THE C.A.S.E. APPROACH (CORROBORATION, ABOUT ME, SCIENCE, EXPLAIN/ADVISE): IMPROVING COMMUNICATION WITH VACCINE-HESTITANT PARENTS

by
Jessica Celeste Stevens

Copyright © Jessica Celeste Stevens 2016

A DNP Project Submitted to the Faculty of the
COLLEGE OF NURSING
In Partial Fulfillment of the Requirements
For the Degree of
DOCTOR OF NURSING PRACTICE
In the Graduate College
THE UNIVERSITY OF ARIZONA

2016
THE UNIVERSITY OF ARIZONA
GRADUATE COLLEGE

As members of the DNP Project Committee, we certify that we have read the DNP Project prepared by Jessica Celeste Stevens entitled The C.A.S.E. Approach (Corroboration, About Me, Science, Explain/Advise): Improving Communication with Vaccine-Hesitant Parents, and recommend that it be accepted as fulfilling the DNP Project requirement for the Degree of Doctor of Nursing Practice.

__________________________________________ Date: Summer 2016
Gloanna Peek, PhD, RN, CPNP

__________________________________________ Date: Summer 2016
Donna B. McArthur, PhD, APRN, FNP-BC, FAANP, FNAP

__________________________________________ Date: Summer 2016
Terry A. Badger, PhD, RN, PMHCNS-BC, FAAN

Final approval and acceptance of this DNP Project is contingent upon the candidate’s submission of the final copies of the DNP Project to the Graduate College.

I hereby certify that I have read this DNP Project prepared under my direction and recommend that it be accepted as fulfilling the DNP Project requirement.

__________________________________________ Date: Summer 2016
Gloanna Peek, PhD, RN, CPNP
STATEMENT BY AUTHOR

This DNP Project has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this DNP Project are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his or her judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: Jessica Celeste Stevens
# TABLE OF CONTENTS

LIST OF FIGURES ............................................................................................................ 6
LIST OF TABLES ............................................................................................................... 7
ABSTRACT ......................................................................................................................... 8
INTRODUCTION ............................................................................................................... 10
Vaccine-Hesitant Parent Definition .............................................................................. 11
Problem Description ...................................................................................................... 12
  Long Forgotten ........................................................................................................... 12
  Anti-Vaccination Movement ...................................................................................... 14
  Disease Outbreaks .................................................................................................... 15
  National Coverage Falling Short ............................................................................. 17
  Absence of a Combined Front .................................................................................. 18
Literature Review ........................................................................................................... 20
  Search Parameters .................................................................................................... 21
  C.A.S.E. Approach Literature .................................................................................. 22
  VHP Communication Literature ............................................................................ 23
  Knowledge Gap ......................................................................................................... 24
Rationale ........................................................................................................................... 24
  Conceptual Model of Parental Decision Making ..................................................... 25
  Aristotelian Rhetoric .............................................................................................. 26
METHODS ....................................................................................................................... 29
Sample and Setting ........................................................................................................ 29
Procedures ...................................................................................................................... 29
Intervention .................................................................................................................... 30
Evaluation ...................................................................................................................... 33
Analysis ........................................................................................................................... 34
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethical Considerations</td>
<td>34</td>
</tr>
<tr>
<td>RESULTS</td>
<td>36</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>38</td>
</tr>
<tr>
<td>Strengths</td>
<td>39</td>
</tr>
<tr>
<td>Pilot Study</td>
<td>39</td>
</tr>
<tr>
<td>Theory-Based Intervention</td>
<td>40</td>
</tr>
<tr>
<td>Potentially Wide Impact</td>
<td>40</td>
</tr>
<tr>
<td>Limitations</td>
<td>40</td>
</tr>
<tr>
<td>Sample Size</td>
<td>41</td>
</tr>
<tr>
<td>Selection Bias</td>
<td>41</td>
</tr>
<tr>
<td>The Testing Effect</td>
<td>41</td>
</tr>
<tr>
<td>Questionnaire Imprecision</td>
<td>41</td>
</tr>
<tr>
<td>Conclusions</td>
<td>42</td>
</tr>
<tr>
<td>APPENDIX A: C.A.S.E. Approach Questionnaire Pretest and Posttest</td>
<td>44</td>
</tr>
<tr>
<td>APPENDIX B: Introduction to the Project</td>
<td>50</td>
</tr>
<tr>
<td>APPENDIX C: Learning Module Power Point Slides</td>
<td>52</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>56</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

FIGURE 1. Pertussis Cases, United States, 1940-2009 .............................................13
FIGURE 4. Conceptual Model of Parental Decision Making. ....................................26
FIGURE 5. Aristotelian Rhetoric Influence on Parent’s Decision Regarding Vaccination ....28
LIST OF TABLES

TABLE 1. Mean Total Questionnaire Scores at Pretest and Posttest. ........................................36
TABLE 2. Comparison of Pretest and Posttest Means Scores Using Paired Samples t-Tests. .....36
TABLE 3. Comparison of Pretest and Posttest Mean Scores by Sub-Category.............................37
TABLE 4. Comparison of Pretest and Posttest Mean Scores by Sub-Category Using Paired
Samples t-Tests. ..........................................................................................................................37
ABSTRACT

OBJECTIVES: The anti-vaccination movement is prevalent in today’s media with claims which continue to create feelings of fear and trepidation in the minds of many parents. The C.A.S.E. Approach (Corroboration, About Me, Science, Explain/Advise) is a method of communication to be used in formulating meaningful, rapid responses to parents hesitant to vaccinating their children. This DNP project assessed the effects of a C.A.S.E. Approach learning module on family nurse practitioner (FNP) students’ perceived levels of knowledge and self-efficacy regarding vaccination discussion with vaccine hesitant parents (VHPs).

