

Community-Based Education of COVID-19 on Hispanic Church Members at Better Life

Worship Center in Clermont, FL.

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### Abstract

The coronavirus disease of 2019 (COVID-19) pandemic has exacerbated the social and economic injustices leading to accentuated health inequities. Health inequities originate from disparate treatment of certain populations based on socioeconomic or sociodemographic characteristics, and leads to inferior access to treatment, life expectancies, quality of life, and heightened severity of disease. A review of the literature highlighted Hispanics as a population that has been significantly affected by health inequities. Hispanics are dying from COVID-19 an average of 10 years younger than their African Americans and 20 years younger than their Caucasians. Furthermore, political, and media-driven controversies have caused the spread of inconsistent and false information regarding COVID-19. Community health education increases awareness, decreases further spread of disease, and improves the overall health of the community. Therefore, in order to bridge the health inequity gap and promote accurate evidence-based information, a 60-minute educational session regarding the health effects, transmission, and prevention of COVID-19 was conducted at Better Life Worship Center (BLWC) in Clermont, FL. A pretest/posttest design was utilized to measure change in knowledge and retention of knowledge in this qualitative, quasi-experimental scholarly project. Statistical analysis of the results showed a significant increase of mean scores between the pretest (*mean score* = 8.80) and the posttest (*mean score* = 9.80), with a slight decrease between the posttest and the one-month posttest (*mean score* = 9.51). These findings further support the foundation of future research into the influence of knowledge on behavior adaptations and safety promotion.

## Table of Contents

Introduction	7
Section One: Problem and Picot Questions	
Significance and Background of Identified Problem	8
PICOT Evidence Review Questions	9
Section Two: Literature Review	
Search Strategies	10
GRADE Criteria	10
Literature Review and Synthesis of Evidence	11
Operational Definitions	11
Theoretical Framework	13
Vulnerabilities to COVID-19	13
Multigenerational Households	14
Hispanic Education Levels	14
Lack of COVID-19 Education	15
Section Three: Methodology	
Project Aims	16
Methods	16
Design	16
Setting	16
Sample Methodology	17
Access and Recruitment Methods	17

Ethical Considerations	18
Data Collection	19
Instruments	19
Data Analysis	20
Planning and Procedures	21
Planning	21
Implementation	21
Barriers and Facilitators	22
Timeline	23
Section Four: Results	
Results/Findings	23
Section Five: Discussion and Implications	
Discussion	25
Applicability to Practice	28
Contribution to Professional Growth	29
Limitations	29
Conclusion	30
Section Six: Dissemination	
Dissemination	31
Section Seven: References	
References	32

## List of Figures and Tables

Figure 1: Demographic Survey Results	24
Figure 2: Descriptive Statistics	24
Figure 3: Tests of Within-Subjects Effects	25
Figure 4: Estimated Marginal Means of Assessment	25

## List of Appendices

Appendix A: Matrix Tables	42
Appendix B: Recruitment Flyer	47
Appendix C:	
Demographic Survey	48
Multiple Choice Question Test	50
Appendix D: Budget and Verification of Costs	52
Appendix E: Final Timeline	53

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Worship Center in Clermont, FL.

The Coronavirus Disease 2019 (COVID-19) pandemic has affected millions of people globally and continues to be a major concern in the United States (U.S.). COVID-19 is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) which resides in respiratory airways and is spread through droplets. Severe disease progression is more common in those with preexisting conditions and includes acute respiratory distress syndrome (ARDS) with subsequent multisystem organ failure and death (Macias-Gil et al., 2020; Mason, 2020; Pan et al., 2020; Rozenfeld, et al., 2020; Stokes et al., 2020; WHO, 2020).

A heightened vulnerability to COVID-19 has been experienced by Hispanics and the healthcare community. Hispanics are experiencing a higher incidence of infections and hospitalizations than their Caucasian counterparts (Cato et al., 2020; Laurencin & McClinton, 2020; Marcias et al., 2020; Stokes et al., 2020). This holds true in Lake County, FL where Hispanics account for 23% of COVID-19 positive cases, while only making up 16.7% of the population. (Florida Department of Health, 2020; U.S. Census Bureau, 2019).

The healthcare community has been directly affected by the rapid spread and devastating complications of COVID-19. Nurse anesthetists are on the front lines of this pandemic and are consistently performing airway manipulation maneuvers that cause aerosolization of airway secretions. This poses a risk for anesthesia providers to contract and transmit this highly contagious virus (AANA, 2020; Chachar, Dugar, & Marciniak, 2020; Wang et al. 2020). Efforts to reduce COVID-19 will not only promote the health of the community, but improve the health of vulnerable populations (Shin, Yeo, & Jung, 2018; Vraga, Tully, & Bode, 2020).

### **Significance and Background**

According to the U.S. Census Bureau (2020), the U.S. has a population of 329,484,123 people, with 18% self-identifying as Hispanics. In January 2021, the number of COVID-19 positive cases in the U.S. reached 25,921,703 with over 400,000 deaths. Hispanics have been disproportionately affected by the COVID-19 pandemic, composing 33% of COVID-19 positive cases in the U.S. (CDC, 2020; WHO, 2020). Further evidence of health inequities experienced by Hispanics includes COVID-19 related hospitalization and death rates which are 4.1 and 2.8 times higher than Caucasian Americans respectively (Cato et al., 2020; CDC, 2020; Laurencin & McClinton, 2020; Marcias et al., 2020; Stokes et al., 2020).

Hispanic communities in the U.S. have been disproportionately affected by the COVID-19 pandemic due to socioeconomic characteristics that predispose individuals to poor health outcomes such as education levels, health literacy, proficiency in the English language, and lack of job opportunities that provide health insurance as a benefit of employment (Calo et al., 2020; Escarce & Kapur, 2006; Holtgrave et al., 2020; Pan et al., 2020; Rozenfeld, et al., 2020; Stokes et al., 2020). In 2018, 24.2 million Hispanics in the U.S. lacked health insurance and had an annual income of less than \$17,000 a year (U.S. Census Bureau, 2019). Lack of health insurance was attributed to language barriers and lower likelihoods of Hispanics working in jobs that offer health insurance (The Commonwealth Fund, 2016; U.S. Census Bureau, 2019). Uninsured individuals are more likely to self-manage illnesses at home. Lack of early diagnosis and preventative therapies cause an unnecessary escalation of otherwise minor, preventable health problems. This leads to worse outcomes, mismanagement of scarce healthcare resources, and increased healthcare costs (Artiga, Orgera, & Pham, 2020; Riley, 2016).



Health inequities affect healthcare costs and decrease the overall quality of care. Health inequities have amounted to 93 billion dollars in excess medical costs and 42 billion dollars in lost productivity spent on otherwise preventable diseases. Minimizing health inequities can increase the economy of the U.S. by up to eight trillion dollars by the year 2050 and improve quality of care for all by re-allocating government healthcare funds in a more effective manner (Artiga, Orgera, & Pham, 2020; Suthers, 2008).

Poor community health directly affects anesthesia care. Studies indicate that 12-15% of individuals hospitalized for COVID-19 will require endotracheal intubation and subsequent mechanical ventilation (CDC, 2020; WHO, 2020). COVID-19 infection makes it difficult for nurse anesthetists to effectively oxygenate, ventilate, and manage the patients' airways during surgery or emergency resuscitation. COVID-19 positive patients also have increased risks of perioperative complications, increasing the length of hospital stays. Health inequities in minorities increases the spread of SARS-CoV2, placing the nurse anesthetist at a greater risk of contagion and increasing the risk of anesthetic related complications. Evidence from prior epidemics has proven that improving community awareness and knowledge of infection prevention decreases the spread of communicable diseases and improves the overall health of the community (Shin, Yeo, & Jung, 2018; Vraga, Tully, & Bode, 2020). Therefore, the purpose of this scholarly project is to influence the knowledge and knowledge retention on the health effects, transmission, and prevention of COVID-19 for Hispanics at the BLWC in Clermont, FL.

### **PICOT Evidence Review Questions**

Two PICOT questions that guided the systematic review of literature are as follows. One is a community-based problem: In minorities in the United States (P), how does

community-based education on the health effects, transmission, and prevention of COVID-19 (I) influence their knowledge and retention of knowledge on COVID-19 (O)?

The second is the intervention/innovation: In Hispanic adults attending Better Life Worship Center in Clermont, Florida (P), does the implementation of one, 60-minute educational session on the health effects, transmission, and prevention of COVID-19 (I) influence their knowledge and retention of knowledge (O), in a one-month period (T)?

