10-2020

The Effect of an Online Educational Intervention on the Community Knowledge of Physical Health, Mental Health and Self-Efficacy During the Covid-19 Pandemic

Kerstin Ashby Ferguson
Andrews University, kerstin@andrews.edu

ABSTRACT

THE EFFECT OF AN ONLINE EDUCATIONAL INTERVENTION ON THE COMMUNITY KNOWLEDGE OF PHYSICAL HEALTH, MENTAL HEALTH AND SELF-EFFICACY DURING THE COVID-19 PANDEMIC

by

Kerstin Ashby Ferguson

Chair: Carol Rossman, DNP, APRN-BC

ABSTRACT OF GRADUATE STUDENT PROJECT

Andrews University

College of Health & Human Services

TITLE: THE EFFECT OF AN ONLINE EDUCATIONAL INTERVENTION ON THE COMMUNITY KNOWLEDGE OF PHYSICAL HEALTH, MENTAL HEALTH AND SELF-EFFICACY DURING THE COVID-19 PANDEMIC

Name of researcher: Kerstin Ashby Ferguson

Name and degree of faculty chair: Carol Rossman, DNP, APRN-BC

Date completed: October 2020

Background

Community health education during times of pandemic is of utmost importance to disseminate information regarding safety precautions, educate the public regarding the disease process, and provide accurate health information during a time when individuals are specifically vulnerable to inaccurate sources of information. During the COVID-19 pandemic, physical gatherings were highly restricted; therefore, it became important to incorporate technology into the educational process.

Purpose

The purpose of this project was to determine if a thirty-day, online community health education program would increase the health knowledge and self-efficacy of participants.

Methods

This project utilized a quantitative quasi-experimental pre-test/post-test design from a convenience and snowball sample. The project manager worked in cooperation with Lincoln Amazing Grace Seventh-Day Adventist church during this project. Recruitment strategies targeted the areas of Lincoln, CA and the surrounding communities. The pre-test and post-test were performed in order to evaluate a health education intervention entitled *Renew: Better Me, Better We* which addressed topics relevant to the COVID-19 pandemic. The project was guided by the Health Belief Theory.

Results

Forty-five people completed the 30-day intervention. While the sample size was small and lacked some variety in demographics, there was a statistically significant increase in health knowledge following the intervention, $t(44)=-5.288$, 1-tailed $p=<0.001$. There was no significant change in self-efficacy following the intervention.

Conclusion

This thirty-day health educational intervention was found to increase the health knowledge of participants significantly. The results of this project validated the literature regarding the effectiveness of online health information during times of pandemic.

Keywords: pandemic, COVID-19, online health education, health knowledge, self-efficacy

Andrews University

College of Health & Human Services

THE EFFECT OF AN ONLINE EDUCATIONAL INTERVENTION ON THE COMMUNITY KNOWLEDGE OF PHYSICAL HEALTH, MENTAL HEALTH AND SELF-EFFICACY DURING THE COVID-19 PANDEMIC

A Scholarly Project

Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Nursing Practice

by

Kerstin Ashby Ferguson

October 2020

THE EFFECT OF AN ONLINE EDUCATIONAL INTERVENTION ON THE COMMUNITY KNOWLEDGE OF PHYSICAL HEALTH, MENTAL HEALTH AND SELF-EFFICACY DURING THE COVID-19 PANDEMIC

A Scholarly Project
Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Nursing Practice

by

Kerstin Ashby Ferguson

APPROVAL BY THE COMMITTEE

Chair: Carol Rossman	Dean, School of Health Professions: Emmanuel Rudatsikira
Member: Sonja DeRose	Member: Anil Kanda

Date approved

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

AACN – American Association of Colleges of Nursing

ANOVA – one-way analysis of variance

CDC – Centers for Disease Control and Prevention

COVID-19 – Coronavirus Disease 2019

DNP – Doctor of Nursing Practice

DNP Essentials – Essentials of Doctoral Education for Advanced Nursing Practice

EVALI – e-cigarette or vaping product use-associated lung injury

ID – identification

MD – medical doctor

MERS – Middle East Respiratory Syndrome

MPH – Master in public health

PHEIC – Public health emergency of international concern

SARS – Severe Acute Respiratory Syndrome

SPSS – The Statistical Package for Social Sciences

WHO – World Health Organization

ACKNOWLEDGEMENTS

First and foremost, I am grateful to God for giving the me the strength, persistence and endurance to complete my capstone project. There were many difficulties, roadblocks, and setbacks along the way, but through it all, He has remained faithful to hold my hand and guide me through this journey.

My project chair, Dr. Carol Rossman has been a voice of reason for me ever since she joined the team at Andrews University as the Director of the DNP program. She has "talked me off a ledge" more than once and has always encouraged me to keep putting my best foot forward while focusing on the next step. She has been a source of encouragement and motivation when obstacles seemed insurmountable.

Dr. Jochebed Bea Ade-Oshifogun helped me to be creative and look beyond the restrictions of the COVID-19 pandemic. The idea for this project was born while brainstorming with Dr. Bea after another potential project fell through due to the COVID-19 restrictions. I am grateful for her creativity, guidance and encouragement along the way.

To my committee members, Dr. Sonja DeRose and Anil Kanda, thank you for stepping up and helping me tackle this project. Sonja, your knowledge and expertise was invaluable as I was developing my Health Knowledge Assessment Questionnaire and health education videos. Besides that, I always appreciate your friendship. Anil, I've always known I could count on you for literally anything. Thanks for being there

throughout this project. You have a way of making huge obstacles seem manageable. I couldn't have done it without you.

Dr. Jean Cadet, thank you for being so patient with me during the data analysis process. I appreciate your kindness in leading me through the process.

There are a few other people in my corner who have encouraged me, listened to my rants of frustration, and encouraged me to keep going when quitting seemed like the most logical option. My husband, Jon Ferguson, has been one of my biggest cheerleaders. We started dating about four months after I started the DNP program and got married a couple years later while I was in the middle of the clinical portion of the program. He has seen me during my good times and bad times, heard every rant of frustration more than once, and still manages to love me. He has also been my tech support throughout the program. To my best friend, Sandy Khongphan, I can always count on you for a laugh, a pep talk, or to be there to go get some food when eating my problems seems like the best way to go. We've been on this school journey together from the beginning, and I'm looking forward to finishing our degrees together at the end of the year.

To my small but mighty DNP cohort, Dr. April Chew (You did it, April!) and Juliana Maldonado, you ladies have been my rock in this program. I am fully convinced that I would've thrown in the towel years ago had you not been in this with me. With you ladies by my side, I've somehow always found the courage to keep charging forward.

To my family including, but not limited to, the following: my mom (Jan) and dad (Jim), sisters (Kathrin and Kerine), brother (Jamie), brother-in-law (Josh), mother-in-law (Lorraine) and father-in-law (Rob), thanks for the prayers, kind words, encouragement,

and for believing in me. Having family to navigate through life with is a privilege and a blessing that I don't take for granted.

CHAPTER 1

INTRODUCTION, BACKGROUND AND SIGNIFICANCE

Introduction

In March 2019, a novel disease began sweeping through nearly every country in the world. Coronavirus disease 2019 (COVID-19) caused massive death and debilitation and successfully changed the daily routines of many societies. The World Health Organization (WHO) began response to the COVID-19 outbreak in China at the beginning of January 2020. As the spread continued, the WHO declared a Public Health Emergency of International Concern (PHEIC) on January 30, 2020 and ultimately declared a pandemic on March 11, 2020 (World Health Organization [WHO], 2020).

Wuhan, Hubei Province, China served as the initial epicenter of the outbreak. Initially health officials believed that animal-to-person spread of COVID-19 first occurred in a live seafood and animal meat market in Wuhan, China. Since then, however, many different theories have emerged. The Centers for Disease Control (CDC) cited likely animal to human transmission as the source of the outbreak (2020a). Following the initial cases identified, human-to-human transmission started rapidly occurring (CDC, 2020b). There were four long-standing human coronavirus strains that commonly infected humans globally before COVID-19 and caused mild symptoms: 229E, NL63, OC43, and HKU1. Two more recent, and more severe, novel coronaviruses included Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory

Syndrome (SARS). Both of these infections mutated and began spreading from animals to humans, but did not spread as quickly and widely as COVID-19 had (CDC, 2020c).

Once a pandemic was declared, the CDC issued guidelines intended to slow the spread of the virus. These guidelines included engaging in work or school activities from home as much as possible, avoiding groups of ten or more people, maintaining a distance of six feet away from other individuals when out in public, avoiding travel and eating at restaurants, and avoiding visits to long-term care facilities. In addition, United States residents were advised to stay at home if they were feeling sick, practice isolation precautions for the entire household if anyone tests positive for COVID-19, and engage in strict social distancing for the immunocompromised or elderly (CDC, 2020b). Some states, including California, enacted stricter stay-at-home orders, forcing non-essential businesses to close for a period of time and restricting public activities to only those essential such as grocery shopping and caring for healthcare needs of humans and pets (Executive Department, State of California, 2020). Following this order, many outpatient healthcare agencies started limiting in-person appointments and started incorporating telehealth on a more frequent basis.

Backgrounds

Health education is of utmost importance during a pandemic. Because worldwide pandemics are fairly rare, there is limited information regarding community health education strategies during pandemics. The last pandemic was the novel influenza A H1N1 strain of 2009. Two studies performed following this pandemic, one in Malaysia and the other in the Netherlands, demonstrated that individuals who received a greater amount of health information were more likely to practice infection control and

preventive measures (Wong & Sam, 2010; Van der Weerd et al., 2011). Those with lower levels of education preferred televised education over written educational pieces. People interviewed also preferred education from healthcare professionals (Wong & Sam, 2010). Both studies demonstrated that the general public favored information regarding disease prevention and treatment (Wong & Sam, 2010; Van der Weerd et al., 2011). Another research study in the United States demonstrated that people who expressed higher concern and knowledge during a pandemic were more likely to engage in preventive measures such as handwashing, social distancing, and wearing a mask. The health practices of those of lower socioeconomic status were more likely to be influenced by their social networks partially due to lack of access to healthcare (Lin et al., 2018).

With the institution of strict social distancing practices in California, multiple public health needs became evident. Many people became concerned and even afraid for their lives during the epidemic. Dissemination of information regarding preventive measures recommended by the CDC had the potential to empower community members and instill in them a greater sense of control over their health and wellbeing.

Smoking cessation was also an important subject of health education during this time. A systematic review of multiple studies performed during the surge of COVID-19 cases in China noted a significantly higher chance of severe disease and death among those who smoked. In fact, when further analysis was performed regarding the data in one large-scale study, it was found that smokers were 1.4 times more likely to have severe symptoms and 2.4 times more likely to require intensive care admission, require mechanical ventilation or die than those who did not smoke (Vardavas & Nikitara, 2020, pg. 2). There was developing evidence that vaping may potentially have been a cause of

increased morbidity with respiratory illnesses such as COVID-19. Vaping had recently been found to be associated with e-cigarette or vaping product use-associated lung injury (EVALI). EVALI often manifested as pneumonia, alveolar damage or fibrinous pneumonitis (Ullo et al., 2020). A study involving exposure of mice to e-cigarette vapor both with and without nicotine demonstrated delayed immune response and increased lung inflammation when infected with influenza. The results were independent of nicotine exposure, suggesting that the lung damage was associated with solvents in the vaping solution itself and not nicotine (Madison et al., 2019). Because respiratory health was an important factor in the COVID-19 pandemic, it was a relevant time to discuss measures such as ceasing smoking and vaping to improve respiratory health both during the pandemic and in anticipation of future respiratory illness.

The CDC reported that those with pre-existing conditions were at a higher risk for contracting COVID-19. Many of these diseases are related to poor lifestyle practices and could be avoided or improved with lifestyle changes. Examples included diabetes, obesity, and cardiovascular disease (CDC, 2020d). Although prevention of COVID-19 complications through lifestyle changes during the pandemic may have been behind time, this was a unique opportunity to educate the public on making lifestyle changes that could prevent illness in the future.

Additionally, other public health needs had surfaced in the midst of the pandemic. The disruption of daily routines as well as social isolation had the potential to increase feelings of anxiety in the general population but especially in children and those with pre-existing mental health diagnoses. Education regarding resources that were available for individuals who were exhibiting increased mental distress as well as encouraging

appropriate social interaction during the pandemic proved to be helpful (Gordon, 2020). Healthcare workers were also considered a high-risk group for mental distress and illness during the pandemic. People who had no previous history of mental illness were also experiencing symptoms of anxiety and depression during COVID-19. Improved access to mental health interventions via a smartphone or the internet had the potential to decrease morbidity and mortality related to mental illness during the COVID-19 pandemic (Cullen et al., 2020). Poison control also reported a rise in calls related to household chemical exposures and ingestions (Sweeney, 2020). Timely information during the pandemic also included precautionary instructions regarding safe use of disinfectants in the home and dangers of ingesting disinfectants.

Community members and members of the Lincoln Amazing Grace Seventh-Day Adventist church had also approached the project investigator with questions regarding the pandemic. The church also requested that the project investigator provide some type of online health education regarding topics relevant to COVID-19 to help educate and empower the church members and community.

Problem Statement

There was a need for healthcare providers to provide community health education during the time of pandemic. Many community health needs had surfaced over the time period of the COVID-19 pandemic including a lack of focus on general health principles such as exercise, following a healthy diet, and getting enough fresh air and sunshine; a need or community health education on how to avoid illness or stay well during the pandemic; and the need for dissemination of accurate health information by healthcare

professionals. Community and church members in the Lincoln, CA area requested community education regarding topics relevant to the COVID-19 pandemic.

Purpose and Objectives

The purpose of this project was to fulfill the need for accurate community health education regarding topics relevant to the COVID-19 pandemic in the Lincoln, CA area and surrounding communities. The project evaluated the effect of a thirty-day online community health education program on the health knowledge and self-efficacy of participants during the COVID-19 pandemic. Project objectives included the following:

1. To evaluate the effect of online health education on the health knowledge of the community during a pandemic utilizing a health questionnaire pre-test and post-test.
2. To explore the association between demographic factors and community health knowledge.
3. To determine if online health education led to increased self-efficacy during a pandemic utilizing the General Self-Efficacy Scale as a pre-test and post-test.

PICO Questions

1. During the COVID-19 pandemic, does an online health education curriculum improve community health knowledge?
2. During the COVID-19 pandemic, does an online health education curriculum increase self-efficacy?
3. Do demographics such as age, gender, education level, race and healthcare provider or not impact the effectiveness of an online health education curriculum during the COVID-19 pandemic?

Impact and Significance of Project on Healthcare System and Population

The goal of this project was to identify whether online learning modules were an effective technique for educating individuals in the community during a pandemic. This was a nursing intervention with the potential to help influence education during the COVID-19 pandemic and future pandemics, especially during a time when in-person and group education was discouraged. The anticipated significance of this intervention on the population involved them feeling empowered to take charge of their health and prevent illness through simple daily practices.

