enjoyed the weekly check-ins over the phone for telehealth support, some preferred to learn the techniques over video calls where live demonstrations and teaching can be provided to the participants. As aforementioned, some participants required extra or customized assistance such as a video call, depending on the participant's physical capabilities, perception of telehealth, or experience with telehealth. Because the participants were aged between 70 to 96 years old, many have never used technology such as a Bluetooth device, a digital blood pressure cuff, a smartphone, or the internet before. Therefore, it was important to take those factors into consideration prior to teaching each patient.

CHAPTER 5: RESULTS AND CONCLUSIONS

Results

During the onboarding process of the ASSIST study, 22 older patient participants were initially enrolled to participate. One participant was lost due to health complications that were not related to the study. This participant never completed the immediate post-intervention survey and thus was not included in the study. The remaining eligible 21 participants were able to complete the intervention, finish the

immediate post-intervention survey, and received ongoing patient education throughout the two-month data collection period.

Participant Demographics

The demographic information of the 21 older adult participants is shown in Table 1. There were 11 (52%) male and 10 (48%) female participants. Their age ranged from 70 to 96 years old, with a mean age of 81 years old and standard deviation of 7.2. There were 10 (48%) non-Hispanic whites, 3 (14%) Hispanics, 6 (29%) Asians, 2 (9%) other/mixed race participants. Most participants spoke English, except for one participant who spoke Chinese only but had a caregiver who spoke English and translated for the participant. All participants were retired. 57% of the participants were married, 19% were divorced, 19% were widowed, and 5% were single. All participants were insured through Medicare and/or Medi-Cal, or private insurance, and had already established care with a primary care provider at the geriatric primary care center where the ASSIST study was conducted.

As aforementioned, an immediate post-intervention survey was conducted over the phone by an RN educator, which was recorded in Redcap. In addition, an interview was conducted with an RN educator who was also one of the research assistants. Both the author and that DNP student's input were utilized as qualitative data for this project. Table 2 presents the main themes and subthemes from the qualitative data collected from these immediate post-intervention surveys and interviews with RN educators. The major themes across all collected data were a) overcoming physical challenges, b) navigating technology, c) seeking social connection, and d) benefits of telehealth through education. Table 3 represents the quantitative data that was collected from the immediate post-intervention surveys.

Overcoming physical challenges

The participants elicited multiple physical challenges that presented at the beginning of the data collection period and immediate post-intervention. Despite rating 5.4 out of 6 points in the "home monitoring" survey question that queried how confident the participants were in taking their own

measurements after the patient education intervention (see table 3), some participants brought up the unavoidable physical challenges that presented with self-home monitoring. While 8 participants specifically stated they had no issues in doing their own measurements, some admitted to having physical and memory challenges. One participant stated: “sometimes I feel like because I am getting older and slowing down it takes me longer to do things that I normally do. I also sometimes get forgetful and that bothers me a lot.” One participant with a disability relied heavily on family members or caregivers, stating “I let my daughter manage my health,” and “I rely on my daughter to help me with technology- she answers the phone, monitors my blood pressure, and helps with the computer, I can’t do it on my own.”

Multiple adjustments were made by the RN educators with the delivery of telehealth education to overcome these physical challenges. For instance, the RN educators learned that by enlarging the fonts on the iPhone, the participants with vision impairment were able to view the MyChart and Withings apps more clearly. By utilizing the function of a video call, participants were able to “see” the teaching or demonstration “face-to-face”. It was noted that simple adjustments and utilizing the accessibility functions of the devices tremendously assisted these participants in navigating through the devices more swiftly. RN educators also involved caregivers to overcome barriers to using technology; one RN educator modified teaching to include a caregiver for a participant who was unable to put on a blood pressure cuff on his own due to physical limitations.

Navigating Technology

Navigating through technology continued to present itself as a major challenge throughout the education process, as demonstrated in the immediate post-intervention survey and interviews. A RN educator stated, “familiarizing patient with technology was by far the hardest throughout.” For instance, participants had to be coached on how to turn on the smart phone, charge the devices, open apps on the iPhone, etc. On the other hand, the participants themselves echoed the same challenge in the survey- for many, it was their first time utilizing a smart (cell) phone, blood pressure Bluetooth device, phone apps,

and the internet. One participant even admitted to not being digitally connected at all, “We don’t really use MyChart at home, we don’t have internet.” Subsequently, many participants also had difficulties logging onto the MyChart app and the internet. A DNP student further expressed, “trying to teach somebody how to use a phone when they’re on the phone is next to impossible.” Technology fears and anxieties were revealed to the RN educators, as one characterized, “some (participants) were very anxious about it (technology); they were worried. There was a lot of reassurance, ‘Yes, you’re doing it right.’”

In terms of the different modalities of education that were provided to help the participants navigate the technology, one of the RN educators stated, “all methods were helpful. But the best teaching method was the hands-on 1:1, showing them personally hands-on this is the button you press...having them to do it and being able to tell them in real time. After that, having the written material (patient education pamphlet) was the best thing for them to go back to reference.” In another RN educator’s experience, she found that once the patient was sent home from the in-person onboarding session, it was helpful to be able to provide teaching to the patient over the phone by going through the pamphlet together step-by-step. The pamphlet also served as a good reminder and reference for when the patient was alone and had to troubleshoot any issues him or herself before reaching out for assistance. She stated that patients found it helpful to have a pamphlet to refer to, especially a senior-friendly one as provided that was easy to read and comprehend.

Seeking Social Connection

Despite some of the challenges that the participants experienced, the participants valued the social connection saying that they benefited from the interaction within the RN educators and volunteers. One patient stated, “I like that you guys ‘ring my bell’ every now and then”, and that he was comfortable being called (by volunteers and educators) once or twice a week. Another participant also valued the telehealth experience with his healthcare provider, “it’s nice to be able to talk to the doctors and stay connected.” A caregiver of another participant echoed the same sentiment, stating “Yes, I would say he (the participant) would benefit from having more connection and forcing me to monitor his vital signs

more closely.” The RN educators, on the other hand, noted that most of the participants sounded joyful during the telephone check-ins, the participants were “happy”, “joyous”, “pleasant”, and “welcoming to speak to.” Through spending more time with these participants and by listening to their stories, it became evident that the participants enjoyed the social interaction with the RN educators. In turn, the educators were also able to learn about the participants on a more personal level in order to tailor their teaching methods.

Benefits of Telehealth Through Education

Based on the survey results, the participants felt they benefited from the ASSIST program and education received during the Covid-19 pandemic in various ways, with a mean score of 5.25 out of 6 (see Table 3). Convenience was a positive aspect that was highlighted throughout the surveys. A participant stated, “it is great that we can do the same (telehealth) visits from home, I feel more comfortable at home.” Analogously, one added “I love the telehealth delivery system on the computer...I do not have to worry about the hustle and bustle of getting ready and driving to the clinic. There is nothing I would change.” Participants also appreciated being able to achieve better health outcomes through the study, with one stating “I feel that my blood pressure will be better managed”, and “it is very convenient to be able to monitor my blood pressure at home.” A participant also highlighted the importance of being able to view the data that was collected, stating “I like the convenience of this program and that I get to see the analytical data.”

Being able to understand one’s own health has proven to be crucial and beneficial for participants as well, as one highlighted “I feel that in this program I’ll be able to understand my body more and that I can do something towards my health.” Similarly, a participant stated the technology has helped him by identifying a possible health issue from monitoring his pulse at home. In fact, post-intervention, the participants rated a mean score of 5.45 out of 6 in terms of illness management, showing improved understanding their condition and managing their illness while receiving care at home through the ASSIST program and telehealth education (see Table 3). Furthermore, participants acknowledged

improved telehealth usage with increased confidence over time after telehealth education, rating a 5.4 out of 6 for the statement that reads “I feel confident taking my own weights, P, and other vital sign measurements (see Table 3). A participant revealed, “it was a little hard to get use to using the blood pressure device at the beginning and my son-in-law had to assist me with it. But it’s gotten better and now I can do it on my own.” DNP students also agreed that with more teaching sessions and practices, whether it was through in-person, telephone or video call, patients were able to better manage the devices. After a few coaching sessions over the telephone, the participants seemed more relaxed, less anxious, and more confident, as demonstrated by their tone of voice, calmer attitudes, and continued willingness to learn. Most importantly, post-intervention, the participants rated a mean score of 5 out of 6 for the statement the states “I found the technology and devices easy to use and helpful for staying healthy and connected during this pandemic” (see Table 3). This was a reflection that the telehealth education was in fact effective and helpful to these older adult participants.

Discussion

Overall, it was demonstrated that RN educators were successful in engaging and educating the participants. With the RN educator’s assistance, the participants’ attitude toward telehealth improved from being overwhelmed at the beginning of the study to feeling more confident and relaxed after the initial hands-on teaching and one to two weeks of telephone check-ins. Through the educators’ multiple teaching sessions and reinforcement, the participants’ abilities to use the devices also improved over time with the tailored education that was provided to them. From the teaching, the participants learned how to operate a smart phone, turn it on, charge it, manage the MyChart app, and accurately check their blood pressure using a Bluetooth device. This was a momentous feat as most participants had never even owned a smart phone nor Bluetooth device prior to the study. Moreover, the participants demonstrated an improvement in their ability to better manage their own health by learning how to check their own blood pressure then view their own data instantaneously on the MyChart app, which reflected improved health literacy and digital literacy. This allowed these older adult participants to comfortably manage their own

health at home without having the need for an in-person visit, preventing them from unnecessary exposure to Covid-19.