### **Search Strategy/Results**

The search strategy included Academic Search Premier, PubMed, and Google Scholar databases. The professional practice organization utilized was the American Association of Nurse Anesthetists (AANA). Initial search yielded 619 articles; addition of exclusion criteria narrowed the results to 82 articles. Abstract and title reviews yielded 50 articles. After a full review of said articles, four were further excluded due to relevance. The remaining articles met the inclusion criteria of public health, community health, minorities, Hispanics, health literacy, and health inequities. Exclusion criteria included inpatient or long-term care, studies related to specific diseases or conditions including smoking, cancers, obstetrics, and psychological disorders. Key Search terms included: COVID-19 AND vulnerable populations AND public health. MeSH terms included: adult, coronavirus infections, coronavirus mortality, ethnic groups, pneumonia, health outcomes, health literacy, health status inequities, risk factors, socioeconomic factors, and United States epidemiology. The search limits included: in the United States, Hispanics, adults, and published within the last five years.

### **GRADE Criteria**

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) method was used to evaluate the reliability of information and evidence collected for this

literature review. The overall GRADE level of evidence is low to moderate. Preliminary examination of the evidence found yielded moderate results due to the inherent principal design. The included studies consisted of systematic reviews, quasi-experimental, and longitudinal designs. The quality and structure of the evidence was initially moderate, however, due to imprecision, inconsistencies, and risk of bias, the evidence was graded down by three points. Imprecision issues arose from small sample sizes, sometimes only including longitudinal case studies. Problems found with inconsistency were lack of standardized report reliability and validity testing. Although there were inconsistencies and imprecisions with the evidence presented, there was a great magnitude of effect to support community health education due to the lack of associated risks. Publication bias was also not evident; therefore, the literature was graded up by two points. Based on the evidence retrieved, it is suggested to incorporate community health education to raise the public's awareness, knowledge, and safety.

### **Literature Review and Synthesis of Evidence**

This literature review includes operational definitions, the theoretical framework, and a review of the literature on COVID-19, public health education, and sociodemographic inequities. Topics discussed in the literature review include the following sections: the vulnerabilities of Hispanics in the U.S., multi-generational households, Hispanic education levels, and the lack of COVID-19 education.

### **Operational Definitions**

**Minority.** Part of a population different from others in some characteristics and often subjected to differential treatment (Merriam-Webster, n.d.). In the U.S., the term “minority” refers to four major racial/ethnic groups: African Americans, American Indians/Alaska Natives, Asians/Pacific Islanders, and Hispanics (Pollard, 1999).

**Hispanic.** A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race (U.S. Census Bureau, 2012).

**Health inequity.** Disadvantages certain populations experience in achieving their full health potential due to social position or other socially determined circumstances. (WHO, 2018; CDC, 2020)

**Community-Based Education.** A wide variety of instructional methods used by educators to deliver pertinent information to the surrounding communities. The information can include topics such as health science, general science, history, literature, cultural heritage, etc. (The Glossary of Education Reform, 2014).

**Face Validation.** A subjective assessment that measures how clear, reasonable, and relevant the tools are to the project (Oluwatayo, 2012; Yusoff, 2012).

**COVID-19.** COVID-19 is the infectious disease caused by the Severe Acute Respiratory Syndrome Coronavirus-2, or SARS-CoV2. COVID-19, SARS-CoV2, and coronavirus are all interchangeable terms. COVID-19 was first detected in China in December 2019. The first case of COVID-19 in the U.S. was identified on January 20, 2020 . (CDC, 2020; WHO, 2020)

**Educational Sessions.** A group of people gathering to be taught information by a teacher or instructor.

**Better Life Worship Center (BLWC).** A multicultural, Christian church located in Clermont, FL.

**Clermont, FL.** A city in Lake County, FL. about 20 miles west of Orlando, FL. Clermont is the largest city in Lake County (City of Clermont, 2021).

**Lake County FL.** A county in Central FL. adjacent to Orange County, FL. (Lake County Government, 2021).

### **Theoretical Framework**

Community-based education for minorities has strong ties to the Adult Learning Theory. The Adult Learning Theory, which is also referred to as andragogy, depicts the manner in which adults learn and illustrates the most efficient teaching strategies. The theory of andragogy was developed in 1968 by Malcolm Knowles and is based on five key principles: self-motivation, past life experiences and knowledge, goal-orientation, relevancy, and motivation. Adults shift from being dependent learners to independent learners. Considering that participation in this scholarly project is optional, Hispanic participants must be completely self-motivated and seek to improve their personal lives. Andragogy also depends on the adult's readiness to learn. According to Knowles, adults seek educational opportunities when the information is relevant and applicable to their current situation. If the participants immerse themselves in the educational sessions and synthesize the information presented, they have the tools needed to remain healthy and safe during the COVID-19 pandemic (Machynska & Boiko, 2020; Westoby & Shevellar, 2012).

### **Vulnerabilities to COVID-19**

The vulnerability of Hispanics to COVID-19 is attributed to biological, social, and structural mechanisms (CDC, 2020; Geno-tai, Shah, Doubeni, Sia, & Wieland, 2020; Wilder, 2020). Hispanics are disproportionately affected by comorbidities associated with detrimental outcomes in the presence of COVID-19 infection. These can include diseases such as hypertension, diabetes mellitus, obesity, renal disease, and coronary artery disease. Evidence shows that the aforementioned comorbidities increase the likelihood of a severe COVID-19

infection, rapid progression, and death (CDC, 2021). Currently, about 20% of Hispanics in the U.S. lack health insurance, limiting their access to high quality healthcare (U.S. Department of Health and Human Services: Office of Minority Health, 2019). Hispanics without health insurance are less likely to seek medical attention, when necessary, which increases the spread of COVID-19 to the general population (Calo, Murray, Francis, Bermudez, & Kraschnewski, 2020; CDC, 2020). Higher incidence of comorbidities, un-insurance, and decreased access to healthcare plays a significant role in health inequities experienced by Hispanics (Calo, Murray, Francis, Bermudez, & Kraschnewski, 2020; CDC, 2020; Geno-tai, Shah, Doubeni, Sia, & Wieland, 2020; Vega, Rodriguez, & Gruskin, 2009; Wilder, 2020).

### **Multigenerational Households**

The U.S. Census Bureau (2012) defined multigenerational households as family households consisting of three or more generations. Approximately 27% of Hispanics in the U.S. live in multigenerational households (Hoff, 2020; U.S. Census Bureau, 2012). Multigenerational households make it nearly impossible for effective quarantining. This type of household is frequently experienced in areas with a high percentage of immigrants, higher costs of living, and a higher percentage of unmarried parents (U.S. Census Bureau, 2012). Central Florida fits this description, which further validates the need for COVID-19 education for Hispanics in Central Florida.

### **Hispanic Education Levels**

The level of education in conjunction with language barriers also contribute to the health inequities faced by Hispanics. Language barriers have shown to decrease the quality of care. It is estimated that 72% of Hispanics speak a language other than English and 30% report non-fluency in the English language (Calo, Murray, Francis, Bermudez, & Kraschnewski, 2020;

Laurencin & McClinton, 2020; Marcias et al., 2020). Inequalities in access to high-quality education for Hispanics lead to lower secondary education completion rates. This in turn reduces comprehension of the English language and also reduces health literacy rates in Hispanics. Lower health literacy rates lead to misinformation about COVID-19 and higher COVID-19 infection rates. The level of education in Hispanics also contributes to a limited access to stable jobs and professions. With decreased educational attainment, Hispanics are less likely to leave essential jobs that place them at risk of contracting the deadly COVID-19 virus (Calo, Murray, Francis, Bermudez, & Kraschnewski, 2020; CDC, 2020; Vega, Rodriguez, & Gruskin, 2009).

### **Lack of COVID-19 Education**

The most effective method to decrease the spread of disease is through public health education. Education improves health literacy rates and comprehension of disease, which subsequently promotes health equity in the community (Adams, 2010; Gamm, Castillo & Williams, 2010; Hahn & Truman, 2015). In the past, public health education has been directed towards combating conditions commonly seen across the U.S., such as diabetes, coronary heart disease, heart failure, and rheumatoid arthritis (Adams, 2010). Although the efficacy of public health education has been established in the literature, no information is available on the effects of public health education on the spread of COVID-19 in Hispanics. The novelty of COVID-19 and the inexperience of the modern world with pandemics creates a dire need for COVID-19 education. Public health education for Hispanic individuals on COVID-19 can equip them to lead healthier lives and potentially avoid contracting COVID-19 or similar viruses (Vraga, Tully, & Bode, 2020; Wilder, 2020).

