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Improving Healthcare Provider COVID-19 Vaccine Hesitancy Knowledge in Black Patients: A Quality Improvement Project

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Improving Healthcare Provider COVID-19 Vaccine Hesitancy Knowledge in Black Patients:

A Quality Improvement Project

A Scholarly Project Presented to the Faculty of the
Nicole Wertheim College of Nursing and Health Sciences

Florida International University

In partial fulfillment of the requirements
For the Degree of Doctor of Nursing Practice

By

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Abstract

Background: Widespread vaccination hesitancy is now a global health concern that threatens the spread of communicable diseases, such as COVID-19. The acceptance of vaccines in the Black American community is lower than other groups. With the availability of three COVID-19 vaccines in America, acceptance rates of vaccines in the Black community are lower due to inequalities within socioeconomic status, healthcare resources, and medical distrust.

Objective: The purpose of this DNP study is to evaluate whether extending education to healthcare workers/providers about COVID-19 vaccines, vaccine hesitancy, and communication techniques increases provider knowledge. Additional goals of the study are to increase the acceptance rates of COVID-19 vaccines in Black U.S. communities.

Methodology: Using a quantitative, pre-test/post-test study design, a group of South Florida primary care healthcare workers and providers were requested to participate. Within four weeks, they were asked to complete a pre-test evaluation, followed by a video PowerPoint presentation and a post-test evaluation. The assessed outcomes were knowledge about COVID-19 and COVID-19 vaccines, communication techniques, and cultural sensitivity.

Results: The study enlisted 10 healthcare workers. Overall, there was an 11% increase in scores when comparing the pretest and posttest scores. APRNs maintained the highest scores and had the most improvement from 88% (pretest) to 93% (Posttest). APRNs, 100% of them, felt the most comfortable discussing COVID-19 vaccines with patients that refuse or are hesitant of taking vaccines. In cultural sensitivity, APRNs improved their scores in identifying racial barriers from 33.3% to 50%, while nurses had a decrease in scores by 50% and medical assistants by 25%. Overall, for communication techniques, scores increased by 2.9%. For the

clinical knowledge assessment, APRNs consistently scored at 100% in both the pretest and the posttest.

Conclusion: The Black population in the United States have been hit the hardest in the COVID-19 pandemic of 2020. Black individuals accept vaccines at lower rates than other races and ethnicities. They are also the most likely to suffer from higher mortality rates and complications from diseases that are preventable by vaccines. The results reinforce the established literature that healthcare providers and workers, especially APRNs, are the most trusted individuals to educate reluctant patients and convert vaccine hesitant individuals into accepting the COVID-19 vaccines.

Keywords: Vaccine hesitancy, COVID-19 vaccines, COVID-19, vaccine acceptance, nurse practitioner, pandemic

Introduction

It has been highly proven through decades of rigorous studies and reviews that vaccines are one of the most effective public health tools in our health care toolbox. However, when analyzing the data, it shows that Black patients tend to accept vaccines at lower rates than other groups. To better understand why certain populations take vaccines in fewer numbers than other populations, a deep dive into the established literature by experts in the field has been completed. The key concepts in answering these questions include medical, social, geographical, and demographic concepts. Much of the rejection of vaccines is embedded in the historical Black experience in America, which will be further expanded.

In 2021, the World Health Organization described immunizations as the most effective and economic tool to prevent infectious and communicable disease (World Health Organization, 2021). However, there are people that do not feel the same sentiment and would rather forgo the use of vaccines and use natural remedies, reliance on one's immune system, and herd immunity. These people are termed "vaccine-hesitant" or "vaccine-refusers". There has been growing concern over vaccines, and the community of "vaccine-refusers" continues to grow as people have more access to individuals with similar views. Vaccine-refusers are those that are not willing, under most circumstances, to take a vaccine regardless of its positive health impact/outcome. Per Eitze, et al 2021, vaccine hesitancy is defined as "*a delay in the acceptance or refusal of vaccination despite the availability of vaccination services*" (Eitze, Heinemeier, Schmid-Kupke, & Betsch, 2021). Lately, "vaccine-hesitant" individuals have taken the lead over concern for new vaccines, such as the vaccines for COVID-19. Vaccine-hesitant individuals feel emboldened and protected from viruses by using other means, such as hand-washing, vitamins, and masks for respiratory diseases. Vaccine-refusers rely more on herd immunity to help prevent the spread of a disease.

Many providers are well-versed on the vaccines that they are attempting to get their patients to take. However, studies conducted in Canada have shown that one-third of providers do not feel comfortable giving vaccine counseling to vaccine-hesitant patients (Shen & Dubey, 2019). It is well documented in literature that recommendations from healthcare providers (HCPs) are the strongest determinant on whether a patient decides to take a vaccine (Paterson, et al., 2016). A study done in six European countries suggested that general practitioners, pharmacists, and local hospitals were listed as the most trustworthy resources for health information and medicine. However, with all the knowledge and skills that HCPs have, some

admit that they still feel ill-equipped to answer questions and some do not feel confident enough to engage in those conversations (Paterson, et al., 2016). This is most striking when attempting to educate vaccine-refusers versus vaccine-hesitant patients. The target group for converting those into accepting vaccines are the vaccine-hesitant population rather than the vaccine-refuser population. This is because vaccine-refusers have already pre-determined the desire to not accept a vaccine regardless of any conversion attempts.

The preparedness – or unpreparedness – of HCPs is another aspect that determines one's level of vaccine knowledge (Paterson, et al., 2016). A study conducted in the UK amongst midwives revealed that 76% of midwives agree with routine vaccination advisories for pregnant women (Ishola, Permolloo, Cordery, & Anderson, 2013). However, only 25% of those midwives actually felt sufficiently prepared to advise their patients (Ishola, Permolloo, Cordery, & Anderson, 2013). Furthermore, there is an association between HCPs that are vaccinated or unvaccinated and the approaches they use to advise their patients on vaccines. Vaccinated HCPs believe they can give more reassurance to their concerned patients, whereas unvaccinated HCPs are more likely to advise their patients into accepting a vaccine; however, they are less likely to encourage the treatment (Paterson, et al., 2016).

Generally, knowledge about a vaccine and its safety, efficacy, and mechanism all assist in the confidence level of the HCP. When the HCP is more confident, they are more likely to recommend and endorse a vaccine. In South Africa, a study found that when nurses perceived their younger patients' willingness to accept the HPV vaccine, they were more confident and likely to recommend the vaccine (Hoque, Monokoane, & Van Hal, 2014). There are many reasons why an individual would be vaccine-hesitant and a person can have more than one

reason influencing their stance. Individual reasons need a lot of contexts, including time, setting, and type of vaccine being offered.