Based on the feedback retrieved from the participants, RN educators were appropriate choices for telehealth education and the main reason behind the success of telehealth education for these older adults. As registered nurses and DNP student nurse practitioners, the RN educators have completed extensive education and training to provide patient education and health promotion. Donelan et al. (2019) specifically highlights the RN's role in healthcare management and research, stating "RNs have played a major role in developing and leading care management programs in hospitals and health systems, consistent with meeting the health care needs of patient with complex chronic illness, frailty, or comorbidity at hospital-to-community transitions. Leading researchers in primary and geriatric care teams have also promoted clinician partnerships with RNs in community practice." As demonstrated in this study, the RN educators were able to utilize their expertise in patient education earned from their day-to-day experience interacting with their patients at the bedside and successfully applied it to the study. In fact, the RN educators were already experts in taking vital sign measurements in their practices, often while using the latest technology; hence, they were also experts in teaching participants how to measure their blood pressure or weight for the study. The efficacy of the telehealth education was almost immediate, as reflected in the immediate-post intervention survey and interview, where most participants (and caregivers for those with physical disabilities) were able to peruse the provided blood pressure devices and smartphones after receiving coaching sessions from the RN educators.

Findings from this study further demonstrated that by providing telehealth education, older adult participants were able to overcome the physical challenges that hindered the usage of telehealth and the associated technology or equipment. When the learning experience was tailored to fit the participants' needs, their overall telehealth experience and utilization improved.

The findings from the survey and interview revealed that while many older adult participants were not familiar with some of the latest technology, some did not even have access to technology at all.

Therefore, some participants required extra coaching sessions, in addition to the 1:1 hands-on teaching from the onboarding session. The participants were anxious and worried throughout the teaching sessions, requiring multiple reassurance and additional telephone check-ins from the RN educators. As another way to improve digital literacy, an RN educator further took on the role of a researcher by creating a senior-friendly education pamphlet based on national recommendations. It was deemed important to have this an extra teaching tool especially when low digital literacy was a barrier to maximizing the utilization of technology and telehealth. It was important to ensure that the participants could utilize the devices appropriately so they could measure their own blood pressure or weight correctly to ensure accurate results. In this way, the participants were able to better manage their health, reflecting a boost in health literacy.

As the Covid-19 pandemic may have exacerbated social isolation and loneliness for older adults, many participants benefited from the social connection that they developed with the RN educators and medical/nursing student volunteers. RN educators discovered that participants were receptive of the teaching and that the telehealth education provided was helpful in combating social isolation in these older adult participants during the pandemic.

Moreover, the survey findings revealed that older adult participants enjoyed the benefits of telehealth that they gained from this study once they became familiarized with the technology through patient education. Most importantly, some participants felt that they were able to understand their own health better because they were able to measure their own vital signs daily and see the trends on the MyChart app. Compared to existing literatures, this study demonstrated similarities in the benefits of telehealth. A recent narrative review reveals that “telehealth technologies have shown effectiveness on improving self-care skills, improving self-monitoring behaviors and improving clinical outcomes among older adults with chronic condition (s) in different settings” (Yuqi & Albright, 2017). As demonstrated in the surveys and interviews, by educating older adults and coaching them so they can learn how to use the

latest technology to utilize telehealth, older adults were able improve their self-monitoring skills and digital literacy. Subsequently, improved digital literacy would then improve health literacy as well.

Limitations

There were several limitations to this capstone project. First, this project involved a small sample size that was recruited through the parent study. Although the participants were carefully selected with specific inclusion and exclusion criteria, the qualitative data retrieved was rather limited and may not be enough to be representative of the general older adult population of the U.S. Second, the time spent on the 1:1 in-person onboarding training was kept to a minimum (one hour) to prevent Covid-19 exposure to the older adult population. As a result, there is a possibility that the participant could have benefited from spending more time learning from the DNP students at the hands-on onboarding training. Third, some participants indicated they were already using a blood pressure device at home to self-monitor. As such, these participants should be considered as more advanced learners, which may have affected the survey results.

Implications

In order to increase the generalizability of the study, future work should broaden the patient demographics and expand the study to a larger sample size. The same intervention can be tested multiple sites to determine and compare the efficacy of telehealth education in older adults. Different education modalities can be tested to experiment and determine the best teaching method for the older adult population. The type of data collected can also be broadened to enhance health management, which may include the following but not limited to monitoring: oxygen saturation, electrocardiogram (EKG), pain monitoring, diet, etc. In addition, as a recent literature review concludes, “health coaching combined with telehealth may be an effective solution for providing health care to older adults. However, health coaching is predominantly performed by human coaches with limited use of technology to augment or

replace the human coach” (Markert et al., 2021). Therefore, it remains to be explored to include automated coaching or teaching in the future to reach and benefit a larger older adult population.

Post-pandemic, older adults will have to face the new “normal” where telehealth utilization may continue despite the return of in-person visits, though it remains to be seen whether older adults will have adapted to existing technology and telehealth in general by that time. The multiple benefits of telehealth demands new policies that will broaden access to telehealth in the older adult population, and new funding to support research in telehealth to mitigate barriers. Government organizations may further provide incentives to healthcare providers and facilities to encourage the use of telehealth and ultimately promote better health outcomes in older adults.

Conclusion

The intention of providing telehealth education and ongoing technology support as an intervention of the ASSIST study was to help overcome the barriers to the utilization of telehealth in older adults and boost telehealth literacy. Overall, the intervention was successful, as most participants were able to collaborate with the RN educators to improve their overall digital usage and knowledge. As demonstrated in the immediate post-intervention surveys and interviews, the participants became more independent and efficient in utilizing the provided technology after the 1:1 hands-on onboarding and coaching sessions through frequent telephone check-ins. As a result, the older adult participants developed greater confidence in using technology and telehealth to for better self-management and understanding of their own health during the pandemic while combating social isolation at the same time.

This project has promoted mastery of DNP essentials II, IV and VI. As outlined in DNP essential II, “Organizational and systems leadership for quality improvement and systems thinking”, this project focused on the needs of the older adult population to develop a Quality Improvement intervention based on the latest nursing science. In satisfying DNP Essential IV, “Information systems/technology and patient care technology for the improvement and transformation of health care”, the project utilized knowledge and skills related to information systems and technology, as well as the latest technology to

improve digital and health literacy. Lastly, DNP essential VI, “Interprofessional collaboration for improving patient and population health outcomes” was met through a close collaboration with the interprofessional team for the project, where effective communication and collaborative skills were utilized for the development of the telehealth education intervention.

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Appendix A

Site Approval/Authorization Letter



Letter of Cooperation with Outside Organization for UCI DNP Project

Date: 11/12/2021

Dear: (name of DNP Student): Lucetta Chiu

This letter confirms that I, as an authorized representative of allow the above-named Doctor of Nursing Practice student access to conduct a leadership, policy, quality improvement, or evidence-based practice project activities at the listed site(s) as discussed with the DNP student and outlined below. These activities may commence after the DNP student has consulted with UCI IRB about the proposed project.

- **Project site(s):** (list specific site name and address for all sites within which the organization is providing student access to conduct the project)

UCI Health SeniorHealth Center
101 The City Drive, South Pavilion 4, Building 25
Orange, CA 92668

- **Project purpose:** (briefly summarize the project purpose, plan and expected outcomes)

Purpose: To improve the telehealth experience and address barriers to digital literacy for high-risk geriatric patients at the UCI Senior Health Center through patient education

Plan: Building upon the ASSIST study, this DNP capstone project seeks to address the barriers to digital literacy through patient education: on-site training, senior-friendly education materials, weekly check-in phone calls

Expected outcomes: Improve telehealth experience for older adults, boost health literacy, and increase use of patient self-monitoring. The outcomes will be measured by surveys, interviews, and data from EMR system

- **Project activities:** (briefly summarize the activities that will commence at the site, including any baseline data collected, educational interventions, PDSA cycle proposed...)

21 participants will receive training on provided digital devices for home-monitoring on site over 2 months. Data is collected and automatically transmitted through EMR. Various patient education modalities will be provided to help improve digital literacy.

1) senior-friendly education materials in multiple languages, 2) provide in-person hands-on teaching sessions at the Senior Health Center, 3) weekly check-in phone calls by the ASSIST team and on-going technology support when needed, including video and phone visits.

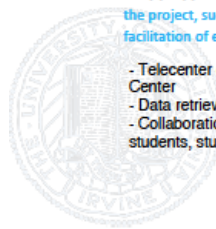
- **Target population:** (identify the population upon whom the project will focus)

Older adults aged 65 and up at the UCI SeniorHealth Center

- **Site(s) support:** (briefly describe the support the project site(s) agree to provide to support the project, such as space to conduct project activities, data retrieval from electronic records, facilitation of educational activities...)

- Telecenter (conference room) and patient exam rooms at the UCI SeniorHealth Center
- Data retrieval from Epic EMR System
- Collaboration with the ASSIST research team: Geriatric MDs, Lead scientists, DNP students, student volunteers, IT personnel

Sue & Bill Gross School of Nursing
268 Berk Hall
Irvine, CA, 92697-3959
(949) 824-3650
www.nursing.uci.edu



- **Data management plan:** (briefly describe the plan for management of data such as what data will be collected, whether it will be identified/de-identified, what protections will be in place for data protection...)

Research participants and their data are de-identified and saved in RedCap or secure server of UCI Health Division of Geriatric Medicine. The Epic data will be accessible to authorized persons of the research team only.

- **Other agreements:** (briefly describe any additional agreements that have been made to support the project, if applicable)

IRB approval for the ASSIST research study on 8/27/2020
UCI IRB HS# 2020-6074

- **Anticipated end date:** (indicate the anticipated date that the project will be concluded at the site)

May, 2021

It is understood that all DNP Scholarly Project related activities must cease if directed by UCI IRB. It is also understood that any activities that involve Personal Private Information or Protected Health Information must comply with HIPAA Laws and institutional policy.

Our organization agrees to the terms and conditions stated above. If there are any concerns related to this project, we will contact the DNP student named above and their DNP Scholarly Project Chair. For concerns regarding IRB policy or human subject welfare, we may also contact our own institutional IRB.