Conclusion

Health education during a pandemic required a different strategy. In-person visits with providers were limited and group education was not an option. Providing online video education with health professionals regarding topics relevant to health during a pandemic had the potential to be a method that could be used effectively both during the COVID-19 pandemic and pandemics to come.

CHAPTER 2

CONCEPT IDENTIFICATION, THEORETICAL FRAMEWORK, AND REVIEW OF LITERATURE

There were very few alive in the United States in 2019-2020 who had been exposed to such a widespread pandemic as COVID-19. Many were faced with challenges as they attempted to navigate through life incorporating practices that were foreign such as minimizing in-person interaction with other individuals, maintaining physical distance and wearing a mask. As many healthcare offices were becoming more hesitant to schedule routine, in-person office visits and focused on emergency care and telehealth adoption, it was vital for community members to continue to receive support and education from healthcare professionals. The primary goals of health promotion during a pandemic involved (1) the use of the internet as the primary means of health education, (2) prevention of the spread of disease, and (3) maintaining optimal physical, spiritual and mental health.

Theoretical Framework

The Health Belief Model

The Health Belief Model was developed in the 1950s by several social psychologists working with the United States Public Health Service. During this time, public health primarily focused on prevention of disease. As the United States Public

Health Service offered free programs aimed at screening for and detecting asymptomatic disease, they found that many people did not take advantage of these services. Free chest x-rays were offered to screen for tuberculosis; however, many did not take advantage of this service. While the theory was first designed to help public health officials explain why people were not taking advantage of free preventive services, it eventually was also applied to the response patients exhibit towards symptoms and compliance with prescribed regimens. The Health Belief Model was based on the belief that behavior, in general, depended on (1) the value a person places on a goal and (2) the likelihood that the goal would be achieved by a certain action. When applied to health, these variables include (1) the desire to avoid sickness or to get well and (2) the belief that specific self-care actions will either prevent or relieve illness (Janz & Becker, 1984).

Today, the Health Belief Model has been one of the most widely used theoretical frameworks regarding health behaviors. The Health Belief Model described four beliefs that help influence the readiness of an individual to take action: perceived susceptibility, perceived severity, perceived benefits and perceived barriers (Herrmann et al., 2018). Perceived susceptibility and severity involved the individual's perception of threat, while perceived benefits and barriers involved the individual's expectations. Both of these factors are influenced by the person's background including demographics, socioeconomic status, education level and past knowledge of the problem. Two other components to the model included cues to action and self-efficacy. Fairly self-explanatory, cues to action involved any event that inspired an individual to take action. Examples of cues to action include the influence of friends and family, television ads or commercials, or a medical diagnosis. Self-efficacy was added to the revised Health

Belief Model in the 1980s and involved confidence that an individual's efforts would be successful (Kim & Zane, 2016).

Table 1

The Health Belief Model as a Guide for an Online Health Education Curriculum

Individual Perception	**Modification Factors**	**Likelihood of Action**
Demographics • Knowledge • Socioeconomic Status • Education • Background	Perceived Self-Efficacy	Outcomes • Increase in Knowledge • Increase in Self-Efficacy
	Perceived Threat • Perceived susceptibility • Perceived severity	Cues to Action • Education • Raised Awareness
	Expectations • Perceived Benefits • Perceived Barriers	

Note. Adapted from Rosenstock et al., (1974).

Application of Theory to Project

Application of Health Belief Model

The Health Belief Model was the primary theoretical framework utilized to develop *Renew: Better Me, Better We,* an online health education program to educate community members during the COVID-19 pandemic. The first lecture focused

primarily on the perceived susceptibility and perceived severity of COVID-19. Because there had already been significant education provided to the public by the CDC, local health agencies and news reports, the public, in general, already had a heightened sense of susceptibility and severity; therefore, spending a significant amount of time on this was not indicated. Many people were already wearing masks and gloves out in public, which demonstrated an understanding to some extent regarding susceptibility and severity. A different approach to education was something that would be welcomed by individuals and was thought to have the potential to increase health knowledge based on the ability to ask relevant questions and have them answered by a dedicated health professional. During the period of the intervention, the California state governor had already issued a statewide stay-at-home order (Executive Department, State of California, 2020). While the CDC had suggested the use of a cloth mask while out in public (CDC, 2020e), some counties in California such as San Bernardino and Riverside counties had already taken it a step further and required that everyone wore a face covering while out in public (San Bernardino County, 2020; City of Riverside, 2020). By the time the intervention was already in process, the use of a cloth facemask while in public became a statewide mandate ("Masks and Face Coverings," 2020).

The remainder of the educational information focused on health topics relevant to COVID-19 including mental, dental and physical health. Each lecture began with information on susceptibility and severity and then transitioned to interventions including benefits and barriers. For example, one lecture focused on smoking cessation. In the beginning of the lecture, the presenter discussed how smoking affects respiratory health in general and then incorporated data regarding the severity of COVID-19 seen in those

who smoked. This approach was utilized in hopes that this "cue to action" might assist participants to recognize and acknowledge the susceptibility and severity related to smoking. Following, methods that have shown promising results in smoking cessation were discussed along with the benefits and barriers that came along with them.

Change in knowledge may be not be as powerful as it could be if it is not accompanied by self-efficacy – the belief that a person can set out to accomplish a goal. This project also aimed to evaluate whether this online health education program had an effect on self-efficacy utilizing the General Self-Efficacy Scale which was included in the pre-test and post-test.

The factors being measured that were linked to likelihood of action included an increase in knowledge regarding topics pertinent to the COVID-19 pandemic using a pre-test/post-test model and whether this health education program influenced the self-efficacy of the participants.

Literature Review

The primary intervention for this project involved education regarding pertinent topics related to COVID-19 delivered to community members in video form. During a time when stay-at-home orders remained in place, online health education proved to be a viable option for providing education in lieu of in-person health education that might normally have taken place at office visits, classes or support groups.

Online Health Education

Online health education was a flexible way for community members to receive information regarding health issues and could occur at any time in the comfort of their homes. Online health education had the potential to improve self-care practices as well

as emotional well-being. Individuals who were able to gain knowledge often reported feeling empowered and in control of their health, which led to decreased anxiety. Those who understood the reason for their treatments and medications are also more likely to adhere to them in the future (Win et al., 2015).

Research demonstrated that accurate online health education may also be particularly important to those who did not have access to a doctor, were uninsured or had health disparities. Young adults who were in college specifically reported that they would rely on the internet for answers regarding their health questions. Unfortunately, they often lacked the skills necessary to evaluate the information for validity (Rennis et al., 2015). With the plethora of health information from a variety of sources, evidence-based health information was needed especially for groups who turn to the internet first when looking for health guidance.

When there was a high perceived threat to health recognized by the public, online education became even more valuable. One study demonstrated that trust is significantly related to adoption of health-related practices presented on social media. It also found that trust was highly influenced by perceived knowledge, knowledge consensus and source credibility. Lastly, as the health threat and fear increased, perceived knowledge most heavily influenced trust which led to increased adoption of recommended healthcare principles. During health threat and heightened fear, source credibility and knowledge consensus became less important. Perceived knowledge, referring to the subjective evaluation and perception of content, was the most significant indicator of trust regarding health education on social media during health threats (Huo et al., 2018). During a pandemic, people were more likely to view the health threat as being high and exhibit

fear regarding the unknown. This was a time when people were searching for health information, and unfortunately, reportedly also had a tendency to stop relying on more concrete evidence, such as source credibility, to determine if health information was accurate. As people strived to increase their knowledge during a time of fear, it was important to provide accurate, evidence-based information from trusted sources online and on social media so that health was not placed in further jeopardy by adopting potentially harmful practices.

Online health education could be utilized in conjunction with care from the patient's healthcare team in order to increase evidence-based practices. One study evaluated the effectiveness of an online pre-conception healthcare module in facilitating discussion regarding reproductive health with a healthcare practitioner. Secondary goals included discussion of folic acid supplementation, contraception methods and self-efficacy scores. This study involved 292 participants split between an intervention and control group. Each group took a pre-assessment survey followed by an email with educational curriculum. Following the next visit with the participant's women's health provider, a post-assessment was performed. There was a statistically significant increase in the number of women in the treatment group who reported discussing reproductive care with their physicians (Batra et al., 2018). This study demonstrated that online health education had the potential to encourage individuals to acknowledge potential problems and then seek out solutions in conjunction with their healthcare provider.

Online health education also proved beneficial for parents when learning about the health challenges of their children. One study evaluated the use of an online educational website and app that targeted fathers with children who had type 1 diabetes.

The fathers were interviewed and filled out a questionnaire at the beginning of the study. Following, they were provided with access to the website and/or app which included educational topics and videos regarding diabetes management, insulin administration, glucose monitoring, ketone monitoring, psychosocial effects, et cetera. All of the content was written at the sixth-grade level or below. Some videos were hosted on the YouTube site. This study found that commercial-free content and links to scientific sources helped to gain parental trust in online health information (Albanese-O'Neill et al., 2019).

Online health education not only could be provided to the public, but also could be beneficial for healthcare providers. British Columbia's Provincial Health Services Authority hosted a class regarding hepatitis C that could either be performed in person or online. The course was available to both healthcare providers and patients. There were 312 providers and 94 patients that completed the pre-test/post-test and education. The increase in knowledge between the in-class and online participants was comparable, showing a statistically significant increase in knowledge following the intervention (Buller-Taylor et al., 2018). Not only could online education provide much needed health education to patients and the community, it had the potential to be beneficial to healthcare providers as well.

Online health education may be developed for a generic audience or target a specific group or city. One study evaluated an online health education website entitled GetHealthyHarlem that was specifically designed to target the residents of Harlem, New York. The website was developed after performing multiple interviews and focus groups to discuss the culturally specific needs to the residents of Harlem, New York. A core group of community members met monthly to discuss the design of the website. It was

launched in 2008 and then modified and relaunched in 2011-2012. During this time, the website was being used as an intervention in a research study regarding awareness and control of hypertension. Because of this, there was significant content on hypertension. They also included a "healthy tip of the week" as well as shared inspiring stories of community members (Smith et al., 2015).

Advertisement and promotion of the website was performed through the group's Facebook page, distribution of flyers, and community events including a photo contest and outdoor reception. The group used Google Analytics and Facebook Insights to track visits to the site. Following the relaunch of the site, the group was totaling 5,284 visits to the website per month with 25%-30% returning visitors (Smith et al., 2015, pg. 483). There was little conversion of passive to active users following the relaunch of the website. Although there are many limitations to this study based on the methods of evaluation, the goal of the project was to increase awareness regarding the website, drive online traffic and establish a presence as a reputable source for health information and those goals were met (Smith et al., 2015).

Conclusion

The Health Belief Model was demonstrated to be a sufficient guide to the development of an online health education program for community members regarding topics relevant to COVID-19. Online health education has been demonstrated in the literature to be an effective method of education for the public and healthcare professionals in previous research projects and studies. The project investigator chose to utilize the Health Belief Model in the design of the curriculum for an online health intervention that was entitled *Renew: Better Me, Better We.* This curriculum had a

specific focus on personal and community health with the understanding that a person's knowledge and self-efficacy both affect his willingness and ability to engage in preventative health actions.

CHAPTER 3

METHODOLOGY

Project Design

This project utilized a quantitative quasi-experimental pre-test/post-test design from a convenience and snowball sample. A pre-test and post-test were performed to measure the effectiveness of an online, 30-day, nurse led, health educational intervention entitled *Renew: Better Me, Better We.* The curriculum for the intervention was developed by the project investigator with assistance from the committee chair and members and included topics relevant to the COVID-19 pandemic including physical and mental health topics. A pre-test was performed which included demographic information, the Health Knowledge Assessment Questionnaire (25 questions) developed by the project investigator and the General Self-Efficacy Scale (10 questions) developed by Matthias Jerusalem and Ralf Schwarzer (Schwarzer, 2014). These same two tests were administered post-intervention. SurveyMonkey was utilized as a platform to administer the pre-test and post-test. Each participant who fully completed the research project was provided with an electronic Amazon gift card in the amount of $10.00 as a thank you for their participation.

Population and Sample

The project investigator worked in cooperation with the Lincoln Amazing Grace Seventh-Day Adventist Church. Because of this, the research project primarily focused on the members and contacts of the church as well as residents in the surrounding communities. Church members and approximately 900 community members who had expressed interest in community programs were invited to join the program utilizing an approved script and flyer. Targeted Facebook advertising was primarily used to invite those in the community to join the research project. Because this research project includes snowball sampling, anyone could invite others to join the project.

Independent and Dependent Variables

The independent variable in this research project was COVID-19 health education. Dependent variables included health knowledge and self-efficacy.

Sample Size

The paired t-test was utilized to estimate sample size assuming a medium effect, an alpha of 0.05 and a power of 0.80. The recommended sample size was 34 to control for attrition. The project investigator, however, aimed to include at least 50 participants. Utilizing the aforementioned recruiting methods, a total of 66 participants consented to participate in the project by taking the pre-test through SurveyMonkey. Because the attrition rate was noted to be fairly high once the first cohort began the intervention, a second period of recruitment was performed which resulted in a second and very small third cohort. A total of 45 participants in total completed the entire project including the pre-test, watching the health videos, and taking the post-test. Because the only means of contact was an email address, it was difficult to maintain contact with the participants.

The project investigator did send reminder emails to participants who stopped watching the video presentations in hopes of encouraging them to complete the research project. Some responded noting that they did not receive the episode. If this was the case, the episode was resent. Others responded by resuming watching the episodes and others did not reply.

Definition of Participation

Participation in the research project was defined by the following criteria:

- Having consented to participate in the research project by submitting the pre-tests
    - Health Knowledge Assessment Questionnaire
    - General Self-Efficacy Scale
    - Demographic Information
- Having watched the *Renew: Better Me, Better We* health education curriculum
    - Eight video presentations that are approximately 10 minutes each
    - Link to each presentation were sent to provided email address
    - Video presentations were posted on Panopto to monitor which participants were viewing the presentations and for how long
- Submitted the post-tests within two (2) weeks of receiving the link via email.
    - Health Knowledge Assessment Questionnaire
    - General Self-Efficacy Scale
    - Demographics
- Provided email address to account for accurate tracking of pre-test and post-test results.
- Email address was used to send links to lectures and post-tests

- Each participant who successfully completed each of these steps received an electronic Amazon gift card in the amount of $10.00.

Inclusion and Exclusion Criteria

Inclusion criteria included that each participant be either male or female and was an adult of at least 18 years of age. Additionally, each participant was required to have access to a computer, smartphone or tablet in order to access the pre-test, health lectures and post-test via the internet. Multiple participants within the same household were allowed, however, the pre-test and post-tests were to be completed independently.

