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Methods to Increase the Rate of Childhood Vaccinating

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This is to certify that the doctoral study by

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Abstract

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MSN, University of Memphis, 2012

BSN, Chamberlain College of Nursing, 2010

ASN, Jackson State Community College, 2004

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Vaccinations such as polio, diphtheria, varicella, and meningitis help to protect a child from life-threatening illnesses which have previously been contained by routine vaccinations. However, misinformation, negative press, and other contributing factors, have influenced caregivers to refuse to vaccinate their children placing the children at risk for contracting the disease. The Centers for Disease Control and Prevention recommends regular vaccinations for children beginning as newborns, yet the vaccination rate remains below acceptable levels. This project was developed to provide an educational program guided by Orem's self-care theory and intended to increase nurses' knowledge of vaccination and ultimately vaccination rates. A search of the literature was conducted to identify vaccination best practice recommendations, the rationale for them, and the methods for vaccinating children of all ages. The power point educational program was reviewed by an expert panel of 5 nurses who scored it using a content validity index with a perfect score of 1.0. A pretest was then administered, to the same 5 nurses participating in the project, the education program presented, and a posttest completed. Results indicated an increase in knowledge from the pretest scores ($M = 0.88$) to the posttest scores ($M = 100$). The results of this project may promote positive social change as nurses are knowledgeable of the need for vaccinations and can provide education to parents and caregivers of the children in the community.

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Section 1: Introduction to Project Study

Introduction

Vaccinations are known throughout the health care realm to be an important part of preventative health care. By receiving vaccinations on a regular schedule as recommended by the Centers for Disease Control (CDC), outbreaks of deadly diseases such as polio, diphtheria, whooping cough, measles, and many more can be prevented to protect the population at large (Kurup, He, Wang, X., Wang, W., & Shorey, 2017). Vaccinations are well-known to be relatively safe and are received effectively by many patients each day throughout the world. Research shows that vaccinations are across the board safe to receive and are known to protect against many dangerous illnesses (Kurup, Shorey, Wang, & He, 2017; Mus, Kreijkamp-Kaspers, McGuire, Deckx, & van Driel, 2017). Despite the many research studies that show the safety and effectiveness of vaccines, many people still refuse to receive them or to allow their children to receive vaccinations (Kurup, Shorey, Wang, & He, 2017; Mus, Kreijkamp-Kaspers, McGuire, Deckx, & van Driel, 2017). The population's refusal to receive preventative vaccines can lead to the infection and even death of the general population due to severe outbreaks or possible epidemics (Kurup, He, Wang, X., Wang, W., & Shorey, 2017). Therefore, it is important that caregivers' consent to have their children vaccinated. The purpose of this project will be to increase the rate of vaccination of children in one clinical practice setting by developing an educational program for caregivers and patients that can be administered by the staff nurses and providers. Section 1 of this project will address the problem statement, the purpose, the nature of the project, significance, and provide a summary.

Several negative assumptions about vaccinations have been proposed that create fear about the use of vaccinations or potential side effects (Kurup, He, Wang, X., Wang, W., & Shorey, 2017). Many caregivers have been quick to believe these claims although there is no research to support the position (see Kurup, He, Wang, X., Wang, W., & Shorey, 2017). These negative assumptions have played a large role in causing the steep decline in vaccinating and resulted in a major negative effect on the nation's health (see Kurup, He, Wang, X., Wang, W., & Shorey, 2017). Without regular and widely adopted use of vaccinations, the future health of the nation is at great risk (see Kurup, He, Wang, X., Wang, W., & Shorey, 2017). This lack of consistency with recommended vaccinations has created the gap in practice at the local clinical practice setting that this project will address.

Background

Vaccinations are considered an important part of preventative health services in pediatric medicine. The CDC makes recommendations about what vaccines are necessary for each patient, depending on age (Kurup, He, Wang, X., Wang, W., & Shorey, 2017). By receiving vaccinations for such illnesses as polio, diphtheria, whooping cough, measles, and many more, a deadly outbreak can be prevented which will protect the population at large (Kurup, He, Wang, X., Wang, W., & Shorey, 2017). Research shows that vaccinations are safe to receive and are known to protect against many dangerous illnesses (Mus et al., 2017). Despite the many research studies that show the safety and effectiveness of vaccines, many people still refuse to receive the recommended vaccinations (Mus et al,, 2017). This refusal of preventative vaccines can lead to infections and even death of the unvaccinated person.

Caregivers have many notable concerns regarding vaccinations including, first and foremost, safety. Safety concerns are primarily regarding the preservatives used to manufacture and store vaccines among others (Mus et al., 2017). They also express grave concern over possible side effects or allergies to the vaccinations that may not have been expressed before (Mus et al., 2017). Caregivers also have concerns about multiple vaccinations being given at one time, causing the immune system to become overloaded and produce unwanted reactions (Mus et al., 2017). Finally, other barriers exist that are beyond the scope of education such as religious beliefs, ethical considerations, ideological concerns, and an overall distrust of the medical establishment (Gesser-Edelsburg, Walter, Shir-Raz, Sassoni Bar-Lev, & Rosenblat, 2017).

Research shows that vaccines are a safe, effective way to help prevent the spread of dangerous diseases (Kaufman et al., 2017). Statistics produced from research studies show that in the past 60 years, vaccines have helped to eradicate one disease known as smallpox and are close to eradiating another which is polio (Murthy, Rodgers, Pabst, Fiebelkorn, & Ng, 2017). Vaccines are known to prevent more than 2.5 million deaths each year (Murthy et al., 2017). Scientific studies and evidence-based research reviews continue to show no relationship between vaccines and autism (Mus et al., 2017). Vaccines can cause *herd immunity* which means if most persons in a community have been vaccinated against a disease, an unvaccinated person is less likely to get sick and spread the disease (Mus et al., 2017). Research shows that most diseases prevented by vaccines are no longer common in the United States (Kaufman et al, 2017). If vaccines were not used, just a few cases could quickly turn into hundreds and even thousands of cases (Kaufman et al., 2017).

Problem Statement

The problem statement for this Doctor of Nursing practice (DNP) project is to address the decline in vaccination rates in one primary clinic setting by the development of an educational program for caregivers of patients due for recommended vaccinations. I will provide the program to the staff nurses and providers who will then be able to incorporate the education into the patient visits. It is hoped that this education, when provided to the staff nurses and providers, will promote positive discussion with caregivers and patients and increase the rate at which patients receive recommended vaccinations.