UCI IRB: <https://www.research.uci.edu/compliance/human-research-protections/researchers/irb-faqs.html>

With regards,

Project Scientist Division of

(Signature of Project site-authorized representative)

(Job title of authorized representative)

11/12/21

(Date signed)



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Appendix B

IRB Form



OFFICE OF RESEARCH
INSTITUTIONAL REVIEW BOARD
PAGE 1 OF 3
August 27, 2020

UC IRVINE: OFFICE OF RESEARCH
INSTITUTIONAL REVIEW BOARD (IRB)
PAGE 2 OF 3

LISA GIBBS
GERIATRIC MEDICINE DIVISION/FAMILY MEDICINE DEPT

RE: UCI IRB HS# 2020-6074 *ASSIST Geriatric Program: Assisting and Supporting Socially Isolated Seniors through Telehealth in the COVID-19 Pandemic*

The above-referenced human-subjects research project has been approved by the University of California, Irvine Institutional Review Board (UCI IRB). This approval is limited to the activities described in the approved Protocol Narrative, and extends to the performance of these activities at each respective site identified in the Application for IRB Review. In accordance with this approval, the specific conditions for the conduct of this research are listed below, and informed consent from subjects must be obtained unless otherwise indicated below. Additional conditions for the general conduct of human-subjects research are detailed on the attached sheet.

NOTE: Approval by the Institutional Review Board does not, in and of itself, constitute approval for the implementation of this research. Other institutional clearances and approvals may be required (e.g., EH&S, Radiation Safety, School Dean, other institutional IRBs). Research undertaken in conjunction with outside entities, such as drug or device companies, are typically contractual in nature and require an agreement between the University and the entity. Such agreements must be executed by an institutional official in Sponsored Projects, a division in the UCI Office of Research. The University is not obligated to legally defend or indemnify an employee who individually enters into these agreements and investigators are personally liable for contracts they sign. Accordingly, the project should not begin until all required approvals have been obtained.

Questions concerning the approval of this research project may be directed to the Office of Research, 141 Innovation Drive, Suite 250, Irvine, CA 92697-7600; 949-824-6068, 949-824-2125, or 949-824-0665 (biomedical committee) or 949-824-6662 (social-behavioral committee).

Expedited Review: Category 4,5,7

Cristobal Barrios, MD
Vice Chair, Institutional Review Board

Approval Issued: 8/27/2020
Expiration Date: 8/26/2023
UCI (FWA) 00004071, Approved: January 31, 2003

Important Reminder: UCI is in Research Phase 2 as of June 8, 2020. UCI's research activities will increase over time in parallel with the stages in California's Pandemic Roadmap and other public health and higher education guidance. Refer to the Office of Research webpage on [Research Continuity](#) for more details.

IRB Determinations as Conditions of Approval:

Informed Consent Determinations:

1. Partial Waiver of HIPAA Research Authorization for Participant Recruitment
2. Signed Informed Consent Required for Participant
3. Signed UC HIPAA Research Authorization Required for Participant
4. Waiver of Signed Consent Granted for Caregiver
 - a. Study Information Sheet Required

UNIVERSITY OF CALIFORNIA

APPROVAL CONDITIONS FOR ALL UCI HUMAN RESEARCH PROTOCOLS

POST-APPROVAL INVESTIGATOR RESPONSIBILITIES (PAIR):

In accordance with Federal regulations and HRP policies, there are Investigator responsibilities during the conduct, as well as after completion, of your research. Use the [PAIR Worksheet](#) to ensure adherence with your post-approval regulatory responsibilities.

UCI RESEARCH POLICIES:

All individuals engaged in human-subjects research are responsible for compliance with all applicable [UCI Research Policies](#). The Lead Researcher (and Faculty Sponsor, if applicable) of the study is ultimately responsible for assuring all study team members adhere to applicable policies for the conduct of human-subjects research.

LEAD RESEARCHER (LR) RECORDKEEPING RESPONSIBILITIES:

LRs are responsible for the retention of protocol-related records. The following web pages should be reviewed for more information about the LR's recordkeeping responsibilities for the preparation and maintenance of research files: [Lead Researcher Recordkeeping Responsibilities](#) and [Preparation and Maintenance of a Research Audit File](#).

APPROVED VERSIONS OF CONSENT DOCUMENTS, INCLUDING STUDY INFORMATION SHEETS:

Unless a waiver of informed consent is granted by the IRB, the consent documents (consent form; study information sheet) with the UCI IRB approval stamp must be used for consenting all human subjects enrolled in this study. Only the current approved version of the consent documents may be used to consent subjects. **Approved consent documents are not to be used beyond the expiration date provided on the IRB approval letter.** Current consent documents are available on the [IRB Document Depot](#).

PROTOCOL EXPIRATION:

The UCI IRB approval letter references the protocol expiration date under the IRB Chair's signature authorization. A courtesy email will be sent approximately 60 to 90 days prior to expiration reminding the Lead Researcher to apply for continuing review. It is the LR's responsibility to apply for continuing review to ensure continuing approval throughout the conduct of the study. Lapses in approval must be avoided to protect the safety and welfare of enrolled subjects.

MODIFICATIONS & AMENDMENTS:

Per federal regulations, once a human research study has received IRB approval, any subsequent changes to the study must be reviewed and approved by the IRB prior to implementation *except when necessary to avoid an immediate, apparent hazard to a subject*. Accordingly, no changes are permissible (unless to avoid an immediate, apparent hazard to a subject) to the approved protocol or the approved, stamped consent form without the prior review and approval of the UCI IRB. All changes (e.g., a change in procedure, number of subjects, personnel, study locations, new recruitment materials, study instruments, etc.) must be prospectively reviewed and approved by the IRB before they are implemented.

CHANGES IN FINANCIAL INTEREST:

Any changes in the financial relationship between the study sponsor and any of the investigators on the study and/or any new potential conflicts of interest must be reported immediately to the UCI Conflict of Interest Oversight Committee (COIOC). If these changes affect the conduct of the study or result in a change in the text of the currently-approved informed consent document, these changes must also be reported to the UCI IRB via a modification request.

GRANT CONGRUENCE REVIEWS:

If this human subject research is funded or supported by a Federal Agency, it is the LR's responsibility to submit modifications, as necessary, to assure that the IRB protocol continues to be identical in principle and congruent with the scope of work outlined in the proposal application.

UNANTICIPATED PROBLEMS REPORTING:

In accordance with Federal regulations and HRP policies, only internal (where UCI serves as the IRB of record), Unanticipated Problems must be reported to the UCI IRB. Unanticipated Problems should also be reported to the UCI IRB when UCI is relying on an external IRB, and the incident occurred at UCI or the incident occurred at an offsite location on a study conducted by a UCI LR. Unanticipated Problems must be submitted to the IRB via the Unanticipated Problems (UP) Report within 5 business

days upon the IR's knowledge of the event. For additional information visit the updated HRP webpage on [Unanticipated Problems](#).

POSTING OF THE INFORMED CONSENT DOCUMENT:

Clinical trials initially approved by the IRB on or after January 21, 2019, must post one (1) IRB-approved clinical trial consent form at a publicly available federal website. The consent form must be posted after recruitment closes, and no later than 60 days after the last study visit. For additional guidance, refer to the [OHRP FAQs on Informed Consent](#).

CLOSING REPORT:

A closing report should be filed with the UCI IRB when the research concludes. Visit the HRP webpage [Closing a Protocol](#) for complete details.

Appendix B

HIPPA Form

HS# 2020-6074

University of California Irvine Health
Permission to Use Personal Health Information for Research

Study Title (or IRB Approval Number if study title may breach subject's privacy): Assist Geriatric Program: Assisting and Supporting Socially Isolated Seniors through Telehealth in the COVID-19 Pandemic

Principal Investigator Name: Dr. Lisa Gibbs

Sponsor/Funding Agency (if funded): CARES ACT--Federal Funding
HRSA/GWEP

A. What is the purpose of this form?

State and federal privacy laws protect the use and release of your health information. Under these laws, the University of California or your health care provider cannot release your health information for research purposes unless you give your permission. Your information will be released to the research team which includes the researchers, people hired by the University or the sponsor to do the research and people with authority to oversee the research. If you decide to give your permission and to participate in the study, you must sign this form as well as the Consent Form. This form describes the different ways that health care providers can share your information with the researcher, research team, sponsor and people with oversight responsibility. The research team will use and protect your information as described in the attached Consent Form. However, once your health information is released by UC Irvine Health it may not be protected by the privacy laws and might be shared with others. If you have questions, ask a member of the research team.

B. What Personal Health Information will be released?

If you give your permission and sign this form, you are allowing your health care provider to release the following medical records containing your Personal Health Information. Your Personal Health Information includes health information in your medical records, financial records and other information that can identify you.

- | | | |
|--|--|---|
| ☒ Entire Medical Record | ☐ Lab & Pathology Reports | ☐ Emergency Department Records |
| ☐ Ambulatory Clinic Records | ☐ Dental Records | ☐ Financial Records |
| ☐ Progress Notes | ☐ Operative Reports | ☐ Imaging Reports |
| ☐ Other Test Reports | ☐ Discharge Summary | ☐ History & Physical Exams |
| ☒ Other (describe):
Telehealth Visits
<small>(Description of Other Health Information)</small> | ☐ Consultations | ☐ Psychological Tests |

C. Do I have to give my permission for certain specific uses?

Yes. The following information will only be released if you give your specific permission by putting your initials on the line(s).

- _____ I agree to the release of information pertaining to drug and alcohol abuse, diagnosis or treatment.
- _____ I agree to the release of HIV/AIDS testing information.
- _____ I agree to the release of genetic testing information.
- _____ I agree to the release of information pertaining to mental health diagnosis or treatment.

D. Who will disclose and/or receive my Personal Health Information?

Your Personal Health Information may be shared with these people for the following purposes:

1. To the research team for the research described in the attached Consent Form;
2. To others at UC with authority to oversee the research
3. To others who are required by law to review the quality and safety of the research, including: U.S. government agencies, such as the Food and Drug Administration or the Office of Human Research Protections, the research sponsor or the sponsor's representatives, or government agencies in other countries.

E. How will my Personal Health Information be shared for the research?

If you agree to be in this study, the research team may share your Personal Health Information in the following ways:

1. To perform the research
2. Share it with researchers in the U.S. or other countries;
3. Use it to improve the design of future studies;

4. Share it with business partners of the sponsor; or
5. File applications with U.S. or foreign government agencies to get approval for new drugs or health care products.