METHODS: This DNP project used a pretest-posttest design to measure the effects of the C.A.S.E. Approach training intervention on both knowledge and self-efficacy levels of FNP students. Fourteen students participated in this study. Each took the 20-question pretest C.A.S.E. Approach Questionnaire, then participated in the C.A.S.E. Approach learning module, and finished by repeating the questionnaire as a posttest following the intervention. The questionnaire was designed using four-item Likert questions scored 1 (strongly disagree) to 4 (strongly agree), wherein higher scores reflected better understanding and self-efficacy in the C.A.S.E. Approach. Students were recruited via an online classroom format within a nursing course offered at the University of Arizona: Nursing 612, Introduction to Pediatrics. All testing and module information was accessed online and questionnaire responses were stored at Qualtrics.com, also online.

RESULTS: Students’ posttest scores following the intervention of the C.A.S.E. Approach learning module were significantly higher than pretest scores. Perceived knowledge ($p < 0.001$) of the C.A.S.E. Approach increased more significantly than did perceived self-efficacy ($p =$
0.001) of the C.A.S.E. Approach following the module. Mean test scores increased on average 14.29 points in perceived knowledge of the C.A.S.E. Approach following the module, and 7.93 points for perceived self-efficacy following the module.

**CONCLUSION:** Key findings included an observed increase in participating students’ perceived knowledge regarding the C.A.S.E. Approach as well as an observed increase in participating students’ perceived self-efficacy in using the C.A.S.E. Approach. There was strong statistical evidence ($p \leq 0.05$) to suggest the learning module increased student knowledge and self-efficacy regarding vaccine discussion.
INTRODUCTION

The anti-vaccination movement is prevalent in today’s media with claims that continue to create feelings of fear and trepidation in the minds of many parents. These claims include: Vaccinations cause autism. Vaccinations lead to allergies. Vaccinations overpower the immune system. Vaccinations cause the illnesses they were designed to prevent. Vaccinations are unnatural and unnecessary. These myths are typical of those spread by anti-vaccination activists, and their voices can be difficult to tune out (Betsch & Sachse, 2013). Fortunately, providers in the primary care setting have a more significant influence on parental decision to vaccinate than any other source, and, as of 2010, nurse practitioners (NPs) comprised nearly 20% of this primary provider workforce (Healy & Pickering, 2011; Yee, Boukus, Cross, & Samuel, 2013). This statistic places nurse practitioners at the very forefront of the current battle on vaccination. However, many NPs have not been trained in methods specific to communicating with vaccine-hesitant parents (VHPs), and may find themselves lacking in knowledge and self-efficacy regarding this communicative process. The purpose of this project was to introduce family nurse practitioner students (FNP students) at The University of Arizona College of Nursing to a new communicative method designed specifically for use with vaccine-hesitant parents. The desired outcomes were that following this training, students would experience an increase in their perceived knowledge of the C.A.S.E. Approach (Corroborate, About Me, Science, Explain/Advise), as well as an increase in their perceived self-efficacy to formulate meaningful, rapid responses to parents hesitant to vaccinating their children. This project was designed to answer the following clinical questions:
1) After participation in this DNP project involving C.A.S.E. Approach training, do family nurse practitioner students at the University of Arizona experience an increase in their perceived knowledge regarding this approach?

2) After participation in this DNP project involving C.A.S.E. Approach training, do family nurse practitioner students at the University of Arizona experience an increase in their perceived self-efficacy regarding this approach and its future use with vaccine-hesitant parents?

Vaccine-Hesitant Parent Definition

Vaccine-hesitant parents include parents of children under the age of 18, who exhibit the intent to either delay or avoid vaccines that have been recommended by the Advisory Committee on Immunization Practices (Domachowske & Suryadevara, 2013). While complete refusal of all vaccines is uncommon, hesitancy toward many vaccines, along with the desire to postpone recommended vaccinations is seen regularly in many primary care practices (Domachowske & Suryadevara, 2013). The level of hesitancy varies according to parental knowledge and personal experience (Healy & Pickering, 2011). Reasons given for this hesitancy include (but are not limited to): vaccines and their additives are unsafe, vaccines can cause the disease for which they were designed to protect against, vaccines don’t work, having the “natural” disease is healthier, the vaccine schedule is too complex and may “overload” the immune system, vaccines have been linked to autism, and vaccines are no longer necessary given that herd immunity exists so strongly in today’s society (Healy & Pickering, 2011).
**Problem Description**

The problem involving poor communication with VHPs is multifaceted. Major contributions to this problem involve a new generation of parents who find irrelevance in considering diseases which occurred far before their time, evolving anti-vaxx campaigns and growing resistance in the media, which are leading to a rising of vaccination-averse communities, and inadequate national immunization rates. Finally, the complete lack of a standardized approach to discussion with vaccine-hesitant parents doesn’t allow for the opportunity needed to correct for this anti-vaccination propaganda (Livingston, Sutherland, & Sardi, 2014).