Purpose

This project will address the gap in practice by providing education to promote information exchange and a means of accessing vaccination knowledge from patients and their caregivers. The purpose of this DNP Project was to develop and implement an educational program guided by the DNP education manual on staff education that will increase the rate at which caregivers of patients choose to vaccinate. The program consists of a survey for evaluating the staff's current knowledge regarding vaccinations, an educational program conducted by expert nurses and providers with the caregivers in the clinic setting, and a question and answer session with the expert nurse to take place before the conclusion of the clinic visit. The expert nurses within the clinic will be trained on the educational program extensively and be able to provide this information to the caregivers and patients. The nursing staff will be given a pretest as well as a posttest on the information to make sure that they adequately understand the information and are able to teach it thoroughly to the needed recipients. The goal of this program

was to increase the rate at which patients receive recommended vaccines by ensuring compliance of caregivers, and ultimately, to prevent the spread of illness and preventable disease. By providing this service to the staff and providers in the clinic, they will be able to provide the information to caregivers and patients within the clinic when they come for routine visits. The results may be that positive social change will result as the vaccination rate improves.

Questions

As health care providers, it is the duty of practitioners to make sure that adults, caregivers, and even children understand the importance, risks, and benefits of receiving vaccinations. Allowing the caregiver ample time to ask questions and to have all the information they desire, may increase the number of people who will vaccinate themselves and their children(Kurup, He, Wang, X., Wang, W., & Shorey, 2017). The more patients and caregivers of patients who receive vaccinations the less likely that persons in the general population will have to experience an unfortunate outbreak of these deadly diseases (Kurup, He, Wang, X., Wang, W., & Shorey, 2017). Education is the key to people understanding and implementing vaccinations. The following question was the focus for the DNP project: Can an educational program on the need and rationale for vaccinations in children improve nurses' knowledge for teaching patients and families in the primary care clinic setting? This paper will examine what is currently available and in place within the clinics and what is still needed to fill in the gaps.

Theoretical Framework

Orem's self-care theory will be used to guide the project being conducted to increase the rate of vaccinating children with recommended vaccinations. This theory uses several main

concepts to serve as a framework for the evidence-based practice project. The self-care theory focuses on combining patients and health care provider efforts as a team, working together to improve self-reliance and overall health care outcomes (Self Care Theory, 2013).

The main underpinnings of the self-care theory are guided by six main points (Self Care Theory, 2013). First, patients need to be self-reliant and take responsibility for personal health care (Self Care Theory, 2013). This puts health care into the patient's hands instead of relying on a clinic or health care provider to do everything for the patient. This is the step that guides empowerment (Self Care Theory, 2013). Next, patients are distinct individuals and should be treated as such. Each person has different needs and will require different levels of time, attention, and services (Self Care Theory, 2013). Next, nursing is a form of action; it involves interaction between two or more people (Self Care Theory, 2013). Then, successfully meeting universal and developmental self-care prerequisites is an important component of primary care prevention (Self Care Theory, 2013). Prevention plays a major role in keeping patients healthy through processes such as vaccinating (Self Care Theory, 2013). A person's knowledge of potential health problems is needed for promoting self-care behaviors (Self Care Theory, 2013). By empowering the patients with knowledge, they are better able to implement appropriate self-care behaviors such as taking their medications at a set time each day and checking their blood glucose levels twice daily. Finally, self-care and dependent care are behaviors learned within a sociocultural context. These types of behaviors are culturally specific (Self Care Theory, 2013). This nursing theory will help guide the successful implementation of a plan to increase the rate

of vaccinating by empowering caregivers and patients to take control of their health and subsequent health care. The goal is to empower the caregivers and patients through knowledge.

Nature of the Project

The nature of this project is an observational study. The project will test if an educational protocol implemented within the primary care clinic site will help increase the rate at which caregivers choose to vaccinate their children. Without needed vaccinations, deadly illnesses such as measles, mumps, smallpox, and others can reoccur (Mus et al., 2017). For example, Oklahoma saw the first case of measles it has seen in over 18 years just recently (Kurup, He, Wang, X., Wang, W., & Shorey, 2017). It is thought that an unvaccinated child at Disneyland spread the virus to over 180 people and put thousands more at risk (Kurup, He, Wang, X., Wang, W., & Shorey, 2017). The outbreak is thought to now be contained, but it showed the risk of having unvaccinated people in the population (Mus et al., 2017). One person's decision can affect thousands by causing an outbreak. The ultimate outcome to be achieved by this project is to improve patients' health outcomes by increasing the rate at which they receive needed vaccinations.

Definitions

The following definitions are provided to ensure the understanding of key terms that are used throughout this paper. Definitions that are imperative for the reader to know and understand while reading this paper include the following:

Vaccination: A substance used to stimulate the production of antibodies and provide immunity against one or several diseases, prepared from the causative agent of the

disease, its products, or a synthetic substitute, treated to act as an antigen without inducing the disease (Geer, 2016).

Epidemic: A widespread occurrence of an infectious disease in a community at a particular time (Geer, 2016).

Outbreak: The sudden or violent start of something unwelcome such as a war, disease, etc. (Geer, 2016).

Assumptions

In this project, I assumed that caregivers want what is best for their children and to keep them healthy. There are several additional assumptions that need to be noted before this project is implemented. First, it was assumed that staff nurses will be truthful and fully forthcoming when completing the survey to evaluate what is already known or assumed about vaccinations. Next, it was assumed that persons providing education to the caregivers will follow the protocol and answer the caregiver's questions regarding vaccinations appropriately. It was also assumed that a certain number of patients per day will enter the clinic that need recommended vaccinations. Finally, it was assumed that caregivers will listen to and understand the information that is given to them in the clinic.

Scope and Delimitations

Within this DNP project, the main practice problem to be addressed is vaccinating. Providing children with the needed vaccines that are recommended by the CDC is an essential duty which caregivers must be informed about and undertake in a serious, informed manner. Vaccinating a

child can mean the difference between life or death if a disease turns into an outbreak (Kurup et al., 2017). The population that will be focused on during this DNP project is the staff nurses providing education to caregivers of patients in the primary care clinic under the age of 18 years old. This project and its findings can be used in any similar clinic setting to produce similar results.

Significance

Outbreaks of once suppressed diseases kill thousands of people every day in this country resulting from people refusing to vaccinate (Kurup et al., 2017). It is very important that health care providers inform caregivers about the vaccinations that are recommended for their children, why they are recommended, and the safety and efficacy of the vaccinations. Without these vaccinations, outbreaks of deadly diseases could kill millions of people throughout the world (Kurup et al., 2017). If persons throughout the world would receive the recommended vaccinations that have been researched, developed, and formulated, these deadly illnesses and outbreaks could be prevented (Kurup et al., 2017). This project and the promotion of vaccinations could do a great deal to promote social change and positive health outcomes throughout the world.