F. Am I required to sign this document?

No, you are not required to sign this document. You will receive the same clinical care if you do not sign this document. However, if you do not sign the document, you will not be able to participate in this research study.

G. Optional research activity

If the research I am agreeing to participate in has additional optional research activity such as the creation of a database, a tissue repository or other activities, as explained to me in the informed consent process, I understand I can choose to agree to have my information shared for those activities or not.

- ☐ I agree to allow my information to be disclosed for the additional optional research activities explained in the informed consent process.

H. Does my permission expire?

This permission to release your Personal Health Information expires when the research ends and all required study monitoring is over.

I. Can I cancel my permission?

You can cancel your permission at any time. You can do this in two ways. You can write to the researcher or you can ask someone on the research team to give you a form to fill out to cancel your permission. If you cancel your permission, you may no longer be in the research study. You may want to ask someone on the research team if canceling will affect your medical treatment. If you cancel, information that was already collected and disclosed about you may continue to be used for limited purposes. Also, if the law requires it, the sponsor and government agencies may continue to look at your medical records to review the quality or safety of the study.

J. Signature

Subject

If you agree to the use and release of your Personal Health Information, please print your name and sign below. You will be given a signed copy of this form.

Subject's Name (print)—*required*

Subject's Signature

Date

Parent or Legally Authorized Representative

If you agree to the use and release of the above named subject's Personal Health Information, please print your name and sign below.

Parent or Legally Authorized Representative's
Name (print)

Relationship to
Subject

Parent or Legally Authorized Representative's
Signature

Date

Witness

If this form is being read to the subject because s/he cannot read the form, a witness must be present and is required to print his/her name and sign here:

Witness' Name (print)

Witness' Signature

Date

Appendix B

Consent Form

UNIVERSITY OF CALIFORNIA, IRVINE
CONSENT TO ACT AS A HUMAN RESEARCH SUBJECT

Assist Geriatric Program: Assisting and Supporting Socially Isolated Seniors through Telehealth
in the COVID-19 Pandemic

Lead Researcher
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24-Hour Telephone Number/Pager
714-456-7007

Other Researchers

Dr. Sonia Sehgal, MD, Family Medicine Dr. Cynthia Haq, MD, Chair, Family Medicine
Dr. Jung-Ah Lee, School of Nursing
Dr. Julie Rousseau, Family Medicine
Dr. Shefali Agarwal, Fellow, Geriatric Program
Dr. Katherine De Azambuja, Fellow, Geriatric Program
SeniorHealth Center, UC Irvine Health

Study Coordinator
Jacklyn Schult

STUDY LOCATION(S):
SeniorHealth Center
UC Irvine
Patient's Home

SUMMARY OF KEY INFORMATION:

The information provided in this box includes a brief yet complete summary of key information about the research, presented first as required by the federal regulations. Some sections that require additional information may be repeated later in this document.

Participation is Voluntary

You are being asked to participate in a research study. Participation is completely voluntary. Please read the information below and ask questions about anything that you do not understand. A researcher listed above will be available to answer your questions.

Study Purpose

The purpose of our study is to keep you healthy during the COVID-19 pandemic and to prevent you from needing in-person care at clinics, Emergency Departments, and hospitals.

Study Procedures

We will care for you using enhanced telehealth care with virtual visits to protect you from COVID-19 exposure. We will teach you and supply you with a telehealth home monitoring kit, including an Apple device, Blood pressure monitor, scale and other home use health devices for you to take measurements at home.

Expected Duration

Participation will last approximately four months, with daily self-collected self-monitoring two times a day taking 15-20 minutes and one in person assessment at the SeniorHealth Center. After the four months, you will have a brief survey and interview lasting approximately 1 hour.

Risks of Participation

This study involves no more than minimal risk. Potential risks and discomforts may include any stress caused by telehealth visits and any stress caused by using the home monitoring health technology.

Benefits to Participants

Taking part in this study may or may not make your health better. While researchers hope home monitoring will be safer and keep you healthier during this COVID-19 Pandemic by lowering your risk of exposure, there is no proof of this yet. Researchers believe that the use of home monitoring may be of benefit to your health, including better patient education, self-management skills, and more comprehensive telehealth visits utilizing iPads and home monitoring devices. However, because individuals respond differently to using health technology and telehealth, no one can know in advance if it will be helpful in your particular case. The potential benefits may include a better quality of life, reduced risk of COVID-19 infection, as well as an enhanced knowledge of your health conditions and self-management. However, you should not expect your health conditions to necessarily improve as a result of participating in this study.

Benefits to Others or Society

This is a research study in response to the high risk faced by people over the age of 65 with the COVID-19 pandemic. We aim to improve our telehealth care delivery to best serve the needs of our SeniorHealth Center patients. The researchers hope to find whether telehealth and home monitoring will result in any improvement in quality of life and to better understand how to deliver healthcare remotely for Seniors. This could open new doors regarding the use of health technology devices for seniors with any chronic conditions and help us respond to pandemics and other natural disasters.

Alternative Procedures or Treatments

If you decide not to participate, or if you withdraw from this study before it is completed, your other choices may include:

- Getting standard treatment for your condition without being in a study.

WHY IS THIS RESEARCH STUDY BEING DONE?

The purpose of this research study is to improve our telehealth care delivery to best serve the needs of our SeniorHealth Center patients. We aim to learn how patients experience self-monitoring and telehealth visits in the midst of the Pandemic, and to try to minimize people over the age of 65 seeking in-person healthcare when the risk of transmission of COVID-19 is high.

HOW MANY PEOPLE WILL TAKE PART IN THIS STUDY?

Approximately 20 participants will take part in the research at UCI.

AM I ELIGIBLE TO PARTICIPATE IN THIS STUDY?

Inclusion Requirements

You can participate in this study if you

- Are age 65 years or older
- Are a patient at the SeniorHealth Center
- Have completed a HAPS evaluation.
- Speak English
- Have no significant vision or hearing loss or other cognitive or communication deficits that would hinder your use of the home monitoring devices
- Are willing to take and share your blood pressure, weight, and other measurements at home for 4 months.
- Are willing to engage in telehealth visits weekly or monthly with our Geriatric Fellows and Attending physicians, as needed.
- Allow our assigned medical and nursing students in the ASSIST to call to check in and provide health resources, as needed.

Exclusion Requirements

You cannot participate in this study if you:

- Have a diagnosis of serious, advanced health conditions likely to affect four -month survival or ability to participate in the study,
- Are younger than 65 years of age
- Are unable to understand English for home monitoring instructions and support
- Are cognitively impaired and unable to consent or perform home self-monitoring.
- You do not agree to the terms of the study.

HOW LONG WILL THE STUDY GO ON?

This study includes one visit and takes about 15-20 minutes a day over a period of four months.

WHAT PROCEDURES ARE INVOLVED WITH THIS STUDY?

Before you can participate in the main part of the study...

- First, we will provide you the study information to help you understand the procedures of this study and potential risks and benefits.
- Then, you will undergo a SeniorHealth Center's Health Assessment Program for Seniors evaluation. You will have examinations by a Geriatric Fellow, Attending Geriatrician, Neuropsychologist, Registered Dietician, Occupational Therapist, and a continuity care Nurse Practitioner.
- If you are found to be ineligible, we will let you know at that time.

During the main part of the study...

If the screening exams, tests and/or procedures show that you can continue to be in the study, and you choose to take part, then you will have the following procedures and tests done. The main study tests and procedures include...

- If you are eligible to participate, the Geriatric doctor will explain and gain your consent to enroll in the study.
- You will be provided with direct, hands-on assistance at the SeniorHealth Center (SHC) to set up your Apple device, home monitoring devices and app, and to set up your MyChart account, if needed. You will be able to practice taking your own blood pressure and learning how to use the devices when you return home.
- At home, you will use the scale to weigh yourself in the morning, take your blood pressure two times a day, and other basic self-monitoring every day.

- You will be given access to the program for up to four months. At the end of the study, you will return the Apple device and home monitoring devices.
- A trained research team member will contact you daily or weekly as needed to help you troubleshoot any technical problems, locate resources or discuss any healthcare concerns. We will also provide regular updates on the COVID-19 pandemic and ways to stay healthy.
- You will have regular contact, telehealth visits and check-ins with your Primary Care Provider, a Geriatric Fellow and/or Nurse Practitioner from UCI Health SHC. You will receive the same or more enhanced care as any patient at the SeniorHealth Center, including the recommended telehealth visits.
- After you have used the devices and telehealth services for four months, you will be asked to complete a feedback survey, including satisfaction and ease of use, presence/absence of technical problems with the device, effectiveness of your telehealth experiences. Completion of these questionnaires will take approximately 30 minutes of your time.
- In addition to your self-reporting on our questionnaires, your medical records regarding your self-monitoring, any visits to the Emergency Room or SHC, or any telehealth visits will be reviewed by our research staff weekly, monthly and at the end of the program.

WHAT ARE THE POSSIBLE SIDE EFFECTS OR RISKS RELATED TO THE STUDY?

This study involves no more than minimal risk. Potential risks and discomforts may include any stress caused by the transition patients face with our need for telehealth visits, and any stress caused by using the home monitoring health technology.

The possible risks/discomforts associated with the study are minimal. We encourage you to verbalize any questions or concerns to our attending physicians, nurses, and other ancillary staff, who will be present to support you at all times throughout this study. In the surveys, you may skip any questions that make you feel uncomfortable. Please note that the study is voluntary and your withdrawal from the study will be respected at any point in time.

WILL I BE PAID FOR TAKING PART IN THIS STUDY?

Compensation

You will receive a \$50 gift card upon the completion of all the assigned surveys at the end of the study.

WHAT ARE THE COSTS OF TAKING PART IN THIS STUDY?

There is no cost to you for participation in this study. However there may be out-of-pocket expenses such as parking and transportation fees.

WHAT HAPPENS IF I AM INJURED BECAUSE I TOOK PART IN THIS STUDY?

It is important that you promptly tell the researchers if you believe that you have been injured because of taking part in this study. You can tell the researcher in person or call him/her at the number listed at the top of this form.