**Long Forgotten**

It has become increasingly difficult to relay the importance of vaccines, when evidence of the diseases has been out of sight, out of mind for so long. The development of the vaccine was one of the greatest advances in all of medical history. Following an era in which people often died from sudden illness or resulting disease, vaccines provided a relatively simple solution. By injecting a small amount of a scientifically modified bacteria or virus, leading physicians of their day were able to prompt an immune response without actually causing disease. It is estimated that 300 million people died from smallpox alone, during the 20th century (Flight, 2011). Millions more suffered and died from complications of other untreatable diseases such as diphtheria, tetanus, pertussis, polio, and measles. However, with the World Health Assembly’s push for smallpox vaccination in 1959, the disease was entirely eradicated by 1980 (Flight, 2011). Similarly, cases of other life-threatening diseases dropped off dramatically after their vaccine releases. Before the availability of the pertussis vaccine in 1940, pertussis (whooping
cough) was a common cause of morbidity and mortality among children in the United States.

Following widespread vaccination, the incidence of pertussis dropped from more than 200,000 cases in 1940 to less than 10,000 cases in 1970. See figure 1 (CDC, 2011).

![Pertussis Cases, United States, 1940-2009](image)

*FIGURE 1.* Pertussis Cases, United States, 1940-2009.

Following licensure and widespread distribution of the measles vaccine in 1963, the incidence of measles dropped from 450,000 U.S. cases in 1960 to under 20,000 U.S. cases by 1970. See figure 2 (CDC, 2011a).
These examples support the efficacy of vaccines in eliminating disease. However, to many new parents, these startling case numbers may seem too far distant to hold any relevance in their current decision making process regarding vaccination. It is all too easy to forget the past.

Anti-Vaccination Movement

Unfortunately, despite the overwhelming body of scientific evidence to suggest the contrary, vaccines have recently been rumored to be ineffective, unnecessary and even dangerous. It has even been suggested that vaccinations may be responsible for the current rise in autism (Betsch & Sachse, 2013). Many parents are hearing these accusations, whether it be through social media, friends, family, or popular celebrities, and are left wondering if it is advisable to vaccinate their own children. The term “Anti-Vaxx” refers to a trend of heightened mistrust in today’s vaccines (Livingston, Sutherland, & Sardi, 2014). Popular “anti-vaxxers” include certain celebrities and political activists such as Jenny McCarthy, Rob Schneider, Bill
Maher, Charlie Sheen, Jim Carrey and Donald Trump. These high-profile names and their publicly announced allegations have led to increasing scrutiny of vaccinations by the public eye. Jolley and Douglas (2014) found that participants who were exposed to anti-vaccine conspiracy beliefs showed less intention to vaccinate. Parents are subject to this anti-vaccine propaganda, even as they seek to find credible information on the subject of immunization. With today’s widespread use of the internet and social media outlets, misinformation is everywhere. Oftentimes, parents will mistake anecdotal evidence for medical literature, and, while each may have its use in making personal decisions, one should not be confused for the other.

**Disease Outbreaks**

The Centers for Disease Control (CDC) has reported that an increasing number of measles and pertussis outbreaks are occurring in small, vaccine-averse communities wherein the vaccination rates are far lower than the national standard (Matthias, Dusek, Pritchard, Rutledge, Kinchin, & Lander, 2014). These communities often state religious, philosophical, or personal beliefs, as reasons for not vaccinating. This is a change from trends we’ve seen in the past where those most in danger of vaccine-preventable diseases were infants too young to have yet achieved full immunity, children with severe allergic reactions to vaccines, children with immunodeficiency syndromes (e.g. HIV, cancer, etc), or children with inadequate access to vaccines. Currently, healthy children of all ages are being placed at risk due to an increased incidence of elective refusal in vaccine-averse communities. In August of 2013, the CDC was notified of a pertussis outbreak in Florida, which had occurred in a school and religious community averse to health care and vaccinations. Kindergarten immunization records showed only 5 of 34 students (15%) to be fully vaccinated to pertussis. Eighty-four percent had stated
religious exemptions. A total of 95 cases were identified in the school, and another 109 cases discovered out in the small community (Matthias et al., 2014).

California is also home to many of these vaccine-averse communities. Such areas were thought to contribute to a large measles outbreak which occurred in early 2014. From January to April of 2015, 58 cases were reported – the highest number reported for that period since 1995 (Zipprich, Hacker, Murray, Xia, Harriman, & Glaser, 2014). The majority of these cases occurred in persons who were unvaccinated. One small school in Sausalito, California, reported that only 26% of their incoming kindergarteners had arrived vaccinated (Standen & Brooks, 2013). Under-vaccination was not limited to California. From January 1st, 2014 to August 29th, 2014, 592 cases of measles and 18 outbreaks were identified by the CDC in the United States. This is nearly triple the number of cases from 2013. See figure 3 (CDC, 2014b).

**FIGURE 3.** U.S. Measles Cases by Year, 2001-2014.
Perhaps, the most significant measles outbreak occurred at Disneyland, in Anaheim, California. USA Today reported on January 30th, 2015, that this Disneyland outbreak led to 84 cases of measles in 14 different states, all diagnosed between January 1st and January 28th (Szabo, 2015). These recent outbreaks suggest that the anti-vaccination campaign continues to draw support, especially in certain geographical areas already averse to vaccination.