### **Project Aims**

This project aimed to assess the influence of a 60-minute educational seminar regarding the health effects, transmission, and prevention of COVID-19 on the knowledge base and knowledge retention of Hispanic adults attending BLWC in Clermont, FL.

This scholarly project's specific objectives were:

1. Measure the difference in knowledge base and knowledge retention within the adult Hispanic church members attending BLWC on the health effects, transmission, and prevention of COVID-19 after one, 60-minute educational session.
2. Determine if there is a difference between pretest, posttest, and one-month posttest scores regarding the health effects, transmission, and prevention of COVID-19 within the Hispanic adult congregation at BLWC by Summer 2021.
3. Provide evidence-based recommendations regarding the implementation of COVID-19 public health education to AdventHealth University (AHU) faculty, peers, stakeholders, and subjects based on data analysis obtained by the Spring 2022.

### **Methods**

#### **Design**

This scholarly project utilized a qualitative, quasi-experimental format with the provision of a pretest, posttest, and one-month posttest. Since there is a significant lack of data regarding COVID-19 public health education, a pretest/posttest design was utilized to establish a baseline. A one-month posttest tested the knowledge retention of the educational session.

#### **Setting**

The educational session was held inside the sanctuary at the BLWC in Clermont, FL. This church is of Christian faith and holds both English and Spanish services. Safety measures



coincided with the current CDC's recommendations at the time including, social distancing of at least six feet and a mask mandate.

### **Sample Methodology**

The sample population was Hispanic adults who attended BLWC. As of October 2020, approximately 400 people attend BLWC, with over half identifying as Hispanic. Professional translation services, with an expertise in medical translation, were provided by ClariVita for participants who prefer Spanish language sessions. This was done to ensure consistency in education dissemination.

Convenience sampling was used to recruit 41 participants. According to the XLSTAT 2020 power tool, a sample population of 400 church members required a minimum sample size of 21 participants, an amount which was surpassed. Parameters for this calculation included conventional values for power at 0.9, alpha at 0.05, and the effect size at 0.3. The plan to account for attrition was to increase the sample size by at least 43%, bringing the total sample size to approximately 30 participants, which we have exceeded. Inclusion criteria included adult attendees of BLWC in Clermont, FL, and literacy in English or Spanish. This scholarly project was geared towards adults, thus, in order to eliminate superfluous variables like differing developmental stages, minors under the age of 18 were excluded.

### **Access and Recruitment Methods**

Prior to making project-related announcements, recruiting participants, or any other parts of project implementation, approval from the Institutional Review Board (IRB) was obtained. After IRB approval was obtained, the co-investigators, Aixa Figueroa and Kaitlyn Yook, commenced recruitment efforts on June 27, 2021, at BLWC during four English and Spanish Sunday services at 0900 and 1100, respectively. An accompanying PowerPoint slide

(APPENDIX B) written by the co-investigators and professionally translated via ClariVita Language Services was displayed onto the projection screen behind the altar and contained details such as the time, date, and location of the educational sessions. Prospective project participants were recruited voluntarily through self-selection. Volunteers that met the inclusion and exclusion criteria were allowed to participate, with the stipulation that they read and agreed to the participation agreement before the educational session commenced.

The co-investigators of this scholarly project expected minimal to no foreseeable risks. Potential risks, for example, contraction of the highly communicable COVID-19 disease, were mitigated by the maintenance of social distancing of at least six feet between participants and mask enforcement for all in attendance. Further minimal to no foreseeable risks or discomforts pertain to the politically controversial information presented and the data collected from participants. These included, but were not limited to feelings of embarrassment, fear, or guilt. All protected private information was de-identified according to the security procedures detailed below. Injuries are not anticipated, but should they occur, there will be no compensation or payment to those who are injured in any way by this scholarly project.

Potential benefits, although not guaranteed, included a better understanding of the health effects, prevention, and transmission of COVID-19. A prospective, adventitious outcome was to support the deceleration of COVID-19 spread in the congregation and community. A pre-packaged disposable bag including a one fluid ounce hand sanitizer and face mask was provided at the end of the educational session to thank the subjects for their participation.

### **Ethical Considerations**

Participation agreements were provided for prospective subjects in English and in Spanish. ClariVita Language Services provided the professional medical translation of the

participation agreement. A hard copy of the participation agreement was provided to those who chose to participate and enclosed project details such as the aforementioned potential risks and benefits (APPENDIX C). Mara Cawthorn, a professional medical translator with ClariVita Language Services, was available during the participation agreement process to ensure equity among the potential participants. The subjects in the scholarly project were not coerced into participating and reserved the right to decline and/or retract participation. The participation agreement does not expire, although it may be rescinded under the participant's request. Co-investigators collected participation agreements on the day of the educational session but prior to actual participation.

### **Data Collection**

Data collection was performed solely by the co-investigators during the two encounters with the participants. Data composition includes the results from the physical copies of the 11-question demographic survey (APPENDIX D) and a total of three, 10-question multiple choice tests (APPENDIX D).

### **Instruments**

The co-investigators compiled information from an extensive literature review to develop the instruments utilized in this project. Instruments include a promotional flyer in the form of a Microsoft PowerPoint presentation slide (APPENDIX B), an 11-question demographic survey (APPENDIX D), a Microsoft PowerPoint presentation, and a 10-question multiple choice test (APPENDIX D). In order to provide equal educational opportunities amongst the participants, all the instruments adhered to an 8th grade Flesch-Kincaid readability score and were translated to Spanish by the professional, medical translator. Face validation of the instruments were performed by three Doctor of Nurse Anesthesia Practice (DNAP) students, two DNAP faculty

staff members, an AdventHealth University (AHU) professor, and an end-user with extensive experience with teaching English as a Second Language (ESL). The method of delivery was conducted in two, face-to-face interactions. The first interaction included the educational session on July 24, 2021, while the second interaction included the administration of the one-month posttest on August 22, 2021. The effectiveness of the educational session was assessed by the 10-question multiple choice pretest, posttest, and one-month posttest. Each participant's pretest, posttest, and one-month posttest results were matched with the use of a personal identification code.

### **Data Analysis**

Data analysis for this project was facilitated by the IBM Statistical Package for the Social Sciences (IBM SPSS) software, version 22. Completed demographic surveys, pretests, posttests, and one-month posttests were collected, de-identified, and graded. The IBM SPSS v.22 software was then used to statistically analyze the data. The data analysis for this project utilized the Analysis of Variance for Repeated Measurements (RM-ANOVA) method. An RM-ANOVA was performed because it analyzes changes in mean scores of the same subjects over an extended period of time (Laerd Statistics, 2018).

To protect confidentiality, each participant assigned themselves a personal identification code consisting of the first letter of their last name, followed by the last four digits of their cell phone number. For those who do not have a cell phone, the use of a landline number sufficed. Participants were responsible for remembering their own personal identification code, for it was used to keep track of all documentation pertaining to this project instead of the participant's full name. The participation agreements, demographic information, and test scores were scanned into a digital format and stored under a password-protected Microsoft Teams folder, which can only

be accessed by the principal and co-investigators of this scholarly project. The hard paper copies of the signed participation agreements are kept in a key-protected filing cabinet. Only the co-investigators have a key to this filing cabinet, which is located at the co-investigator's residence. After five years, the hard copies of all documents will be shredded and destroyed and all data in the password-protected folder will be automatically deleted to protect the confidentiality of the parties involved. Rigor will be ensured by reporting barriers and maintaining transparency.

### **Planning and Procedures**

#### **Planning**

Major stakeholders of this project included Juan Rivera, the lead pastor at BLWC, Maria Mowery, the associate pastor, and Mrs. Shirlene Peralta, a BLWC churchgoer with extensive experience with teaching English as a Second Language (ESOL). Since August 2020, more than ten members of the Spanish congregation at BLWC have contracted COVID-19. This outbreak led to a decreased attendance by 50%. Public health education on COVID-19 for the Hispanic members at BLWC can decrease the spread of COVID-19 within the congregation and increase church attendance, thus allowing the buy-in of stakeholders. The stakeholders generously granted the use of the church and needed resources like a projector and seating for the implementation phase of this project. Other resources for this scholarly project included face masks, hand sanitizers, printer paper, printer ink, pens, as well as translational services. The co-investigators privately funded the costs of the project, therefore, no federal, state, or institutional grants were needed (APPENDIX E).