Summary

Vaccines are safe, and scientists continually work to make sure they become even safer (Kurup et al., 2017). Every vaccine undergoes extensive testing before being licensed, and vaccine safety continues to be monitored for the entire time that the vaccine is in use (Kurup et al., 2017). Most side effects from vaccinations are minor, such as soreness where the injection

was given or a low-grade fever (Kurup et al., 2017). These side effects do not last long and are treatable. Serious adverse reactions to immunizations are rare (Kurup et al., 2017). The tiny risk of a serious reaction from a vaccination must be weighed against the very real risk of getting a dangerous vaccine-preventable disease (Mus et al., 2017). Breastfeeding, vitamins, chiropractic care, naturopathy or homeopathy are totally ineffective in preventing vaccine-preventable diseases (Mus et al., 2017). Some parents prefer "natural" disease for their children over "artificial" vaccination, leading to a "natural immunity (Mus et al., 2017)." The natural disease can lead to paralysis, brain injury, liver cancer, deafness, blindness or even death (Mus et al., 2017). Vaccinating is the single, most important way to keep a child healthy and protected from preventable disease. This DNP project will address many of the above issues and provide evidence-based research to help caregivers overcome misconceptions and fear that has developed.

Section 2: Background, Context and Literature

Literature Review Strategies

Several research databases were searched included CINAHL with full text database, MEDLINE, and Walden University databases. Many different searches with different combinations of certain abstract terms such as *vaccinations, pediatric, epidemic* and *outbreak* were used. There is a plethora of information available on vaccinations, but there is little information available that is directly related to an educational protocol on vaccinations in the pediatric population. This informed me that there is very little research existing for us of the clinics as far as protocols to inform the caregivers on the safety, efficacy, and importance of vaccinations. Without this information being given to the caregivers by the healthcare providers, the caregivers are likely to pick up on the negative information from other sources (Mus et al., 2017). This, in turn, will likely cause them not to vaccinate their children when 10 short minutes of a nurse's time could have changed their minds (Mus et al., 2017).

Concepts, Models and Theories

Orem's self-care theory will be used as the framework to systematically integrate these new approaches into practice and to address the issue of vaccinating. This theory uses several main concepts to guide implementation and provide a framework for the evidence-based practice project. The self-care theory focuses on using patients and health care providers as a team, working together to improve self-reliance and overall health care outcomes (Self Care Theory, 2013).

The main underpinnings of this theory are guided by six main points. First, patients need to be self-reliant and take responsibility for their health care. This puts health care into the patient's hands instead of relying on a clinic or health care provider to do everything for the patient. This is the step that guides empowerment. Next, patients are distinct individuals and should be treated as such. Each person has different needs and will require different amounts of time, attention, and services. Next, nursing is a form of action. It involves interaction between two or more people. Then, successfully meeting universal and developmental self-care pre-requisites is an important component of primary care prevention. Prevention will play a major role in keeping patients healthy as is seen through vaccinating. A person's knowledge of potential health problems is needed for promoting self-care behaviors. By empowering the patient with knowledge, the patient is better able to implement appropriate self-care behaviors such as taking their medications at a set time each day and checking their blood glucose levels twice daily. Finally, self-care and dependent care are behaviors learned within a socio-cultural context. These types of behaviors are culturally specific. This nursing theory helped to guide the successful implementation of a plan to increase the rate of vaccinating by empowering caregivers and patients to take control of their health and health care. The goal is to empower the patient and caregiver through knowledge.

Frameworks

The plan, do, study, act cycle was used as the framework to guide the DNP project (see Hodges & Videto, 2011). This cycle has been used by many healthcare agencies as an action-oriented learning cycle that helps to effectively implement change within a healthcare

environment (see Hodges & Videto, 2011). In the plan section of the cycle, the test or observation was planned and included a method for collecting data. Next, is the do section of the cycle. This part of the cycle is when the test is tried out on a small-scale trial run (see Hodges & Videto, 2011). Then, the study section of the cycle is enacted. During this section of the cycle, time is set aside to study and analyze the data as well as to study the results (see Hodges & Videto, 2011). This is where a researcher should decide if any changes need to be made to the plan or it can progress unchanged (Hodges & Videto, 2011). The act section is the final part of the cycle. This is the final stage where one can refine the act, based on what was learned from the test (Hodges & Videto, 2011). One great factor of this framework is that it guides the project through a set cycle. That means that one can go through the steps multiple times until the process is perfected and the results are as the author wants them to be for the project to successfully be implemented within the clinic (Hodges & Videto, 2011). This framework supported this project by providing an action-oriented learning cycle that allowed me to effectively implement change within the clinic.

Background and Context

Goals are defined as "statements that provide specific long-term direction for a program, which are used to present the overall intent or desired program outcome" (Hodges & Videto, 2011, p.162). An objective is defined as "a specific statement of short-term applications directed toward achieving the program goal, usually written in measurable terms and including references to program activities or strategies" (Hodges & Videto, 2011, p. 167). Objectives can be described as the steppingstones that are used to advance to the program's goals. The reason it is important

for the target population of the project to be involved in developing the goals and objectives is, so they will have ownership in the project (Hodges & Videto, 2011). This will help them to realize the importance of the project and get on board with the changes to be implemented. They will have a reason to fill out surveys, participate in forums and other projects needed to design an effective program. Also, giving the target population information on the project can help them realize the potential impact that the project can have once implemented (Hodges & Videto, 2011).

The mission of this program is to increase the rate at which children receive recommended vaccinations by developing and implementing an educational program provides caregivers with the information on vaccines to help them make an educated decision regarding their children being vaccinated. Current vaccination rate in the primary care clinic site is 86%. The goals of this program include the following:

- To educate staff nurses regarding the safety of vaccinations.
- To educate staff regarding the efficacy of vaccinations.
- To answer any questions that staff may have regarding vaccinations.
- To increase the rate of children receiving their childhood vaccinations.

The objectives of the program would include the following:

- To complete an anonymous survey of expert nurses in the clinic that reveals their attitude toward vaccinations, what information they already have about vaccinations and what information they desire to have on vaccinations.

- To complete an anonymous survey of staff in the clinic to determine their best learning style.
- To design an educational program led by staff nurses that informs caregivers about the safety and efficacy of vaccines and, ultimately, encourages them to vaccinate their children.

Review of Relevant Literature

Many articles were reviewed related to vaccinations, educational protocols used within clinics, outbreaks, CDC and many other terms affecting the study. Research journals and authors reviewed include *Journal of Law, Medical and Ethics*, an article by Pavia et al (2014), an article by Campbell and Bedford (2014), an editorial by Frawley (2015), and a Cochrane Review (2014). Conclusions from the research studies show that education is needed in relation to vaccinations especially in the pediatric population. There has been a great deal of research within the multiple databases focused on the pediatric population, but very little of that research has focused on education regarding vaccinations. The chosen articles discuss a variety of methods of disseminating evidence-based research and find that different methods seem to work for different age groups. Modifications must be made so that the information is easily understood by each participant. Current research studies like those listed above show that the numerous misconceptions patients and caregivers have are affecting their choice of whether to vaccinate (Campbell & Bedford, 2014). Finally, the research concluded that people who do not choose to vaccinate are putting the population at risk in many ways including financially, physically and emotionally (Campbell & Bedford, 2014).