**National Coverage Falling Short**

The most recent national vaccination report was published by the CDC in August of 2014, and described vaccination coverage rates for 19-35 month-old children in the year of 2013. Vaccination coverage was 90% or above for measles, mumps, rubella (MMR); hepatitis B; poliovirus; and varicella vaccines (Elam-Evans, Yankey, Singleton, & Kolasa, 2014). However, coverage was below the *Healthy People 2020* targets (of >90%) for other vaccinations including diphtheria, tetanus, and pertussis (DTaP) (83.1%); pneumococcal (82.0%); *Haemophilus influenzae* (82.0%); hepatitis A (54.7%); and rotavirus vaccines (72.6%) (Elam-Evans et al., 2014). Although the national coverage rates for many vaccines are quite respectable, there are still numerous children who are left at risk as evidenced by the disease outbreaks previously discussed. Vaccine hesitancy also continues to be a problem, and parents are more frequently choosing to postpone vaccines until they feel the time is right. Despite a national coverage level of 91.9% for the MMR vaccine, one child in 12 will not receive his or her first dose of the MMR vaccine on time (Elam-Evans et al., 2014). This underscores measles susceptibility across the country, and supports the fact that measles outbreaks continue to occur.
Absence of a Combined Front

Currently, there is no nationally recognized standard approach for communicating with VHPs. This is because there is simply not enough literature with VHP communication as its focus to formalize a successful communication method for use within this population (Opel et al., 2012). This is truly unfortunate as it has been shown that primary health care providers have a greater influence on a parent’s decision to vaccinate than any other source (Healy & Pickering, 2011). Without a standardized approach, it can be difficult to convey the importance of vaccination to the vaccine-hesitant parent. American Academy of Pediatrics (AAP) surveys have shown that, each year, over 85% of providers face a parent refusing to vaccinate his or her child (Flanagan-Klygis, Sharp, & Frader, 2005). These VHPs provide a wide variety of reasons guiding their decision. Some believe vaccines to be harmful with excessive adverse side effects, while others believe them to be medically unnecessary. Other VHPs worry about the number of injections given at one visit, the possibility of the immune system becoming overloaded, or the unnatural, chemical makeup of the vaccines themselves. As future health care providers in the primary setting, family nurse practitioner students must have the ability to convey understanding and validation of these parental concerns in order to promote vaccination (Healy & Pickering, 2011). Nurse practitioner students must be well-prepared, as well as motivated, to actively engage parents in conversation concerning vaccinations (Healy & Pickering, 2011). At this time, and with the lack of VHP communication training in most nursing programs nationwide, many nurse practitioner students are not prepared to have this discussion. This is not because they do not believe in vaccination: the majority of health care providers are familiar with data supporting immunizations, and often choose to vaccinate their own children. Martin and Badalyan (2012)
found that 95% of surveyed pediatricians reported vaccinating their own children fully and on schedule. Although obviously important to health care providers, many HCPs find it difficult to formulate an effective response to the vaccine-hesitant parent. Their own lack of vaccine-related knowledge and confidence in stressing vaccine necessity to parents contributes to this communication deficit. A study conducted in 2009 used a standardized patient (an actor used to assess physician performance) to portray the role of an expectant mother opposed to vaccination (Bryant, Wesley, Wood, Hines, & Marshall, 2009). The majority of physicians scored well in listening, maintaining eye contact, spending adequate time with the patient, and avoiding paternalistic posturing. However, assessment of the patient’s knowledge of vaccines, validation of the patient’s concerns, encouragement of questions, and the provision of the physicians’ personal standpoints were seriously lacking. Overall, it appeared that the physicians did not know how to express the importance of vaccines to the patient, and, at times, appeared to be unaware or uninterested in the patient’s opinion (Bryant et al., 2009). Again, this report reaffirms the struggle encountered when trying to communicate successfully with a vaccine-hesitant parent. Providers and students alike who are unprepared for such circumstances with a VHP may attempt to offer erroneous information, or may dismiss the subject entirely for fear of offending the parent (Bryant et al., 2009). These are not appropriate methods, nor are they conducive to bettering communication with VHPs. Without a standardized approach to the VHP, children will continue to go unvaccinated as today’s misinformed anti-vaxx arguments overshadow those important lessons from the past. Disease outbreaks will continue to occur in those ever-growing vaccine-averse communities, and it will become extremely difficult to reach those Healthy People 2020 targets of greater than 90% vaccination by 2020. Without a
combined front, nor a strategic effort in place to combat those myths being fed to VHPs, it will be nearly impossible for those vaccine-hesitant parents to see the value of immunizing since successful vaccination by so many around them makes its value truly invisible (Jacobson, 2013).

**Literature Review**

The C.A.S.E. Approach (Corroborate, About Me, Science, Explain/Advise) is a relatively new method of communication designed specifically for use with VHPs. It can be used while discussing vaccination to set the tone for a respectful, successful talk (Singer, 2010). It is the model of choice for the Minnesota Chapter of the American Academy of Pediatrics, who teaches its clinicians to use the C.A.S.E. Approach with vaccine-hesitant parents (Jacobsen, 2014). The model was created by Alison Singer, MD, who is also the co-founder and president of the Autism Science Foundation. In her work, she addressed the autism-vaccination argument. Countless studies have supported that there is clearly no causal relationship between vaccines and autism (Taylor, Swerdfeger, & Eslick, 2014). However, parents continued to challenge her with questions regarding a possible link. This led Dr. Singer to conclude that the traditional framework for communicating science to patients and parents was no longer enough. In the past, when a successful study or review was published, and certain recommendations were concluded, it was common practice to state these findings to the patient and proceed with the proposed counsel. Vaccines save lives – your child should be vaccinated (Singer, 2010). However, with the media continuing to portray such controversy, and the anti-vaccine movement in full force, this traditional approach has not been the most effective when speaking with vaccine-hesitant parents. Dr. Singer suggested that the problem exists in communication practices between
providers and parents. “Existence of good science suggests [the] problem is communication” (Singer, 2010, p. 3).