Vaccine hesitancy within Black communities is very prevalent, quite significant and can be attributed to many factors. Those factors include, but are not limited to, healthcare provider mistrust, disinformation, inequalities, and lack of resources. When looking at well-established vaccines, such as the influenza vaccine, the Black population is vaccinated at much lower rates than their White/Caucasian and Asian counterparts, and are more likely to be hospitalized due to influenza. The Centers for Disease Control and Prevention (CDC) estimated that for the 2019-2020 influenza season, only 41% of non-Hispanic Black individuals were vaccinated against influenza and had the highest rates of influenza related hospitalizations (69 per 100,000) (Centers for Disease Control and Prevention, 2020). In contrast, Non-Hispanic White individuals had lower influenza-related hospitalization rates (38 per 100,000) and Non-Hispanic Asian individuals had the lowest rates (32 per 100,000) (Centers for Disease Control and Prevention, 2020).

There has been acknowledgement that communication and evidence-based educational tools are necessary to bridge the educational gap between health care provider and patient. However, the literature and educational tools geared towards the provider are lacking. The burden must be put back on providers and researchers to find a way to disseminate information in an easy and accurate way to Black and African American communities.

Summary of the literature

The World Health Organization states that there are vaccines to prevent over twenty diseases and prevent millions of deaths per year from those conditions (World Health Organization, 2021). COVID-19 is a respiratory illness caused by the b-coronavirus severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Today, the COVID-19 vaccine is the newest and latest addition to that list. In order to reduce the transmission and hospitalization rates due to COVID-19, a vaccine was produced and expedited at a rapid rate. Many people are enthusiastic about taking the vaccine; however, there is a large amount of people that are either hesitant or refuse to take the vaccine.

Eitze et. al (2021) used the Knowledge Hypothesis in a longitudinal randomized control trial to assess whether increased health knowledge would lead to the decrease in vaccine hesitancy. They hypothesized that if an individual is exposed to information (contained in pamphlets/leaflets), the individual should have greater knowledge after the exposure. They argue that vaccination hesitancy has many factors that vary from individual to individual. Using the 5c model for health theories, they were able to interpret it for vaccine hesitancy. The 5c's are complacency, confidence, convenience or constraints, collective responsibility, and calculation. To expand, influential factors include perceived lack of risk, perceived barriers, lack of trust in its effectiveness and safety, herd immunity considerations, and weighing the pros and cons of vaccination. (Eitze, Heinemeier, Schmid-Kupke, & Betsch, 2021)

Fisher et. al (2020) did a survey of U.S. adults to assess their attitudes regarding receiving a potential vaccine for COVID-19. While the vaccine has already rolled out and has been administered to millions, this study was completed before this roll-out. The importance of this

assessment is to use an accurate sample of the population to identify predictors and factors for vaccine hesitancy. The study design was a cross-sectional survey of approximately 1,000 adults in the U.S. The results showed that 56.7% of participants would take the vaccine, 31.6% were not sure, and 10.8% do not intend to take the vaccine. Participants that responded with “no” or “not sure” were independently associated with vaccine hesitancy. These participants were of lower educational status, Black race, younger age, and did not take the influenza vaccine in the previous year. On further assessment, their vaccine concerns included lack of trust and information about the vaccine, and antivaccine attitudes. They concluded that in order to increase COVID-19 vaccine acceptance, efforts need to be multipronged and highly targeted. (Fisher, Bloomstone, & Walder, 2020)

Shen and Dubey (2019) addressed vaccine hesitancy by creating clinical guidance for primary care physicians that interact with vaccine hesitant parents. They acknowledge that addressing vaccine hesitancy needs to start early and needs to be built on trust and honesty regarding safety and side effects. By providing common statements that physicians can use to discuss vaccine-related conversations, it will increase provider confidence in discussing this matter with their patients. It is important that patients receive vaccine information from their healthcare provider because concerns surrounding vaccines are increasing. Currently, in Canada, over one-third of providers report not feeling confident or comfortable discussing vaccine counseling. However, the amount of “vaccine-refusers” – those that will never accept a vaccine under most circumstances – outweighs the number of vaccine-hesitant people, which makes this group (vaccine hesitant) a more favorable target to address. The authors state that providing facts and numbers is not enough. Rather, it is more important to focus on building trust and adopting vaccinations as a default approach. The authors gave many examples of statements, questions,

and answers to expect during vaccine counselling. One example is to use a presumptive approach – explain what vaccines are to be expected for the visit, rather than asking them what they would like to do regarding the shots today. The limitations addressed include the fact that vaccine hesitancy is a fairly new research topic with limited studies. Most of the study designs are qualitative in nature and in the future, more high-quality quantitative studies need to be considered. (Shen & Dubey, 2019)

PICO Clinical Question

Does providing vaccine education to healthcare providers reduce COVID-19 vaccine hesitancy in the Black population?

P: Black men and women adults that are eligible to receive the COVID-19 vaccine

I: Pre-test/Post-test on knowledge assessment for healthcare providers (MD, DO, NP, PA, RN) on vaccine mechanism, side effects, and safety profiles.

C: HCPs that will not participate in the training.

O: Healthcare providers will participate in an educational session for vaccines and how Black people respond to vaccines. Information gained will be applied to selective participants and the HCPs will perform a post-test to detect increased knowledge, communication skills, and confidence.

Definition of Terms

For the purpose of clarification, the following terms have been defined in context to the research to better understand the study.

Vaccine hesitancy: The reluctance or refusal of taking a vaccine for individual, societal, or environmental reasons

Vaccine: Any immunization that prevents or reduces the risk of contracting disease.

Black people/population: Individuals of Black African descent. Ex: African American, Caribbean, Haitian, etc.

Healthcare worker/provider: Any person licensed as a medical doctor, nurse practitioner, or physician assistant. Also, any person employed to provide diagnostic services, preventative care, treatments, and any other services related to direct patient care.

Conceptual Underpinning and Theoretical Framework of the Project

The primary theoretical framework and conceptual underpinning for this project will be based on the Health Belief Model (HBM). The origins of this model are from 1950 by a few social psychologists working at the U.S. Public Health Service (Glanz, Rimer, & Viswanath, 2008).