#### **Implementation**

After the recruitment phase was completed, as outlined above, the implementation phase began. To minimize physical contact, all documents were printed on paper, safely handled with proper hand hygiene practices, and laid out on a table in individual plastic bags with a pen. On the day of the educational session in July of 2021, participants were asked to sign the participation agreement form. After the participation agreement form was signed, participants proceeded to take an 11-question demographic survey (APPENDIX D). The demographic survey was used to collect personal information such as age, gender, ethnicity, marital status, annual income, education level, employment status, number of persons in the household, and language spoken at home. Participants then took a 10-question, multiple-choice pretest, which was immediately followed by the in-person educational session on the health effects, transmission, and prevention of COVID-19. Mara Cawthorn, a professional medical translator, remained present throughout the entirety of the educational session and translated all project-related interactions between the co-investigators and project participants. Participants then took a posttest immediately after the educational session, and again one month later to measure knowledge retention.

### **Barriers and Facilitators**

Potential barriers to successful completion of this scholarly project included participation, engagement, attrition, and COVID-19 safety measures. Presenting information on a topic that has been tainted with political and media-driven controversies could potentially cause disagreements and reluctance to attend. Required safety measures for the COVID-19 pandemic also presented another obstacle. Safety measures like social distancing and wearing of face masks were strictly enforced for all attendees during the educational session. Adequate social distancing may inadvertently affect a participant's ability to learn by making the information

harder to see and comprehend. To overcome this, multiple projection screens with the PowerPoint presentation in English and in Spanish were used. The co-investigators and medical translator also utilized microphones to ensure all participants were able to hear the information being presented. This project requires us to meet with project participants twice. The need for multiple encounters could also lead to higher attrition rates, which can skew the data of this project. We recruited as many participants as possible to help ensure an adequate sample size to compensate for a potentially high attrition rate. Project facilitators include the key stakeholders: Pastor Rivera, Pastor Mowery, and Mrs. Peralta. Another facilitator identified was the relevance of the project's topic to current events.

### **Timeline**

Recruitment of participants began in late June 2021 with project implementation and data collection taking place on July 24, 2021, and August 22, 2021 (APPENDIX F). Data analysis took place on November 3, 2021, with the assistance of statistician, Dr. Roy Lukman. Dissemination of the results will be conducted in the Spring of 2022 at AHU in Orlando, FL.

Initially, recruitment of participants was to take place in March 2021 with project implementation and data collection in April 2021 through June 2021. Data analysis and dissemination were tentatively scheduled to be conducted in the Spring of 2022. The timeline was altered due to restrictions of the ongoing pandemic and unforeseen family emergencies experienced by the co-investigators.

### **Results/Findings**

There were a total of 41 participants; of the 41, two did not complete the demographic survey, and three did not complete the post tests. Furthermore, six subjects were excluded from the analysis due to missing data. The results of the demographic survey are displayed in Table 1.

The mean scores for the three tests are as displayed in Table 2 and Figure 1. Table 3 outlines the results yielded from the RM-ANOVA in SPSS. There was insufficient evidence to run correlational statistics between demographic results and test scores.

Figure 1

Characteristic	n=35	Characteristic	n=35
Age		Number of Children	
18-25	8	0	13
26-35	7	1	4
36-45	4	2	8
46-54	6	3	13
55-64	9	4	1
65+	5	Missing Data	2
Missing Data	2		
Sex		Number in Household	
Male	12	2-4	35
Female	26	5-8	4
Missing Data	3	Missing Data	2
Race/Ethnicity		Education	
Black of African American	1	Less than High School	3
Hispanic/Latino of any	38	High School Graduate or Equivalent	7
Race	2	Some College	8
Missing Data		Associate Degree	5
		Bachelor's Degree	9
		Graduate or Professional Degree	6
		Missing Value	3
Language		Household Income	
Primarily English	13	\$10,000-19,000	1
Primarily Spanish	15	20,000-29,000	5
English & Spanish Equally	11	30,000-39,000	4
Other	3	40,000-49,000	6
Missing Data	2	50,000-59,000	6
		60,000-69,000	3
		70,000-79,000	5
		More than 80,000	8
		Missing Value	3
Marital Status		Healthcare Worker	
Single	8	Yes	7
Married	29	No	34
Divorced	2		
Missing Data	2		

Figure 2

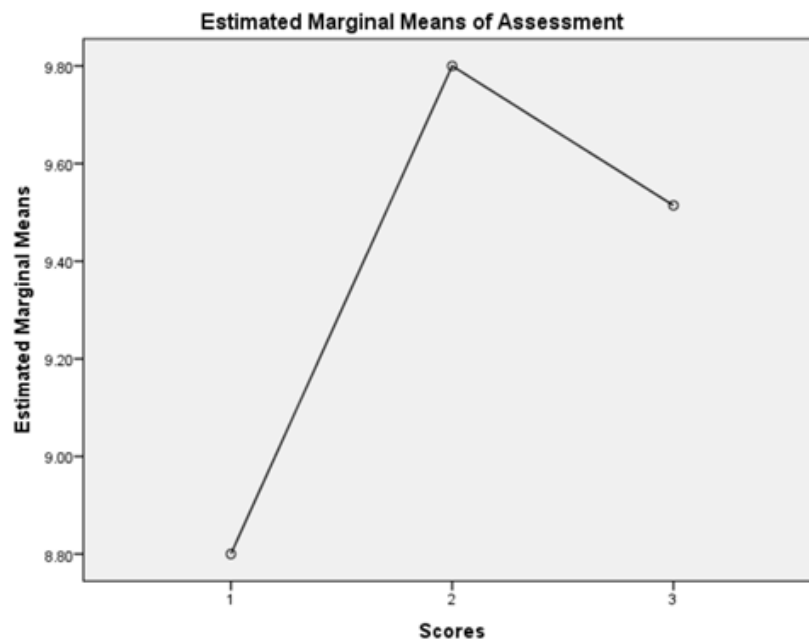


Descriptive Statistics			
	Mean	Std. Deviation	N
Pre	8.8000	1.43075	35
Post1	9.8000	.53137	35
Post2	9.5143	.85307	35

Figure 3

Tests of Within-Subjects Effects							
Measure: Assessment							
Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Scores	Sphericity Assumed	18.571	2	9.286	16.014	.000	.320
	Greenhouse-Geisser	18.571	1.186	15.654	16.014	.000	.320
	Huynh-Feldt	18.571	1.204	15.419	16.014	.000	.320
	Lower-bound	18.571	1.000	18.571	16.014	.000	.320
Error(Scores)	Sphericity Assumed	39.429	68	.580			
	Greenhouse-Geisser	39.429	40.336	.978			
	Huynh-Feldt	39.429	40.951	.963			
	Lower-bound	39.429	34.000	1.160			

Figure 4



## Discussion

The review of literature strongly supported the need for further COVID-19 public health education. This need stemmed from the uncertainty and confusion that months of misinformation have procured. The spread and amplification of inaccurate information has led to harm, and even death, in cases where prevention was underplayed and ineffective cures were presented (Vraga, Tully, & Bode, 2020). According to Gostin, Friedmanm and Wetter (2020), there is a dire need for a trusted source to provide education to the public regarding subjects such as known risks, unknown risks, progressive planning, prevention of spread, proper hygiene practices, and where to go for help – be it religious help, financial help, or access to supplies. Empowering the public with evidence-based knowledge can improve health outcomes (Gostin, Friedmanm, & Wetter, 2020; Vraga, Tully, & Bode, 2020). The purpose of teaching the community regarding the health effects, transmission, and prevention of COVID-19 was to help increase awareness, decrease further spread, and improve the health of the community.

The intervention effectively measured the difference in knowledge and knowledge retention within adult Hispanic church members attending BLWC. The Greenhouse-Geisser correction indicated that the intervention elicited statistically significant changes between assessments,  $F(1.186, 40,3360) = 16.014, P < .0005$ . Further inspection of the plot indicated that there was a significant increase of mean scores between the pretest (*mean score* = 8.80) and the posttest (*mean score* = 9.80), with a slight decrease between the posttest and the one-month posttest (*mean score* = 9.51). The implementation of a 60-minute educational session on the health effects, transmission, and prevention of COVID-19 yielded results supporting the notion that community health education increases the Hispanic community's knowledge and knowledge retention of COVID-19. Although there was a decrease in knowledge from the initial posttest (*mean score* = 9.80) to the one-month posttest (*mean score* = 9.51), there was an overall increase

in knowledge and knowledge retention when comparing the results from the one-month posttest (*mean score* = 9.51) to the results of the pretest (*mean score* = 8.80). The decrease in knowledge from posttest to the one-month posttest can be attributed to the fact that information on COVID-19 is fluid and changes as new information is shared through the media by organizations such as the Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO). The information taught to participants could have become antiquated by the time participants took the one-month posttest, therefore causing a minor decrease in test scores from the posttest and one-month posttest.