Recruitment

Members and contacts of the Lincoln Amazing Grace Seventh-Day Adventist Church received an email utilizing an approved script inviting them to participate in the project. Each of the aforementioned individuals were also mailed an approved flyer with information regarding the research project. The same flyers were also placed in food bags during the weekly community food giveaway at Lincoln Amazing Grace Seventh-Day Adventist Church. An approved Facebook page entitled *Renew: Better Me, Better We* was developed and utilized in Facebook targeted advertising to the following zip codes: 95658, 95648, 95765, 95663, 95650, 95602, 95603, 95604. Participants and anyone interested in the research project were also given permission to refer others who were interested in participating in the research project to the Facebook or SurveyMonkey page.

Following Project Participants

The only personal information that participants were required to provide was an email address. The purpose of including the email address was to provide a means for

the project investigator to be able to match pre-test and post-test and as a means of communication during the intervention period. Each email address was assigned a participant identification (ID) number in order to de-identify the data. The participant ID number was utilized in the participant tracking log by the project investigator to track tasks related to the project. The tracking log that was developed included the following information for each participant ID number:

- Implied consent/pre-tests submission
- Whether each *Renew: Better Me, Better We* lecture was watched and now many minutes were watched
- Submission of post-tests
- Electronic delivery of $10.00 Amazon gift card after completing all steps outlined in the definition of participation.

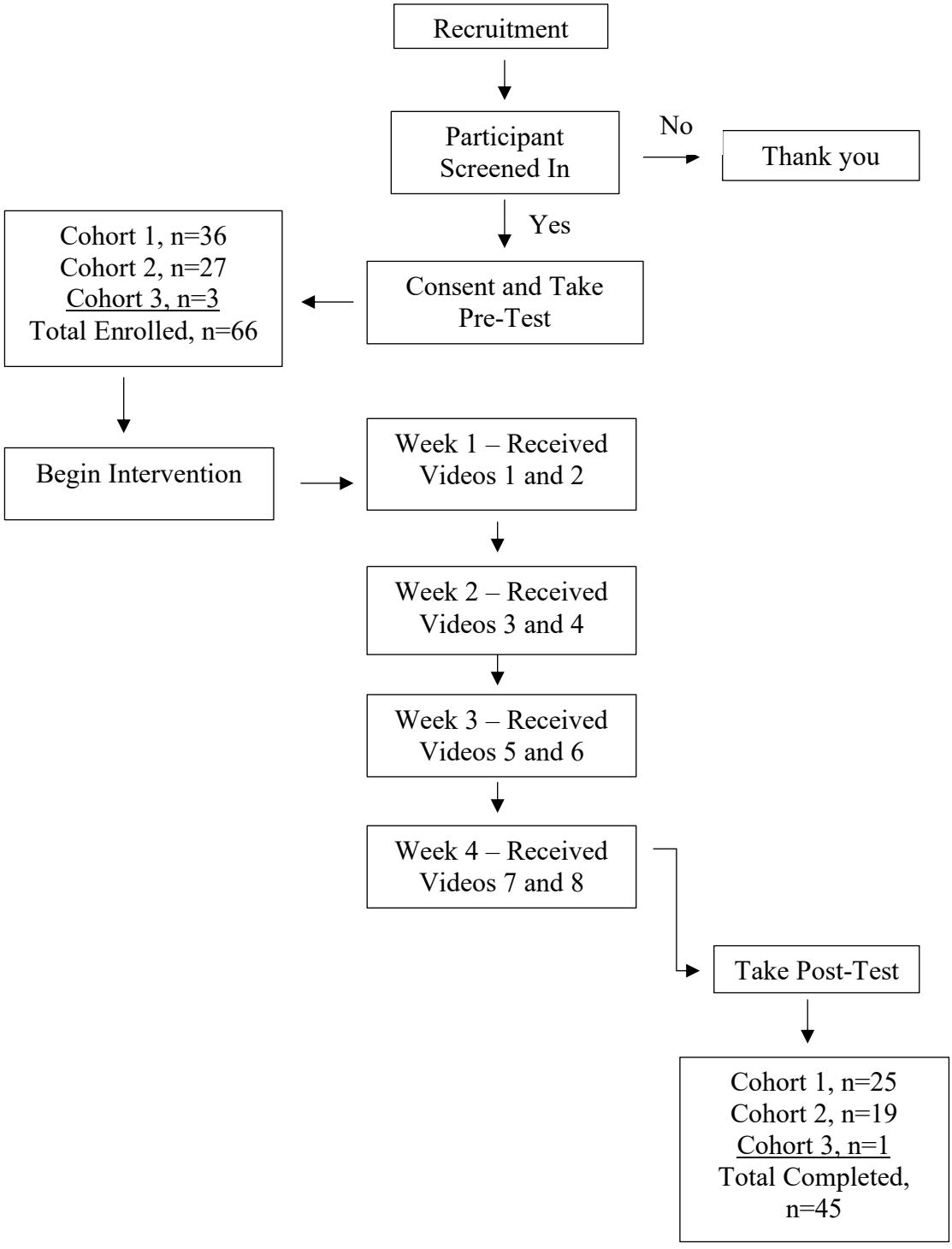

Figure 1. Project Protocol

Measurement/Instrumentation

The 25-question Health Knowledge Assessment Questionnaire created by the project investigator was developed in conjunction with the health education curriculum. There were at least two questions on the questionnaire related to each topic covered in the curriculum. The questionnaire was reviewed by the committee chair and committee members for accuracy and clarity. This team had a diverse education background including a Ph.D., master's in public health (MPH) and medical doctor (M.D.). Additionally, the project investigator asked two community members to answer the questions on the questionnaire and provide feedback. The wording of several questions was changed/clarified in response to the feedback received. The test consisted of multiple choice, select all that apply and true/false questions with a possible score ranging from 0-25/25. The primary investigator had chosen to regard a score of 70% as "knowledgeable." Additionally, the primary investigator's goal for practical significance was to note an increase of between 10-20% in post-test scores, the difference of one to two letter grades.

The General Self-Efficacy Scale was a tool developed by Matthias Jerusalem and Ralf Schwarzer. It was a self-reported self-efficacy assessment consisting of 10 questions with a possible score of 10-40/40 with lower scores being indicative of lower self-efficacy and higher scores being indicative of higher self-efficacy. The tool was proven to be reliable with a Chronbach's alpha between 0.75-0.91 (Scholz et al., 2002, pg. 243). The scale was utilized in several large-scale research studies that have confirmed its validity. The General Self-Efficacy Scale showed consistent, positive correlation with optimism, pro-active coping, self-regulation, perception of challenge in

stressful situations and perception of expected social support; likewise, there was consistent negative correlations associated with depression, anxiety, burnout, procrastination, and lack of accomplishment. Additionally, it was shown to be unidimensional (Schwarzer et al., 2000). Scoring for each question ranged from one to four (1=not true at all, 2=hardly true, 3=moderately true, and 4=exactly true). The General Self-Efficacy Scale was available to be used without permission in research studies (Schwarzer, 2014).

The *Renew: Better Me, Better We* health education curriculum was developed by the project investigator and presented by the project investigator and committee member Anil Kanda, MPH. Each presentation ranged from 10-12 minutes in length and was posted on Panopto for participants to watch. There was a total of eight presentations, with two posted to Panopto per week for a total of four weeks. Participants were notified via their provided email address when each presentation was available. The Panopto hosting site allowed for the primary investigator to assess data including which participants had watched the presentations, how many minutes they watched, and if any part of the presentation was watched more than once.

The *Renew: Better Me, Better We* curriculum was guided by the Health Belief Model. The topics covered were relevant to the COVID-19 pandemic and included the following topics: an overview of COVID-19, information regarding healthy nutrition practices and hydrotherapy to strengthen the immune system, discussion regarding safe use of disinfectants in the home, tips for maintaining mentally healthy during the pandemic, improving respiratory health, and how COVID-19 was specifically affecting children (Table 2). Each lecture discussed the perceived susceptibility, perceived

severity, perceived threats and perceived benefits of each topic and intervention. The importance of self-efficacy was incorporated by discussing simple techniques related to each topic. The *Renew: Better Me, Better We* intervention was employed as a cue to action in hopes of educating those participating regarding pertinent topics and promoting increased health awareness. The expected outcomes included an increase in health knowledge and self-efficacy as measured using the aforementioned post-test.

Table 2

Researcher-Developed Community Health Education Intervention Topics/Content

Renew: Better Me, Better We	**Included Content**
1. COVID-19 Overview Presenter: Kerstin Ashby Ferguson	● What Is It? ● Is it really worse than the flu? ● Protecting myself and loved ones ● Current testing guidelines
2. Self-Care and a Pandemic: Keeping Healthy When Doctors' Offices Are Closed Presenter: Anil Kanda	● Nutrition ● Vitamins & Supplements ● Sunshine ● Wearing PPE
3. Self-Care and a Pandemic: Keeping Healthy When Dentist Offices Are Closed Presenter: Kerstin Ashby Ferguson	● Dental Hygiene ● Links to immune system ● Dental Hygiene & Links to overall health
4. Increasing Your Body's Own Ability to Fight Presenter: Anil Kanda	● Benefits of Hydrotherapy on the immune system
5. Safety First: Use of Disinfectants in the Home Presenter: Kerstin Ashby Ferguson	● What if I cannot find antibacterial products? ● Dangers of mixing disinfectants ● Poison control education
6. Improving Respiratory Health Presenter: Kerstin Ashby Ferguson	● Smoking & COVID-19 severity ● Vaping associated morbidity ● Strategies for smoking cessation ● Where to go to get help
7. Interventions for Maintaining Mentally Healthy During a Pandemic Presenter: Anil Kanda	● Current research ● Balanced diet ● Exercise ● Deep breathing & Exercise ● Spiritual health
8. COVID-19 & Children Presenter: Kerstin Ashby Ferguson	● Infection rates ● How children respond to change ● Helping children cope

Confidentiality

All data was de-identified utilizing participant ID codes prior to analysis. The participant log, which was a record of matched emails to participant ID codes, was stored on the project investigator's password protected computer in a file separate from any de-identified data collection files. Email addresses were only used by the project investigator to communicate with participants during the research period. The email addresses were not shared or used for any other purpose.

Data collection was obtained utilizing SurveyMonkey. IP tracking was disabled in order to allow for greater security and to make it easier for multiple members of the same household to participate. According to SurveyMonkey, their data is stored in SOC 2 accredited data centers and is transmitted over a secure HTTPS connection. Data at rest was encrypted per the industry standard (SurveyMonkey, 2020).

Internal/External Validity

Factors associated with this research project that improved internal validity included experimental manipulation utilizing the independent variable and adhering to the study protocol as to avoid variation in data collection and intervention implementation. The same instrument was also used to collect pre-test and post-test data.

Threats to external validity were decreased by incorporating a broad inclusion criterion, allowing for the characteristics of the sample to be as close as possible to the characteristics of the population. Demographic data was collected and used to further analyze whether demographics had an effect on the knowledge of participants.

Implementation

This project began with a two-week period of recruitment utilizing the aforementioned strategies including Facebook targeted advertising, recruitment from the Lincoln Amazing Grace Seventh-Day Adventist church and through word of mouth by other interested parties. The *Renew: Better Me, Better We* Facebook page was activated and advertising started on May 14, 2020. Additionally, the communications committee for the church distributed an informational flyer via mail and email to its members and contacts as well as distributed flyers in food bags provided to the community during their weekly food giveaway. During this period, potential participants were able to view information regarding the research project by navigating to the cover page of the pre-test utilizing the SurveyMonkey link or the project Facebook page. The SurveyMonkey cover page incorporated all of the required elements of informed consent. Those who chose to participate were also able to take the pre-test after submitting the consent form. Those who chose not to participate were able to either select "no" at the bottom of the consent page, or simply close their browser. Each participant was required to provide an email address as part of the pre-test process.

The pre-test consisted of the 25-question Health Knowledge Assessment Questionnaire developed by the project investigator, 10-question General Self-Efficacy Scale, and demographic questions. All questions required an answer.

The first cohort of participants involved 36 people who submitted the pre-test. The first *Renew: Better Me, Better We* episode was produced by the project investigator and submitted to participants via Panopto on May 28, 2020. Following, the participants received a new episode every Tuesday and Friday thereafter for the duration of the eight

episodes. Each time an episode was available, each participant would receive an email from the project investigator's university email address containing details on how to access the new episode as well as an email generated from Panopto with a direct link to the video.

Because the attrition rate was found to be high, a second period of recruiting utilizing targeted Facebook advertising to the same zip codes was initiated on June 12, 2020. A second cohort of 27 individuals started the *Renew: Better Me, Better We* intervention on June 16, 2020 and a smaller, third cohort of 3 people started the intervention on June 23, 2020. These cohorts followed the same pattern of receiving a new episode each Tuesday and Friday with accompanying emails over the course of four weeks. Following the release of the last episode, the link for the post-test was emailed to each of the participants. The post-test questions were identical to the pre-test questions. The participants were expected to submit the post-tests within two weeks of receiving the post-test link.

Each participant who successfully completed the entire research project was provided with a thank you gift in the form of an electronic Amazon gift card valued at $10.00. This gift was emailed to the email address that was provided upon submission of the pre-test and within two weeks following the deadline for submission of the post-test. Ultimately a total of 45 participants successfully completed the research project.

Research Project Timeline

Table 3 below outlines the research project timeline from start to finish.

Table 3.