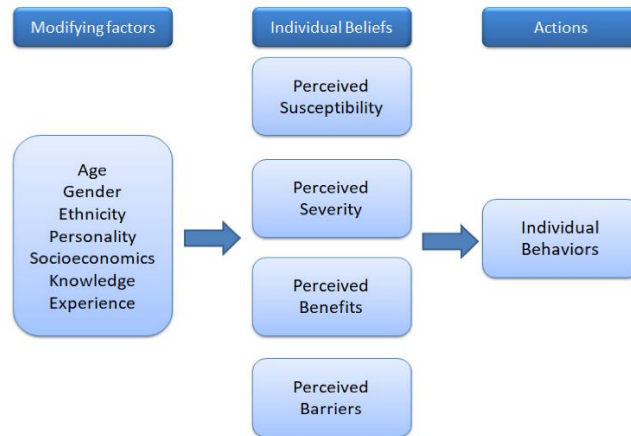
The social psychologists working on this theoretical framework are named Rosenstock, Hochbaum, and others (Glanz, Rimer, & Viswanath, 2008). This model was produced to explain the failures of individuals who participated in disease prevention and detection programs.

Through time, the HBM was evolved into addressing a vast range of public health concerns in

diverse health behaviors and populations. The HBM has several constructs to predict why certain individuals participate in disease prevention, screening, and health condition control (LaMorte, 2019). The six constructs of the HBM are (LaMorte, 2019):

- Perceived Susceptibility – an individual’s feelings/perception of contracting an illness/disease
- Perceived Severity – belief of the seriousness of getting a disease and the severity of its consequences
- Perceived Benefits – confidence in the positive impacts of the health behavior
- Perceived Barriers – belief of certain obstacles to engaging in the health behavior
- Cues to Action – factors that stimulate the action
- Self-Efficacy – an individual’s level of confidence in performing the behavior

Figure 1. Health Belief Model



(Ban & Kim, 2020)

The Health Belief Model (HBM) is an optimal theoretical framework for this project concerning vaccinations. This is because vaccines and immunizations are primary preventative measures to prevent and reduce disease transmission. Many vaccines are mandatory for entrance into school, work, and foreign countries. However, there are many vaccines that are optional, but are just as important at reducing mortality. Vaccines for COVID-19, at this time, are optional. However, the risk of death and/or complications for this coronavirus is very high. An individual may weigh the pros and cons on whether or not to take the vaccine. When considering this preventative behavior, one considers their perceived susceptibility of contracting COVID based on their levels of risky behaviors and exposures to other individuals. Young individuals may perceive the severity of the disease to be low, thus considering their need for a vaccine low. Perceived benefits align with whether or not an individual has assessed their risk for contracting COVID to be low. Certain communities may have higher perceived barriers to access the vaccine making it an intervention not worth the effort.

Methodology

This DNP project will be a quality improvement project based on a quantitative study design.

- I. Study design: Quantitative – pre-test/ post-test
- II. Setting: American Care Medical Center, Liberty City
- III. Sample: The individuals being studied will be anyone employed at the clinic who provides direct patient care (MD/DO, PA, APRN, RN, medical assistants). Sample size will be determined once individuals are recruited. Inclusion criteria is anyone employed as a health care worker who provides patient care and education. Exclusion criteria would be anyone employed to provide only administrative services.
- IV. Intervention: The intervention has been stated within the PICO question. This study will use an educational intervention to examine and assess the stated PICO question. Materials used for the educational intervention will be a voiceover/video PowerPoint presentation. The presentation will be clear and concise, while expanding on previously attained knowledge. The educational PowerPoint intervention will be administered once during the project. Participants will have access to the intervention once they have demonstrated completion of the pretest survey. It is expected to take the participant approximately 15-20 minutes to complete the presentation and they will have a window of four weeks to access the intervention. Subsequently, once the participant has completed both the pretest and the intervention, they will be directed to complete the posttest survey/questionnaire. The DNP student will be the one to administer the intervention and will be supervised by the project mentor and clinical faculty.

- V. Measures/Instruments: The format of the study design is a pretest-posttest with an educational intervention. The pretest and posttest will be a survey/questionnaire, and both will be identical. The survey will be available by both paper and electronic format – whichever is most convenient for the participant. The questions will be given in multiple styles, such as true/false and multiple choice. The results of the pretest and posttest are not meant to degrade or demean the participant. Rather, it is to highlight gaps in knowledge, weaknesses, and points of review. The survey/questionnaire will be developed using the Qualtrics online survey tool that can maintain anonymity and accuracy of results. The intention for the majority of the questions to be included in the survey will require a response of confidence gained or lost due to the use of the educational material. The format of the educational intervention will be presented using the technology of PowerPoint. It will be distributed via email as a self-led, pre-recorded presentation.
- VI. Data Collection Procedures: Participants will be recruited with a combination of telephone, email, and online methods. Recruitment will be assisted by the project mentor at the facility. The way data will be collected is determined by the manner in which the participant chooses to complete their survey. Participants are strongly encouraged to use the Qualtrics online survey tool to complete their questionnaire. Therefore, data will be collected using the integrated tools within the online service platform. Should the participant choose to complete their questionnaire via paper form, data will be collected with the assistance of the Clinical Project Mentor.
- VII. Data Analysis: Data will be analyzed with the assistance of Qualtrics online survey tool. Qualtrics has the ability to automatically analyze data and produce various reports

tailored to certain needs. If further analysis is needed, data will be extracted from Qualtrics and imported into SPSS or Excel. Any exported data will remain depersonalized without private protected information. Access to the data will be kept to a minimum and coordinated with the project mentor and clinical faculty.