If you are injured as a result of being in this study, UCI will provide necessary medical treatment. The costs of the treatment may be covered by the University of California or billed to you or your insurer just like other medical costs, depending on a number of factors. The University and the study sponsor do not normally provide any other form of compensation for injury. For more information about this, you may call UCI Human Research Protections (949) 824-6068 or (949) 824-2125 or by e-mail at IRB@research.uci.edu

WHAT HAPPENS IF I WANT TO STOP TAKING PART IN THIS STUDY?

You are free to withdraw from this study at any time. If you decide to withdraw from this study, you should notify the research team immediately. The research team may also end your participation in this study if you do not follow instructions, miss scheduled telehealth visits, the study sponsor decides to stop the study, or your safety and welfare are at risk.

If you experience any of the side effects listed above, if your health worsens, or if you are injured during the research, you may need to be withdrawn from the study, even if you would like to continue. The research team will make this decision and let you know if it is not possible for you to continue. The decision may be made to protect your safety and welfare, or because the research plan does not allow people who develop certain conditions to continue to participate.

If you withdraw or are removed from the study, the researcher may ask you to return the Apple devices and all home monitoring equipment you received. The research team may still request that you complete a patient satisfaction survey and interview to explain your withdrawal from the study.

If you elect to withdraw or are withdrawn from this research study, you may choose to terminate the continued use or disclosure of your protected health information (PHI) for research purposes. The request to end the use or disclosure of your PHI should be made in writing.

HOW WILL INFORMATION ABOUT ME AND MY PARTICIPATION BE KEPT?

Subject Identifiable Data

Identifiable information collected about you will be removed and replaced with a code. A list linking the code and your identifiable information will be kept separate from the research data. A list linking the code and your identifiable information will be kept separate from the research data. All identifiable information that will be collected will be maintained and respected within the UC Irvine Health electronic medical records that is routinely utilized for every UC Irvine Health patient.

Data Storage

Research data will be stored electronically on a secure and encrypted computer network that is password protected at UC Irvine Health. All research data will be maintained in a secure location at UCI. Only authorized individuals will have access to it.

Data Retention

In accordance with UC Office of the President policy, information will be retained for 10 years after the end of the calendar year in which the research is completed.

WHO WILL HAVE ACCESS TO MY STUDY DATA?

The research team, authorized UCI personnel, and regulatory entities such as the Office of Human Research Protections (OHRP), may have access to your study records to protect your safety and welfare.

While the research team will make every effort to keep your personal information confidential, it is possible that an unauthorized person might see it. We cannot guarantee total privacy.

WHO CAN ANSWER MY QUESTIONS ABOUT THE STUDY?

If you have any comments, concerns, or questions regarding the conduct of this research, please contact the research team listed at the top of this form.

If you wish to ask questions about the study or your rights as a research participant to someone other than the researchers or if you wish to voice any suggestions, problems or concerns you may have about

the study, please contact the UCI Institutional Review Board by phone, (949) 824-6068 or (949) 824-2125, by e-mail at IRB@research.uci.edu or at 141 Innovation Drive, Suite 250, Irvine, CA 92697.

What is an IRB? An Institutional Review Board (IRB) is a committee made up of scientists and non-scientists. The IRB's role is to protect the rights and welfare of human subjects involved in research. The IRB also assures that the research complies with applicable regulations, laws, and institutional policies.

HOW DO I AGREE TO PARTICIPATE IN THIS STUDY?

You should not sign and date this consent form until all of your questions about this study have been answered by a member of the research team listed at the top of this form. You will be given a copy of this signed and dated consent form, and the attached "Experimental Subject's Bill of Rights" to keep. **Participation in this study is voluntary.** You may refuse to answer any question or discontinue your involvement at any time without penalty or loss of benefits to which you might otherwise be entitled. Your decision will not affect your future relationship with UCI or your quality of care at the UCI Medical Center.

If, during the course of this study, significant new information becomes available that may relate to your willingness to continue to participate, this information will be provided to you by the research team listed at the top of the form.

Your signature below indicates you have read the information in this consent form and have had a chance to ask any questions you have about this study.

Note: If the research described in this form involves your protected health information (PHI), you will be asked to sign separate UC HIPAA Research Authorization form for the use of your PHI.

I agree to participate in the study.

Subject Signature

Date

Printed Name of Subject

Signature of Person Obtaining Informed Consent

Date

(For research that is greater than minimal risk, this individual must be listed on Page 1 of this consent)

Printed Name of Person Obtaining Informed Consent

UNIVERSITY OF CALIFORNIA, IRVINE
Experimental Subject's Bill of Rights

The rights listed below are the right of every individual asked to participate in a research study. You have the right:

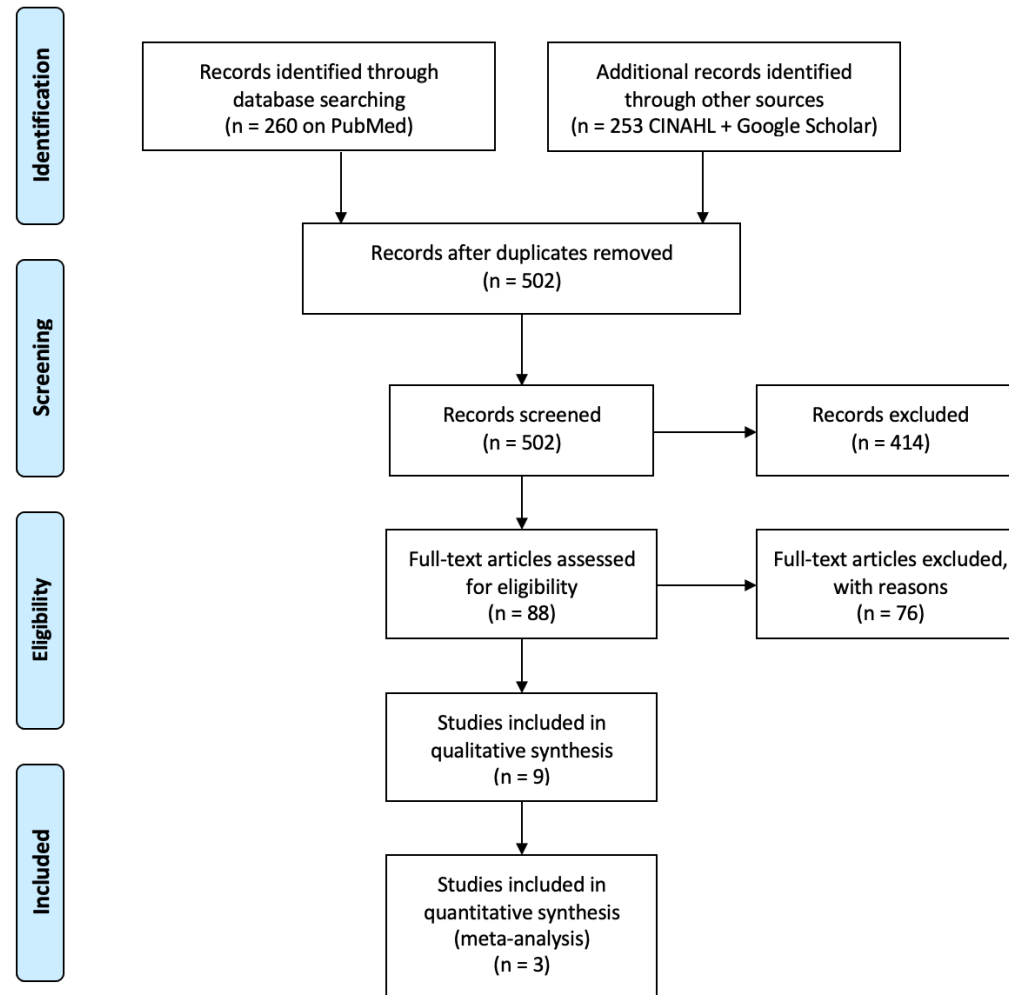
1. To be told about the nature and purpose of the study.
2. To be told about the procedures to be followed in the research study, and whether any of the drugs, devices, or procedures is different from what would be used in standard practice.
3. To receive a description of any side effects, discomforts, or risks that you can reasonably expect to occur during the study.
4. To be told of any benefits that you may reasonably expect from the participation in the study, if applicable.
5. To receive a description of any alternative procedures, drugs, or devices that might be helpful, and their risks and benefits compared to the proposed procedures, drugs or devices.
6. To be told of what sort of medical treatment, if any, will be available if any complications should arise.
7. To be given a chance to ask any questions concerning the research study both before agreeing to participate and at any time during the course of the study.
8. To refuse to participate in the research study. Participation is voluntary. You may refuse to answer any question or discontinue your involvement at any time without penalty or loss of benefits to which you might otherwise be entitled. Your decision will not affect your right to receive the care you would receive if you were not in the experiment.
9. To receive a copy of the signed and dated written consent form and a copy of this form.
10. To be given the opportunity to freely decide whether or not to consent to the research study without any force, coercion, or undue influence.

If you have any concerns or questions regarding the research study you should contact the research team listed at the top of the consent form.

If you are unable to reach a member of the research team and have general questions, or you have concerns or complaints about the research study, research team, or questions about your rights as a research subject, please contact the UCI's Human Research Protections unit in the Office of Research by calling (949) 824-6068 or (949) 824-2125 Monday – Friday, 8 am – 5 pm; or by e-mail at IRB@research.uci.edu; or by writing us at 141 Innovation Drive, Suite 250, Irvine, CA 92697.