Currently under study, this approach has a strong theoretical foundation, and has been well-received in medical communities where it has been introduced (Jacobsen, 2013; Jacobson, Van Etta, & Bahta, 2013). Through the C.A.S.E. Approach, clinicians may provide rapid, useful responses to parents who are leery of vaccinating their children. Teaching of this model to NP students has the potential to enhance their knowledge and confidence while speaking with VHPs. The C.A.S.E. Approach was chosen for this DNP project because it presents a new framework for speaking with VHPs, and involves more than just providing medical data to support the need for vaccination. The approach draws from Aristotelian rhetoric stating that one needs more than simply evidence to persuade an audience (Jacobson, 2013). The C.A.S.E. Approach combines active listening, patient validation, storytelling, and the offering of personal facts, along with medical discussion of the scientific evidence and literature to present the VHP with a solid case for immunization. And, with its lack of competing alternatives for use within the VHP population specifically, the C.A.S.E. Approach was the best method available to provide nurse practitioner students with a standardized approach to VHPs.

**Search Parameters**

Searches were conducted within the Cumulative Index of Nursing and Allied Health Literature (CINAHL), and PubMed databases. Search terms included the following: vaccine-hesitant parents, parental attitudes, primary care provider, health care providers, immunizations, vaccinations, vaccines, C.A.S.E. Approach, communication, health communication, nurse practitioner communication, physician conversation, doctor-patient communication, and vaccine-
safety. These terms were set together in a variety of combinations to provide ample search results. Inclusion criteria included publication within the last ten years, but preferably five, and articles written within peer-reviewed academic journals. The project questions in mind throughout this literature search were: *what communicative approaches work best with vaccine-hesitant parents when discussing the importance of vaccination? Are these methods used consistently in such circumstances? And, how effective is the C.A.S.E. Approach in the clinical setting?* The articles reviewed *had* to help answer questions. If an article did not specifically address these primary concerns, they were excluded from the synthesis.

Through this process of appraising existing literature regarding communication practices with VHPs, it became very apparent that the evidence was very limited. Only 15 articles satisfied inclusion criteria and were able to answer the project questions used in this search. Danchin & Nolan (2014) conducted a similar recent search of the literature, and concluded their Cochrane and systematic reviews to show limited evidence available to guide the implementation of effective methods to managing vaccine refusal. They state “new intervention studies are needed that incorporate vaccine communication strategies into the health care encounter” (Danchin & Nolan, 2014, p. 691). This project stands to do just that by introducing future practicing NPs to an effective communicative method designed specifically for use with VHPs.

**C.A.S.E. Approach Literature**

Unfortunately, there is an absence of completed studies using the C.A.S.E. Approach in the clinical setting. Jacobson (2014) applied the C.A.S.E. Approach to the argument for the HPV vaccine, but did not conduct any research of the application of the approach within the clinical setting. Currently, there are no available studies which report on the use of the C.A.S.E.
Approach in the clinical setting, nor any results seen with the implementation of this method. There are narratives describing the reasons that the approach would be effective, but no quantitative results. This greatly limited the literature search, particularly those articles which could answer the project question regarding the use of the C.A.S.E. Approach in the clinical setting.

**VHP Communication Literature**

The use of the C.A.S.E. Approach is strengthened by the available literature. Although there is very little published data on this specific approach by name, there is moderate data available supporting styles of communication that are used within the C.A.S.E. Approach. Parent validation, vaccine education, encouraging questions, checking for understanding, and the use of personal stories were all found throughout the literature to facilitate discussion with a VHP (Bryant et al., 2009; Danchin & Nolan, 2014; Healy & Pickering, 2011; Leask, 2009; Kempe et al., 2011; Williams et al., 2013). These are all elements found within the C.A.S.E. Approach. Many of the articles reviewed had strong internal validity, and, despite the qualitative nature of “successful conversation” and its measurement, many articles included randomized trials or cross-sectional studies with quantitative results offered. Williams et al. (2013), one of the cross-sectional observational studies included in the synthesis, found that by providing a combination of parent fear validation, vaccine education, and personal story-telling, VHP scores on the Parent Attitudes about Childhood Vaccines (PACV) surveys were significantly decreased (meaning less apprehension regarding vaccines) when compared to a control group who did not receive the intervention. Again, these are all elements incorporated into the C.A.S.E. Approach.
The communicative methods used within the C.A.S.E. Approach continue to be supported by the evidence.

**Knowledge Gap**

The literature also shows there to be a lack of structure or standardized approach used when primary care providers attempt to discuss immunizations with vaccine-hesitant parents (Bryant, Wesley, Wood, Hines, & Marshall, 2009; Leask, 2009; Opel et al., 2012; Opel et al., 2013). This strengthens the argument for need of C.A.S.E. Approach education. Such education would provide nurse practitioner students with a standardized, effective approach to be used in their future clinical practice. Currently, the literature shows providers to be using a variety of approaches, to be lacking in areas that the C.A.S.E. Approach endorses, to occasionally use communication methods that are extremely damaging to the vaccine discussion, and only 50% of providers to be pursuing original recommendations when met with resistance regarding vaccinations (Bryant et al., 2009; Leask, 2009; Opel et al., 2012). Kempe et al. (2011) concluded the burden of communicating with VHPs to be very high and to significantly interfere with job satisfaction. Again, these studies strengthen the case and need for C.A.S.E. Approach training.