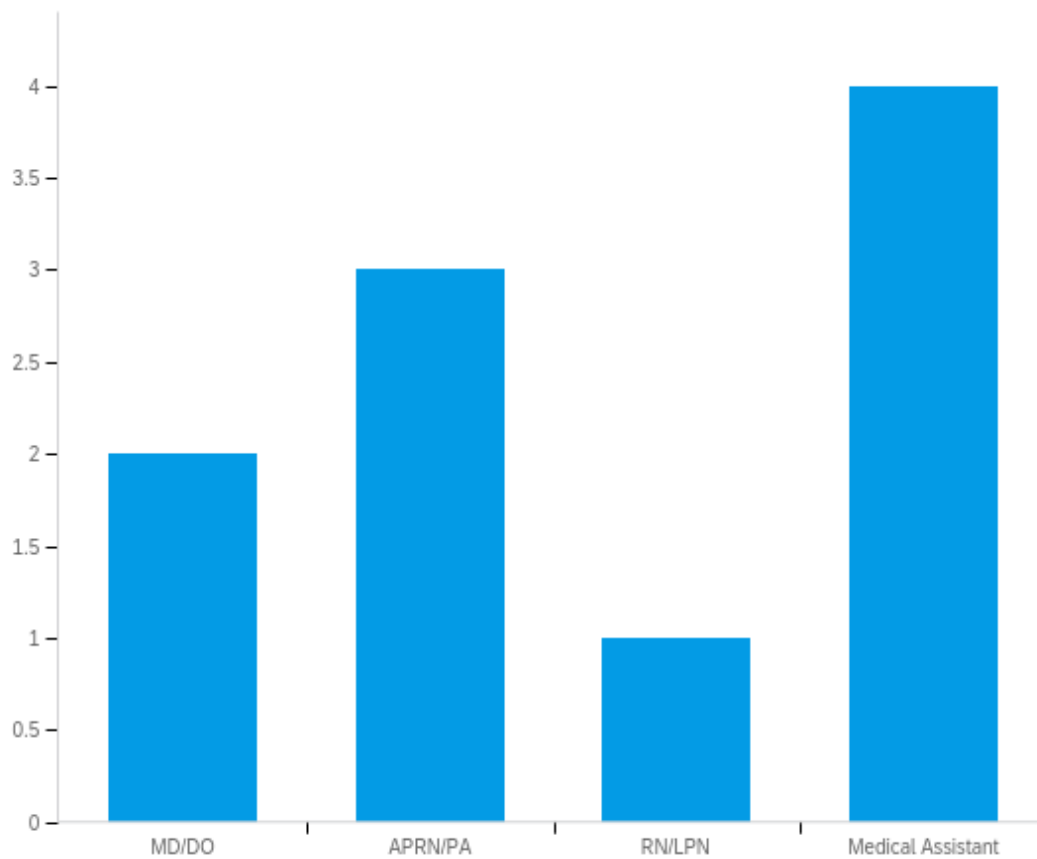
- VIII. Protection of Human Subjects: To maintain confidentiality and privacy, the project will be subject to IRB review. Informed consent will be retrieved from each participant. HIPPA compliance will be maintained where needed, if necessary. All data will be collected anonymously. No identifiable private information will be collected as part of the pre-test and post-test surveys. Only the investigators will have access to the pre-test and post-test surveys. Data collected from the pre-test and post-test surveys will be tabulated anonymously to electronic spreadsheets, which will be maintained on a password protected laptop computer. The risk of participation is low, and all participants are not obligated to continue with the project at any point. Benefits to participating in the project include being able to add to the established body of knowledge, make the corresponding community healthier, and improve the patient-provider relationship.

Results

Demographics

Among 11 eligible healthcare providers/workers, 11 individuals (100%) completed the survey. After excluding 1 individual due to bias and conflict of interest, the sample included 10 healthcare providers/workers. Among the individuals who provided demographic information on sex, 6 (60%) were women and 4 (40%) were men. The majority of respondents (60%) listed their

age bracket as 40-49 years, followed by both age brackets 20-29 and 50+ with 20% each (n=2 each). With respect to clinical position, 4 (40%) individuals identified as medical assistants (MA), 3 (30%) as either nurse practitioner or physician assistant, 2 (20%) as medical doctors (MD/DO) (20%), and 1 as a registered nurse or licensed practical nurse (10%). The participants at this clinic provided demographic information on their ethnic identity. They were given eight categories to select from, including “other”, and they all identified within 3 distinct ethnic identities. Black or African American was selected by 40% (n=4) of participants, Hispanic was selected by 40% (n=4) of participants, followed by 20% (n=2) of individuals selected white/Caucasian.