Timeline for Project Start to Finish

Date	Event
May 14-27, 2020	• Recruit participants, participants take pre-tests
May 28, 2020	• Release of *Renew: Better Me, Better We* episode 1, "COVID-19 Overview" (cohort 1)
June 2, 2020	• Release of *Renew: Better Me, Better We* episode 2, "Self-Care and a Pandemic: Keeping Healthy When Doctor's Offices Are Closed" (cohort 1)
June 5, 2020	• Release of *Renew: Better Me, Better We* episode 3, "Self-Care and A Pandemic: Keeping Healthy When Dentist Offices Are Closed" (cohort 1)
June 9, 2020	• Release of *Renew: Better Me, Better We* episode 4, "Increasing Your Body's Own Ability to Fight" (cohort 1)
June 12, 2020	• Release of *Renew: Better Me, Better We* episode 5, "Safety First: Use of Disinfectants in the Home" (cohort 1) • Second wave of recruiting via Facebook
June 16, 2020	• Release of *Renew: Better Me, Better We* episode 6, "Improving Respiratory Health" (cohort 1) • Release of *Renew: Better Me, Better We* episode 1, "COVID-19 Overview" (cohort 2)
June 19, 2020	• Release of *Renew: Better Me, Better We* episode 7, "Interventions for Maintaining Mentally Healthy During A Pandemic" (cohort 1) • Release of *Renew: Better Me, Better We* episode 2, "Self-Care and a Pandemic: Keeping Healthy When Doctor's Offices Are Closed" (cohort 2)
June 23, 2020	• Release of *Renew: Better Me, Better We* episode 8, "COVID-19 & Children" (cohort 1) • Release of *Renew: Better Me, Better We* episode 3, "Self-Care and A Pandemic: Keeping Healthy When Dentist Offices Are Closed" (cohort 2) • Release of *Renew: Better Me, Better We* episode 1, "COVID-19 Overview" (cohort 3)
June 26, 2020	• Post-test invitation email sent to participants (cohort 1)

Table 3 – Continued

	• Release of *Renew: Better Me, Better We* episode 4, "Increasing Your Body's Own Ability to Fight" (cohort 2) • Release of *Renew: Better Me, Better We* episode 2, "Self-Care and a Pandemic: Keeping Healthy When Doctor's Offices Are Closed" (cohort 3)
June 30, 2020	• Release of *Renew: Better Me, Better We* episode 5, "Safety First: Use of Disinfectants in the Home" (cohort 2) • Release of *Renew: Better Me, Better We* episode 3, "Self-Care and A Pandemic: Keeping Healthy When Dentist Offices Are Closed" (cohort 3)
July 3, 2020	• Release of *Renew: Better Me, Better We* episode 6, "Improving Respiratory Health" (cohort 2) • Release of *Renew: Better Me, Better We* episode 4, "Increasing Your Body's Own Ability to Fight" (cohort 3)
July 5, 2020	• Deadline to submit post-test (cohort 1)
July 7, 2020	• Release of *Renew: Better Me, Better We* episode 7, "Interventions for Maintaining Mentally Healthy During A Pandemic" (cohort 2) • Release of *Renew: Better Me, Better We* episode 5, "Safety First: Use of Disinfectants in the Home" (cohort 3)
July 10, 2020	• Release of *Renew: Better Me, Better We* episode 8, "COVID-19 & Children" (cohort 2) • Release of *Renew: Better Me, Better We* episode 6, "Improving Respiratory Health" (cohort 3)
July 14, 2020	• Post-test invitation email sent to participants (cohort 2) • Release of *Renew: Better Me, Better We* episode 7, "Interventions for Maintaining Mentally Healthy During A Pandemic" (cohort 3)
July 17, 2020	• Release of *Renew: Better Me, Better We* episode 8, "COVID-19 & Children" (cohort 3)
July 19, 2020	• Deadline for project investigator to email Amazon $10.00 gift cards to participants (cohort 1)

Table 3 – Continued	
July 22, 2020	• Post-test invitation send to participants (cohort 3)
July 23, 2020	• Deadline to submit post-test (cohort 2)
July 30, 2020	• Deadline to submit post-test (cohort 3)
August 6, 2020	• Deadline for project investigator to email Amazon $10.00 gift cards to participants (cohort 2)
August 13, 2020	• Deadline for project investigator to email Amazon $10.00 gift cards to participants (cohort 3)
August-October, 2020	• Data Analysis and write-up

Data Collection

Pre-test and Post-test values were collected through SurveyMonkey utilizing the Health Knowledge Assessment Questionnaire and the General Self-Efficacy Scale.

Data Analysis

Pre-test and post-test data were transferred from SurveyMonkey to Microsoft Excel. Following de-identification, the final data set was cleaned and analyzed utilizing IBM SPSS Statistics for Windows (version 27) with a significance level of 0.05. The paired t-test was utilized to compare the overall pre-test and post-test scores on both the health knowledge questionnaire and the General Self Efficacy Scale in order to determine if the intervention (*Renew: Better Me, Better We* curriculum) had a statistically significant effect on health knowledge related to COVID-19 and general self-efficacy. The project investigator had planned to use the independent t-test and one-way analysis of variance (ANOVA) to compare mean pre-test and post-test scores within demographic groups; however, some of the data was not of a normal distribution after recoding for comparison. ANOVA was utilized to compare age groups and the Mann-Whitney U test and Kruskal-Wallis test were utilized when variables were not normally distributed.

The project investigator believed that it was important to include healthcare workers in the research because of their varying degrees of education regarding COVID-19; thus, any healthcare worker could benefit from an education program like this. The project investigator planned to compare the healthcare workers and non-healthcare workers groups in order to determine if healthcare workers had a greater health knowledge regarding COVID-19 when compared to non-healthcare workers, however, only five of the 45 participants identified themselves as healthcare workers. Because of the small sample size of healthcare workers, this comparison was not performed.

The majority of the participants watched each health video in its entirety one time. Although the project investigator initially planned to compare results between level of participation, this was not possible due to the lack of variation in participation data.

Conclusion

This project included a simple methodology, however, the potential for influence in the community health education field in the future is significant. The project aimed to demonstrate that online health education during a pandemic is associated with increased health knowledge and self-efficacy. The results of this project had the potential to increase quality of life during and after the intervention.

CHAPTER 4

FINDINGS AND RESULTS

This research project was a nurse led, educational intervention with the goal of determining whether an online educational program related to COVID-19 had the potential to increase the health knowledge of participants as well as to increase their self-efficacy. This chapter provides a description of the project results including a discussion of the data analysis and demographics of the participants. For parametric tests, the mean (*M)* and standard deviation (*SD*) are reported and for non-parametric test, the median (*Mdn)* and range. All reported p-values are single tailed.

Participant Demographics

There was a total of 45 participants who completed the project. The majority (73%) of the participants were female (Figure 2). The average age of participants was 38 years old with the majority of participants being in the 18-29 and 30-39 age ranges, 33% and 29% respectively (Figure 3). The most common education levels were "some college" or "undergraduate degree" (Figure 4). Seventy-one percent of participants were white and 89% of participants were not defined as healthcare workers (Figure 5 & Figure 6). Because of the lack of healthcare workers participating in the study, comparison between healthcare workers and non-healthcare workers means scores could not be performed. There was a total of 32 participants who classified their race as white and 13 participants who classified their race as African American, Hispanic/Latino, Asian or

other (Figure 5). Due to the smaller sample size, the race variable was recoded for analysis to compare white participants with all other races combined. The majority of participants classified their education level as either some college, undergraduate degree or graduate degree. The education variable was also recoded to compare the three aforementioned education categories.

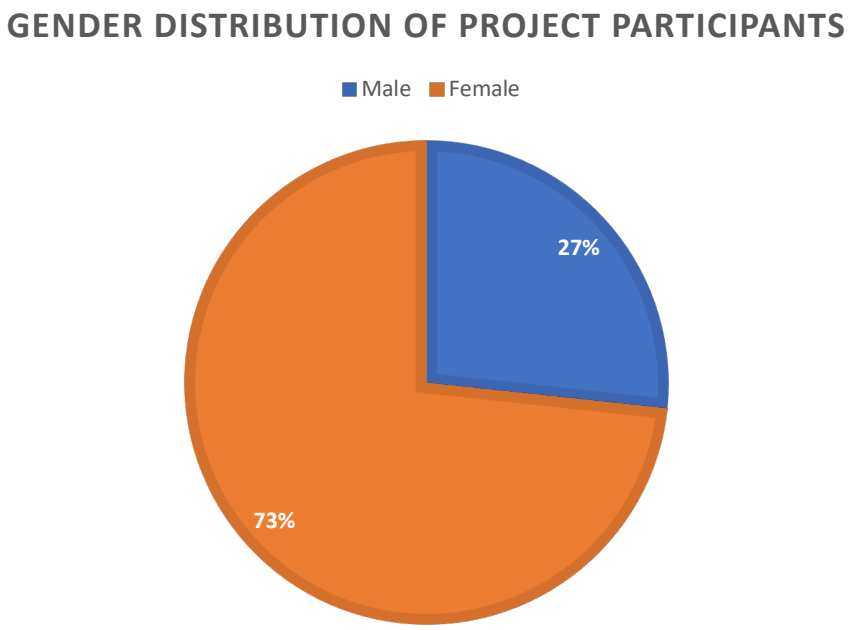

Figure 2. Gender of Project Participants

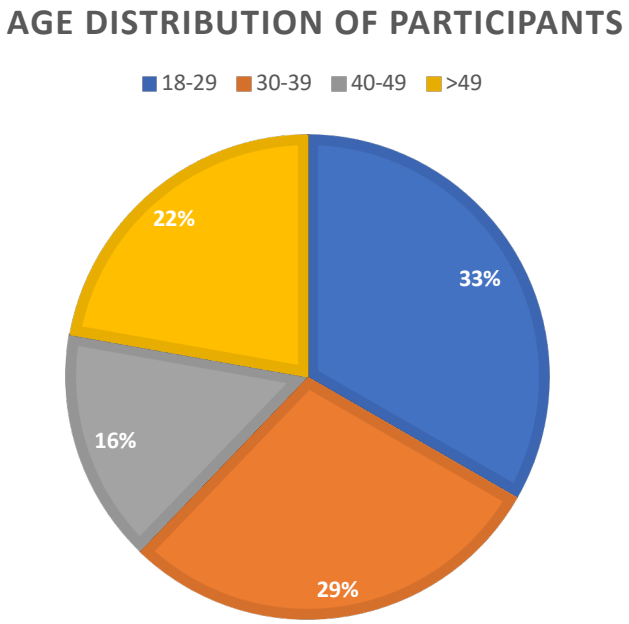

Figure 3. Age Distribution of Project Participants

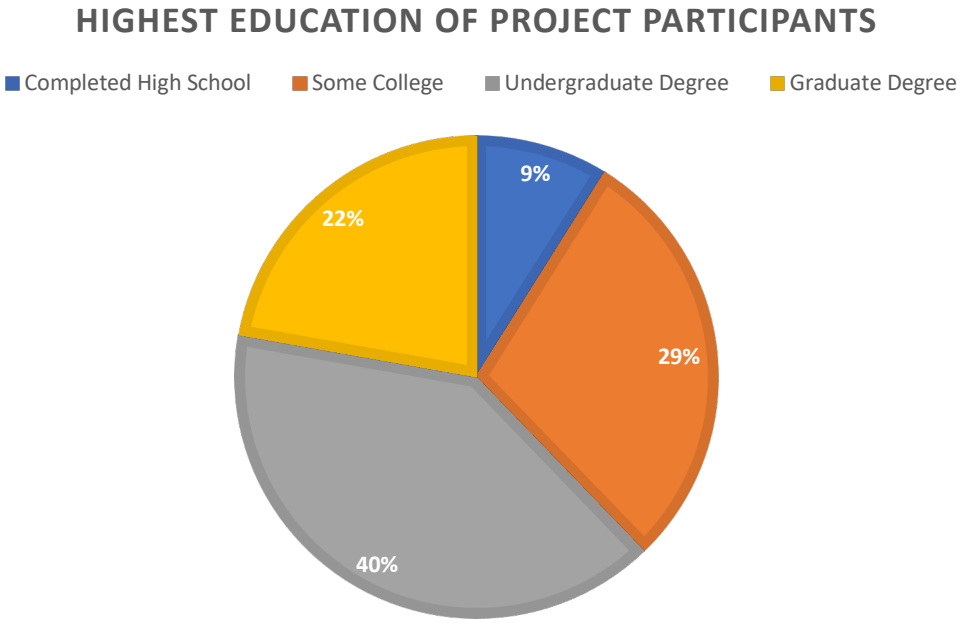

Figure 4. Education Level of Project Participants

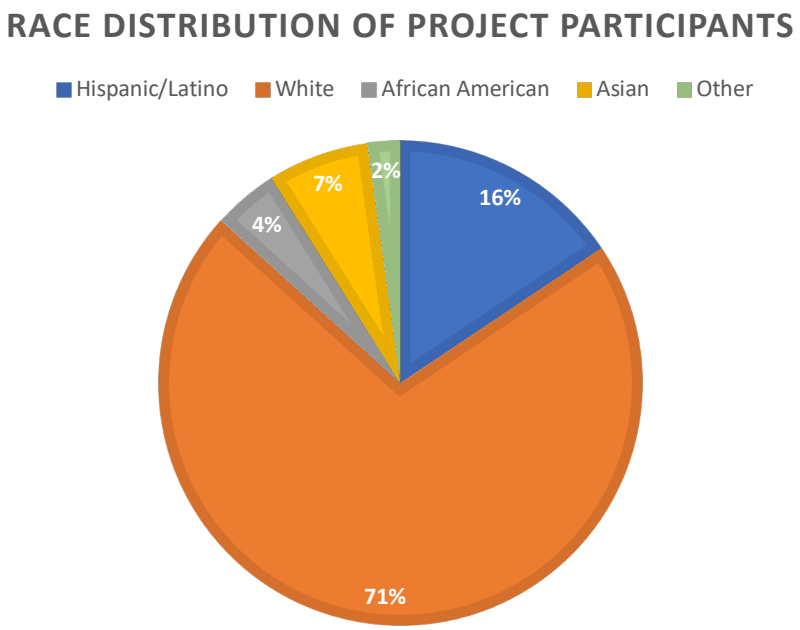

Figure 5. Race Distribution of Project Participants

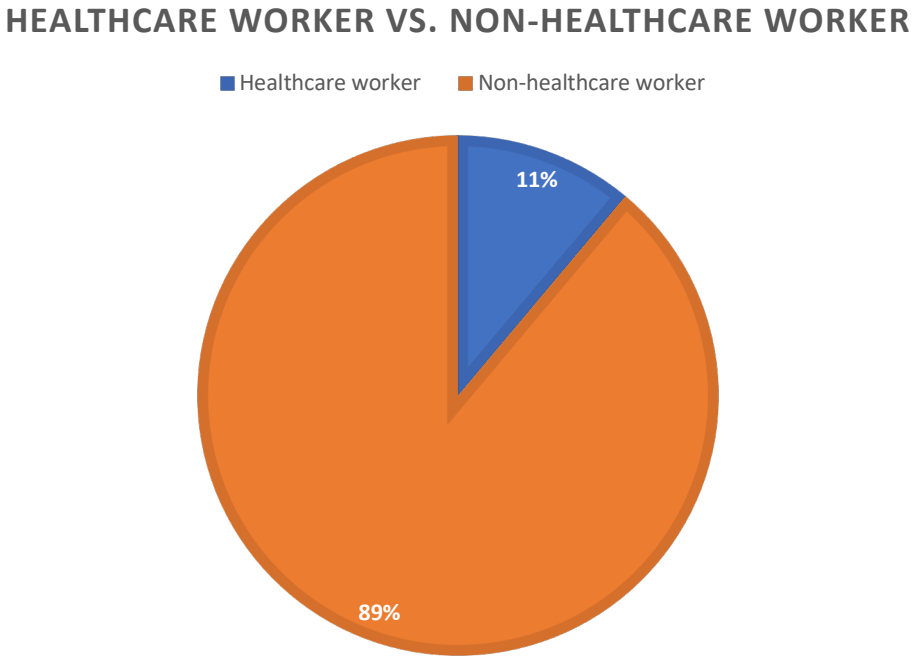

Figure 6. Project Participants in Healthcare vs. Non-Healthcare Job Role

Participant Health Knowledge

The first objective of this project was to determine if an online health educational program would increase the health knowledge of participants. The paired sample t-test was utilized to compare the pre-test and post-test scores from the Health Knowledge Assessment Questionnaire. The data was of a normal distribution. Following data analysis, it was noted that there was a statistically significant increase from mean pre-test score (M=13.31, SD=4.07) to post-test score (M=15.36, SD=4.73) following the intervention, t(44)=-5.288, 1-tailed p=<0.001 (Table 4).