Appendix C

Prisma Chart



Appendix D

Table of Evidence

First author (Year) Title of the article	Conceptual Framework (name it)	Design/Method	Sample/Setting	Major valuables (outcomes) studied (their definitions)	Measurement (Instruments or tools to measure outcomes)	Data Analysis Method	Findings	Appraisal: Put the level and quality of the article Worth to use?
1) LaMonica, 2021 “Understanding technology preferences and requirements for health information technologies designed to improve and maintain the mental health and well-being of older adults: participatory design	N/A	Descriptive study 3-hour participatory design workshop using a variety of methods	21 participants- Adults 50+ who self-identified as a supportive other (family member, caregiver)	To understand the use of technology by older adults and identify the potential barriers to and facilitators of the adoption of health information technologies (HITs) to support the health and well-being of older adults to facilitate implementation and promote user uptake.	Prompted discussion, group-based development of user journeys	NVivo 12 software to code data	1)Preferred devices used by older adults: smartphone, computer, Apps and e-tools, tablets, etc, in this order) 2)Some participants referenced the importance of social connectedness, others indicated a need for self-reliance “I’d manage it myself, wouldn’t want to burden other people” 3) The impact of technology in daily life- Barriers and facilitators. Social connectedness was one of the primary ways in which participants were making use of technology	Yes. This article provides valuation information in how to improve the delivery of telehealth. Also identified the use and impact of technology in daily life including barriers and facilitators

2) Banbury, 2019 “Adding value to remote monitoring: Co-design of a health literacy intervention for older people with chronic disease delivered by telehealth-the telehealth literacy project”	N/A	Mixed method, quasi-experimental, non-randomized trial “The Telehealth Literacy Project (THLP)- Health Literacy questionnaire, semi-structured interviews and focus group	Intervention group (n=52) Control group (n=60) Adults aged 50+ w/ at least one chronic condition	Qualitative data indicates the intervention was successful in developing social connection and support between participants as well as knowledge and insight, confidence and self-efficacy in self-managing	Questionnaires Interviews Focus groups	Descriptive statistics using SPSS	Confirmed previous findings – highlights the importance of telehealth in developing relationships and overcoming a lack of social support in older people	Yes, high quality. Has both qualitative and quantitative data
3) Yehle, 2016 “Health-related quality of life in heart failure patients with varying levels of health literacy receiving telemedicine and standardized education”	N/A	Pre-post treatment only design	N=35 (38 to 87 y/o) Age 18 years or older, an established primary or secondary diagnosis of HF, the ability to read and speak English, a land-based telephone, and no cognitive impairment.	51.4% had adequate health literacy 31.4% had inadequate health literacy, 17.1% marginal No statistically significant differences between health literacy levels and baseline health-related quality-of-life scores (physical and emotional functioning)	Short-Form Test of Functional Health Literacy in Adults (S-TOFHLA) Minnesota Living with Heart Failure Questionnaire (MLHFQ) Demographic questions,	Statistical data analysis using SPSS	Providing education and telemonitoring as part of home healthcare services does not ensure that patients with HF will perceive improvement in “health-related quality of life”	Sample was too small, confined to home health services. But helpful to see if patient education improves health literacy
4) Locke, 2019 “Using video telehealth to facilitate inhaler training in rural patients w/ obstructing lung disease”	N/A	Pilot home video telehealth inhaler education program by pharmacists	N=74 rural patients (mean age 69.2 y/o), lived an average of 52 miles from the VA Medical Center in Seattle, WA	We noted a statistically significant improvement in each inhaler score comparing the pretraining score to the post-training score, except for ipratropium MDI, which was only used by three patients. At the third visit, the improvement was sustained. There was not a significant difference in	Feedbacks via participant surveys of videoconferencing program	Wilcoxon signed rank test	A quarter of the participants reported technical problems w/ the computer software during most to every session.	Small sample and related to pts w/ COPD, but helpful to see if videoconferencing makes a difference in self-managing diseases.

				the count of pre- and post-training all-cause ED and hospitalizations ($p = 0.12$).				
5) Nilsson, 2020 “Patients’ experiences of using an e-Health tool for self-management support after prostate cancer surgery: a deductive interview study explained through the FITT framework” DID NOT USE THIS ARTICLE FOR LIT REVIEW	FITT framework (Fit Between Individuals, Tasks, and Technology)	Semi-structured interviews	15 patients with prostate cancer who had undergone radical prostatectomy (56-72 y/o)	Evaluating pt’s experiences of using a web-based application to support for self-care activities after prostate cancer surgery	Used transcripts from interviews	N/A	Provision of diagnosis-specific information, a bidirectional communication feature and the possibility to personalise timing and features of self-care activities based on preferences and needs were especially appreciated and motivating. A good fit between the patient and technology, with a focus on personalization and autonomous functioning, as shown in this study, may support patient engagement in using ePATH as a self-management tool in the postoperative phase	No. will not include this article. Small sample, but interesting to see how self-management works using telehealth

6) Elbeddini, 2021 “Barriers to conducting deprescribing in the elderly population amid the covid 19 pandemic	N/A	Not a study/research	Scientific article	N/A	N/A	N/A	The virtual delivery of deprescribing has challenges in the elderly for a variety of reasons: inability to use technology, lack of resources (e.g. video camera, smartphone), lack of literacy, lack of assistance from others, greater propensity for withdrawal effects, and greater risk for hospitalization	Described barriers d/t Covid 19
First author (Year) Title of the article	Conceptual Framework (name it)	Design/Method	Sample/Setting	Major valuables (outcomes) studied (their definitions)	Measurement (Instruments or tools to measure outcomes)	Data Analysis Method	Findings	Appraisal: Put the level and quality of the article Worth to use?
7) Williams, 2021 “Addressing implementation challenges to digital care delivery for adults with multiple chronic conditions: stakeholder feedback in a randomized controlled trial”	N /A	RCT	9 patient partners 129 participants 32 case managers (21 and older with multiple chronic physical and behavioral health conditions)	Identified implementation challenges and developed stakeholder-driven adaptations to improve a digitally delivered care management strategy (high-tech care)	Study support log, patient partners work group log, case interview log, implementation meeting minutes	Analyzed surveys and intervention engagement outcomes before and after each solution was implemented	Stakeholders reported challenges around 2 major themes 1) difficulties using basic functionalities of smartphone and high-tech care components 2) difficulty using high-tech care d/t cellular reception and internet connectivity issues.	Yes. Helpful work group feedback from the participant AND the stakeholders; Patient sample: age 21 + but w/ multiple chronic diseases like older adults
8) Chung, 2016 “Ethical considerations regarding the use of smart home	Ethical framework	Integrative review	N/A	Explored ethical issues re: smart home use at the interaction of aging, technology, and home environment	N/A	N/A	Sixteen articles were included in the review. Privacy and obtrusiveness issues appear to be the most important factors that can affect smart home technology	Yes, informational and explored ethical aspects of the digital divide

technologies for older adults”				Key ethical issues of the framework include privacy, informed consent, autonomy, obtrusiveness, equal access, reduction in human touch, and usability. R			adoption. In addition, this article recommends that stigmatization and reliability and maintenance of the system are additional factors to consider. Implications: When smart home technology is used appropriately, it has the potential to improve quality of life and maintain safety among older adults, ultimately supporting the desire of older adults for aging in place.	
9) Mathieson, 2017 “Access to digital communication technology and perceptions of telemedicine for patient education among American Indian patients with diabetes”	“Community of Inquiry” framework	Cross-sectional, anonymous survey design	12-month data collection of 115 patients; patients w/ DM under the care of the Indian health Services- Joslin Vision Network at the Phoenix Indian Medical Center	Explored the “digital divide” in the medically underserved Ex: how to increase adherence Evaluated access to digital devices, use of virtual communication technologies such as e-mail and social media tools, and perceptions of telemedicine among AI patients with DM resulting in additional information, previously not addressed in the literature to help inform communication decisions aimed at	44-item Surveys	IBM SPSS statistics Chi-square tests	Education and age are factors of the digital divide. In this study, more education was significantly associated with access to digital devices Since older and less educated patients often suffer from poorer health, the challenge for health care providers is that these patients seem to be more difficult to reach via patient	Yes. The focus of the study was American Indians w/ DM, but the article explored the digital divide in underserved populations/communities. Shows how to tailor telemedicine strategies to these target population