**Rationale**

There are many factors which influence a parent’s decision regarding vaccination. Conceptual models and frameworks allow further insight into this delicate interplay between emotions, perceptions and diverse roles leading to a vaccination decision. In order to be successful in this project’s purpose to increase knowledge and self-efficacy of the C.A.S.E. Approach, nurse practitioner students must understand the role they stand to play in a parent’s
decision to vaccinate. These students must prepare themselves to be able to perform directed, meaningful clinician-parent discussion in order to manipulate determinants related to vaccine choice.

**Conceptual Model of Parental Decision Making**

In 2005, Sturm, Mays, and Zimet presented a conceptual model with potential determinants of parental willingness to immunize their children. This model entitled, *The Conceptual Model of Parental Decision Making*, summarized the influences that social-environmental factors, the family’s interface with the health care system, and the physical environment of health all have on a parent’s decision to vaccinate. This model is particularly relevant to this project in that it portrays, not only the influence that social factors, such as media coverage and anti-vaccination campaigns, can have on parental decision to immunize, but also suggests that the provider’s approach and attitude regarding the importance of immunizations is equally important. It is a battle between provider influence and social/media manipulation to prompt a change in personal health beliefs. Which factor will tip the scale? Will social influence be too difficult to ignore? Or can the provider offer up an argument for vaccination’s cause that is irrefutable? It is hoped that, through the use of the C.A.S.E. Approach, the nurse practitioner student, and future primary provider, can strengthen his or her position of influence with the parent, and overcome the opposition to vaccination. In order to accomplish this goal, the FNP student must have a firm understanding of the C.A.S.E. Approach, as well as self-efficacy in putting this approach into action with the VHP.

Strum et al., (2005) suggested that social-environmental issues include vaccine media coverage, social norms as perceived by the parent, and the persuasive power of one’s peers. The
parent’s interface with health care includes the provider’s recommendations and attitude. The personal factors suggested in the model include parental health beliefs, knowledge related to the vaccines and to the diseases they prevent, and the parent’s experience in decision-making. Institutional factors involve mandates or policies related to vaccines, such as those necessary for entry into schooling programs. Together, these four domains (social-environmental factors, interface with health care, personal factors, and institutional factors) produce influence over the parental decision-making process. See figure 4 (Strum et al., 2005).

![Conceptual Model of Parental Decision Making](image)

**FIGURE 4.** Conceptual Model of Parental Decision Making.

The intended improvement of this project is to enhance FNP student-parent communication, thereby positively influencing the parental decision-making process exhibited by VHPs.

**Aristotelian Rhetoric**

The C.A.S.E. Approach was ultimately designed to be a tool used in the art of honest persuasion. Its founder, Dr. Alison Singer, MD, built the approach using Aristotelian Rhetoric as
its foundation (Jacobson, 2013). Aristotle’s *Rhetoric* is an ancient written work dating back to the fourth century B.C. (Golden, Berquist, Coleman, Golden, & Sproule, 2007). In it, Aristotle, a Greek philosopher and scientist, describes the ability to see and use three available means of persuasion – pathos, ethos and logos (Henning, 1998). Pathos (a Greek word meaning ‘suffering’) is persuasion by appealing to one’s emotions (Henning, 1998). The nurse practitioner student should show emotional investment to the vaccine-hesitant parent by partaking in ‘Corroboration’ with the parent. This involves actively listening to the parent’s concerns and responding with validating statements, assuring her that you also want what’s best for the child. “I know you are worried, but you and I want the same thing for your child – to be healthy and free of disease or injury” (Jacobsen, 2013).

Ethos (a Greek word meaning ‘character’) involves the convincing of one’s audience through the credibility of the author (Henning, 1998). ‘About Me’ in the C.A.S.E. Approach represents this ethos element. By reminding the patient or parent of your professional standing and knowledge, your argument may then bear greater significance.

Logos (a Greek word meaning ‘word’) refers to the use of reasoning to persuade an argument (Henning, 1998). Aristotle believed this to be the heart of argumentation, and maintained that the substantiation of claims with facts is often the most difficult to refute. This is the “Science” element in the C.A.S.E. Approach. The nurse practitioner student should lead the parent through a quick review of the vaccine’s purpose, efficacy, and safety substantiates through numerous medical studies. The Vaccine Information Statements provided by the CDC may prove very helpful through this part of the discussion. The science does not include
anecdotes or popular opinion. Rather the science behind vaccines refers to the vast body of supporting evidence to immunize.

Finally, all three forms of rhetoric – pathos, ethos, and logos – come together in the final element of the C.A.S.E. Approach, ‘Explain/Advise.’ This component is meant to end the discussion with a strong take-home message endorsing vaccination. The nurse practitioner student, who at this time appears credible, emotional, yet logical, should advise the parent to vaccinate.

The intended outcome of this project was to improve communication efforts made to the vaccine-hesitant population by enhancing C.A.S.E. Approach knowledge of the nurse practitioner student soon to be in clinical practice. Each rhetorical style used within the C.A.S.E. Approach contributed to the model’s overall effectiveness.