The project investigator chose to regard a score of greater than or equal to 70% as "knowledgeable" on the Health Knowledge Assessment Questionnaire and had set a goal of an increase of 10-20% between pre- and post-test scores. The average pre-test score was equal to 53% with the average post-test score equal to 61%. Neither average score reached the "knowledgeable" threshold. A total of seven people scored 70% or greater on the pre-test while a total of 15 scored 70% or greater on the Health Knowledge Assessment Questionnaire post-test (Figure 7). Although on average participants were not considered "knowledgeable" regarding health knowledge, a total of eight people crossed the threshold to "knowledgeable" following the intervention. On average, there was an 8% increase in health knowledge which also did not meet the project investigator's goal. When the scores were further assessed individually, 11 people either had the same score or a decreased score following the intervention, 15 people had an increase in their score by less than 10% and 19 people had an increase in their score by 10% or greater (Figure 8).

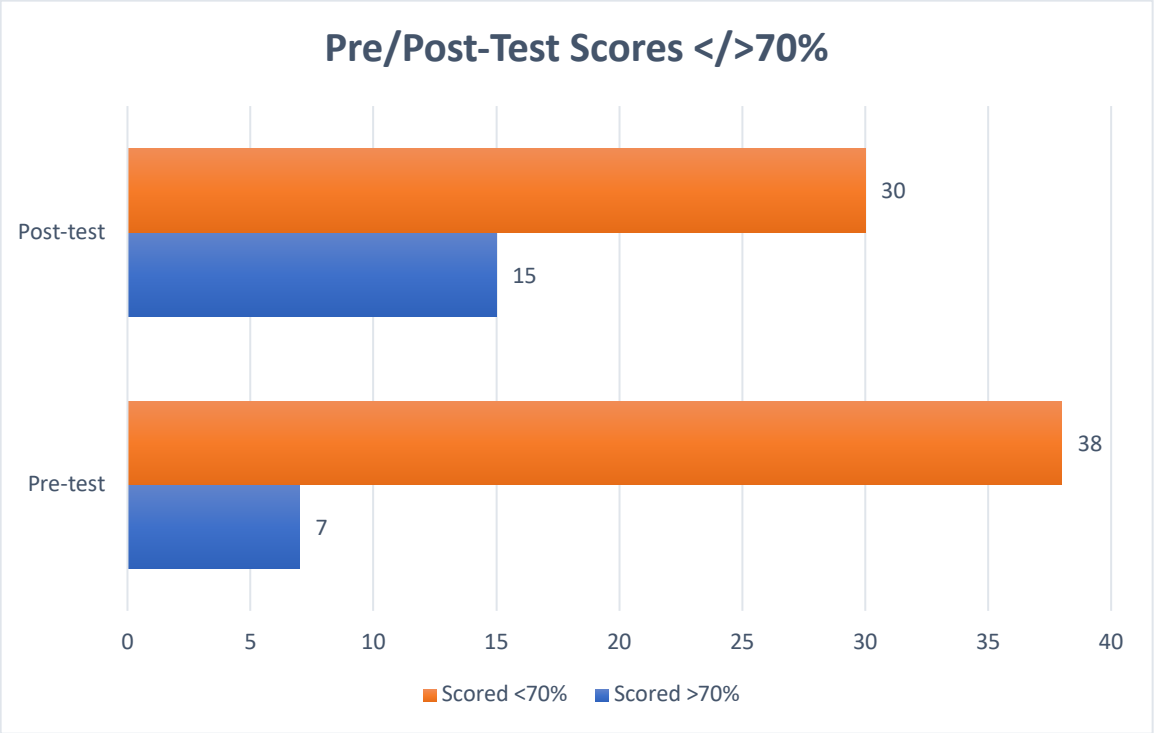

Figure 7. Health Knowledge Scores <70% vs. >70% Pre-Test/Post-Test

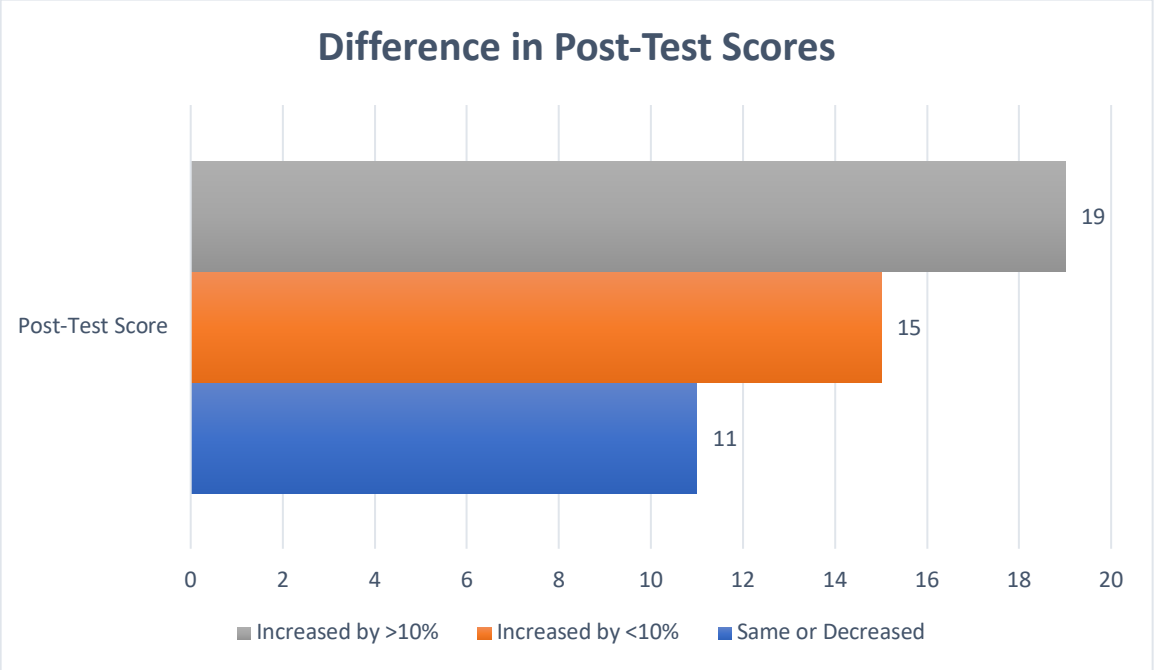

Figure 8. Change in Health Knowledge Scores Post-Intervention

Association Between Demographics and Test Scores

The independent t-test was utilized to compare the mean pre-test and post-test scores between male and female participants. There was a significant difference noted between the mean scores of males (M=10.92, SD=3.53) and females (M=14.18, SD=3.95) on the Health Knowledge Assessment Questionnaire. This difference was noted even prior to the intervention, t(43)=-2.519, 1-tailed p=0.008; however, following the intervention, the difference between the scores of males (M=12.25, SD=4.90) and females (M=16.48, SD=4.19) was even more significant, t(43)=-2.865, 1-tailed p=0.003 (Table 6). Females had higher means scores than males both pre- and post-intervention with means scores of 14.18 and 16.48 respectively. Following the intervention, the means score in the female group increased by 9%. Males scored an average of 10.92 on the pre-test and 12.25 on the post-test, accounting to an average increase of 5% on the post-test following the intervention (Table 6).

There was not a statistically significant difference between the mean scores of males and females on the General Self-Efficacy Scale either pre- or post-intervention. Males, on average, scored slightly higher than females on the General Self-Efficacy Scale. Both groups maintained almost identical mean scores pre-test and post-test.

Participants were grouped into four age categories for analysis to compare mean pre-test and post-test scores for the Health Knowledge Assessment Questionnaire utilizing ANOVA: ages 19-29, ages 30-39, ages 40-49, and age 50 or greater. When comparing the mean pre-test scores of all four age groups before the intervention, there was noted to be a statistically significant difference between these groups (19-29: M=11.93, SD=3.00; 30-39: M=10.86, SD=2.77; 40-49: M=16.14, SD=3.45; 50 or greater:

M=16.70, *SD*=4.22) with a test statistic of $F(3,41)=8.612$, 1-tailed $p=<0.001$ (Table 6). There continued to be a statistically significant difference between the four groups (19-29: *M*=13.43, *SD*=4.11; 30-39: *M*=12.79, *SD*=3.93; 40-49: *M*=19.57, *SD*=4.43; 50 or greater: *M*=18.70, *SD*=2.71) when comparing the mean post-test scores following the intervention with a test statistic of $F(3,41)=8.620$, 1-tailed $p=<0.001$ (Table 6).

Post Hoc test using Scheffe criterion showed that the health knowledge score prior to the intervention for age group 50 or greater (*M*=16.70, *SD*=4.22) was significantly higher than the health knowledge score for age group 19-29 (*M*=11.93, *SD*=3.00), $p=0.007$ or the health knowledge score for age group 30-39 (*M*=10.86, *SD*=2.77), $p=0.001$. Also, the pre-intervention health knowledge score for age group 40-49 (*M*=16.14, *SD*=3.45) was significantly higher than health knowledge score for age group 30-39 (*M*=10.86, *SD*=2.77), $p=0.007$ (Table 8). The difference between mean test scores became less significant post-intervention when comparing the health knowledge score of age group 50 or greater (18.70 ± 2.71) with the health knowledge score for age group 30-39 (*M*=12.79, *SD*=3.93), $p=0.004$ or the health knowledge score for age group 19-29 (*M*=13.43, *SD*=4.11), $p=0.010$. The difference between scores became more significant when comparing the health knowledge score of age group 40-49 (*M*=19.57, *SD*=4.43) with the health knowledge score from age groups 30-39 (*M*=12.79, *SD*=3.93), $p=0.003$ and 19-29 (*M*=13.43, *SD*=4.11) $p=0.007$ (Table 8). The highest pre-test mean score was noted in the 50 or greater age group (*M*=16.70, *SD*=4.22) while the highest post-test mean score was noted in the 40-49 age group (*M*=19.57, *SD*=4.43). There was an increase in each age group's means scores post-intervention, however, the most

significant increase was noted in the 40-49 age group with an average increase of 3.5 points or 14% (Table 8).

Using the same age groups, mean General Self-Efficacy Scale pre-test and post-test scores were compared between groups utilizing ANOVA. There was no significant difference found between age groups when comparing scores either pre-test or post-test (Table 7).

Upon recoding data for analysis by race and education, the data was found to not be of a normal distribution; therefore, the Kruskal-Wallis test was utilized instead of ANOVA to compare mean scores between education levels and the Mann-Whitney U test was utilized instead of the independent t-test to compare median scores between white and other races on the Health Knowledge Assessment Questionnaire scores. When comparing median pre-test and post-test scores, there was no significant difference noted between groups when comparing the median score of white participants to those of other races or when comparing median scores between those with some college, an undergraduate degree or a graduate degree either pre-test or post-test (Table 6).

Participant Self-Efficacy

The last objective was to determine whether online health education led to an increase in self-efficacy. The paired samples t-test was utilized to compare pre-test and post-test results from the General Self-Efficacy Scale. There was no significant difference between pre-test and post-test self-efficacy scores, $t(44)=-0.074$, 1-tailed $p=0.471$ (Table 4). The scores on the General Self-Efficacy Scale pre-test and post-test were almost identical.

Table 4

Health Knowledge/Self-Efficacy Pre/Post-Test Results

	Pre-Test	**Post-Test**		
	M ± *SD*	*M* ± *SD*	Statistics	1-tailed *p*-value
Health Knowledge Assessment Questionnaire	13.31 ± 4.07	15.36 ± 4.73	t(44)=-5.288	<0.001*
General Self-Efficacy Scale	31.11 ± 4.06	31.16 ± 3.36	t(44)=-0.074	0.471

**p*-value significant

Table 5

Demographics of Study Participants

Characteristics	***n***	**(%)**	***M (SD)***
Gender			
Male	12	(26.7)	
Female	33	(73.3)	
Race			
Hispanic/Latino	7	(15.6)	
White	32	(71.1)	
African American	2	(4.4)	
Asian	3	(6.7)	
Other	1	(2.2)	
Healthcare Worker			
Yes	5	(11.1)	
No	40	(88.9)	
Education			
Less than high school	0	(0)	
Completed high school	4	(8.9)	
Some college	13	(28.9)	
Undergraduate degree	18	(40.0)	
Graduate degree	10	(22.2)	
Age	45		38.04 ± 13.91

Table 6

Health Knowledge Assessment Questionnaire Scores According to Demographics

Characteristics	***n***	**Pre-Test Score**	**Statistics**	**Post-Test Score**	**Statistics**
		M ± SD		*M* ± SD	
Gender					
Male	12	10.92 ± 3.53	t(43) = -2.519,	12.25 ± 4.90	t(43) = -2.865,
Female	33	14.18 ± 3.95	*p*=0.008*	16.48 ± 4.19	*p*=0.003*
Age					
19-29	14	11.93 ± 3.00	*F*(3,41)=8.612,	13.43 ± 4.11	*F*(3,41)=8.620,
30-39	14	10.86 ± 2.77	*p*=<0.001*	12.79 ± 3.93	*p*=<0.001*
40-49	7	16.14 ± 3.45		19.57 ± 4.43	
50 or greater	10	16.70 ± 4.22		18.70 ± 2.71	
		Mdn (Range)		*Mdn* (Range)	
Race					
White	32	13.00 (16)	*U* = 220.50,	15.50 (19)	*U* = 231.50,
Other	13	13.00 (12)	*p*=0.377	16.00 (12)	*p*=0.276
Education					
Some College	13	14.00 (13)	*H* = 4.320,	16.00 (13)	*H* = 4.225,
Undergraduate	18	10.00 (13)	*p*=0.058	11.00 (19)	*p*=0.061
Graduate	10	13.00 (10)		16.50 (9)	

*1-tailed *p*-value significant

Table 7

General Self-Efficacy Scale Scores According to Demographics

Characteristics	***n***	**Pre-Test Score**	**Statistics**	**Post-Test Score**	**Statistics**
		M ± SD		*M* ± SD	
Gender					
Male	12	31.83 ± 2.86	t(43) = 0.717,	31.83 ± 1.47	t(43) = 1.174,
Female	33	30.85 ± 4.42	*p*=0.239	30.91 ± 3.81	*p*=0.124
Age					
19-29	14	31.14 ± 3.88	*F*(3,41)=1.319	31.50 ± 2.71	*F*(3,41)=2.162
30-39	14	32.57 ± 2.90	*p*=0.109	32.57 ± 2.10	*p*=0.054
40-49	7	30.71 ± 5.31		30.14 ± 4.14	
50 or greater	10	29.30 ± 4.55		29.40 ± 4.38	

Table 8

Health Knowledge Assessment Questionnaire Scores According to Age-Group

Characteristics	***n***	**Pre-Test Score**	***p*-value**	**Post-Test Score**	***p*-value**
		M ± SD		*M* ± SD	
Comparison 1					
19-29	14	11.93 ± 3.00	0.432	13.43 ± 4.11	0.489
30-39	14	10.86 ± 2.77		12.79 ± 3.93	
Comparison 2					
30-39	14	10.86 ± 2.77	0.007*	12.79 ± 3.93	0.003*
40-49	7	16.14 ± 3.45		19.57 ± 4.43	
Comparison 3					
30-39	14	10.86 ± 2.77	0.001*	12.79 ± 3.93	0.004*
50 or greater	10	16.70 ± 4.22		18.70 ± 2.71	
Comparison 4					
19-29	14	11.93 ± 3.00	0.035*	13.43 ± 4.11	0.007*
40-49	7	16.14 ± 3.45		19.57 ± 4.43	
Comparison 5					
19-29	14	11.93 ± 3.00	0.007*	13.43 ± 4.11	0.010*
50 or greater	10	16.70 ± 4.22		18.70 ± 2.71	
Comparison 6					
40-49	7	16.14 ± 3.45	0.495	19.57 ± 4.43	0.488
50 or greater	10	16.70 ± 4.22		18.70 ± 2.71	

*1-tailed *p*-value significant

CHAPTER 5

DISCUSSION

The main objective of this project was to determine if online health education during a pandemic would result in an increase in health knowledge and an increase in self-efficacy. Participant demographics were analyzed as well as the relationship of the results to the project objectives and theoretical framework. Additionally, the project strengths, limitations, implications for future research and practice, and how this project related to the *Doctor of Nursing Practice (DNP) Essentials* as defined by the American Association of Colleges of Nursing (AACN).