The research regarding the use, safety, and effectiveness of vaccines is current and ongoing daily in the adult and pediatric populations (Mus et al., 2017). The CDC provides guidelines and to keep evidence-based practice guidelines available for providers who administer vaccinations (Hendrix et al., 2017). The CDC provides guidelines for specific vaccinations that a child or adult at each age should receive (Hendrix et al., 2017). They also provide ongoing recommendations for needed vaccinations as a person ages and even into adulthood with vaccines such as tetanus, pneumovax, meningococcal and influenza (Hendrix et al., 2017). The CDC has a certain committee called the Advisory Committee on Immunization Practices or ACIP that provides up to date recommendations and guidelines on vaccine schedules, recalled vaccines, vaccine storage and handling, and vaccine administration practices. All information and guidelines on vaccines is current and ongoing daily. These guidelines are based on evidence-based practice from research trials that are continuing each day. Also, the CDC keeps close monitoring on any immunization recalls or adverse reactions that may occur. This helps the CDC to stay abreast of the situation and to provide the safest, most effective vaccinations that they possibly can.

In one article by Moser, Reiss & Schwartz (2015) published in the *Journal of Law, Medical and Ethics*, the author is discussing the associated costs of parents choosing not to vaccinate not their children. The choice to not vaccinate has a direct cost linked to it when preventable diseases start to have outbreaks across the world with deadly consequences. In this article, the author discusses that these parents making their own "informed" decisions for their child must be held financially accountable for their actions (Moser, Reiss & Schwartz, 2015).

This author does wonder though, how informed was the parent? Was it appropriate, research-based information from within their child's clinic or misinformation and assumptions from the media? More research should be done to see what protocols are in place for education within this population.

In an article by Pavia et al (2014), researchers theorized that they could increase the rate of Human Papillomavirus (HPV) vaccinating among college-aged patients by engaging them in a computerized educational program. They learned that many of the patients had never heard of the HPV vaccine. They also learned that this was a great way to provide information to the technical savvy college-aged adult who is very busy and on the go. The research showed that this was a great way to present this educational information to this population and that this educational program would in turn increase the rate of HPV vaccinating (Pavia et al., 2014).

In an article by Campbell and Bedford (2014), it was determined that the current advertisements to promote caregivers to vaccinate their children with Measles, Mumps and Rubella (MMR) vaccinations may not be working. Caregivers have been misinformed for many years now and have many preconceptions that have been put into their heads by negative media. It is very difficult to overcome this by an advertisement on a television screen. Much research is still needed to determine what would work in the place of these advertisements. For this paper, I wonder if an educational program where the nursing staff spent time with the caregiver one-on-one in the clinic setting to clear up these misconceptions could help to ease the caregivers mind and preconceptions?

In an editorial by Frawley (2015), the message resounds that providers need to be talking with their patients about vaccinating. There is a great deal of misinformation and caregivers do not know what to believe. Providers need to take the time to talk with the patient and give them the correct information that comes directly from the research literature and can be proven. This way, if it is a caregiver, then they can know they are making the best, informed decision for their child. Giving the caregiver time to talk and ask questions can ease their worry.

In a Cochrane Review (2014), face-to-face programs that promote education for the caregivers of children needing recommended vaccinations were evaluated. It was found that education is greatly needed. It is very important to give parents time to ask questions, obtain information, and often, to just be heard. Many times, what is found is that parents are confused by the wealth of information that is available and they only want to do what is best for their child, but they are unsure of what that is. If the provider will take the time to sit with them, provide information on the safety, efficacy and importance of vaccinations, it can often make a great difference.

Summary

After careful review of multiple databases, there is a vast amount of information available regarding vaccinations. What is not available though, is information on in-office protocols to provide information to caregivers regarding vaccinations especially regarding the pediatric population. This leads me to believe that more work needs to be done to develop a protocol that will help caregivers to better understand the safety, efficacy and importance of vaccinations. Also, a successful protocol would also allow time for the caregivers to have their questions

answered. This could help to clear up negative assumptions and help the caregiver to make an informed decision for the health of their child.

Section 3: Approach

Overall Approach and Rationale

Over the first 8 weeks of this study, the DNP project, guided by the DNP education manual on staff education, was implemented within the primary care clinic site. Each expert staff nurse received a survey (Appendix D) evaluating their current knowledge on vaccinations. This was an anonymous survey given by the clinic to the expert nursing staff. Then, the caregiver received a 10-minute educational session with the nurse. The expert nurse has been trained on the educational program, given a pre- and posttest (Appendix E) to check for understanding, and will have used a handout and poster presentation to help knowledge to be retained before the education protocol is implemented. There was a set educational program (Appendix F) with handouts and a poster presentation that the nurse discussed with each caregiver to assure that all recipients receive the same information. After this was complete, the expert nurse gave each caregiver an adequate amount of time to have their questions answered. At the end of the 8 weeks, I evaluated to see if the rate at which caregivers chose to vaccinate their children had increased at all within the primary care clinic site. The rate of vaccination prior to project implementation was 86%. This number was computed by taking the total number of patients under the age of 18 due for recommended vaccinations and dividing this by the number of patients that chose to receive vaccinations to get a percentage of patients who were vaccinated. This will be compared to the percentage of patients being vaccinated after the implementation of the educational program. This determined if the educational program was successful or if changes needed to be made to the program for it to be successful.

The first step in this part of the process was to conduct a problem analysis. In the problem analysis, a researcher first needs to fully understand all the aspects of the problem at hand. The needs assessment for this project's problem included an anonymous general survey of the expert nurses and a resources inventory to itemize what is available now within the primary care clinic site. Both mentioned items helped me to understand the population's needs, desires, and current status on the issue. The needs assessment was carried out prior to the clinic session. The general survey was given to the expert nurses prior to their educational training session. The resource inventory was conducted within the clinic to see what was currently available regarding education on vaccinations.

The development of an educational protocol derived from the most current evidence took much research, trial and error, and evaluation. While working within the primary care clinic site, I first had to assess the need for education on vaccines, looking at what the current model was and assessing the current model's effectiveness. Next, I assessed the needs, learning styles, and educational levels of the community by conducting a needs assessment. This helped me to understand at what grade level education needed to be written and in what learning style it would best appeal to the caregivers. Next, I began to formulate the educational protocol by using the research gathered from the most current evidence to address the safety, efficacy, and methods of vaccinations, focusing those guidelines toward the education that was needed by the caregivers. After the educational protocol was written and developed, I trained the expert nursing staff on how to best implement the program and how to monitor its' effectiveness. The educational protocol was reviewed and critiqued by a doctorate-prepared provider prior to implementation.