The initial review of literature highlighted the efficacy of public health education on non-COVID-19 related health issues but failed to provide any information on the effects of public health education on the spread of COVID-19 in Hispanics. Not only do the results support the notion that community health education increases general awareness, knowledge, and safety, but it also supports the need for continuous reinforcement and re-education on important community health issues such as the COVID-19 pandemic.

This scholarly project yielded insufficient evidence to make statistical inferences between demographic data and test scores. This made it particularly difficult to make generalizations based on the data found. However, we were surprised to discover that 22.9% ( $n = 8$ ) of participants had a household salary greater than \$80,000, 37.1% ( $n = 13$ ) of participants spoke primarily English at home, and that 31.4% ( $n = 11$ ) of participants spoke English and Spanish equally at home. This contradicts data stating that Hispanic communities in the U.S. lack proficiency in the English language and beneficial job opportunities (Calo et al., 2020; Escarce & Kapur, 2006; Holtgrave et al., 2020; Pan et al., 2020; Rozenfeld, et al., 2020; Stokes et al., 2020). It is also important to note that our sample population is not a direct representation of all Hispanic

adults in the U.S., although findings may be transferable to other populations in similar contexts or settings.

As previously mentioned, the Adult Learning Theory, or andragogy, strongly relates to the problem identified in this scholarly project. Andragogy supports the motivation observed in Hispanic participants to protect themselves against COVID-19. Considering that participation in the intervention was completely voluntary, the Adult Learning Theory proved that when adults take control of their own education, positive learning experiences are obtained. This was evidenced by the level of participation and by the statistical results of the pretest, posttest, and one-month posttest. According to the Adult Learning Theory, the Hispanic adult church members at BLWC noticed a problem in their community, which was the fast propagation of COVID-19. Furthermore, they chose to take control of their health by participating in the educational sessions. Their readiness to learn was evidenced by the improvement in test scores from pretest to posttest, and in the general increase in scores when comparing the pretest scores to the one-month posttest scores. The findings indicate that following the principles of the Adult Learning Theory by ensuring relevance of topics, and voluntary enrollment can promote increased participation and provide overall positive results in regard to knowledge gained by the targeted audience and community.

### **Applicability to Practice**

The results of this scholarly project suggest that applying the same interventions to other minority groups can increase their knowledge of COVID-19, potentially decreasing the spread and ending the ongoing pandemic. Primary prevention efforts, similar to the one implemented in this scholarly project, can be applied to future public health emergencies, epidemics, and/or pandemics in order to promote general wellness, and eradicate health inequities experienced by minorities in the U.S. (Adams, 2010; Gamm, Castillo & Williams, 2010; Hahn & Truman, 2015).

The results of this scholarly project also suggests that further research should be done on the effects of increased health knowledge on public behavioral changes and health practices in the future.

### **Contribution to Professional Growth**

Lessons learned from the Ebola epidemic outbreak of 2014 has provided powerful insight into public education techniques and its effectiveness. The most effective method of public education was social learning where a small group of people were taught the information, and consequently, shared the information to others. This method was faster than mass media campaigns and more effective than a national government response (Abramowitz, McKune, Fallah, Monger, Tehoungue, & Omidian, 2017; Shin, Yeo, and Jung, 2018). If these same principles hold true today, there is a potential that increasing the project participant's knowledge of COVID-19 through educational sessions will also transmit awareness and knowledge to the surrounding communities through means of social learning. Improving community awareness and knowledge of infection prevention and control has shown to improve the overall health of the community (Shin, Yeo, & Jung, 2018; Vraga, Tully, & Bode, 2020).

Public health education on COVID-19 will also improve the health of anesthesia providers. With a 20% post-intubation infection rate, anesthesia providers are at an increased risk of contracting COVID-19. Improving the health of the community helps decrease the contraction rate of anesthesia providers, which helps prevent further spread of COVID-19 to other healthcare professionals, their friends and families, and patients (Chachar, Dugar, & Marciniak, 2020; Wang et al. 2020).

### **Limitations**

This scholarly project focused on a specific population of Hispanic adults who attend a Christian church in a small town in Central Florida. The specificity of the subjects may serve as a misrepresentation of the population as a whole. Although Hispanics face severe health inequities during the COVID-19 pandemic, data from this project may not accurately represent the magnitude of health inequities faced by other minority groups. Furthermore, characteristics such as Christian faith may also have had an unknown impact on the results that may not reflect accurately on other such religious or non-religious groups.

Other limitations of this study include several confounding variables. Varying family dynamics and support systems of Hispanic participants make it difficult to make generalized conclusions of the test results and data retrieved. COVID-19 guidelines by the CDC and WHO are also frequently updated. Information that was held to be true at the time of the educational session may have been proven to be inaccurate at the time of the one-month posttest. This may have altered the accuracy of assessing the participants' retention in the one-month posttest.

In addition, the aim of this scholarly project was to determine how community health education influenced the knowledge and retention of knowledge on COVID-19 of the Hispanic adult congregation at BLWC. This scholarly project did not aim to provide compelling evidence that community health education decreases the actual spread of COVID-19 amongst Hispanics. Further research would have to be conducted to measure this outcome.

### **Conclusion**

The goal of healthcare is to improve the health of the people it serves. As anesthesia providers, it is our responsibility to promote health to our communities (AANA, 2020; WHO, 2018). As exhibited in the literature review, public health education is a well-recognized evidence-based practice that effectively promotes health in the community (Shin, Yeo, & Jung,

2018; Vraga, Tully, & Bode, 2020). That is why the purpose of our project was to influence the knowledge and knowledge retention on the health effects, transmission, and prevention of COVID-19 in our community. In alignment with the PICOT statement, the implementation of one, 60-minute educational session on the health effects, transmission, and prevention of COVID-19 positively influenced the knowledge and retention of knowledge of Hispanic adults attending BLWC in Clermont, FL. The results of this scholarly project supports and builds upon current literature as to the efficacy of public health education on knowledge and retention of knowledge of its subjects.

### **Dissemination**

Dissemination of the findings will be presented to the DNAP faculty, the key stakeholders, and the BLWC leadership in the form of a PowerPoint presentation in the Spring of 2022 at AHU in Orlando, FL. Recommendations formulated from the data analysis will also be provided to presentation attendees.

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## Appendix A

### Matrix Tables

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Purpose	Variables	Setting/Subjects	Measurement and Instruments	Results	Evidence Quality
<p><b>Article 1:</b> Present racial and ethnic distribution of COVID-19 confirmed cases and fatalities, dispel untrue facts of black immunity, and push for an improvement in identifying and addressing racial/ethnic disparities</p> <p><b>Article 2:</b> To highlight disparities in (US)Hispanics and present improvement strategies</p>	<p><b>Article 1:</b> <i>Independent:</i> Races and ethnicities</p> <p><i>Dependent:</i> COVID-19 confirmed cases and fatalities</p> <p><b>Article 2:</b> <i>Independent:</i> Hispanic/ Latino ethnicity</p> <p><i>Dependent:</i> COVID-19 confirmed cases, hospitalizations, and fatalities</p>	<p><b>Article 1:</b> 3141 COVID-19 positive cases from the Connecticut State Department of Public Health. ~55% did not have race/ethnicity. Connecticut census = 66.5% white, 12% black, 4.9% Asian, 0.6% native American/Alaskan native, and 16.5% Hispanic/Latinx.</p> <p><b>Article 2:</b> COVID-19 CDC data from 31 states and D.C. that included Hispanic ethnicity, COVID-19 related hospitalizations in 14 states, and death rate in NYC</p>	<p><b>Article 1:</b> Analysis of public health data.</p> <p><b>Article 2:</b> Analysis of public health data.</p>	<p><b>Article 1:</b> 45% cases had race/ethnicity, 60.8% white, 17.2% black, 2.9% Asian, 0.2% Hispanic. 90/96 had race/ ethnicity: 76.7% white, 14.4% black, 6.7% Hispanic, and 2.2% Asian. Average age of death: 81-white, 72-black, 62-hispanic, 76-asians</p> <p><b>Article 2:</b> Hispanic cases &gt; proportion of Hispanics in 27/31 states. In 14 states, 14.2% of hospitalizations were Hispanic. Death in NYC (age-adj.) = 2-fold higher death rate of Hispanics</p>	<p><b><u>Methodological flaws:</u></b> <b>Article 1:</b> Lack of identifying characteristics in 55% of reported cases and 6/96 deaths <b>Article 2:</b> Collection of data is not standardized</p> <p><b><u>Inconsistency:</u></b> <b>Article 1:</b> N/A <b>Article 2:</b> N/A</p> <p><b><u>Indirectness:</u></b> <b>Article 1:</b> N/A <b>Article 2:</b> N/A</p> <p><b><u>Imprecision:</u></b> <b>Article 1:</b> N/A <b>Article 2:</b> N/A</p> <p><b><u>Publication bias:</u></b> <b>Article 1:</b> None <b>Article 2:</b> None</p>
Design					
<p><b>Article 1:</b> Epidemiological observational study</p> <p><b>Article 2:</b> Epidemiological observational manuscript</p>					<p><b>Implications</b></p> <p><b>Article 1:</b> Hispanics (on average) die younger than other races due to COVID-19.</p> <p><b>Article 2:</b> There is a particularly adverse impact on the Latino community in the U.S.</p>