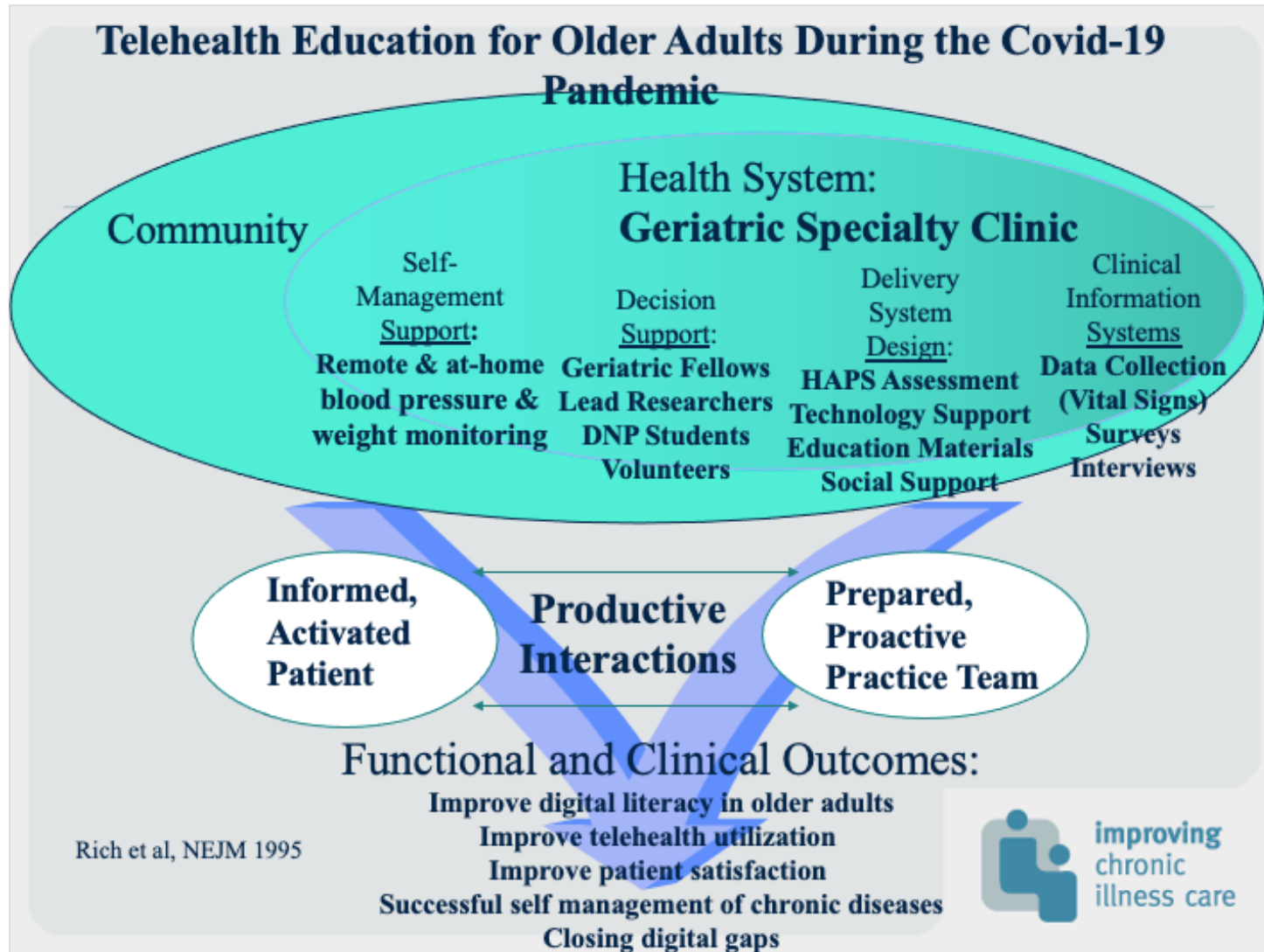
				improving health outcomes.			education and engagement efforts involving digital technology.	
10. Jeong, 2018 “Telephone Support and telemonitoring for low-income older adults”	N/A	Randomized, controlled, single-blinded, parallel pilot trial	40 randomized participant -> 20 assigned to intervention group, 20 to control group to complete an 8-week study (telephone support provided by nurses)	To examine whether an intervention via telephone support improves health behavior, self-care, and physiological indices in low-income older adults with HTN and T2DM	Primary outcome: The Health Practice Index (HPI) score was used to assess health behavior. Secondary outcome: 2 different instruments were used to measure self-care behavior	Descriptive statistics- Chi-square test, Fisher’s exact test, independent t test	After telephone support, 14 (70%) participants in the intervention group had improved health behavior (1.7 increase in HPI score), and 11 (55%) participants had lower systolic BP (-19.8 mmHg) compared with pretest values. Nurse-led telephone support had a medium effect on improving health behavior (Cohen's d = 0.58, 95% CI [-0.10, 1.27]) and reducing systolic BP (Cohen's d = -0.61, 95% CI [-1.29, 0.08])	Yes. This was a intervention to see if 30 minute telephone calls twice per week is helpful for self-monitoring
11. Holmstrom, 2016 “It is important that they care, older persons’ experiences of telephone advice nursing	N/A	Descriptive study with a qualitative inductive approach	10 older persons in Sweden recruited through an older citizen’s organization. Inclusion criteria: age>65 and have experience of calling telephone advice regarding health-related problems	Open-ended for interviewees to speak freely about their experience of telehealth services by nurses	Individual Semi-structured interviews	Qualitative content analysis; processed using Word files and analyzed manually	Patient-friendly aspects of the telephone advice nursing: being the center of attention, supportive communication, feelings of trust and confidence Patient-unfriendly aspects: Access to	Yes. This study reveals the type of communication techniques or methods that are needed to provide telehealth services for the elderly.

							help, uncertainty surround the technique (technology), unsupportive or disconfirming communication, feeling forlorn and having a need for follow-up	
First author (Year) Title of the article	Conceptual Framework (name it)	Design/Method	Sample/Setting	Major valuables (outcomes) studied (their definitions)	Measurement (Instruments or tools to measure outcomes)	Data Analysis Method	Findings	Appraisal: Put the level and quality of the article Worth to use?
12. Platts-Mills, 2018 “Randomized controlled pilot study of an educational video plus telecare for the early outpatient management of musculoskeletal pain among older emergency department patients”	N/A	RCT pilot study of an educational video about pain mgmt. with and without follow-up telephone support for older adults presenting to the ED	75 patients - English speaking patients aged 50+ presenting to ED for MSK pain	The purpose of this pilot study was twofold: (1) assess the feasibility of a clinical trial to test an educational video and pain management telecare intervention for older ED patients with acute musculoskeletal pain and (2) obtain preliminary estimates of the effect of the video plus telecare vs. usual care and of the video alone vs. usual care on pain symptoms and other outcomes over the first month.	Baseline interview, follow-up assessments 1 month after ED visit 3 intervention groups: 1) usual care 2) viewing a brief interactive educational video in the ED 3) video + follow-up phone call from 1 of 2 study physicians not involved in the patient’s ED care.	STATA 14.1	Findings from this pilot trial provide preliminary evidence of a possible benefit of an interactive video plus telecare intervention for older adults presenting to the ED with acute musculoskeletal pain. Results also indicate problems with follow up and suggest the need for adopting more aggressive methods for ensuring study participants can be reached at 1 month	Yes, provides information on educational video + follow up telehealth phone calls
13. Arcury, 2020 “Older adult internet use and eHealth literacy”	David’s technology acceptance model and the person-environmental	Patients who meet the criteria were recruited using a 3-step process. Then questionnaires were administered in person. REDCAP was	200 participants- Pts from urban and rural clinics that primarily serve low-income pts and pts from minority communities in NC.	Assessed low-income and minority older adults’ eHealth literacy and identify its determining factors to ensure they can	Questionnaire: Measured eHealth Literacy with eight -item	SAS 9.4	72% had inadequate general health literacy, 56.9% preferred to rely on the doctor’s knowledge when	Yes, this was a big enough sample. IRB approved. Statistical test used were appropriate.

	interaction model	used to record interview data.	Aged 55+ being treated for chronic disease, spoke English/Spanish,	use available eHealth resource effectively	eHEALS. (Literacy scale)		making medical decision. More than half (53% of the participants use the internet. Those with higher education or income were more likely to use the Internet.	
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Appendix E

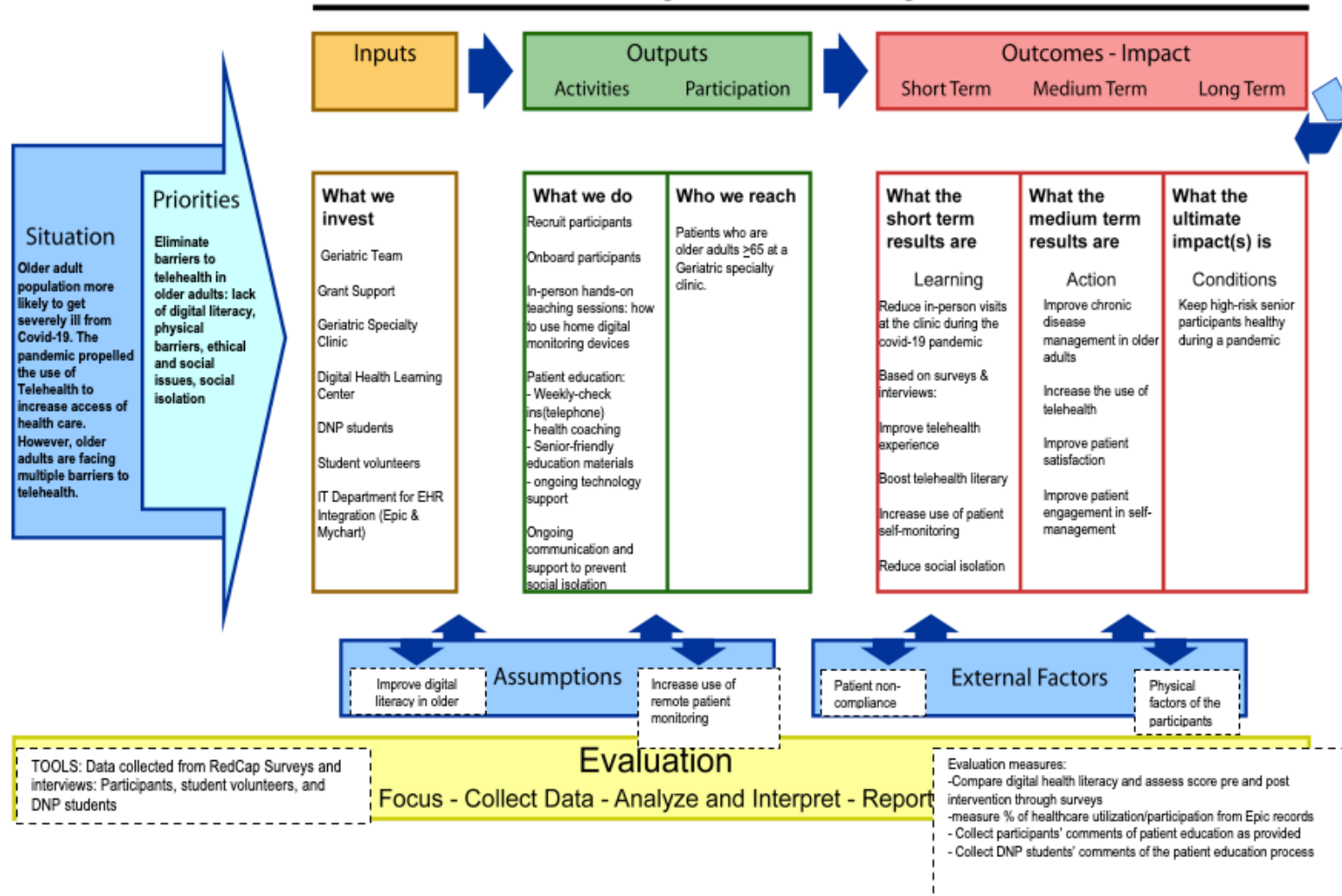
Conceptual Framework: Chronic Care Model



Appendix F

Logic Model

Program Action - Logic Model



Appendix G

Data Collection Instruments: Survey

Study ID: _____ Date (mm/dd/yy): _____

CARES ASSIST Program

Patient Baseline Survey

Script: Hello, I am _____ (name of **phone call interviewer**), a research member of the 'Assist' study by UC Irvine Health. We greatly appreciate your time and willingness to participate in the study. Today, we would like to ask you a few questions to understand your perceived health condition at the beginning of this study, and we will ask you similar questions at the end of this study when you are discharged from this 'Assist' research project. Your participation in answering these questions is strictly voluntary. You are free to skip and questions or to stop answering at any time. We want to assure you that all answers you give will be completely confidential. You are identified only by a code number in this research project and no one except the authorized research members have access to the codes.