Participant Demographics

The smaller sample size made it difficult to analyze the data according to demographics and limited the amount of variety seen within the demographic categories. Although there was seemingly a lack of variety within the race category with 71% of participants being white, 16% being Hispanic or Latino, 7% being Asian, 4% being African American and 2% being classified as other, these percentages are similar to the race demographics seen in Lincoln, CA and the surrounding cities (Table 9). The target population of this project was Lincoln, CA and the cities surrounding it. The largest cities included in Facebook Targeted Advertising included the cities of Lincoln, Rocklin, and Auburn, CA. In each of these cities, white was the predominant race followed by Hispanic (United States Census Bureau, 2019).

There was under-representation of male participants as the United States Census Bureau reported approximately 50% of the population being female versus male in each of the three aforementioned cities (2019). The United States Census Bureau only reported educational statistics for high school or greater and undergraduate degree or greater. For each of the three aforementioned cities, at least 92% of the population finished high school and between 34-44% of the population had at least a bachelor's degree. All participants in this study reported at least finishing high school. Sixty-two percent reported having an undergraduate degree or higher, however, it was difficult to compare this to the education statistics from the United States Census Bureau since this percentage also included those with an associate's degree.

Table 9

Race Distribution in Lincoln, Rocklin, and Auburn, CA

	Lincoln, CA	**Rocklin, CA**	**Auburn, CA**
White	68.2%	70.4%	83.8%
Hispanic/Latino	20.5%	13.1%	10.3%
African American	1.8%	2.1%	0.2%
Asian	6.3%	9.5%	2.0%

Note. Demographics for cities according to the United States Census Bureau, 2019.

Relationship of Results to Project Objectives

There were three objectives for this project:

1. To evaluate the effect of online health education on the health knowledge of the community during a pandemic utilizing a health questionnaire pre-test and post-test.
2. To explore the association between demographic factors and community health knowledge.
3. To determine if online health education leads to increased self-efficacy utilizing the General Self-Efficacy Scale as a pre-test and post-test.

Health Knowledge

Data from this research project demonstrated that there was a statistically significant increase in health knowledge as measured by the Health Knowledge Assessment Questionnaire pre-test and post-test. The average pre-test score on the Health Knowledge Assessment Questionnaire was only 53% with an increase of eight percentage points to 61% post-test. Although this fell short of the project investigator's goal of at least a 10% increase from pre-test to post-test score, almost half of participants had an increase of at least 10% in their scores (Figure 8). This is significant because research from the H1N1 pandemic of 2009 demonstrated that those who had access to a greater amount of health education resources were more likely to participate and comply with infection control measures (Wong & Sam, 2010; Van der Weerd et al., 2011). As many people began growing weary of infection control measures such as mask wearing and social distancing while the pandemic was still running rampant, increased health

education strategies was one strategy that could be utilized in order to increase compliance with preventative measures.

As the focus shifted primarily to COVID-19, many routine health practices also began to lose their role in people's lives. Physical inactivity and sedentary behavior have long been viewed as an ever-increasing public health risk, a pandemic in their own sense. In the early phases of the COVID-19 response, research began to emerge warning of potential long-lasting health concerns as a result of efforts to slow the spread of COVID-19. Many opportunities for physical activity were thwarted as gyms and parks were closed. People were starting to live more sedentary lives as they went into isolation and stayed home the majority of the time. This was another side to the pandemic with ramifications that won't be fully understood for years into the future (Hall et al., 2020). A previous study linked social isolation with unhealthy lifestyle practices relating to diet and exercise in families with adolescent children (Thompson et al., 2019). Poor mental health has long been understood to be exacerbated by social isolation (Hall et al., 2020). Studies like these demonstrated that it was important to focus on routine public health principles such as physical activity, healthy diet practices, and healthy social associations even in the midst of a pandemic.

The *Renew: Better Me, Better We* program didn't simply focus on narrowly educating people regarding COVID-19 principles and practices. Instead, it focused on a wide variety of topics that had a relation to COVID-19, but also affected lives in many different areas. These topics included the importance of maintaining an active routine and healthy diet even in the midst of social distancing and a pandemic. The series also addressed the importance of maintaining social connections while still abiding by social

distancing practices. Like many previous pandemics, the COVID-19 pandemic eventually will be a topic of the past, but the long-lasting health effects that resulted from unhealthy lifestyle practices adopted because of the pandemic have the potential to influence health well into the future. Because of this, interventions such as the *Renew: Better Me, Better We* program that addressed a wide variety of lifestyle topics relevant to the current times potentially were invaluable when it came to avoiding future public health crises linked to unhealthy lifestyle practices associated with pandemic living.

Health Knowledge and Demographics

Because of the small sample size, it was difficult to make all of the demographical comparisons desired by the project investigator. Some comparisons were able to be made including between genders, age groups, and educational groups. Prior to the intervention, there was a statistically significant difference between the health knowledge of males and females. Females scored significantly higher than males on the Health Knowledge Assessment Questionnaire pre-intervention. This trend continued post-intervention. Post-test scores in the female group also increased more than the scores in the male group (9% vs. 5% respectively). There was also greater representation in the female group.

Studies have demonstrated that females were more likely than males to be interested in and engage in preventative health programs (Smith et al., 2018). Additionally, women were more likely to utilize the internet to engage in education regarding health-related topics (Smail-Crevier et al., 2019). Because of this, online health educational interventions may be more attractive to females. Programs such as the *Renew: Better Me, Better We* may have attracted more female participants because they are already generally more interested in health topics than are males. Additionally, this

pointed out an area of improvement in that perhaps online health education could be modified to better meet the needs of male participants in the future.

When mean scores of participants were compared based on race and education level, there wasn't a significant difference noted. As previously mentioned, the majority of participants were white. This, along with the small sample size, made it impossible to compare scores among each race group and required recoding of the race categories to compare white with all other race groups. Similarly, there were only enough participants in the "some college," "undergraduate degree," and "graduate degree" categories to compare with each other.

Self-Efficacy

According to the authors of the General Self-Efficacy Scale, the purpose of the tool is not to determine whether a person has high or low self-efficacy, therefore, there is no pre-identified score cut-off to identify if participants have adequate self-efficacy. The General Self-Efficacy Scale has been utilized in several large-scale studies in multiple countries. In the United States, the average score was noted to be 29.48 in the adult population with equal distributions of male and female (Schwarzer, 2014). The average General Self-Efficacy Scale pre-test and post-test scores in this study were 31.11 and 31.16 respectively. Comparing these results with the average American adult's scores, participants in this study had slightly higher scores than the average American adult.

Relationship of Results to Theoretical Framework

The Health Belief Model has been utilized to guide many public health initiatives in the past. It has sought to explain the health decisions and practices of human beings based on the strength of their desire to avoid an illness or health threat compared to the

strength of their belief that engaging in certain behaviors would help avoid illness or help them get well (Janz & Becker, 1984). A person's perceived threat was defined as a combination of their perceived susceptibility and perceived severity. The likelihood of a changed behavior was also defined by the difference between a person's perceived benefits and perceived barriers of an action. Cues to action were the portion of the model that drives an individual towards change. A person's level of self-efficacy also was a predictor of their likelihood to adopt new heath practices. A person's demographics, background and previous knowledge all effected their perception of health and illness as well as their self-efficacy and likelihood to adopt new health practices (Janz & Becker, 1984).

The Health Belief Model was employed to help develop, shape and mold the *Renew: Better Me, Better We* intervention. The intervention served as a "cue to action" in the midst of a time of uncertainty and change. The *Renew: Better Me, Better We* intervention communicated the severity of the COVID-19 pandemic as well as the susceptibility of each individual to the disease. By incorporating simple and doable lifestyle and behavioral modifications, the perceived barriers to change were minimized and perceived benefits were highlighted. The goals of the project investigator were to promote an increase in both health knowledge and self-efficacy. The design of the intervention, having utilized the Health Belief Model as a guide, was successful in increasing the health knowledge of individuals. According to the Health Belief Model, a person's health knowledge had a direct effect on their perceived barriers and perceived expectations related to health practices (Janz & Becker, 1984). As an individual's health knowledge increased, their perceived benefits of engaging in a health promoting behavior

increased and perceived barriers decreased. This project was beneficial in that by increasing the health knowledge of a community, the result of that increased knowledge should be a willingness to engage in health promoting behaviors.

Without adequate self-efficacy, or the belief that one can accomplish what she sets out to do, a person is unlikely to be successful. The goal of increasing self-efficacy through this intervention was aimed to increase the chances that the participants would engage in becoming healthier themselves. There wasn't a significant increase in self-efficacy, however, the individuals involved in the study already scored higher on the General Self-Efficacy Scale than the average adult in the United States. In previous studies that utilized the General Self-Efficacy Scale, the average score for the adult in the United States was 29.5 (Schwarzer, 2014). Those who participated the research project already had scores slightly higher than this on the pre-test.

Project Strengths

One significant strength of this project was the fact that it sought to fill a gap in literature regarding education of the community during times of pandemic. There were very few studies available regarding this topic. The study was performed in the midst of the pandemic and utilized an approach that would be easy to duplicate and utilize in the future during periods of pandemic.

Project Limitations

Significant improvements were noted in the health knowledge of participants despite several limitations of this study. Two limitations were a smaller sample size and utilizing convenience sampling. The smaller sample size limited the analyses that could be performed especially for objective two due to some of the demographic categories

being missing or not having enough participants to accurately perform data analysis. Lack of a control group and some data not being of a normal distribution were also limitations of this study.

Implications for Future Research

Should this study be duplicated in the future, a larger sample size, employing a random sampling method, and including a control group would be helpful for reducing bias and making the results more generalizable. A larger sample size would allow for more data points and more accurate analysis between demographical groups.

Implications for Future Practice

Periods of pandemic have existed throughout history. With each pandemic, there have been public health initiatives aimed to control the spread of the disease. During a time when technology was accessible to most individuals, it was an effective means for healthcare providers to educate the public with accurate health information. Interventions such as the *Renew: Better Me, Better We* program could also be utilized to dispel harmful information that tends to circulate among the public during times of pandemic such as the drinking of bleach that was promoted by some as a means to avoid COVID-19 during the pandemic. Online health education could be utilized even during times of social distancing and could also be an effective means of calming people's fears during times of uncertainty.

Dissemination

A trifold was developed by the project investigator detailing a brief description and outline of the project and the results. This trifold was emailed to the mayor and council members of the largest cities that were targeted for recruitment: Lincoln, Rocklin,

and Auburn, CA. In the email, the project investigator offered for the community leaders to contact her if they were interested in obtaining more information about the project or would like the project investigator to make a presentation regarding the project at a future meeting. This same trifold was also provided the leaders at the Lincoln Amazing Grace Seventh-Day Adventist Church. The project investigator also gave a short presentation to the church in which a summary of the project and its results were reviewed.

Mastery of DNP Essentials

Essential I: Scientific Underpinnings for Practice

Essential I: Scientific Underpinnings for Practice was what encouraged the nursing profession to close the gap between clinical practice and theory. Doctorate prepared nurses should have been prepared to examine and understand both nursing-based science and theory as well as science and theory from other professions in order to translate the principles to practice to improve the whole person (AACN, 2006). This project utilized a scientific theory, the Health Belief Model, along with an evidence-based intervention, education, to fill a research and practice gap involving education of the community during the COVID-19 pandemic.

Essential II: Organizational and Systems Leadership

Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking involved the process of the advanced practice nurse constantly being aware of the current patient, community and organizational needs. The nurse, through her scientific education, was equipped with the ability to develop new care models that are adapted to the specific healthcare needs of the targeted patient group (AACN, 2006).

The project investigator noted a community need for accurate health education as people from her church and in the community started asking for information regarding COVID-19 and poor health practices began being recommended such as ingesting, inhaling or cleansing the skin with antibacterial cleaning products. During the time of COVID-19, group gatherings were completely eliminated for a period of time in California as well as many other states. Hospitals were seeing far fewer patients than usual and primary care offices closed their doors to inpatient visits for a period of time. Not having access to healthcare professionals to answer questions and calm fears left a population vulnerable to fear and to inaccurate health opinions from unqualified individuals. This project was adapted to fill a need during a time when community education from healthcare professionals was crucial.

Essential III: Clinical Scholarship and Analytical Methods

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice described the difference between a DNP and a PhD in nursing. The DNP-prepared nurse combines clinical experience with the knowledge of scientific based research and theories which is then translated into nursing practice. The DNP is the healthcare provider that "bridges the gap" between science and practice, who translates science into practice (AACN, 2006). The project investigator was able to utilize her clinical experience as an acute care nurse to identify healthcare needs and then drew upon her scientific knowledge of research and theory in order to have met those needs.

This project combined the clinical experience of the project investigator in caring for acutely ill patients with COVID-19 with her knowledge of scientific research regarding the pathophysiology and risk factors for the disease to create an online

educational series of videos that allowed the community members accurate education and information. In the midst of fear, uncertainty and a barrage of health information from a variety of unqualified sources, this series provided a voice of accuracy and reason and disseminated accurate health information that provided participants the tools needed to feel empowered.