During the time of the protocol's implementation, I kept a constant monitor on the effectiveness of said protocol making notes of any adjustments that needed to be made to the protocol throughout the Plan, Do, Study, Act Cycle. Finally, after the period of training and implementation, I evaluated whether the protocol formulated to increase the rate of vaccinating was effective or not. After the protocol proved to be effective, the guidelines of the educational protocol were implemented into the primary care clinic's current system. If the protocol had not proven to be effective, then the guidelines of the protocol would have been reworked, and the process of implementation and evaluation would have been restarted from the beginning.

For the survey, developed by the DNP student, several questions were given to the expert nursing staff to assess their current knowledge regarding vaccinations. This survey evaluated the staff's thoughts and feelings towards vaccinations, educational goals regarding vaccinations, and their general understanding of the safety, efficacy, and benefits versus risks of vaccinations. The survey helped me to determine the staff's level of understanding regarding vaccinations. The findings from the survey were tallied by marking one column for a yes answer and a second column for no answers.

For the resource inventory, there was three categories including available educational programs, length of programs, and time to complete programs. This helped me to understand what is available to the patients and caregivers within the community and what is currently being used to gain understanding. From this information I formulated a plan for the educational program based on the needs, wants, and learning styles of the caregiver and patient population.

Project Team

The project team included several key people. I served as scholar-consultant to direct the construction of the project and the implementation of the project. The expert nursing staff at the practicum site served as the educators who implemented the educational protocol and conducted the question and answer session with the caregivers. The Provider at the primary care clinic site was available for any unanswered questions by the expert nursing staff. The front desk person assisted with paperwork that needed to be completed and kept track of certain elements of data for the project. The stakeholders in this project were the caregivers of the patients at the clinic. They were involved as participants and were given an active and ongoing voice throughout the implementation and evaluation process. I looked to them for answers regarding the success of the project.

Products of the DNP Project

The product I hoped to reveal through this DNP project is educated caregivers that wish to give their children vaccinations as recommended by the CDC. I monitored the rate at which the children under age 18 coming through the clinic were receiving vaccinations over the 8-week period and compared those results with what was happening in the clinic before the educational program was implemented. The rate of vaccination was computed by dividing the number of patients receiving vaccinations by the number of patients that were recommended to receive vaccinations. This number let me know if the project was effective at increasing the rate of vaccinating.

Data and Participants

The data results from this project were reported in a percentage-based format. Prior to project implementation, 86% of children who came to the clinic received the vaccinations that were recommended by the CDC for their age group. I compared this to the 8-week trial group received education from the expert nursing staff through the program that I developed. These identified subjects were the participants. The terminal data goal of the project was to increase the percentage of patients receiving recommended vaccinations from the current 86% over the 8-week period.

The primary impetus for the difference in outcomes from what would be expected, and the research literature was a person's ability to make their own choices about vaccinating. There was a large amount of negative media surrounding vaccinations and many people base their decision on whether to vaccinate solely on what they hear. This difference in outcomes was a hard one to justify or correct being that it was merely based on opinions. Health care providers must focus on the available research with the most current evidence, safety profiles, and respected effectiveness profiles of the vaccinations to provide evidence-based guidelines to the patients and caregivers. By providing this education, the provider can make sure that the patient or caregiver is making an informed decision and not just a decision based on opinion.

Summary

The conclusive goal of this project was the ability to produce better patient outcomes by increasing the rate at which caregivers choose to vaccinate their children. By choosing to protect their children with these recommended vaccinations, the caregivers are protecting them from

many deadly diseases and illnesses. This is of utmost importance for their overall health. My hope was that by providing the caregivers with an educational program that is clear, concise, and evidence-based that it would allow them to make an informed decision in the best interest of their child. Increasing the rate of vaccinations will ultimately help to decrease the cases of outbreaks of deadly diseases in the United States.

As a DNP prepared nurse, I have been fully equipped to utilize and implement evidence-based research into my current practice. With this implementation, I have been able to positively affect social change by producing healthier patients with better quality of life and improved outcomes through staff education. This project was approved by Walden University Institutional Review Board August of 2019. The IRB approval number for this staff education project is 08-23-18-0467319.

Section 4: Findings and Recommendations

Introduction

Caregivers consider healthcare professionals one of the most trusted sources in answering questions and addressing concerns about their child's health, including vaccination recommendations (CDC, 2017). In a recent survey, caregivers listed their child's healthcare professional as one of their top 3 sources for trusted information on vaccines (CDC, 2017). This tells the DNP student that this project will likely be effective because a nurse's recommendation backed by evidence-based research plays a key role in guiding a caregiver's decision on whether to vaccinate or not. A very important component of education regarding vaccinations is about what side effects will be expected after vaccinations (CDC, 2017). It was found by the CDC that allowing time to address the caregiver's questions or concerns on an appropriate level for the person helps to make the caregiver feel comfortable with their decision to vaccinate. This DNP student has prepared a project on staff education to help address all these components related to caregiver's decision on whether to vaccinate their children.

Despite the benefits of vaccinations, refusal to vaccinate continues to present major problems in the United States (Kurup et al., 2017). The educational intervention addressed (a) side effects related to vaccinations, (b) efficacy of current vaccinations that are given within the clinic, and (c) importance of receiving recommended vaccinations during childhood. The content of the staff education protocol was constructed to assess needs of the staff and patient population identified during the need's assessment and surveys of the staff. Orem's self-care theory guided the planning, development, and implementation of the project. The literature review conducted

for this project reviewed current trends in vaccinating, educational programs that are currently available regarding vaccinations, and response to interventions currently available regarding education on vaccinations. The studies consisted of evidence-based research being used in current practice and caregivers' response to what is currently available versus what is still needed.

Findings and Implications

The educational intervention tool was created using the current literature and input from the nursing staff and clinic providers. Five expert nurses within the primary care clinic site were asked to establish the content validity of the educational intervention prior to its use (Polit & Beck, 2006). The Item-Content Validity Index (I-CVI) = 1.0 indicating universal agreement on the educational intervention among the five experts. Polit and Beck (2006) posited that with five or fewer experts, all must agree and "the I-CVI should be 1.00" (p.491). Similarly, the Scale-Content Validity Index (S-CVI) = 1.00, indicating universal agreement (Appendix G).

The same five expert nurses were asked to take a pretest to evaluate their knowledge on vaccinations as well (See Appendix E). The pretests consisted of 10 questions, each with an individual score of 10: with the lowest possible score being 0 and the highest possible score being 100. All pretests were administered to the expert nurses individually by the office manager. Each pretest was hand-scored using a guide of correct answers. The average score of the pretest (n=5) was 88 (SD = 13.03) with a range of 70 to 100. Following the pretest, the educational intervention was presented to the five experts and following the presentation, the posttest was administered by the office manager. The posttests were hand-scored using a guide

of correct answers. The average score of the posttest (n = 5) was 100 (SD = 0) with a range of 100. Using a Wilcoxon Signed Rank Test for differences in the pretest score (mean = 88.0) and the posttest scores (mean = 100) (z = -1.604, p>0.05).