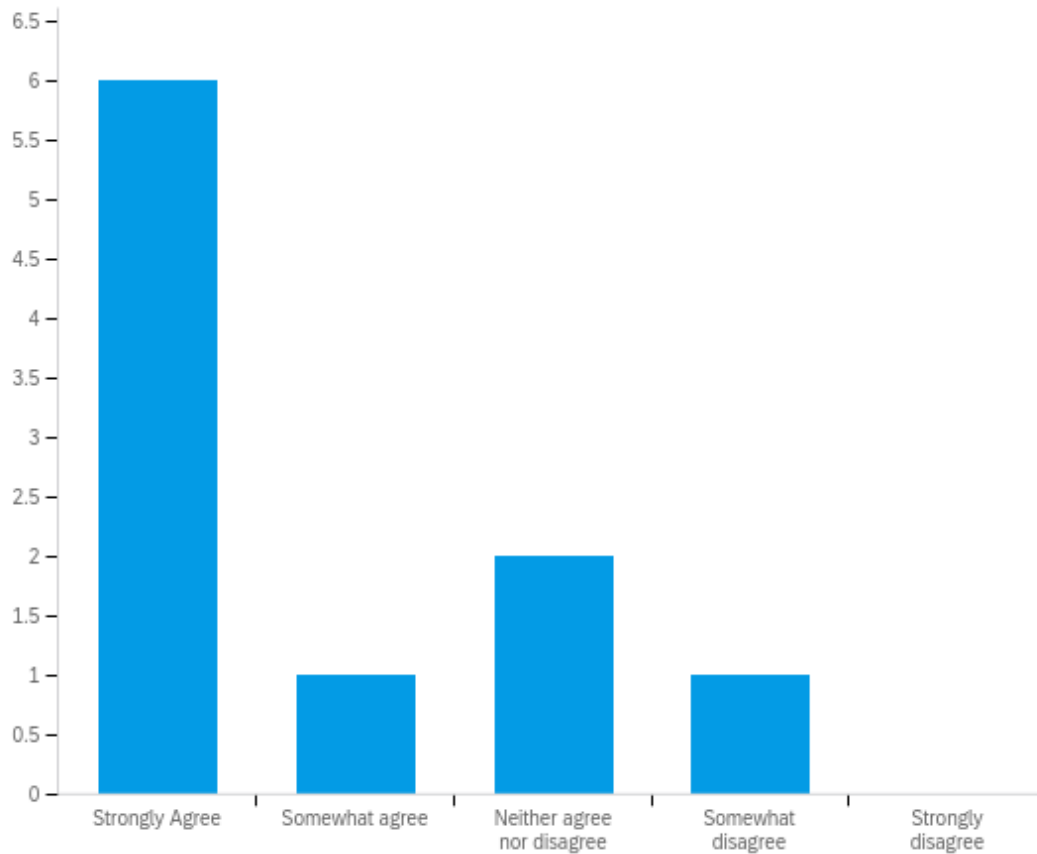


Prior History and Experience

To assess the prior history, experience, and comfort level of each participant when discussing vaccines and vaccine hesitancy, the Likert scale question format was utilized. A Likert scale is a question format that measures an individual's attitudes directly – the participant knows that their attitude is being analyzed. Completed with a five-point scale, the participants were asked to express how much they agree or disagree with the statements presented to them in the survey. The options available to them were strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and strongly agree. When asked about familiarity with COVID-19 and COVID-19 vaccines, 90% (n= 9 and n=10, respectively) either strongly, agreed, somewhat agreed, or neither agreed nor disagreed. None of the participants disagreed in this line of questioning. The majority of participants, 80% (n=8), agree that they are confident in their ability to discuss COVID-19 with their patients during the pretest. After the intervention, there was a 20% increase to 100% of participants that feel confident in their abilities. As it relates to clinical position, 100% of doctors and 100% of the nurse practitioners and physician assistants strongly agree that they are confident to discuss COVID-19 with their patients. The same number of individuals, 80% (n=8) believe that they have the necessary skills to effectively communicate and discuss COVID-19 vaccines with their patients. Only 10% (n=1) disagreed that they have these necessary skills. In this instance, 100% of both doctors, nurse practitioners, and physician assistants strongly agree in their skills to effectively communicate. Nurses (RN/LPN) positioned themselves at 100% that somewhat agree in their necessary skills. The medical assistants had varying responses: 50% strongly agree, 25% neither agree nor disagree, and 25% somewhat disagree that they hold the necessary skills to effectively communicate with their patients. When asked how comfortable they felt explaining COVID-19 vaccines with patients that refuse to take

the vaccines, 60% (n=6) strongly agree, 10% (n=1) somewhat agree, 20% (n=2) neither agree nor disagree, 10% (n=1) somewhat disagree, and no one selected strongly disagree. Of those that responded, 100% (n=3) of nurse practitioners and physician assistants strongly agree that they are confident in communicating to patients that refuse vaccines. The doctors (MD/DO) and medical assistants both strongly agree at 50% each. Nurses somewhat agree at 100%. Finally, 25% of medical assistants neither agree nor disagree and 25% somewhat disagree that they are comfortable explaining COVID-19 vaccines with patients that refuse vaccines.

I am comfortable explaining COVID-19 vaccines with patients that refuse to take the vaccines



Assessment of Clinical Knowledge

Clinical knowledge of the healthcare workers during the survey/questionnaire targeted a wide range of topics related to COVID-19, COVID-19 vaccines, and healthcare disparities among the Black population. When questioned if Black patients have higher mortality rates from COVID-19 than White or Asian patients, APRNs answered “true” (correct answer) at 100% for both the pretest and posttest. Doctors improved their answer by 25%, and medical assistants showed no improvement by answering “true” at only 25% and “false” 75%. Participants were asked about the basic, best practices for reducing the spread of COVID-19 with hand soaps and alternative methods. Handwashing is the preferred method for removing COVID-19 viral particles over alcohol-based hand sanitizer and it is also recommended to use a 60% alcohol-based sanitizer. When asked if this was “true or false” and if using a 60% alcohol-based sanitizer is best practice, 100% of participants responded “true” (correct answer) in both the pretest and the posttest. Three COVID-19 vaccines in the U.S. have received Emergency Use Authorization (EUA) (Pfizer, Moderna, and Janssen). Participants responded at 100% in both the pretest and posttest that the AstraZeneca vaccine did not receive EUA in the U.S. When asked whether the COVID-19 vaccines are approved by the FDA, 80% of participants in the pretest stated “yes” compared to 85% of participants stating “yes” in the posttest – there was a 5% increase in correct responses. Some pre-existing medical conditions increase mortality rates from COVID-19. Participants were asked which one of four conditions did not increase mortality rates: heart or lung conditions, weakened immune system, severe obesity, or vertigo. In the pretest, 80% of participants answered correctly that vertigo did *not* increase mortality rate – 25% of medical assistants selected heart or lung conditions and severe obesity. In the posttest, medical assistants made a 25% improvement in responding correctly. All others responded the same and correctly.

Communication Techniques

A significant aspect of this project was to determine if healthcare providers/workers have the skills to effectively communicate and educate their patients on COVID-19 vaccines thereby increasing the uptake and acceptance of vaccines. Open-ended communication is the best technique when having discussions with patients. When the participants were asked if this was the best option among others, 90% of respondents answered correctly in the pretest and 57.1% of respondents answered correctly in the posttest. Passive listening is considered an ineffective communication technique. When asked, among other options, if this is the least effective tool, 40% of respondents answered correctly in the pretest, and 42.9% answered correctly in the posttest – a 2.9% improvement. The ability for a medical provider to persuade or encourage a hesitant patient to accept a vaccine takes skill. When asked what the best way is to do this 100% of participants answered correctly in the pretest by selecting “give your strong recommendation for taking the vaccine”. In the posttest, 85.7% of participants answered correctly – a 14.3% decrease. When a patient refuses a vaccine, participants were asked what the best way would be to respond to the patient. The correct answer is to “acknowledge that it is their decision”. The correct answer was chosen by 100% of the participants in both the pretest and posttest.

Cultural Sensitivity

Cultural sensitivity is the foundation to understanding and treating patients across all ethnicities, races, genders, religions, and identities. This portion of the survey compared how knowledgeable each clinical position is when dealing with cultural sensitivity. When asked

which barriers make it more challenging for individuals living in historically Black communities to attend COVID-19 vaccine appointments, the correct answer was “transportation to clinic sites”. The doctors consistently scored correctly at 100% in both the pretest and the posttest. Nurses scored at 100% in the pretest, but then fell to 50% in the posttest. Nurse practitioners improved from 33.3% to 50% and medical assistants showed a 25% decrease from the pretest to the posttest. Medical mistrust is a reoccurring theme in the Black community. When asked *which historic example has contributed to this*, the correct answer was the Tuskegee Syphilis Study. All clinical positions improved their score on this question when the pretest and posttest were compared. Nurse practitioners scored 100% consistently. Doctors, nurses, and medical assistants improved by 5.6%, 50%, and 25% respectively.

Discussion

As defined by the World Health Organization, vaccine hesitancy is *the reluctance or refusal to vaccinate despite the availability of vaccines* (Akbar, 2021). It is a global health threat that can reverse the progress science and medicine has made in eliminating vaccine-preventable diseases. With people now refusing vaccines altogether, or delaying their acceptance, some previously eliminated diseases have seen a reemergence. Globally, measles, which is one of the most contagious diseases has seen a 30% increase (Akbar, 2021) (Centers for Disease Control and Prevention, 2019). Reasons for vaccine hesitancy and outbreaks are complex, but the data shows that in the year 2019, the CDC reported 1,282 measles cases in the U.S (Centers for Disease Control and Prevention, 2019). The reason for the outbreak was due to travelers going abroad

and bring measles back to their community and causing further spread in pockets of communities with high rates of unvaccinated individuals (Centers for Disease Control and Prevention, 2019).