Essential IV: Information Systems/Technology

Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care is provided to ensure that the doctorate prepared nurse has an adequate knowledge of technology and information systems, being able to incorporate them into evidence-based care to improve patient outcomes and lead the practice in new, innovative methods (AACN, 2006). This project utilized multiple avenues of technology through the internet. One of the primary avenues of recruitment was through Facebook Targeted Advertising to the selected community areas. Participants then accessed the consent form and pre-test on the SurveyMonkey website. The project manager and her team member, Anil Kanda, recorded the health videos on the computer utilizing both Zoom and iMovie. The videos were then uploaded to the Panopto hosting site with a link specific to each email address then provided to each participant. Utilizing Panopto allowed the project investigator to ensure that the participants were each watching the majority of each health video. Lastly, the post-test was also taken through SurveyMonkey.

Essential VI: Interprofessional Collaboration

Interprofessional collaboration is an essential skill that is present at the very core of nursing. In fact, any member of a healthcare team must be skilled in the art of

interprofessional collaboration in order to provide safe care in the complex medical environment (AACN, 2006). *Essential VI: Interprofessional Collaboration for Improving Patient and Population Outcomes* was met by the project investigator during this project as she constantly was collaborating with her team, the Lincoln Amazing Grace Seventh-Day Adventist Church, and Andrews University's information technology department. The project investigator utilized evidence-based research in the development of an educational health curriculum relevant to COVID-19 targeting the city of Lincoln, CA and surrounding cities. Throughout this process, she depended on the expertise of her teammates, which included a DNP and pediatric nurse practitioner, PhD prepared nurse, a medical doctor and an individual with a master's in public health, to provide insight, direction, and critique of the curriculum and project. She worked in collaboration with the Andrews University information technology department to activate a Panopto account to host the health videos. Additionally, she collaborated with her team and community members to develop the Health Knowledge Assessment Questionnaire.

Essential VII: Clinical Prevention and Population Health

Unhealthy lifestyle behaviors account for many chronic diseases seen in the United States and other parts of the world. Cardiovascular disease is the leading cause of death in the United States. It is believed that 33% of deaths from cardiovascular disease could be avoided by making healthier lifestyle choices (Lanier et al., 2016). The CDC (2014) reported that approximately 40% of annual deaths in the United States would likely be preventable by lifestyle changes. As previously discussed, many of those who are experiencing severe COVID-19 symptoms have pre-existing lifestyle diseases such as obesity, heart disease, and diabetes (CDC, 2020d).

The project manager met *Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health* by incorporating information and simple strategies to engage in heathy lifestyle choices in the *Renew: Better Me, Better We* curriculum. Participants were encouraged to make small lifestyle changes such as adding different colored foods to the diet, aiming to eat a serving of beans every day, aiming to spend 15 minutes in the sun and exercise for 30 minutes as many days as possible, making an effort to connect with friends and family via the telephone and video chat and creating a journal to write down things for which to be thankful. Although these lifestyle changes likely came too late to make a significant difference in mortality and morbidity rates during the COVID-19 pandemic, similar lifestyle changes have been shown to improve quality of life in the short-term. Long-term benefits of a healthier population could be demonstrated in future pandemics.

Essential VIII: Advanced Nursing Practice

Essential VIII: Advanced Nursing Practice describes the role of the advanced practice nurse in her area of specialty. The DNP prepared advanced practice nurse has a wide variety of clinical experience with a mastering of a specific, chosen area of emphasis. The DNP education prepares a nurse to conduct complex patient assessment while incorporating patient-centered and culturally sensitive interventions that are evidence-based, develop therapeutic relationships with patients and colleagues, serve as a mentor to other nurses, provide education and guidance to individuals as they navigate through complex situations, and, finally, evaluate the policies and practices in place (AACN, 2006).

The project investigator met this essential by developing a community-centered curriculum to help guide residents through the COVID-19 pandemic with confidence. Having also chosen a specialty in family practice nursing, the project investigator chose presentation topics that were relevant to her specialty such as disease prevention and health promotion.

References

Albanese-O'Neill, A., Schatz, D., Thomas, N., Bernhardt, J., Cook, C., Haller, M., Bernier, A., Silverstein, J., Westen, S., Elder, J. (2019). Designing online and mobile diabetes education for fathers of children with type 1 diabetes: Mixed methods study. *JMIR Diabetes, 4*(3), E13724. http://doi.org/10.2196/13724

American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice.* http://www.aacnnursing.or/Portals/42/Publication/DNPEssentials.pdf

Batra, P., Mangione, C., Cheng, E., Steers, W., Nguyen, T., Bell, D., Kuo, A., & Gregory, K. (2018). A cluster randomized controlled trial of the MyFamilyPlan online preconception health education tool. *American Journal of Health Promotion, 32*(4), 897-905. http://doi.org/10.1177/0890117117700585

Buller-Taylor, T., McGuinness, L., Yan, M., & Janjua, N. (2018). Reducing patient and provider knowledge gaps: An evaluation of a community informed hepatitis C online course. *Patient Education and Counseling, 101*(6), 1095-1102. http://doi.org/10.1016/j.pec.2018.01.008

Centers for Disease Control and Prevention. (2014). *Up to 40 percent of annual deaths from each of five leading US causes are preventable*. https://www.cdc.gov/media/releases/2014/p0501-preventable-deaths.html

Centers for Disease Control and Prevention. (2020a). *Identifying the source of the outbreak.* https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/about-epidemiology/identifying-source-outbreak.html

Centers for Disease Control and Prevention. (2020b). *The president's coronavirus guidelines for America: 30 days to slow the spread.* https://www.whitehouse.gov/wp-content/uploads/2020/03/03.16.20_coronavirus-guidance_8.5x11_315PM.pdf

Centers for Disease Control and Prevention. (2020c). *Human coronavirus types.* https://www.cdc.gov/coronavirus/types.html

Centers for Disease Control and Prevention. (2020d). *People with certain medical conditions.* https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html

Centers for Disease Control and Prevention. (2020e). *Recommendation regarding the use of cloth face coverings, especially in areas of significant community-based transmission.* https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover.html

City of Riverside. (2020). *Covering your face now required.* https://www.riversideca.gov/press/covering-your-face

Cullen, W., Gulati, G., & Kelly, B. (2020). Mental health in the COVID-19 pandemic. *QJM : Monthly Journal of the Association of Physicians, 0(*0), 1-2. http://doi.org/10.1093/qjmed/hcaa110

Executive Department, State of California. (2020). *Executive Order N-33-20.* https://www.gov.ca.gov/wp-content/uploads/2020/03/3.19.20-attested-EO-N-33-20-COVID-19-HEALTH-ORDER.pdf

Gordon, J. (2020). *Coping with coronavirus: Managing stress, fear and anxiety*. National Institute of Mental Health.

https://www.nimh.nih.gov/about/director/messages/2020/coping-with-coronavirus-managing-stress-fear-and-anxiety.shtml

Hall, G., Laddu, D., Phillips, S., Lavie, C., & Arena, R. (2020). A tale of two pandemics: How will COVID-19 and global trends in physical inactivity and sedentary behavior affect one another? *Progress in Cardiovascular Diseases*. http://doi.org/10.1016/j.pcad.2020.04.005

Herrmann, A., Hall, A., & Proietto, A. (2018). Using the Health Belief Model to explore why women decide for or against the removal of their ovaries to reduce their risk of developing cancer. *BMC Women's Health, 18*(1), 184. http://doi.org/10.1186/s12905-018-0673-2

Huo, C., Zhang, M., & Ma, F. (2018). Factors influencing people's health knowledge adoption in social media. *Library Hi Tech, 36*(1), 129-151. https://search-proquest-com.libproxy.csudh.edu/docview/2005056199?accountid=10347&rfr_id=info%3Axri%2Fsid%3Aprimo

Janz, N., & Becker, M. (1984). The Health Belief Model: A decade later. *Health Education Quarterly*, *11*(1), 1-47. https://doi.org/10.1177/109019818401100101

Kim, J., & Zane, N. (2016). Help-seeking intentions among Asian American and white American students in psychological distress: Application of the health belief model. *Cultural Diversity and Ethnic Minority Psychology, 22*(3), 311-321. http://doi.org/10.1037/cdp0000056

Lanier, J., Bury, D., & Richardson, S. (2016). Diet and physical activity for cardiovascular disease prevention. *American Family Physician, 93*(11), 919-924. https://www.aafp.org/afp/2016/0601/p919.html

Lin, L., McCloud, R., Jung, M., & Viswanath, K. (2018). Facing a health threat in a complex information environment: A national representative survey examining American adults' behavioral responses to the 2009/2010 A(H1N1) pandemic. *Health Education & Behavior, 45*(1), 77-89. http://doi.org/10.1177/1090198117708011

Madison, M., Landers, C., Gu, B., Chang, C., Tung, H., You, R., Hong. M., Baghaei, N., Song, L., Porter, P., Putluri, N., Salas, R., Gilbert, B., Levental., I., Campen, M., Corry, D., & Kheradmand, F. (2019). Electronic cigarettes disrupt lung lipid homeostasis and innate immunity independent of nicotine. *The Journal of Clinical Investigation, 129*(10), 4290-4304. http://doi.org/10.1172/JCI128531

Masks and face coverings (2020). https://covid19.ca.gov/masks-and-ppe/

Rennis, L., McNamara, G., Seidel, E., & Shneyderman, Y. (2015). Google it!: Urban community college students' use of the internet to obtain self-care and personal health information. *College Student Journal, 49*(3), 414-426. https://go-gale-com.libproxy.csudh.edu/ps/i.do?p=AONE&u=csudh&id=GALE%7CA429736075&v=2.1&it=r

Rosenstock, I. M., Hockbaum, G. M., Kegels, S., & Leventhal, H. (1974). Historical origins of the health belief model. *Health education monographs, 2*(4), 328-335. http://doi.org/10.1177/109019817400200403

San Bernardino County. (2020). *Order of the health officer of the county of San Bernardino for the control of COVID-19.* http://wp.sbcounty.gov/dph/wp-content/uploads/sites/7/2020/04/SKM_C45820040714190.pdf

Scholz, U., Doña, B. G., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment*, *18*(3), 242–251. http://doi.org/10.1027//1015-5759.18.3.242

Schwarzer, R. (2014). *Everything you wanted to know about the self-efficacy scale but were afraid to ask.* http://userpage.fu-berlin.de/~health/faq_gse.pdf

Schwarzer, R., Schmitz, G.S., & Tang, C. (2000). Teacher burnout in Hong Kong and Germany: A cross-cultural validation of the Maslach Burnout Inventory. *Anxiety, Stress, and Coping, 13,* 309–326. http://doi.org/10.1080/10615800008549268

Smail-Crevier, R., Powers, G., Noel, C., & Wang, J. (2019). Health-related internet usage and design feature preference for e-mental health programs among men and women. *Journal of Medical Internet Research, 21*(3), E11224. http://doi.org/10.2196/11224

Smith, M., Bergeron, C., Ahn, S., Towne, S., Mingo, C., Robinson, K., Mathis, J., Meng, L., Ory, M. (2018). Engaging the underrepresented sex: Male participation in chronic disease self-management education (CDSME) programs. *American Journal of Men's Health*, *12*(4), 935-943. http://doi.org/10.1177/1557988317750943

Smith, M., Mateo, K., Morita, H., Hutchinson, C., & Cohall, A. (2015). Effectiveness of a multifaceted community-based promotion strategy on use of

GetHealthyHarlem.org, a local community health education website. *Health Promotion Practice, 16*(4), 480-491. http://doi.org/10.1177/1524839915571632

SurveyMonkey. (2020). Maintain data security with a trusted survey platform. Retrieved 17 April 2020, from https://www.surveymonkey.com/mp/data-security-and-compliance/

Sweeney, D. (2020). Poison control center calls spike in US as bleach and sanitizer mishaps rise. *The Sacramento Bee*. Retrieved 16 April 2020, from https://www.sacbee.com/news/coronavirus/article241826296.html

Thompson, T., Rodebaugh, T., Bessaha, M., & Sabbath, E. (2019). The association between social isolation and health: An analysis of parent–adolescent dyads from the family life, activity, sun, health, and eating study. *Clinical Social Work Journal*, *48*(1), 18-24. http://doi.org/10.1007/s10615-019-00730-2

Ullo, M., Sugalski, G., & Winograd, S. (2020). Taming of the flu: An update on what's new. *Emergency Medicine Reports, 41*(1). http://libproxy.csudh.edu/login?url=https://search-proquest-com.libproxy.csudh.edu/docview/2333552525?accountid=10347

United States Census Bureau. (2019). QuickFacts. https://www.census.gov/quickfacts/fact/table/auburncitycalifornia,lincolncitycalifornia,rocklincitycalifornia,US/PST045219

Van der Weerd, W., Timmermans, D., Beaujean, D., Oudhoff, J., & Van Steenbergen, J. (2011). Monitoring the level of government trust, risk perception and intention of the general public to adopt protective measures during the influenza A (H1N1)

pandemic in the Netherlands. *BMC Public Health, 11*(1), 575. http://doi.org/10.1186/1471-2458-11-575

Vardavas, C., & Nikitara, K. (2020). COVID-19 and smoking: A systematic review of the evidence. *Tobacco Induced Diseases*, 1-4. https://doi.org/10.18332/tid/119324

Win, K., Hassan, T., Bonney, N., & Iverson, M. (2015). Benefits of online health education: Perception from consumers and health professionals. *Journal of Medical Systems, 39*(3), 1-8. http://doi.org/10.1007/s10916-015-0224-4

Wong, L., & Sam, P. (2010). Public sources of information and information needs for pandemic influenza A(H1N1). *Journal of Community Health, 35*(6), 676-682. http://doi.org/10.1007/s10900-010-9271-4

World Health Organization. (2020). *Coronavirus (COVID-19) disease outbreak.* https://www.who.int/westernpacific/emergencies/covid-19

APPENDIX A

HEALTH KNOWLEDGE ASSESSMENT QUESTIONNAIRE

Health Knowledge Assessment Questionnaire Pre-test and Post-test with Demographics

Part 1: Demographics (Required)

1. Are you a healthcare worker?
    a) Yes (if yes, what is your healthcare role?)
    b) No
2. If participant answers "yes" to above question, what is your healthcare role?
3. Is someone in your immediate family a healthcare worker?
    a) Yes
    b) No
4. What year were you born?
5. Highest education level completed:
    a) Less than high school
    b) Completed high school
    c) Some college
    d) Undergraduate degree
    e) Graduate degree

6. Gender:
    a) Male
    b) Female
7. Race:
    a. Hispanic or Latino
    b. White
    c. African American
    d. Asian
    e. Other

Part 2: Health Knowledge Assessment

1. How is COVID-19 most likely spread in the United States?
    a. Food
    b. Exposure to animals
    c. Respiratory droplets
    d. Feces
2. What statement is true regarding COVID-19?
    a. The flu is as deadly as COVID-19
    b. Children and adolescents are not affected COVID-19
    c. African Americans are more likely to have severe symptoms or die from the disease.
    d. Those in the 18-49 year old age range generally experience the worst symptoms.
3. How much is considered a serving of fresh vegetables?