## References

- Dousari, S.A., Moghadam, T. M., & Satarzadeh, N. (2020) COVID-19 (Coronavirus Disease 2019): A new coronavirus disease. *Infection and Drug Resistance*. 13, 2819-2828. doi: 10.2147/IDR.S259279
- Stokes, E. K., Zambrano, L. D., Anderson, K. N., Marder, E. P., Raz, K. M., El Burai Felix, S., Tie, Y., & Fullerton, K. E. (2020). Coronavirus disease 2019 case surveillance: United States, January 22-May 30, 2020, *MMWR. Morbidity and Mortality Weekly Report*, 69(24), 759-765. doi: 10.15585/mmwr.mm6924e2

Purpose	Variables	Setting/Subjects	Measurement and Instruments	Results	Evidence Quality
<p><b>Article 1:</b> Present COVID-19 known information and recommendations</p> <p><b>Article 2:</b> Identify and report trends in COVID-19 impacts</p>	<p><b>Article 1:</b> N/A</p> <p><b>Article 2:</b> <i>Independent:</i> Race, ethnicities, ages, and sexes</p> <p><i>Dependent:</i> COVID-19 cases, ICU and hospital admissions, deaths</p>	<p><b>Article 1:</b> Wuhan, China, and WHO data</p> <p><b>Article 2:</b> United States</p>	<p><b>Article 1:</b> Analysis of data from Wuhan studies and WHO</p> <p><b>Article 2:</b> Analysis of public health data - CDC and JHU.</p>	<p><b>Article 1:</b> Main s/s: fever, cough, fatigue, spread- droplets &amp; close contact, onset &amp; progression depends on interactions of virus and immune system</p> <p><b>Article 2:</b> Cases – 33% Hispanics, 22% Black, 1.3% AI/AN (18,13,0.7% of US population), underlying conditions: 6x higher hospitalizations, 12x higher death rate</p>	<p><b><u>Methodological flaws:</u></b> <b>Article 1:</b> None <b>Article 2:</b> Collection of data not standardized. Many cases lacked descriptive analysis</p> <p><b><u>Inconsistency:</u></b> <b>Article 1:</b> None <b>Article 2:</b> Differing data form JHU and CDC</p> <p><b><u>Indirectness:</u></b> <b>Article 1:</b> N/A <b>Article 2:</b> None</p> <p><b><u>Imprecision:</u></b> <b>Article 1:</b> None <b>Article 2:</b> N/A</p> <p><b><u>Publication bias:</u></b> <b>Article 1:</b> None <b>Article 2:</b> None</p>
<p><b>Design</b></p> <p><b>Article 1:</b> Review article</p> <p><b>Article 2:</b> Epidemiological observational study</p>				<p><b>Implications</b></p> <p><b>Article 1:</b> Strengthen immune system- vitamins, decoction. Best prevention is to disrupt transmission</p> <p><b>Article 2:</b> Minorities are disproportionately affected by COVID-19</p>	

## References

Rodriguez-Diaz, C. E., Guilamo-Ramos, V., Mena, L., Hall, E., Honermann, B., Crowley, J. S., ... Millett, G. A. (2020). Risk for COVID-19 infection and death among Latinos in the United States: Examining heterogeneity in transmission dynamics, *Annals of Epidemiology*. doi: 10.1016/j.annepidem.2020.07.007.

Pan, D., Sze, S., Minhas, J.S., Bangash, M.N., Pareek, N., Divall, P., ... Pareek, M. (2020). The impact of ethnicity on clinical outcomes in COVID-19: A systematic review. *EClinicalMedicine*, 23(100404), 1-8. doi: 10.1016/j.eclinm.2020.100404

Purpose	Variables	Setting/Subjects	Measurement and Instruments	Results	Evidence Quality
<p><b>Article 1:</b> Determine COVID-19 transmission dynamics among Latino communities in the U.S.</p> <p><b>Article 2:</b> To assess whether ethnicity has been reported in patients with COVID-19 and its relation to clinical outcomes, including intensive care admission and mortality.</p>	<p><b>Article 1:</b> <i>Independent:</i> Dependent:</p> <p><b>Article 2:</b> <i>Independent:</i> Ethnicity</p> <p><i>Dependent:</i> Risk of infection with SARS-CoV2, hospitalizations, ICU admissions, clinical outcomes, and mortality.</p>	<p><b>Article 1:</b> Latinos in the U.S and Puerto Rico up until May 11<sup>th</sup>.</p> <p><b>Article 2:</b> A total of 162 articles for systematic review. 10 were from an electronic database search, 72 were from the pre-specified medical journals, and 80 pre-print articles from MedRxiv. The studies took place in the USA, UK, France, China, and Singapore.</p>	<p><b>Article 1:</b> Zero-inflated binomial regression models, adjusted rate ratios, multivariable analysis of US Census, CDC, Bureau of Labor Statistics, USAFacts</p> <p><b>Article 2:</b> The quality of the articles was assessed with the Joanna Briggs Institute Critical Appraisal Tool. Bivariate analysis of data was performed to retrieve statistical data.</p>	<p><b>Article 1:</b> Latino dx: &gt; in NE &amp; MidW regions (aRR 1.42, 95% CI 1.11–1.84 &amp; aRR 1.70, 95% CI 1.57–1.85). Deaths in MW: (aRR, 1.17, 95% CI 1.04-1.34)</p> <p><b>Article 2:</b> 5 out of 10 database articles reported on ethnicities. 12 out of 72 medical journals reported a correlation between COVID-19 deaths and ethnicities. 34 out of 80 preprints reported on ethnicities. 13 found Black, Asian, and Minority Ethnic (BAME) individuals at an increased risk of infection and 12 reported worse clinical outcomes. 7 out of 12 grey literature reports, reported poorer clinical outcomes in BAME groups.</p>	<p><b><u>Methodological flaws:</u></b> <b>Article 1:</b> Data collection is not standardized. Many cases lacked descriptive analysis <b>Article 2:</b> Search only included publications in English from December 2019 to May 2020.</p> <p><b><u>Inconsistency:</u></b> <b>Article 1:</b> None <b>Article 2:</b> None</p> <p><b><u>Indirectness:</u></b> <b>Article 1:</b> None <b>Article 2:</b> None</p> <p><b><u>Imprecision:</u></b> <b>Article 1:</b> None <b>Article 2:</b> None</p> <p><b><u>Publication bias:</u></b> <b>Article 1:</b> None <b>Article 2:</b> Articles funded by different agencies, therefore the views expressed are those of the authors and not necessarily those of the National Institute for Health Research or the Department of Health</p>
Design				Implications	
<p><b>Article 1:</b> Epidemiology Study</p> <p><b>Article 2:</b> Systematic Review</p>				<p><b>Article 1:</b> COVID-19 dx and deaths in Latinos differ by region. Structural factors &amp; monolingual Spanish speakers at elevated risks <b>Article 2:</b> Black, Asian, and Hispanic patients at higher risk of acquiring SARS-CoV-2 compared to White patients. Worsened clinical outcomes and mortality rates were also increased in this group.</p>	

## References

- Berkman, N.D., Sheridan, S.L., Donahue, K.E., Halpern, D.J., & Crotty, K. (2011). Low health literacy and health outcomes: An updated systematic review. *Annals of Internal Medicine*, 155(2), 97-107. doi: 10.7326/0003-4819-155-2-201107190-00005
- Soto-Mas, F. Jacobson, H.E., & Olivarez, A. (2017). Adult education and the health literacy of Hispanic immigrants in the United States. *Journal of Latinos and Education*, 16(4), 314-322. doi: 10.1080/15348431.2016.1247707