Patients have cited their healthcare providers, pharmacists, and local hospitals as the most credible source of information. However, the literature, and in particular a study in Canada, showed that 63% of patients use the Internet as a source of information – mainly Google (Shen & Dubey, 2019). This is a reasonably growing concern due to the increase in the intentional spread of misinformation online, and a growing number of “antivax” websites that inaccurately propagate a range of disinformation (Shen & Dubey, 2019). This study highlighted the need for healthcare providers and healthcare workers to be at the frontline of refuting disinformation and misinformation. The survey revealed that all the healthcare workers have strong confidence in their abilities to educate their patients on vaccine acceptance. It also revealed that most of the healthcare workers have the necessary skills, knowledge, and training to effectively communicate their strong recommendation to accepting COVID-19 vaccines. The importance of this revelation is that we can see that medical professionals are well-poised to stand in the gap of vaccine hesitancy and take the lead on increasing vaccine acceptance rates.

Nurse practitioners are great patient educators because their background is in nursing, which is more than just identifying a problem and creating a solution. Nursing is an intricate collaboration between patients, families, and other entities to create a patient-centered focus (Judge-Ellis & Wilson, 2017). Studies have shown that physicians and nurse practitioners spend the same amount of time with their patients, yet NPs have higher patient satisfaction scores (Judge-Ellis & Wilson, 2017). The nurse practitioner focus and philosophy is embedded in disease prevention, health promotion, and health education and counseling (Judge-Ellis & Wilson, 2017). This in turn empowers patients to make well-informed decisions affecting their

health. In this study, nurse practitioners were the most consistent in answering the questions correctly when comparing the pretest and posttest. They also had the best scores in the pretest before being given any educational material. This could be attributed to a few reasons: NPs may be more exposed to COVID-19 information, they may treat more COVID-19 patients, or they tend to focus more on education and counseling than others. The list of reasoning is long, and the true source of the matter may be different for everyone, but APRNs demonstrated a high level of knowledge in this study.

Limitations

Early in the discovery process of this study, a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) was completed to assess for potential issues or concerns that may arise during the study design. The weaknesses and threats were considered greatly and used to optimize the study design in a way that aligned best with the projected goals and outcomes. The sample size of the study participant pool was small. With only 10 individuals surveyed, there may be a limited generalizability of the results. The family/primary care clinic selected is one clinical site out of many that belong to the same organization. The demographics and culture of the clinic can create a bias in the results when compared to other clinics that have a different set of demographics and cultural makeup.

Participants were all made aware of the risks and benefits of participating in this study. Benefits included adding knowledge and information to literature and research. There was no monetary incentive. Because of this, one can only assume that the participants completed this study for the greater good. Individuals are motivated by different incentives, and any participant

that may be motivated by a monetary or gift incentive may have performed differently compared to what the results displayed. Furthermore, convenience sampling was used to collect the pool of participants. It creates a challenge when identifying any differences between respondents and nonrespondents. The measures to reduce any bias that convenience sampling may create were not taken – the survey was not repeated, there was no cross-validation, and multiple samples were not taken.

Additionally, the study was limited to the age of the data and ongoing findings. SARS-CoV-2 (COVID-19) is a novel disease that continues to be studied. As the project was ongoing, new data and information emerged. For example, participants were asked “*are COVID-19 vaccines approved by the FDA?*”. At the time that the intervention was produced, the COVID-19 vaccines were not approved by the FDA. However, as data collection and the approval process continued within the FDA, the vaccines did become approved while the participants had access to this information. Data was skewed for this answer based on when the participant took the questionnaire. Those that completed the intervention early may have a different response than those that completed it later.

Implications for Advanced Practice Nursing

The COVID-19 pandemic has brought about many practice changes for APRNs in both primary care and hospital-based care. With hospitals reaching full capacity, many primary care-based APRNs are seeing higher acuity patients in the outpatient setting. With the current physician shortage, APRNs are vital in bridging the gap to care. In the face of this crisis, some

states have enacted emergency action along with the Centers for Medicare and Medicaid Services (CMS) to allow APRNs to practice with more flexibility and less physician supervision (Diez-Sampedro, et al., 2020). Nurse practitioners must be ready to treat sicker patients and have increased responsibility.

The global COVID-19 pandemic of 2019 exposed many weaknesses in the U.S. healthcare system. It exposed the severe shortages of providers and highlighted the importance of APRN role. While the federal and state emergency orders that allowed some APRNs to practice to the fullest extent of their practice, it is only temporary. This makes it a great opportunity for nurse practitioners to emphasize their role in healthcare. This includes their ability to maximize access to care in urban and rural areas, manage acute and chronic patients, and create a sustainable healthcare system. (Stucky, Brown, & Stucky, 2021)

As of September 2021, there are 184,432 nurse practitioners employed in the United States (Zippia, 2021). The majority of APRNs, 81.4%, identify as White, 6.7% Asian, 4.6% Hispanic or Latino, and 5.2% identify as Black or African American (Zippia, 2021). With an abundance of workplace options and locations, Black APRNs are more likely to serve in minority, underserved, and underinsured communities. Minority communities are more likely to suffer healthcare disparities and poor patient outcomes, which makes the role of APRNs in these communities very important.

Vaccine hesitancy within the Black population is an issue that is both multifactorial and problematic to public health. There must be a distinction made between those hesitant based on personal beliefs versus those hesitant based on contributing outside factors. An understanding of

those outside influential factors is important for those in advanced practice nursing to be able to engage this community in effective conversations. Health care providers that practice in predominantly Black communities are poised to be of the greatest help. History has shown us that patients value the input of their healthcare provider greatly and it is important that they are able to effectively listen to valid questions and concerns that their patients have. Providers that are able to give strong recommendations, information, and education to their patients create higher vaccine acceptance rates (Bailey, 2020).