Pathos, ethos and logos each pertain to different aspects of the parent’s concerns and help to reassure and convince the VHP. See figure 5.

**FIGURE 5.** Aristotelian Rhetoric Influence on Parent’s Decision Regarding Vaccination.
METHODS

Methods discussed will include sample and setting, procedures, a detailed description of the intervention, evaluation measures, methods used for analysis, and, finally, ethical considerations.

Sample and Setting

Participants were recruited from The University of Arizona College of Nursing (UA CON) online classroom of Nursing 612: Introduction to Pediatrics. This online course is often taken during the second year of DNP-FNP study at the university and typically includes 50-60 students per semester. Students in the spring 2016 semester who met inclusion criteria were asked to take a pretest to evaluate perceived C.A.S.E. Approach knowledge and self-efficacy, then read through the educational module regarding the C.A.S.E. Approach and its use, and finish with the posttest to evaluate change. Those who chose to participate followed the project’s hyperlinks which were posted electronically to the main “Announcements” board of NURS 612. See Appendix B. Inclusion criteria was as follows: (1) full-time or part-time enrollment at the University of Arizona’s College of Nursing in the Doctor of Nursing Practice (DNP) Family Nurse Practitioner (FNP) specialty program; (2) enrolled in the spring 2016 semester course of NURS 612: Introduction to Pediatrics; (3) access to the internet. A total of 14 students met inclusion criteria and participated in the intervention, completing both the pre- and posttests.

Procedures

This project used a one group pretest-posttest design to measure the effects of the C.A.S.E. Approach intervention on perceptions of both knowledge and self-efficacy of FNP students. Following recruitment, hyperlinks were made active on April 1st, 2016. Participating
FNP students were able to take both the pretest and posttest in an online, automated format. These links were operational from April 1st, 2016 through May 10th, 2016, and students were able to access these via the internet whenever and wherever circumstances allowed. Students began by following hyperlink #1 to take the pretest. Following completion of the pretest, students returned to the “Announcements” page of their NURS 612 online classroom, and followed the second link to view the C.A.S.E. Approach (Corroboration, About Me, Science, Explain/Advise) training module. Finally, students followed the third link to complete the posttest. These components were to be completed consecutively. The process, start to finish, should have taken no longer than 60 minutes. The pre- and posttest links redirected students to the Qualtrics.com website, while the module link directed students to a Google Drive website wherein they were able to view the C.A.S.E. Approach training module. Completed questionnaires were saved to Qualtrics.com for future available viewing by the conductor of this study.

**Intervention**

The intervention for this study was a learning module of the C.A.S.E. approach. The module’s slides, containing bulleted, summarized information regarding the C.A.S.E. Approach and its four separate components, were developed by the PI. See Appendix C. The slides used for this intervention were adapted from a presentation created by Dr. Robert Jacobson, MD, a professor of pediatrics at the Mayo Clinic (Jacobson, 2013). He also used a Power Point presentation to relate information regarding the C.A.S.E. Approach, including descriptions of the four C.A.S.E. Approach components and scenarios in which the approach could be used. His presentation included 50 slides, with many examples of how to talk to vaccine-hesitant parents,
and many vaccine-specific details. Dr. Jacobson’s information was synthesized and condensed into a much shorter 18-slide module designed specifically for use within this DNP project. Dr. Jacobson is one of the only leading researchers of the C.A.S.E. Approach with articles and materials made available to the public, and his Power Point presentation was essential to the development of this module.

The module began by outlining learning objectives before providing a brief explanation of what the C.A.S.E. Approach is and how it is used. The components of the C.A.S.E. Approach are as follows (Jacobson, 2013; Singer, 2010):

- Corroborate
  - This involves listening to the parents’ concerns and letting them feel validated. Dr. Singer suggests finding some point on which you can agree.
  - Example: “Yes, there have certainly been many stories in the media regarding autism and vaccines, so I can understand your concerns.”

- About Me
  - This element allows the provider to assure the parent that she is qualified to take excellent care of the child in question, and has reviewed the evidence thoroughly.
  - Example: “I actually just returned from a professional conference where scientific evidence was presented concerning this issue. I like to be sure that I am up to date on the most recent information, so I can make the best recommendations for my patients.”

- Science
This is a presentation of the science and data to support the provider’s recommendation. However, it is best to actively engage the parent in this conversation, rather than to provide a printed handout or email. The Vaccine Information Statements (VIS’s) provided by the CDC are excellent resources, but should be read several times over by the clinician before ever engaging in actual discussion with a patient.

Example: “The scientific evidence does not support a link between vaccines and autism. In fact, a new meta-analysis of 10 studies involving more than 1.2 million children reaffirmed that no relationship exists (Taylor, Swerdfeger, & Eslick, 2014).”

- Explain/Advise

  The provider should finish the discussion by outlining his or her advice to the parent based on the scientific evidence. It may be useful to suggest what you would do personally, if it were your own child.

  Example: “Choosing not to vaccinate does not protect your child from autism, but does leave him at increased risk for serious diseases. I highly recommend this vaccine, and if it were my own son, I would be vaccinating him today.”