As stated in section 2, the purpose of this DNP project was to determine if an educational intervention would increase the vaccination rate of the primary care clinic site. Prior to the start of the educational intervention, the office manager of the primary care clinic determined that the overall vaccination rate was 86%. During the 8-week educational intervention, 27 patients came into the clinic who were eligible for recommended vaccinations. Of those 27 patients who were eligible, 22 received their vaccinations demonstrating a vaccination rate of 91% (N. Spain Office Manager, Personal Communication, September 18, 2019).

Recommendations

The CDC has strongly recommended that caregivers vaccinate children at scheduled times in order to prevent the spread of communicable disease and to avoid unwanted epidemics. Despite that there was no statistical difference in the pretest and posttest, the percentage of vaccinations increased from 86% to 91%, demonstrating a clinical difference. Thus, this DNP project demonstrated that an educational intervention geared towards caregivers of children needing vaccinations is a plausible solution in increasing the number of vaccines given to children and thus, meeting this important recommendation. By educating healthcare providers of this population regarding vaccination scheduling, side effects, safety, risks, efficacy, and benefits, providers are equipped with adequate information for the caregivers of these patients, who in turn, can mage an informed decision about vaccinations and potentially, reduce vaccine

refusal. Further, the results of this project may suggest that the educational intervention may have increased awareness of the providers which in turn, resulted in the vaccine rate increase.

Limitations of the Project

As with any project, there are limitations. A major limitation of this project was the limited number of participants While efforts were made to include all providers of the clinic, only five of the providers were willing to act as experts for the project due to time constraints and work commitments of the clinic. One solution to this limitation would be to offer the education intervention multiple times in order to allow more providers the opportunity to attend. Another option would be to create an online version of the educational intervention so that providers may review the information at convenient times. As a result, the findings for this project should be interpreted with caution. A second limitation is while the content validity of the educational intervention was determined by experts, this measure is statistically limited and should be approached with caution. Lastly, the rate of vaccinations was provided to the student solely for the purposes of this project. As a student, there was limited access to the data, thus, the increase in vaccination rates is an observed outcome of the project, and again should be interpreted with caution.

Summary

The educational protocol was developed to help create a successful staff education project to increase the rate at which children receive their vaccinations as recommended by the

CDC. Orem's self-care theory was used to guide in the planning and development of the educational protocol that was implemented in the primary care clinic by the nursing staff. The key findings of the needs survey and pretest determined that there was a great need for an evidence-based research educational protocol to answer questions and concerns that caregivers have regarding vaccinations. The content of the educational protocol was developed to address questions and concerns that caregivers have over safety, side effects, and effectiveness of recommended childhood vaccinations.

Section 5: Dissemination Plan

Introduction

To produce better patient outcomes for communities, new knowledge must be transformed into clinical useful forms that can be effectively implemented across an entire clinic site with measurable terms that effect performance and health outcomes (Stevens, 2013). The educational protocol was created to include evidence-based research that was most current and applicable to the caregivers presenting to this clinic (See Appendix F). The educational protocol has been implemented as the mainstay for increasing the rate at which caregivers vaccinate their children. Multiple caregivers have made positive comments to the staff on the usefulness of this protocol, the quality of the content, and the efficiency of the protocol as an educational program.

Plans for Dissemination

Dissemination of the outcomes of an evidence-based DNP project found to be successful is of utmost importance to provide other facilities with the valuable information and tools that were discovered. This information will be used to improve health outcomes of the target population throughout the country. DNPs have a compelling responsibility to impact change and improve patient outcomes through dissemination of evidence-based practice initiatives (Hodges & Videto, 2011). Following dissemination to the organization, local presentation opportunities will be explored, and appropriate journals such as *Journal of Doctoral Nursing* practice will be identified for possible publication.

Analysis of Self

The DNP experience for me has been one of great trial and error. When I began my DNP journey, right after I completed my MSN degree, in January of 2013, I thought I would complete the program in record time. Little did I know that life happens to the best of us. I completed my coursework in May of 2016 but have took a great deal of time to complete my DNP project due to major health setbacks. I am so thankful for Walden University and my instructors who have continued to support me and my experience despite my procrastination and even strong lack of interest in completing the program at times. I am proud to say that I will soon graduate with my DNP and will be a contributing member of the healthcare field from the knowledge and tools given to me at Walden University. Even though this has been a difficult program for me to complete, I am so thankful for the tools that I will be able to use in my practice such as the ability to synthesize and implement evidence-based research. I feel that this quality will set me apart from other Family Nurse Practitioners in my field. I also plan to start teaching future nurses. I hope to be able to share a little bit of the impact that has been made on me from my professors throughout my nursing career.

Summary and Conclusions

Childhood vaccination is an effective way to reduce childhood illness and possible death (Kurup et al., 2017). As demonstrated, many children do not receive their recommended vaccines due to lack of understanding by their parent or caregiver. The findings of this DNP project demonstrated that one way to educate parents and caregivers on the importance of vaccinations is to educate providers on this important topic. By educating providers on important

information like vaccinations, parents and caregivers can make informed decisions about vaccines and reduce the likelihood of vaccine refusal.

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Mission Statement
The mission of this program is to increase the rate at which children receive recommended vaccinations by preparing an educational program that will arm parents with evidence-based information on vaccines to help them make an educated decision regarding their children being vaccinated.
Goals
1. To educate regarding the safety of vaccinations through evidence-based guidelines. 2. To educate regarding the efficacy of vaccinations. 3. To answer any questions that staff may have regarding vaccinations. 4. To increase the rate of children receiving recommended vaccinations.
Objectives
1. Complete a survey of staff nurses within the primary care clinic site that provides an accurate assessment of their attitude towards vaccinations, what information they already have about vaccinations and what information they desire to learn about vaccinations. 2. Complete a survey of nurses within the clinic to determine their best learning style. 3. Design an educational program that effectively informs staff nurses about the safety and efficacy of vaccinations and that ultimately encourages caregivers to vaccinate their children.
Program Evaluation Goals and Objectives
The primary goal of the program evaluation is to determine the program's impact and policy improvement initiatives. The objectives of the program evaluation include:

1) To complete external reporting to provide feedback on program performance to external stakeholders.

2) To use monitoring tools through program management to provide feedback on program operations to agency administration.

3) To complete the program evaluation to provide feedback on program results to policy makers and planners.