Vaccines have a high safety record and profile. However, patients still have questions and concerns regarding the implications for taking a vaccine versus refusing a vaccine. We know that doctors, nurses, and pharmacists are among some of the professionals that patients feel most comfortable receiving medical advice from. One of the key roles of nurses and APRNs is patient education – making them extremely poised to communicate basic questions, concerns, and implications of vaccines. Furthermore, for the past 18 consecutive years, nurses have been ranked number one in Gallop’s Most Honest and Ethical Professions Poll (Proctor & McClendon, 2020). Nurses and APRNs are a highly trusted profession with individuals and communities that maintain high ethical standards. Additionally, due to the strain the 2020 COVID pandemic has placed on healthcare workers, the year 2020 has been dedicated as the “Year of the Nurse” (Proctor & McClendon, 2020).

Individuals choose not to vaccinate for many reasons, but it is important that well-educated professionals, such nurse practitioners, are ready to dispel misconceptions and misunderstandings. One way for an APRN to persuade a patient to accept a vaccine is for that individual to keep up to date on their own vaccine records (Eastern Michigan University, 2020).

Being able to share a positive experience with a vaccine from a trusted professional can increase vaccine confidence in the patient (Eastern Michigan University, 2020). Nurse practitioners have access to reputable resources such as the CDC, NIH, and public health departments. Patients often forget that vaccines are not just a childhood concern – they are necessary in adulthood as well. Adult vaccines include annual vaccines (e.g., influenza) and booster vaccines (e.g., tetanus). Nurses and nurse practitioners can assist in raising awareness and setting up future appointments so that their patients do not miss important vaccines (Eastern Michigan University, 2020).

Conclusions

In 2021, the World Health Organization described immunizations as the most effective and economic tool to prevent infectious and communicable disease (World Health Organization, 2021). New and emerging vaccines for COVID-19 are the best tool in our healthcare toolkit to combat the 2019 COVID pandemic. Individuals that identify as Black in America have been one of the hardest hit populations when affected by the pandemic. The aim of this study was to see if healthcare providers and workers had the knowledge and confidence to communicate effectively with their Black patients in relation to COVID-19 vaccines and vaccine hesitancy. Overall, there was an 11% increase in scores between the pretest and posttest when participants were exposed to the educational intervention. The study found that 80% and 20% strongly agree and somewhat agree, respectively, that they are confident in their ability to discuss COVID-19 with their patients. Nearly 80% and 10% of respondents strongly agree and strongly disagree, respectively, in their belief that they have the necessary skills to effectively communicate and discuss COVID-

19 vaccines with their patients. The results reinforce the established literature that healthcare providers and workers, especially APRNs, are the most trusted individuals to educate reluctant patients and convert vaccine hesitant individuals into accepting the COVID-19 vaccines.

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Appendix A**IRB Approval Letter****MEMORANDUM****To:** Dr. Dana Sherman**CC:** Effie Simoyi**From:** Maria Melendez-Vargas, MIBA, IRB Coordinator
24, 2021**Date:** August**Protocol Title:** “Improving healthcare provider COVID-19 vaccine hesitancy knowledge in Black patients: A quality improvement project”

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

IRB Protocol Exemption #: IRB-21-0373 **IRB Exemption Date:** 08/24/21 **TOPAZ**
Reference #: 110675

As a requirement of IRB Exemption, you are required to:

- 1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
- 2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
- 3) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

Special Conditions: N/A

For further information, you may visit the IRB website at

<http://research.fiu.edu/irb>. MMV/em

Appendix B**Letter of Support**

Dear Dr. Sherman,

Thank you for inviting American Care Medical Center to participate in the DNP project of Effie Simoyi. It is understood that Effie Simoyi will be conducting this quality improvement project as part of the requirement for the Doctor and Nursing practice program at Florida International University. After reviewing the proposal of the project titled “ Improving Healthcare Provider COVID-19 Vaccine Hesitancy Knowledge in Black patients.”

We believe this project will educate our health care providers the knowledge on COVID-19 vaccine hesitancy within our Africa American community at American Care Medical Center. I support the participation of American Medical Care Center health-care providers in this project and look forward to working collaboration with Florida International University.

Sincerely,

A handwritten signature in black ink that reads "Whitney Baron".

Whitney Baron
Center Manager

Appendix C

Informational Letter



INFORMATIONAL LETTER

Improving Healthcare Provider COVID-19 Vaccine Hesitancy Knowledge in Black Patients: A Quality Improvement Project

Hello, my name is Effie N. Simoyi ARNP, MSN, DNP student. You have been chosen at random to be in a research study about improving healthcare provider knowledge of COVID-19 vaccine hesitancy in the Black patient population. The purpose of the study is to establish whether educating healthcare providers on COVID-19 vaccine hesitancy will increase the uptake of COVID-19 vaccines in the Black patient population. If you decide to be in this study, you will be one of a number of people in this research study. Participation in this study will take four weeks of your time. If you agree to be in the study, I will ask you to do the following things:

1. The healthcare provider's knowledge will be assessed with a pre-test using the Qualtrics online platform. Qualtrics is a data company that is used to design, send, and analyze surveys. The survey questions will be uploaded into Qualtrics.
2. An educational video will be presented to the participant to view and follow along. The video presentation will be provided to the participant using their email address.
3. The participant will be asked to complete a post-test using the same Qualtrics online platform to assess whether there has been a gain of knowledge. All survey responses will be submitted back to the researcher.

There are no foreseeable risks or benefits to you for participating in this study. It is expected that this study will benefit society by providing healthcare providers the necessary skills and education to have meaningful discussions with their Black patients regarding accepting COVID-19 vaccinations. It is also expected to assist in minimizing the risks and mortality associated with Black patients contracting COVID-19.

There is no cost or payment to you, and you will remain anonymous.

If you have questions for one of the researchers conducting this study, you may contact the primary investigator Dana Sherman, DNP, ARNP, ANP-BC at (305) 348-2247, FNP-BC or Effie N. Simoyi ARNP, MSN, DNP student at (718) 290-5004.

If you would like to talk with someone about your rights of being a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu or by mail at 11200 SW 8th Street, AH3-522, Miami, Florida 33199.

Your participation in this research is voluntary, and you will not be penalized or lose benefits if you refuse to participate or decide to stop. You may keep a copy of this form for your records. However, all clinical issues or questions should continue to be directed to your treating physician. If you are ready to participate, please click on the link provided (link for Qualtrics questionnaire). Thank you.

Sincerely,

Effie N. Simoyi

Appendix D

Recruitment Letter



RECRUITMENT LETTER

Improving Healthcare Provider COVID-19 Vaccine Hesitancy Knowledge in Black Patients: A Quality Improvement Project

Dear Healthcare Professional,

My name is Effie Simoyi and I am a doctoral student from the Graduate Nursing Department at Florida International University. I am writing to invite you to participate in my quality improvement project. The goal of this project is to improve healthcare provider knowledge on COVID-19 vaccine hesitancy in the Black patient population. You are eligible to take part in this project because you are a healthcare worker at American Care Medical Center, and you may provide COVID vaccine counseling to Black patients. I am contacting you with the permission of your Office Manager.