Purpose	Variables	Setting/Subjects	Measurement and Instruments	Results	Evidence Quality
<p><b>Article 1:</b> To determine if low health literacy relates to a poorer ability to understand and follow medical advice, poorer use of health care, outcomes, costs, and disparities in persons of all ages.</p> <p><b>Article 2:</b> To assess if basic adult instruction improves health literacy among Spanish-speaking immigrants.</p>	<p><b>Article 1:</b> <i>Independent:</i> Level of health literacy</p> <p><i>Dependent:</i> Healthcare outcomes, costs, and disparities.</p> <p><b>Article 2:</b> <i>Independent:</i> Level of basic adult health education</p> <p><i>Dependent:</i> Health literacy among Spanish-speaking adults</p>	<p><b>Article 1:</b> 111 English-language studies on people of all ages whose health literacy had been measured directly.</p> <p><b>Article 2:</b> Conducted in a U.S.-Mexico border community. A total of 156 students who were enrolled in HEP/MAP, were able to read and write in Spanish and were 21 years of age and older participated. Participants were separated into groups T1 and T2. T1 got GED classes, while T2 got GED and health literacy classes.</p>	<p><b>Article 1:</b> The Rapid Estimate of Adult Literacy in Medicine (REALM), the Test of Functional Health Literacy in Adults (TOFHLA), and short TOFHLA (S-TOFHLA) all measured health literacy. The Schwartz–Woloshin Numeracy Test and the Wide Range Achievement Test (WRAT) measured numeracy. Multivariate analysis to evaluate outcome differences.</p> <p><b>Article 2:</b> A Spanish (S-TOFHLA) assessed health literacy, IBM SPSS Statistics 19.0 software program, Averages of pre- and post-test, two-way factorial analysis of variance with a covariate, Chi-square to identify changes between pre- and post- tests, and a test of reliability on the S-TOFHLA using Kuder-Richardson K-R 20 and Pearson product moment correlations coefficient.</p>	<p><b>Article 1:</b> 15 studies showed increased use of hospital/emergency services in people with lower health literacy. 4 studies predicted less mammography screenings. 6 studies stated that low health literacy is related to poorer medication handling.</p> <p><b>Article 2:</b> Significant gain between pre- and post-test for the “marginal functional health literacy” and “adequate functional health literacy” categories. Chi- square was 56.97 (4 degrees of freedom, <math>p &lt; 0.001</math>). S-TOFHLA for T1, <math>t(35) = 4.84</math>, <math>p &lt; 0.001</math> and a Cohen’s delta of 0.81. S-TOFHLA for T2, <math>t(60) = 3.95</math>, <math>p &lt; 0.001</math> and a Cohen’s delta of 0.51.</p>	<p><b>Methodological flaws:</b></p> <p><b>Article 1:</b> The relationship between oral literacy (speaking and listening) and outcomes was not studied.</p> <p><b>Article 2:</b> Small sample size, disproportionate group sizes, no randomization of test groups</p> <p><b>Inconsistency:</b></p> <p><b>Article 1:</b> Inconsistency between health literacy and access to care, self-efficacy, adherence to med. regimens, prevalence of chronic diseases, and hypertension control.</p> <p><b>Article 2:</b> None</p> <p><b>Indirectness:</b></p> <p><b>Article 1:</b> None</p> <p><b>Article 2:</b> None</p> <p><b>Imprecision:</b></p> <p><b>Article 1:</b> None</p> <p><b>Article 2:</b> None</p> <p><b>Publication bias:</b></p> <p><b>Article 1:</b> None</p> <p><b>Article 2:</b> None</p>
Design				Implications	
<p><b>Article 1:</b> Systematic Review</p> <p><b>Article 2:</b> Quasi-experimental, non-equivalent, pre-test</p>				<p><b>Article 1:</b> Low health literacy is associated with poorer health outcomes and poorer use of health care services.</p> <p><b>Article 2:</b> Basic adult education without specific health-related content, is sufficient to improve health literacy among Spanish-speaking adults.</p>	

## References

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- Roz Rozenfeld, Y., Beam, J., Maier, H., Haggerson, W., Boudreau, K., Carlson, J., & Medows, R. (2020). A model of disparities: Risk factors associated with COVID-19 infection. *International Journal for Equity in Health*, 19(126). doi: 10.1186/s12939-020-01242-z

Purpose	Variables	Setting/Subjects	Measurement and Instruments	Results	Evidence Quality
<p><b>Article 1:</b> To estimate the disparities in terms of SARS-CoV-2 infections, diagnoses, and disease severity for white non-Hispanic, African American, and Hispanic adults.</p> <p><b>Article 2:</b> To identify the sociodemographic, environmental, and clinical predictors of the risk of COVID-19 infection and their relevance to health disparities across race, ethnicity, socioeconomic status, language, and age.</p>	<p><b>Article 1:</b> <i>Independent:</i> Race and Ethnicity <i>Dependent:</i> Infection experienced, diagnosis, hospitalization, and fatality rates for COVID-19</p> <p><b>Article 2:</b> <i>Independent:</i> Patient demographic; financial security; BMI; social, and behavioral history; chronic conditions; prescribed medications; laboratory results; and utilization of acute/ ambulatory healthcare</p> <p><i>Dependent:</i> COVID-19 infection</p>	<p><b>Article 1:</b> White non-Hispanic, Black non-Hispanic, and Hispanic adults in New York State through late March 2020.</p> <p><b>Article 2:</b> 35,403 patients residing in Alaska, Washington, Oregon, Montana and California who were tested for SARS-CoV-2 between February 28, 2020, and April 27, 2020 in the Providence Health System.</p>	<p><b>Article 1:</b> Each continuum was assessed using overall percentages, fatality rates, and relative changes between stages, with statistical comparisons between ethnicity using risk ratios.</p> <p><b>Article 2:</b> Descriptive stats to summarize study participants. Means and standard deviations to describe continuous variables. Frequencies and percentages to describe categorical variables. Bivariate analysis to assess a significant effect of each factor on the outcome. The "area under the receiver operating characteristic curve" and "Hosmer-Lemeshow goodness-of-fit statistic" to evaluate the model's ability to discriminate COVID-19 infection in the validation data set.</p>	<p><b>Article 1:</b> 8.0% of white non-Hispanic, 18.7% of African Americans, and 28.4% of Hispanic adults were estimated to have experienced SARS-CoV-2 infection. Racial/ethnic minority populations had higher likelihoods of COVID-19 diagnosis (0.93% White, 1.89% Black, 1.85% Hispanic), hospitalizations (0.11% White, 0.50% Black, 0.48% Hispanic), and death (0.03% White, 0.18% Black, 0.12% Hispanic).</p> <p><b>Article 2:</b> Higher risk of COVID-19 infection associated with older age (OR 1.69; 95% CI 1.41–2.02, <math>p &lt; 0.0001</math>), male gender (OR 1.32; 95% CI 1.21–1.44, <math>p &lt; 0.0001</math>), Latino ethnicity (OR 2.07; 95% CI 1.77–2.41, <math>p &lt; 0.0001</math>), non-English language (OR 2.09; 95% CI 1.7–2.57, <math>p &lt; 0.0001</math>), financial insecurity (OR 1.10; 95% CI 1.01–1.25, <math>p = 0.04</math>), low air quality (OR 1.01; 95% CI 1.0–1.04, <math>p = 0.05</math>), housing insecurity (OR 1.32; 95% CI 1.16–1.5, <math>p &lt; 0.0001</math>) or transportation insecurity (OR 1.11; 95% CI 1.02–1.23, <math>p = 0.03</math>).</p>	<p><b>Methodological flaws:</b></p> <p><b>Article 1:</b> Lacks separate categories for Asian, Native American, Alaskan Native, and multiracial, multiethnic communities. Finding generalized to NY state.</p> <p><b>Article 2:</b> Relatability of data to the entire U.S. is unclear. Inability to correlate patient data to measure individual behaviors.</p> <p><b>Inconsistency:</b></p> <p><b>Article 1:</b> None <b>Article 2:</b> None</p> <p><b>Indirectness:</b></p> <p><b>Article 1:</b> None <b>Article 2:</b> None</p> <p><b>Imprecision:</b></p> <p><b>Article 1:</b> Metric measured or measured are subject to random and systematic error. Available data on the racial and ethnic composition are limited to partially complete data in NYC, which contains 43% of the state's population</p> <p><b>Article 2:</b> None</p> <p><b>Publication bias:</b></p> <p><b>Article 1:</b> None <b>Article 2:</b> None</p>
<b>Design</b>				<b>Implications</b>	
<p><b>Article 1:</b> Systematic Review of grey literature to create an outcomes continuum</p> <p><b>Article 2:</b> Retrospective study</p>				<p><b>Article 1:</b> Hispanic, African American and minorities have significant disparities in fatalities related to the SARS-CoV-2 infections.</p> <p><b>Article 2:</b> Latinos and minorities already affected by health disparities across age, race, ethnicity, language, income, and living conditions are at greater risk of COVID-19 infection.</p>	