1. Illness management:

I feel confident in understanding my condition and managing my illness while receiving care at home through the Healing at Home program. On a scale of 1 through 6 (6=strongly agree, 1= strongly disagree)

If response falls in 1-3 range, what makes you feel not confident?
What would help you feel more confident?

2. Home Monitoring:

I feel confident taking my own weights, BP, and other vital sign measurements? On a scale of 1 through 6 (6=strongly agree, 1= strongly disagree)

Why or why not? Please explain.

3. Devices:

I found the technology and devices easy to use and helpful for staying healthy and connected during this pandemic? On a scale of 1 through 6 (6=strongly agree, 1= strongly disagree)

How would you improve the devices and home monitoring?

4. Telehealth Visits

I felt that the Telehealth visits with the team were helpful and supported my health during the pandemic. On a scale of 1 through 6 (6=strongly agree, 1= strongly disagree)

Is there anything that you would suggest to improve telehealth care delivery?

Overall:

Compared to my experiences of receiving in-person care in the clinic, I feel that I will benefit from the ASSIST program during the COVID-19 pandemic? On a scale of 1 through 6 (6=strongly agree, 1= strongly disagree)

If response falls in 1-3, What do you expect during your receiving the ASSIST program care?

Thank you for your time and for sharing your experiences and insights.

Appendix G

Data Collection Instruments: Interview questions

Interview questions for RN educators:

1. What are some of the challenges that you faced during the patient education process (onboarding, daily/weekly check-ins, etc.)?
 - a. Physical ability
 - b. Cognition- excluded
 - c. Psychological
 - d. Motivation
 - e. Technical issues
2. Can you please tell me more about the first onboarding education session in person? What were the positives/negatives? What were some of the challenges?
3. After the initial session, what happened to the teaching process? How did that change over time? Ex. Did some participants need more teaching after the first session?
4. Which education method/modality do you think was most effective in building digital literacy? (Pros and cons for video, phone calls, education materials)
5. What did the participants do or say that helped guide you or improve your education methods?
 - a. What kind of adjustments/accommodation did they need?
 - b. Did your education approach change over time, if so, how and why?
6. Did you feel successful in educating these participants? (Using BP cuff, engaging in monitoring, etc.)
 - a. If they showed improvement in self-management, how?
 - b. Did they become more confident towards the end?
7. Do you feel that you played a part in reducing social isolation in these participants?
8. Do you think we helped close the digital gap? How do you feel about our contribution? Were you proud of yourself?

Appendix H

Patient Education Pamphlet

INTRODUCTION

Thank you for participating in the ASSIST study! The purpose of our study is to keep you healthy during the COVID-19 pandemic and to prevent you from needing in-person care at clinics, Emergency Departments, and Hospitals. We will provide you with the following devices to take measurements at home:

- **WITHINGS blood pressure monitor**
- **WITHINGS smart scale**
- **Apple iPhone**

We will assist you with the initial set-up process at the UC Irvine Health Senior health center.

RESULTS

Your measurements from the device will be automatically sent to your MyChart account.

- Tap on the **MyChart** icon on your iPhone
- Enter your Username and Password
- Tap on "**Track my health**" to view a summary of your blood pressure, pulse, and weight

AFTERCARE

- Use the charging cable as provided and connect the USB end of the charging cable to a power source
- Clean the device with a soft and dry cloth
- Do not use alcohol-based or solvent agent to clean

CONTACT US



24 Hour Medical Hotline
(714)-456-7007

For Medical Emergency,
please call 9-1-1



UC Irvine Health SeniorHealth
Center, Orange, CA 92868



INSTRUCTIONS FOR AT-HOME MONITORING

Assist Geriatric Program:
Assisting and Supporting
Socially Isolated Seniors
through Telehealth in the
COVID-19 Pandemic

UCI Health



A. BEFORE EACH MEASUREMENT

1. Take 5 minutes to rest and relax
2. Sit down in a comfortable position, uncross your legs, feet flat on the floor, arm and back supported
3. Do not speak or move during the measurement
4. Ensure the cuff is placed directly on your skin
5. Take the measurement in a calm and quiet area
6. Ensure that the iPhone is next to the WITHINGS device during the measurement

B. TAKING YOUR BLOOD PRESSURE & PULSE

1. Roll up your sleeve and wrap the cuff around your **LEFT UPPER ARM**. The white tube should be positioned against your inner arm
2. Tighten the cuff around your arm.
3. Place your arm on a table and **level it to your heart** or the WITHINGS logo (See Figure 1)
4. Push the **circle white button** to turn on the device (See Figure 2). The screen will display "BP"
5. Push the button again on the device to start your blood pressure measurement. The blood pressure cuff will inflate. (Note: 1 press of the button is 1 measurement, a long press of the button will do a triple measurement)
6. The results (**blood pressure and heart rate**) will display on the screen of the device



Figure 1. Level the cuff to your heart



Figure 2. How to locate the circle white button for measurements

Table 1*Participant Demographics*

Demographic Characteristics		Frequency (N=21)
Gender	Male	N=11
	Female	N=10
Age (year)	Mean (SD)	81 (7.2)
	Median	80
	Range	70-96
Race/Ethnicity	Non-Hispanic Whites	10
	Hispanics	3
	Asians	6
	Others	2
Marital Status	Married	12
	Widowed	4
	Divorce	4
	Single	1

Table 2

Themes and Subthemes of participants and educators' experiences on Telehealth education

Themes	Subthemes	Quotes from immediate post-intervention surveys	Quotes from interviews with RN educators
Overcoming physical challenges	Hard of hearing Visually impaired Physically disabled (amputee) Cognitive impairment (forgetfulness) Memory or concentration issues Caregiver involvement	“Sometimes I feel like because I am getting older and slowing down it takes me longer to do things that I normally do. I also sometimes get forgetful and that bothers me a lot.” “I let my daughter manage my health”, and “I rely on my daughter to help me with technology- she answers the phone, monitor my blood pressure, and helps with the computer, I can’t do it on my own.”	Enlarged fonts on the iPhone for the participants with vision impairment to view the MyChart and Withings apps more clearly By utilizing the function of a video call, participants were able to “see” the teaching or demonstration “face-to-face “I had a patient who just could not hear over the phone at all, period, so he would talk to his daughter who was his caretaker, who would then translate for the patient. He also had cognitive impairment on top of that...That was pretty difficult.”
Navigating technology	Familiarizing with technology Trouble logging onto the internet Trouble using the devices Never had internet	“We don’t really use MyChart at home, we don’t have internet.” “...does not adjust to change very well and would reject	“Familiarizing patient with technology was by far the hardest throughout” “Trying to teach somebody how to use a phone when they’re on the phone is next to impossible.”

	Never had cellphones Adjustment issues Not digitally connected at all Needs for reminders and reinforcement Needs for reassurance Physical tool: education pamphlet	change at first... there's a lot of information coming in at first."	"Some were very anxious about it, they were worried. There was a lot of reassurance, 'Yes, you're doing it right'". "All methods were helpful. But the best teaching method was the hands-on 1:1, showing them personally hands on this is the button you press...having them to do it and being able to tell them in real time. After that, having the written material (patient education pamphlet) was the best thing for them to go back to reference."
Seeking social connection	Enjoyed telephone check-ins Interactions with RN educators and volunteers Seeking more connections with PCP Tailoring teaching methods	"I like that you guys 'ring my bell' every now and then." "it's nice to be able to talk to the doctors and stay connected". "Yes, I would say he (the participant) would benefit from having more connection and forcing me to monitor his vital signs more closely."	The participants sounded joyful during the telephone check-ins, the participants were "happy", "joyous", "pleasant", and "welcoming to speak to" "The participant would go on and on about their lives..."
Benefits of telehealth	Convenience Being able to view data	"It is great that we can do the same (telehealth) visits from	With more teaching sessions and practices, whether it was through in-person, telephone or video call, patients were able to better manage the devices

through education	Better health management and outcomes Improved telehealth usage Increased confidence Improved device management Improved attitudes toward telehealth	home, I feel more comfortable at home.” “I love the telehealth delivery system on the computer...I do not have to worry about the hustle and bustle of getting ready and driving to the clinic. There is nothing I would change.” “I feel that my blood pressure will be better managed.” “it is very convenient to be able to monitor my blood pressure at home.” “I like the convenience of this program and that I get to see the analytical data.” “I feel that in this program I’ll be able to understand my body more and that I can do something towards my health.”	“The participants seemed more relaxed, less anxious, and more confident.”
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		“it was a little hard to get use to using the blood pressure device at the beginning and my son-in-law had to assist me with it. But it’s gotten better and now I can do it on my own.”	
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Table 3*Immediate post-intervention survey results*

Category	Statement (on a scale of 1-6, 6= strongly agree, 1= strongly disagree)	Mean Score	Range
Illness Management	I feel confident in understanding my condition and managing my illness while receiving care at home through the ASSIST program.	5.45	5-6
Home Monitoring	I feel confident taking my own heights, BP, and other vital signs measurements.	5.4	3-6
Devices	I found the technology and devices easy to use and helpful for staying healthy and connected during this pandemic.	5.0	2-6
Telehealth Visits	I felt that the Telehealth visits with the team were helpful and supported my health during the pandemic.	5.1	2-6
Overall	Compared to my experiences of receiving in-person care in the clinic, I feel that I will benefit from the ASSIST program during the Covid-19 pandemic.	5.25	2-6