a. 1 cup

b. ½ cup

c. ¼ cup

d. 1 ½ cups

4. Antibacterial soaps and alcohol-based hand sanitizer are more effective than handwashing with non-antibacterial soaps and water.

    a. True

    b. False

5. I can spread COVID-19 to my loved ones even if I am feeling well

    a. True

    b. False

6. Wearing a facemask in public will stop me from getting the COVID-19 illness.

    a. True

    b. False

7. What are sources of vitamin D? (select all that apply)

    a. Dairy products and eggs

    b. Cereals

    c. Mushrooms

    d. Sun exposure

8. Walking and exercising outdoors is still encouraged during the COVID-19 pandemic in California

    a. True

    b. False

9. How often does the American Dental Association recommend brushing your teeth?
    a. 3 times per day
    b. 1 time per day
    c. 2 times per day
    d. After eating anything
10. How often does the American Dental Association recommend flossing your teeth?
    a. 2 times per day
    b. 1 time per week
    c. 1 time per month
    d. 1 time per day
11. Poor dental hygiene contributes to the following health conditions (select all that apply)
    a. Heart disease
    b. Diabetes
    c. Pre-term labor
    d. None of the above
12. Alternating between hot and cold during hydrotherapy increases blood flow and strengthens the immune response.
    a. True
    b. False
13. What is hydrotherapy?
    a. The use of hot water for health promotion

b. The use of cold water or health promotion

c. The use of water, steam or ice for health promotion

d. None of the above

14. What are some potential ways to activate the immune response in viral illnesses? (select all that apply)

a. Use of a sauna

b. Hot/cold contrast showers

c. Adequate vitamin D levels

d. All of the above

15. When using cleaning products, I should (select all that apply)

a. Wear gloves and protective eye wear if splashing may occur

b. Mix cleaning solutions together for better cleaning

c. Know which chemicals are in cleaning solutions

d. Always use adequate ventilation

16. What is the first thing I should I do if I am concerned about being exposed to a household chemical and have no symptoms or mild symptoms?

a. Induce vomiting

b. Go immediately to the emergency room

c. Call poison control

d. Take my temperature

17. These combinations could be deadly (select all that apply)

a. Windex and Clorox toilet bowel cleaner

b. Vinegar and bleach

c. Drain cleaner and vinegar

d. Baking soda and vinegar

18. Those who smoke are at least two times more likely to experience severe COVID-19 symptoms

    a. True

    b. False

19. Vaping will not increase my risk of respiratory illness

    a. True

    b. False

20. Who is most likely to experience more stress from changes occurring due to COVID-19? (select all that apply)

    a. Those who have a large family

    b. Children and Elderly

    c. Those with mental illness and chronic disease

    d. Healthcare workers

21. Why might mental illness symptoms worsen during a pandemic? (select all that apply)

    a. Disruption of routine

    b. Lack of social support

    c. Poor self-care routines

    d. Lack of balanced meals

22. Which factors can have a poor effect on mental health?

    a. Sleeping 7-9 hours per day

b. Drinking beverages containing caffeine

c. Sticking to a daily routine

d. Eating balanced meals throughout the day

23. Which age group has the highest percentage of mental illness?

a. 0-17 years old

b. 18-25 years old

c. 26-49 years old

d. 50 years or older

24. In order to decrease stress during the COVID-19 pandemic, I should

a. Make a list of things that I am thankful for

b. Drink alcohol

c. Constantly monitor the internet and Facebook for COVID-19 updates

d. Eat comfort foods and binge watch Netflix

25. What statement(s) is (are) true regarding pediatrics and COVID-19? (select all that apply)

a. Children in general do not touch as many contaminated objects, so have a lower chance of catching COVID-19.

b. COVID-19 testing is being performed less in children due to symptoms not meeting testing criteria.

c. Infants have a higher chance of severe symptoms and hospital admission than other child age groups.

d. There is no definite evidence that transmission can occur from mother to infant in breastmilk.

APPENDIX B

GENERAL SELF-EFFICACY SCALE

General Self-Efficacy Scale

	Not at all true	Hardly true	Moderately true	Exactly true
1. I can always manage to solve difficult problems if I try hard enough	☐	☐	☐	☐
2. If someone opposes me, I can find the means and ways to get what I want.	☐	☐	☐	☐
3. It is easy for me to stick to my aims and accomplish my goals.	☐	☐	☐	☐
4. I am confident that I could deal efficiently with unexpected events.	☐	☐	☐	☐
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	☐	☐	☐	☐
6. I can solve most problems if I invest the necessary effort.	☐	☐	☐	☐

7. I can remain calm when facing difficulties because I can rely on my coping abilities.	☐	☐	☐	☐
8. When I am confronted with a problem, I can usually find several solutions.	☐	☐	☐	☐
9. If I am in trouble, I can usually think of a solution	☐	☐	☐	☐
10. I can usually handle whatever comes my way.	☐	☐	☐	☐

APPENDIX C

INSTITUTIONAL CONSENT

April 30, 2019

Institutional Review Board
Andrews University
4150 Administrative Drive, Room 322
Berrien Springs, MI 49104

Project Title: The Effect of An Online Educational Intervention on Community Knowledge of Physical and Mental Health and Self-Efficacy During the COVID-19 Pandemic

To Whom It May Concern:

Consent is granted for Kerstin Ashby Ferguson, RN, BSN, a DNP student at Andrews University and the project manager to implement her DNP project in cooperation with the Lincoln Amazing Grace Seventh-Day Adventist Church under the guidance and supervision of project mentors Dr. Sonja DeRose, MD and Anil Kanda, MPH.

The church will assist Kerstin with recruiting project participants by the following means: Kerstin will be responsible for providing the approved flyer and script to include in communication to church members and contacts. Kerstin will provide the aforementioned information to the church communications committee who will then distribute the information to the church members and contacts via email and text message.

Sincerely,

Gresford A. Thomas
Pastor, Lincoln Amazing Grace Seventh-day Adventist Church

Lincoln Amazing Grace Seventh-day Adventist Church

600 MCBEAN PARK DRIVE
LINCOLN, CA, 95648
916-408-4408
LINCOLNAMAZINGGRACE@GMAIL.COM

APPENDIX D

PROMOTIONAL FLYER

Nursing Research Project
Health Education During COVID-19 Pandemic
Andrews University School of Nursing
Lincoln Amazing Grace Seventh-Day Adventist Church

The Effect of An Online Educational Intervention on Community Knowledge of Physical Health, Mental Health and Self-Efficacy During the COVID-19 Pandemic

Who Can Participate?

- Anyone who is 18 years old or older

What Is Required of Me?

- Completing a pretest survey
- Providing an email address to be used to send links for health presentations and posttest
- Watching 8 presentations (approximately 15 minutes each) in their entirety over the course of the 4-week study period
- Completing a posttest survey

Risks/Benefits?

- No associated risks
- Benefits include increased health knowledge and future benefit to community health education programs.
- Each participant who fulfills all the requirements of the study will also receive an Amazon e-gift card for $10.00

How Do I Sign Up?

https://www.surveymonkey.com/r/renewbettermebetterwe

What If I Have Questions?

Call, Text or Email Kerstin Ashby Ferguson (760) 534-2665, kerstin@andrews.edu

If you have questions regarding your rights as a project participant, please contact Institutional Review Board, Andrews University (269) 471- 6361 irb@andrews.edu

APPENDIX E

SURVEYMONKEY INFORMED CONSENT COVER LETTER

Andrews University, Department of Nursing
Health Education Intervention on the Community Knowledge of Physical Health, Mental Health and Self-Efficacy During the COVID-19 Pandemic Utilizing Renew: Better Me, Better We Curriculum
Informed Consent

Project Manager: Kerstin Ashby Ferguson, RN, BSN
Faculty Advisor: Jochebed Ade-Oshifogun, PhD, RN

Project Goal: To determine the effect of an online health education intervention on the community knowledge of physical health, mental health and self-efficacy during the COVID-19 pandemic.

Consent to Participate in Research

Participation is completely voluntary

- I voluntarily agree to participate in this research study.
- I understand that even if I agree to participate now, I can withdraw at any time without any consequences.

Definition of Participation

- I understand that participation in this research project involves the following
  - Providing an email address
  - Taking a pretest
  - Watching the entire content of 8 online lectures that are approximately 15 minutes each
  - Taking a posttest
- Risks of participating in this project are minimal. There are no significant risks associated with this research project outside of normal day to day risks.

Benefits

- Increase in knowledge related to topics relevant to the COVID-19 pandemic

- Benefit to community health education in the future based on results of research

Protecting the privacy of participants is a priority

- All data will be de-identified prior to analysis
- The only identifier that you are required to disclose is your email address.
- Your email address will only be used to email links to health lectures and posttest and will not be shared
- Email addresses will be stored on the project manager's password protected computer separate from survey results.
- Electronic consents/surveys will be stored in separate folders on project manager's password protected computer.
- You can access the SurveyMonkey privacy policy at https://www.surveymonkey.com/mp/legal/privacy-policy/

If you have any questions regarding this project, please contact Kerstin Ashby Ferguson, RN, BSN, Andrews University Student at (760) 534-2665 or at kerstin@andrews.edu.

For any other concerns or questions about your rights as a project participant, please contact Dr Ade-Oshifogun, PhD, RN, Endowed Chair of Andrews University Department of Nursing at (269) 471-3363 or jochebed@andrews.edu or Andrews University Institutional Review Board at (269) 471-6361 or irb@andrews.edu.

Conflicts of Interest – Kerstin Ashby Ferguson, the project manager, declares no conflicts of interest.

“I have read and recognize that by completing and returning this survey that I am giving my informed consent to participate, agree that I am at least 18 years old and that I agree to the terms listed above.”

If you select “yes,” you will be immediately directed to the pre-test. Selecting “no” will end this session. Thank-you for your time and consideration.

APPENDIX F

RECRUITMENT SCRIPTS

Text message recruiting script

Check out this website for an opportunity to be involved in a community health research project! https://www.surveymonkey.com/r/renewbettermebetterwe

Email message recruiting script

Greetings to the friends and family of the Lincoln Amazing Grace Seventh-Day Adventist Church! I just wanted to invite you to be a part of a research project that I am performing as part of my doctor of nursing practice graduate program through Andrews University. This project is a community health education project focusing on topics relevant to the COVID-19 pandemic. For more information, you can go to https://www.surveymonkey.com/r/renewbettermebetterwe. Also attached is a flyer with more details.

God Bless,

Kerstin Ashby Ferguson

Facebook advertisement headline

Check out this opportunity to be involved in a health education research project in your community!

APPENDIX G

ANDREWS UNIVERSITY IRB APPROVAL LETTER

Andrews University
Office of Research & Creative Scholarship

May 11, 2020

Kerstin Ashby
Tel. 760-534-2665
Email: kerstin@andrews.edu

RE: APPLICATION FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS
IRB Protocol #:20-061 **Application Type:** Original **Dept.:** Nursing
Review Category: Exempt **Action Taken**: Approved **Advisor:** Jochebed Ade-Oshifogun
Title: The effect of an online educational intervention on community knowledge of physical health, mental health and and self-efficacy during the COVID-19 pandemic.

Your IRB application for approval of research involving human subjects entitled: "*The effect of an online educational intervention on community knowledge of physical health, mental health and self-efficacy during the COVID-19 pandemic*" IRB protocol # 20-061 has been evaluated and determined Exempt from IRB review under regulation CFR 46.104 (3)(i)(A): Research involving benign behavioral interventions in conjunction with the collection of information from an adult subject through written responses if the subject prospectively agrees to the intervention and information collection and the information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subject. You may now proceed with your research.

Please note that any future changes made to the study design and/or informed consent form require prior approval from the IRB before such changes can be implemented. Incase you need to make changes please use the attached report form.

While there appears to be no more than minimum risks with your study, should an incidence occur that results in a research-related adverse reaction and/or physical injury, this must be reported immediately in writing to the IRB. Any research-related physical injury must also be reported immediately to the University Physician, Dr. Katherine, by calling (269) 473-2222.

We ask that you reference the protocol number in any future correspondence regarding this study for easy retrieval of information.

Best wishes in your research.

Sincerely,

Mordekai Ongo, PhD.
Research Integrity and Compliance Officer

Institutional Review Board – 8488 E Campus Circle Dr Room 234 - Berrien Springs, MI 49104-0355
Tel: (269) 471-6361 E-mail: irb@andrews.edu

APPENDIX H

TRIFOLD

About

Kerstin Ashby Ferguson is an emergency room nurse completing her Doctor of Nursing Practice Degree through Andrews University. This project targeted Lincoln, CA and the surrounding communities and was completed in cooperation with the Lincoln Amazing Grace Seventh-Day Adventist Church. It aimed to provide community health education on topics relevant to the COVID-19 pandemic from the perspective of a healthcare professional. The project team included Dr. Carol Rossman, DNP, APRN-BC, Dr. Jochebed Bea Ade-Oshifogun, PhD, RN-BC, CNE, Dr. Sonja DeRose, MD, and Anil Kanda, MPH.

Information

For more information on this project, please contact

Kerstin Ashby Ferguson
kerstin@andrews.edu

The Effect of an Online Educational Intervention on the Community Knowledge of Physical Health, Mental Health and Self-Efficacy During the COVID-19 Pandemic

Kerstin Ashby Ferguson, RN, BSN, DNP-c

Objectives

The purpose of this project was to determine if 1) online health education had an effect on health knowledge of participants, 2) to explore the association between demographics and community health knowledge and 3) to determine if online health education led to increased self-efficacy

Project Design

This project used a pre-test/post-test design utilizing a researcher developed Health Knowledge Assessment Questionnaire and the General Self-Efficacy Scale by Matthias Jerusalem and Ralf Schwarzer.

Educational topics were delivered through 8, 10 minute, online videos developed by the researcher.

Recruitment

Recruitment was focused on Lincoln, CA and surrounding cities including Rocklin, Loomis, Penryn, Newcastle and Auburn. Participants were recruited through

- Lincoln Amazing Grace Seventh-Day Adventist Church
- Facebook Targeted Advertising
- Word of Mouth

Topics Covered

- COVID-19 Overview
- Keeping the Immune System Healthy
- Dental Hygiene
- Hydrotherapy and the Immune System
- Safe Use of Disinfectants
- Respiratory Health
- Mental Health
- The Pandemic and Children

Results

A total of 45 participants completed the project.

Participants had a statistically significant increase in health knowledge post-intervention ($p=<0.001$).

There was no change in participant's measured self-efficacy post-intervention.

Females in general scored higher than males in health knowledge both pre-intervention ($p=0.008$) and even more so post-intervention ($p=0.003$).

Significance

Online health education effectively improved the health knowledge of overall study participants, with females having a greater improvement than males.

Accurate online health education can be a vital means of educating the community during periods of pandemic.

This is especially important with social distancing in place and discouragement of group gatherings.

Providing accurate community health education can lead to

- Increased compliance with safety measures
- Decreased fear