**Appendix B**  
Recruitment Flyer


**Please Join Us!**  
**For a FREE educational session!**  
As part of our Scholarly Project

about **COVID-19**


**Separate Fact**  
from *Fiction*

Information is *all*  
backed by  
**Evidence-based**  
**Research**

**Presented by Doctor of Nurse Anesthesia students:**  
**Aixa Figueroa & Kaitlyn Yook**

 **Date:** July 24, 2021  
**Time:** 9:00 AM  
**Location:** Better Life Worship Center

**Free Gifts for Participants!**

 **No sign up needed!**



### Appendix C

#### Demographic Survey

1. How old are you?
  - a. 18-25
  - b. 26-35
  - c. 36-45
  - d. 46-54
  - e. 55-64
  - f. 65+
2. Gender:
  - a. Male
  - b. Female
3. Please specify your ethnicity or race:
  - a. American Indian or Alaska Native
  - b. Asian
  - c. Black or African American
  - d. Hispanic/Latino of any race
  - e. White
  - f. Other
  - g. Two or more races
  - h. Race and Ethnicity Unknown
4. What language is spoken at home:
  - a. Primarily English
  - b. Primarily Spanish
  - c. English and Spanish equally
  - d. Other
5. What is your marital status?
  - a. Single
  - b. Married
  - c. Separated
  - d. Divorced
  - e. Widowed
6. How many children do you have?
  - a. 0
  - b. 1
  - c. 2
  - d. 3
  - e. 4
  - f. More than 4



7. How many people live in your household?
  - a. 1
  - b. 2 to 4
  - c. 5 to 8
  - d. 9 to 12
  - e. More than 12
8. What is the highest level of education you have completed?
  - a. Less than high school
  - b. High school graduate or equivalent
  - c. Trade or Vocational Degree
  - d. Some College
  - e. Associate degree
  - f. Bachelor's degree
  - g. Graduate or professional degree
9. What is your employment status?
  - a. Employed
  - b. Not Employed
  - c. Retired
  - d. Disabled
  - e. Student
10. What is your household annual income?
  - a. Under \$10,000
  - b. \$10,000 to \$19,000
  - c. \$20,000 to \$29,000
  - d. \$30,000 to \$39,000
  - e. \$40,000 to \$49,000
  - f. \$50,000 to \$59,000
  - g. \$60,000 to \$69,000
  - h. \$70,000 to \$79,000
  - i. More than \$80,000
11. Are you a healthcare worker?
  - a. Yes
  - b. No

## Multiple Choice Question Test

Personal Identification Code: \_\_\_\_\_

Date: \_\_\_\_\_

## COVID-19 Multiple Choice Question Test

1. Select the statement that is true regarding the transmission of COVID-19.
  - a. It is mainly transmitted through respiratory droplets.
  - b. It is not contagious unless you are within 6 feet without a mask.
  - c. It is safe to be in contact with people who do not have any symptoms of sickness.
  - d. It can only be transmitted if an infected person is coughing or sneezing in your face.
  
2. On average, how long does it take for someone to get symptoms of COVID-19 once infected?
  - a. 2-4 hours
  - b. 6-12 hours
  - c. 2-14 days
  - d. 15-30 days
  
3. Which of the following is considered a symptom of COVID-19?
  - a. Changes in Vision
  - b. Frequent Urination
  - c. Heartburn
  - d. Loss of Taste
  
4. What is the best way to differentiate between the flu and COVID-19?
  - a. A dry cough is specific for the flu.
  - b. Body aches are specific for COVID-19.
  - c. Laboratory testing to confirm the diagnosis.
  - d. Recent exposure to someone who had the flu.
  
5. Which of the following symptoms requires the use of emergency services?
  - a. Body aches
  - b. Cough
  - c. Fever
  - d. Trouble breathing

6. According to the latest CDC recommendations, how far away from others should **you** stand for social distancing to be effective?
    - a. 1 Foot
    - b. 3 Feet
    - c. 6 Feet
    - d. 12 Feet
  7. Which of the following is true regarding safe cleaning practices?
    - a. Disinfection can be done with hot water alone.
    - b. Disinfection can be done with 1 part 5% bleach to 49 parts water or a 70% alcohol solution.
    - c. You do not need to clean with water and soap if you use disinfectant on hard surfaces.
    - d. You must clean clothes with a special disinfecting detergent to prevent getting sick.
  8. Select the **true** statement regarding safe practices for prevention of the spread of COVID-19?
    - a. Social distancing is recommended even with the use of face masks and proper hand hygiene practices.
    - b. Social distancing is not recommended around family members that live in different households.
    - c. Wearing a face shield is as effective as wearing a mask in public.
    - d. Wearing disposable gloves is as effective as frequent hand washing.
  9. Select the true statement regarding the use of face masks for COVID-19.
    - a. They cause you to have high carbon dioxide levels if used for long periods of time.
    - b. They cause you to have low oxygen levels if used for long periods of time.
    - c. They help prevent the transmission of respiratory droplets in the air.
    - d. They only need to cover your mouth when you are out in public.
  10. What are the most common side effects experienced with COVID-19 **vaccination**?
    - a. Cough and Shortness of Breath
    - b. Fatigue and Headache
    - c. Nausea and Vomiting
    - d. Seizures and Diarrhea
-

**Appendix D**  
Budget and Verification of Costs

Materials	Reference Link	Cost Per Unit	Time/#	Estimated Cost	Total Cost
Face Masks	<a href="https://www.pens.com/auto-and-home/britebrand-antimicrobial-cotton-mask/hvt">https://www.pens.com/auto-and-home/britebrand-antimicrobial-cotton-mask/hvt</a>	\$2.00	140	\$294.00	\$280.00
1 Fl. Oz. Hand Sanitizers	<a href="https://www.bathandbodyworks.com/p/fiji-white-sands-pocketbac-hand-sanitizers-5-pack-026214879.html?cgid=all-hand-sanitizers#start=7">https://www.bathandbodyworks.com/p/fiji-white-sands-pocketbac-hand-sanitizers-5-pack-026214879.html?cgid=all-hand-sanitizers#start=7</a>	\$1.68	100	\$160.00	\$168.00
HP Printer Paper, Office 20lb, 8.5x11, 5 Ream Case, 2,500 Sheets	<a href="https://www.walmart.com/ip/HP-Printer-Paper-Office-20lb-8-5x11-5-Ream-Case-2-500-Sheets/840239696">https://www.walmart.com/ip/HP-Printer-Paper-Office-20lb-8-5x11-5-Ream-Case-2-500-Sheets/840239696</a>	\$19.88	1 Case	\$59.99	\$19.88
Bic Pens (60 Count)	<a href="https://www.officedepot.com/a/browse/bic-pens/N=5+4520&amp;cbxRefine=301587/">https://www.officedepot.com/a/browse/bic-pens/N=5+4520&amp;cbxRefine=301587/</a>	\$5.99	2	\$11.98	\$11.98
E-Z Ink Canon PGI-280XXL Ink Cartridges	<a href="https://www.amazon.com/Z-Ink-Compatible-Replacement-CLI-281-XXL/dp/B07GSX78CW?pd_rd_w=plR7h&amp;pf_rd_p=5bc65336-a8b0-4888-9e70-4d4ce2f6bd59&amp;pf_rd_r=H1RXXFXCQX5Y9BEHGTVP&amp;pd_rd_r=91bb529e-f6f8-4b70-919b-9363e4bb1a99&amp;pd_rd_wg=8HACy&amp;pd_rd_i=B07GSX78CW&amp;pssc=1&amp;ref_=pd_bap_d_rp_1_i">https://www.amazon.com/Z-Ink-Compatible-Replacement-CLI-281-XXL/dp/B07GSX78CW?pd_rd_w=plR7h&amp;pf_rd_p=5bc65336-a8b0-4888-9e70-4d4ce2f6bd59&amp;pf_rd_r=H1RXXFXCQX5Y9BEHGTVP&amp;pd_rd_r=91bb529e-f6f8-4b70-919b-9363e4bb1a99&amp;pd_rd_wg=8HACy&amp;pd_rd_i=B07GSX78CW&amp;pssc=1&amp;ref_=pd_bap_d_rp_1_i</a>	\$30.99	1	\$71.99	\$30.99
Translation of Education Materials	<a href="https://www.clarivita.com">https://www.clarivita.com</a>	\$405.00	N/A	\$250.00	\$405.00
In-Person Translation Services	<a href="https://www.clarivita.com">https://www.clarivita.com</a>	\$120/hr.	1 hour	\$120.00	\$120.00
<b>Total</b>				\$967.96	\$1,035.85

**Appendix E**  
**Final Timeline**

# Project Timeline