Appendix B: Gantt Chart

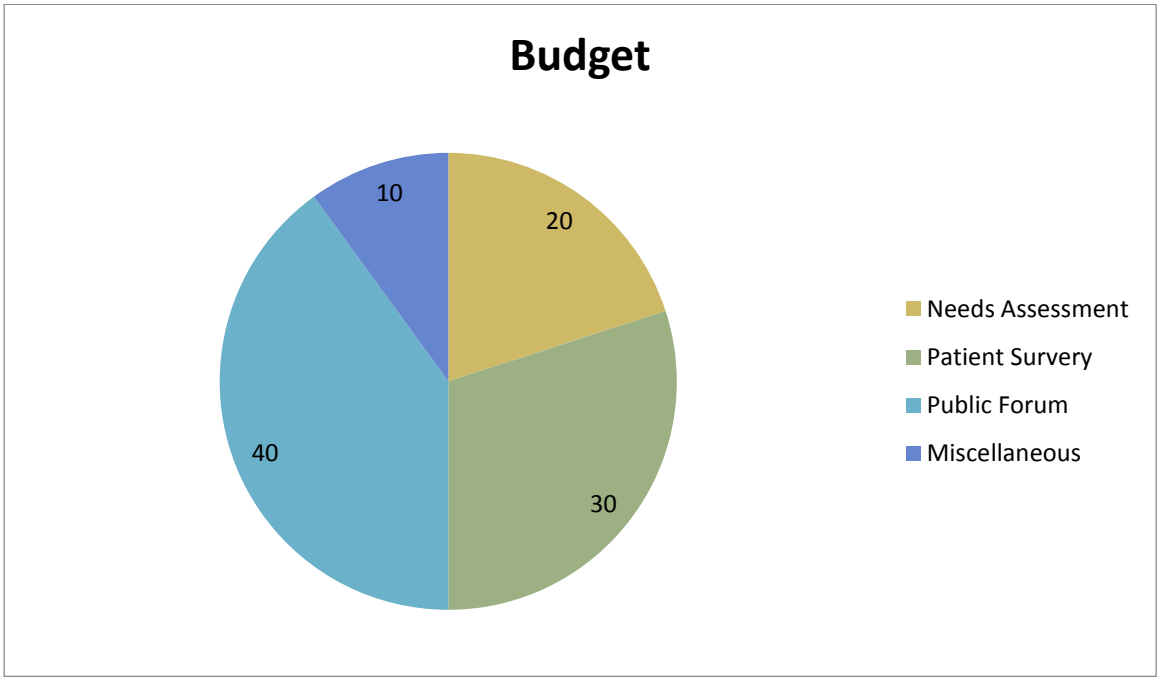
The purpose of the Gantt Chart will be to provide the researcher with a timeline that reflects the implementation and evaluation process. This can help the researcher to visually see what they are doing with their time and how the steps are being carried out through time (Hodges & Videto, 2011).

Weeks of Fall Quarter

WEEKS	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1 to 3 m**	**6 m**	**1 yr**
Complete problem analysis	**x**											
Write mission statement, goals and objectives	**x**											
Conduct Needs Assessment		**x**	**x**	**X**								
Conduct patient survey				**x**								
Hold patient forum					**X**	**x**						
Conduct resource inventory			**x**									
Performance Management										**x**		
Monitoring											**x**	
Program Evaluation												**x**

Appendix C: Pie Chart Illustration of Budgetary Items

*Numbers on pie chart represent percentages



Appendix D: Staff Survey

1. Do you agree that vaccinations are important? Yes or No

2. Do you have concerns about giving your child recommended vaccinations? Yes or No

3. Do you have any religious or ethical concerns in relation to your child receiving recommended vaccinations? Yes or No

4. Have you or anyone in your family ever had a reaction to a recommended vaccination? Yes or No

5. Have you heard things from the news, media or other parents that makes you worry about giving your child recommended vaccinations? Yes or No

6. Do you understand the purpose of your child receiving recommended vaccinations? Yes or No

7. Do you worry about side effects related to recommended vaccinations? Yes or No

8. Do you think that your child can develop autism from receiving recommended vaccinations? Yes or No

9. Do you have trouble understanding information given in a verbal format? Yes or No

10. Do you have trouble understanding information given in a written format? Yes or No

11. Are there any concerns regarding vaccinations you would specifically like to be addressed during this visit?

Appendix E: Pre- and Posttest for Clinic Nurses

1. Which of the following are preventable with the recommended childhood vaccinations?
   A. Diphtheria
   B. Rubella
   C. Polio
   D. All of the above

2. Where are vaccines normally given?
   A. At home
   B. At Walmart
   C. The Park
   D. At the clinic

3. Vaccines cause autism.
   A. True
   B. False

4. “Herd immunity” is useful in preventing vaccine-preventable diseases?
   A. True
   B. False

5. The caregiver has the right to choose whether to vaccinate their child.
   A. Ture
   B. False

6. Childcare centers and schools can refuse to allow unvaccinated children to attend during times of disease outbreaks.
   A. Ture
   B. False

7. Who is the most vulnerable to disease from exposure to an unvaccinated person?
   A. A healthy adult
   B. An elderly person
   C. A healthy child
   D. A baby that is too young to be fully immunized

8. The CDC ensures the safety, effectiveness and availability of vaccines in the U.S.
   A. True
   B. False

9. Which of the following can vaccinations protect you from?
   A. The common cold
   B. Sinus infection
   C. Whooping cough
   D. Flu

10. What are some common side effects of vaccinations?
    A. Runny nose
    B. Low grade fever
    C. Redness at injection site
    D. Cough
    E. Diarrhea
    F. B and C only

Appendix F: Educational Program

Facts:

-Immunizations prevent illness, disability and death from vaccine-preventable diseases including cervical cancer, diphtheria, hepatitis B, measles, mumps, pertussis (whooping cough), pneumonia, polio, rotavirus diarrhea, rubella and tetanus.

-Vaccines were developed to protect people from dangerous often fatal diseases.

-These fatal diseases remain a threat that vaccines are a safe and effective protection from.

-Children who are not vaccinated can transmit vaccine-preventable disease at schools and in the communications, especially babies who are too young to be fully immunized.

-Unvaccinated children may be excluded from school or childcare to protect them and others during times of disease outbreak. This may cause hardship for the child and caregiver.

-Vaccines do not overload the immune system. Every day, a health baby's immune system successfully fights off millions of antigens- the parts of germs that cause the body's immune systems to go to work. Vaccines contain only a small fraction of the antigens that babies encounter in their environment every day.

-No reputable scientific studies have found an association between preservatives in vaccines and autism.

-The U.S. Food and Drug Administration (FDA) ensures the safety, effectiveness, and availability of vaccines for the United States.

Stats:

-Global vaccination coverage has stalled at 86%, with no significant changes during the past year.

-An additional million deaths could be avoided, however, if global vaccination coverage improves.

-The United States currently has the safest vaccine supply in its history.

Who:

-Vaccinating your child beginning at birth, can help keep him or her safe and free from serious diseases. While a few of these diseases your child is vaccinated from have virtually disappeared, reported cases of people with diseases like measles and whooping cough have been on the increase lately. Even if some diseases do completely disappear in the U.S., they are common in other part of the world and are just a plane ride away.

-Your child's provider will always consider medical history, allergies and previous experiences before giving your child any vaccination.