If you decide to participate in this project, you will be asked to complete a short series of tasks. You will be asked to complete a pre-test questionnaire, which is expected to take approximately 10 minutes. Then, you will be asked to view an approximately 15-20 minute long educational presentation online. After watching the video, you will be asked to complete the post-test questionnaire, which is expected to take approximately 10 minutes. No compensation will be provided.

Remember, this is completely voluntary, you can choose to be in the study or not. Also, if you do choose to participate, you can remove yourself from the study at any time. If you would like to participate, please click on the link provided (link for Qualtrics questionnaire).

If you have questions for one of the researchers conducting this study, you may contact the primary investigator Dana Sherman, DNP, ARNP, ANP-BC at (305) 348-2247, FNP-BC or Effie N. Simoyi ARNP, MSN, DNP student at (718) 290-5004.

If you would like to talk with someone about your rights of being a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu or by mail at 11200 SW 8th Street, AH3-522, Miami, Florida 33199.

Thank you very much.

Sincerely,

Effie N. Simoyi, APRN, FNP-BC, DNP Student

Appendix E

Data Collection Tool: Survey & Questionnaire

PRETEST-POSTTEST

“Improving Healthcare Provider COVID-19 Vaccine Hesitancy Knowledge in Black Patients: A quality Improvement Project”

Introduction:

This questionnaire is an essential part of a quality improvement project aiming to increase healthcare provider knowledge of COVID-19 vaccine hesitancy in the Black patient population.

Please answer to the best of your knowledge. Your response will help to understand gaps in knowledge and room for improvement. The questions are structured to assess your understanding of COVID-19, vaccine hesitancy, and cultural competency.

- *Please do not write your name or other personal information on this questionnaire*
- *Your answers are anonymous and will be kept confidential*
- *Your participation is voluntary and will not have any bearing on your position*

Demographic:

Gender: Female _____ Male _____ Other _____ Wish not to disclose _____

Age: 20-30 yrs. _____ 30-40 yrs. _____ 40-50 yrs. _____ >50 yrs. _____

Clinical Position: MD/DO _____ APRN/PA _____ RN _____ Medical Assistant _____

Ethnicity: White _____ Black _____ Hispanic _____ Asian _____ Other _____

Questionnaire:

1. Have you received any training on COVID-19 vaccine hesitancy in any form?

_____ Yes

_____ No

2. Do you have discussions about COVID-19 vaccines with your patients?

_____ Yes

_____ No

3. Have you ever had any training on culturally competent care?

_____Yes

_____No

4. Please respond to the following statements:

Statement	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I am familiar with COVID-19					
I am familiar with COVID-19 vaccines					
I am confident in my ability to discuss COVID-19 with my patients					
I have the necessary skills to effectively communicate and discuss COVID-19 vaccines with my patients					
I am comfortable explaining COVID-19 vaccines with patients that refuse to take the vaccines					

Assessment of Clinical Knowledge

True or False

5. Black patients have higher mortality rates from COVID-19 than White or Asian patients.

_____True

_____False

6. COVID-19 cannot be spread if an infected person is asymptomatic.

_____ True

_____ False

7. Handwashing is the preferred method for removing COVID-19 bacteria over alcohol-based hand sanitizer.

_____ True

_____ False

8. The Janssen COVID-19 vaccine has a higher percentage of efficacy than the Moderna and Pfizer COVID-19 vaccines.

_____ True

_____ False

9. COVID-19 is spread in all of the following ways except:

- a. Close person to person contact
- b. Respiratory droplets
- c. Feces
- d. Contaminated surfaces

10. If soap and water is unavailable for handwashing, what is the next best alternative?

- a. Water alone
- b. >60% alcohol based sanitizer
- c. Detergent
- d. >50% alcohol based sanitizer

11. Are the COVID-19 vaccines approved by the FDA?

_____ Yes

_____ No

12. Which COVID-19 vaccines have not received Emergency Use Authorization?

- a. AstraZeneca COVID-19 Vaccine
- b. Pfizer-BioNTech COVID-19 Vaccine
- c. Moderna COVID-19 Vaccine
- d. Janssen COVID-19 Vaccine

13. All of these conditions increase COVID-19 mortality except:

- a. Heart or lung conditions
- b. Weakened immune system
- c. Severe obesity
- d. Vertigo

Communication Techniques

14. Which communication technique is most effective when speaking with patients?
 - a) Closed loop
 - b) Open-ended
 - c) Accusatory
 - d) Call-out

15. All of these are acceptable communication techniques except:
 - a) Active listening
 - b) Do not make assumptions
 - c) Passive listening
 - d) Seek to understand one's point of view

16. It is best to respond to your patient's questions and concerns with which attitudes?
 - a) Non-judgmental
 - b) Empathetic
 - c) Respectful
 - d) All of the above

17. Which of these is an appropriate way to persuade your patient to accept a vaccine?
 - a. Tell your patient they will die if they do not take the vaccine
 - b. Give your strong recommendation for taking the vaccine
 - c. Give false reassurance
 - d. Tell your patient they have no choice but to take the vaccine

18. During the patient visit, what should you do if the patient refuses the vaccine?
 - a. Close the door to the conversation
 - b. Do not bring up the topic again
 - c. Acknowledge that it is their decision
 - d. Schedule their appointment for vaccine administration

Cultural Sensitivity

19. Which barriers make it more challenging for individuals living in historically Black communities to attend COVID-19 vaccine appointments?
 - a. Office hours
 - b. Transportation to clinic sites
 - c. Vaccine availability
 - d. Access to food

20. In Black patients, which comorbidities increase risk of death from COVID-19?

- a. Hypertension, cataracts, and eczema
 - b. Hyperlipidemia, asthma, and cataracts
 - c. Hypertension, asthma, and diabetes
 - d. Cataracts, vitiligo, and Asthma
21. There is a historical theme of medical mistrust in the Black community, which historic example has contributed to this?
- a. Tallahassee Medical Experiment
 - b. Tuskegee Syphilis Study
 - c. Alabama Institute of Health
 - d. Texas Social Experiment
22. A delay in acceptance or refusal of vaccination despite availability of vaccination services:
- a. Vaccine Hesitancy
 - b. Vaccine Refusal
 - c. Vaccine Reluctance
 - d. Vaccine Rejection