What:

-Vaccinations protect against serious diseases like measles, whooping cough, polio, meningococcal disease, tetanus, rotavirus, hepatitis A, hepatitis B, chickenpox, influenza, and more.

-Vaccinations cannot protect from minor illnesses like colds, but they can keep children safe from many serious diseases.

Where:

-Vaccinations are normally given at your primary care clinic.

When:

-Vaccinations are recommended at different ages from birth throughout childhood and into adulthood. This schedule is recommended by the Centers for Disease Control (CDC).

-The purpose of the recommended immunization schedule is to protect infants and children by providing immunity early in life before they are exposed to potentially life-threatening diseases.

Why:

-Vaccinations are very important because they protect your child against serious diseases by stimulating the immune system to create antibodies against certain bacteria or viruses.

Keys to Remember:

-Vaccines are safe, and scientists continually work to make sure they become even safer.

-Every vaccine undergoes extensive testing before being licensed, and vaccine safety continues to be monitored if the vaccine is in use.

-Most side effects from vaccinations are minor, such as soreness where the injection was given or low-grade fever. These side effects do not last long and are treatable.

-Serious reactions are rare. The tiny risk of a serious reaction from a vaccination must be weighed against the very real risk of getting a dangerous vaccine-preventable disease.

-Breastfeeding, vitamins, chiropractic care, naturopathy or homeopathy are totally ineffective in preventing vaccine-preventable diseases.

-Some parents prefer “natural” disease for their children over “artificial” vaccination, leading to a “natural immunity.” The natural disease can lead to paralysis, brain injury, liver cancer, deafness, blindness or even death.

-Vaccinating is the single, most important way to keep your child healthy and protected from preventable disease.

APPENDIX G: Content Expert Report

Table 1

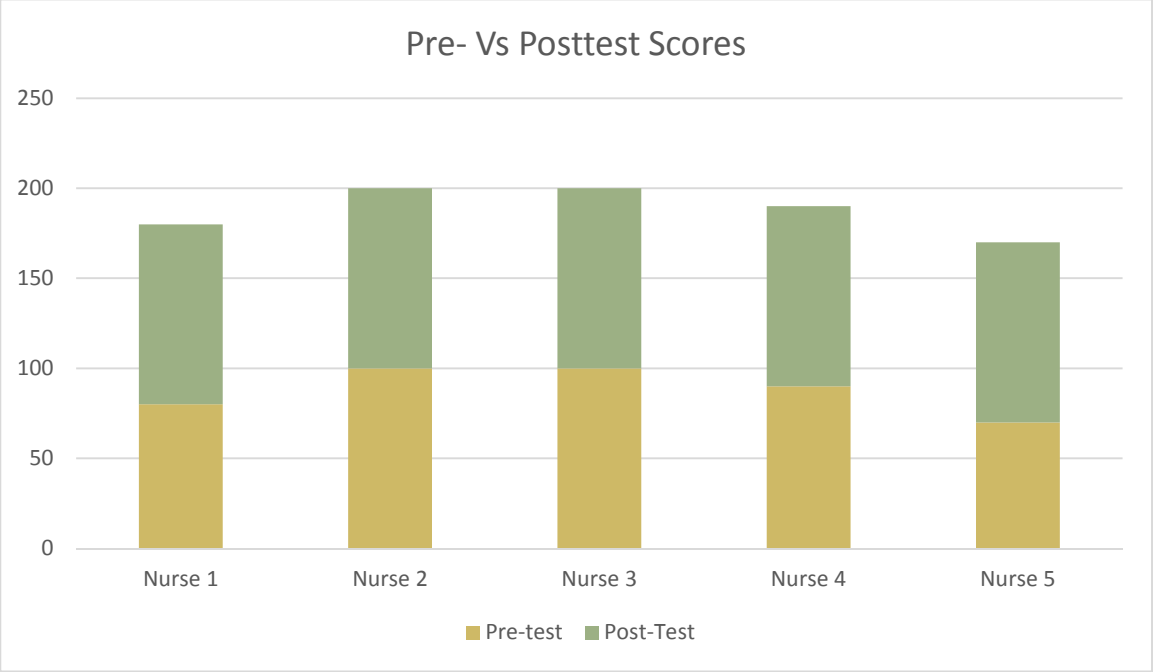
Content Expert Report (N = 5)

Item	**A**	**B**	**C**	**D**	**E**	**Rating 3 or 4**	**1-CVI**	**Pc**	**K***
	Total Number of Expert Nurses								
	n	*n*	*n*	*n*	*n*	*n*			
Content of the protocol is interesting	4	4	4	4	4	5	1.0	0.016	1.0
Relevant Information In the protocol	4	4	4	4	4	5	1.0	0.016	1.0
Current Information Contained in The protocol	4	3	4	4	4	5	1.0	0.016	1.0
Appropriate Information For the Caregivers	4	3	3	4	4	5	1.0	0.016	1.0
User-Friendliness Of the Protocol	4	4	4	4	4	5	1.0	0.016	1.0

The Core Values Index™ (CVI). 1 means not relevant, 2 means somewhat relevant, 3 means quite relevant, and 4 means highly relevant. N represents the umber of the nurse experts and A represents the number of experts who agree that item is highly relevant. The content validity index includes 1-CVI, S-CVI/UA. The level content validity index (1-CVI, 0.83-1) is the number of experts who gave a 3 or 4/ the total number of experts. The scale level content validity/ universal agreement (S-CVI/UA) = 0.83 (number of items with experts grading 3 or 4 (N=4/number of items, N=5).

Appendix H: Pre- and Posttest Scores

Nurse Expert Pre Vs Post Test Scores
Mean Score for pretest: 88
Mean Score for posttest: 100



Raw Data:

	Pre_01	Pre_02	Pre_03	Pre_04	Pre_05	Pre_06	Pre_07
One	10	10	10	10	10	10	0
Two	10	10	10	10	10	10	10
Three	10	10	10	10	10	10	10
Four	10	10	10	10	10	0	10
Five	10	10	10	10	10	10	0

Pre_08	Pre_09	Pre_10	Pre_Total	Post_01	Post_02	Post_03	Post_04
0	10	10	80	10	10	10	10
10	10	10	100	10	10	10	10
10	10	10	100	10	10	10	10
10	10	10	90	10	10	10	10
10	0	0	70	10	10	10	10

Post_05	Post_06	Post_07	Post_08	Post_09	Post_10	Post_Total
10	10	10	10	10	10	100
10	10	10	10	10	10	100
10	10	10	10	10	10	100
10	10	10	10	10	10	100
10	10	10	10	10	10	100

Appendix I: Changes in Vaccination Rates

Changes in Vaccination Rates as a Result of Educational Protocol Implementation
Prior to educational protocol implementation: 86%
Post implementation of educational program: 91%
Percentage of Change: Increase of 5%