After these components were described, and the purpose and need for using a standardized approach for communication with the VHP were made clear, the learning module then focused upon three different clinical scenarios. The nurse practitioner student learned how to put the C.A.S.E. Approach into action by working through these different scenarios outlined in
the module slides. The scenarios depicted three common concerns vaccine-hesitant parents often present in their arguments against vaccines. These concerns included:

1) vaccines cause autism  
2) too many vaccines will overload the immune system  
3) vaccines are no longer necessary  

The module walked the students through the act of addressing these concerns using the C.A.S.E. Approach. See Appendix C.

It was hypothesized that, by working through these scenarios step by step, and learning the correct and incorrect things to say and do with the VHP, nurse practitioner students would finish the module with an increased knowledge and self-efficacy in applying the C.A.S.E. Approach to real-time clinical scenarios they may encounter in future practice.

**Evaluation**

A questionnaire designed by the principal investigator of this DNP project was the tool used within this DNP project to assess the impact of the intervention. It was used as both the pretest and posttest.

The questionnaire included 20 questions related to the student’s feelings of knowledge and self-efficacy concerning the C.A.S.E. Approach and its use with vaccine-hesitant parents. This questionnaire included 12 designed specifically to measure students’ perceptions of C.A.S.E. Approach knowledge, and 8 items to measure students’ feelings of self-efficacy and confidence regarding its use. See Appendix A.

This questionnaire was designed to quantify those two measurable outcomes (knowledge, self-efficacy) using Likert item questions. Each question was a form of a statement which the
Examples of public health questionnaires from the CDC (including the Youth Risk Behavior Surveillance System (YRBSS), National Health and Nutrition Examination Survey (NHANES), Behavior Risk Factor Surveillance System (BRFSS) (CDC, 2014a; CDC, 2015a)) were used as guides when creating this data collection tool. The formatting and grouping of the questions, as well as the use of the Likert scale were done with the intention of mimicking other successful, more widely used evaluation tools (CDC, 2011b).

**Analysis**

Paired t-test procedures were used to test for differences between the pretest and posttest means. A statistical significance level of $p \leq 0.05$ was selected and a 95% confidence interval was reported. The pretest and posttest total scores as well as sub-scores were compared using simple paired-sample $t$-tests. Descriptive statistics, including means, standard deviations, confidence intervals, and $t$-values, were calculated for both pretest scores and posttest scores. Statistics were computed by hand, given the few number of responses. SPSS statistical software was not needed with 14 responses.

**Ethical Considerations**

Ethical concerns within this project were limited due to the nature of the intervention. Providing a learning module, an opportunity for increased education regarding a nationally recognized topic, was not overly alarming as far as ethics were concerned. However, ethical consideration was given to those participating FNP students contributing to this study and their rights and opinions. The educational module was introduced to the students of Nursing 612 as a
voluntary activity. The voluntary nature of the activity was emphasized to avoid imposing upon the students’ rights. This project, its pretest and posttest, and educational module, was not listed on this syllabus and was not a required activity within the course. Students were to understand that their participation was welcome, but not required, and their questionnaire performance did not influence their grades. Poor understanding of these instructions could have led to inaccurate data as students attempted to provide answers they thought were “correct,” rather than answers reflective of their true beliefs. Students were to also understand that their personal opinions on vaccination held no bearing within this study. Questionnaire items were designed for use regardless of opinion towards vaccination. Approval from the Institutional Review Board (IRB) was obtained prior to the implementation of this project.
RESULTS

Mean differences in total test scores (from pretest to posttest) were calculated as well as other descriptive statistics, including measures of spread and variance. A 95% confidence interval was reported because the 0.05 significance level was selected before beginning data collection. See Table 1.

**TABLE 1. Mean Total Questionnaire Scores at Pretest and Posttest.**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest Score</td>
<td>14</td>
<td>49.43</td>
<td>8.26</td>
<td>35-61</td>
</tr>
<tr>
<td>Posttest Score</td>
<td>14</td>
<td>71.79</td>
<td>6.83</td>
<td>60-80</td>
</tr>
</tbody>
</table>

**TABLE 2. Comparison of Pretest and Posttest Mean Scores Using Paired Samples t-Tests.**

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>Significance</th>
<th>Mean Difference</th>
<th>95% Confidence Interval Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference</td>
<td>7.07</td>
<td>13</td>
<td>p &lt; 0.001</td>
<td>22.36</td>
<td>15.53</td>
<td>29.19</td>
</tr>
</tbody>
</table>

The $t$ value of 7.07 and $p$ value of $< 0.001$ indicated a strong statistical difference between the pretest scores and posttest total scores with a mean increase of 22.36 points. See Table 2. Therefore, there was strong evidence that, on average, the module did lead to improved perception of C.A.S.E. Approach knowledge and self-efficacy.

Statistical analysis was also conducted by sub-categories of knowledge and self-efficacy. Twelve questions on the questionnaire addressed students’ perceptions of their C.A.S.E. Approach knowledge and eight questions addressed students’ perceptions of their self-efficacy in using the C.A.S.E. Approach. See Table 3.
**TABLE 3.** Comparison of Pretest and Posttest Mean Scores by Sub-Category

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Difference in Self-Efficacy</strong></td>
<td>14</td>
<td>7.93</td>
<td>6.32</td>
<td>1.69</td>
</tr>
<tr>
<td><strong>Difference in Knowledge</strong></td>
<td>14</td>
<td>14.29</td>
<td>6.38</td>
<td>1.71</td>
</tr>
</tbody>
</table>

**TABLE 4.** Comparison of Pretest and Posttest Mean Scores by Sub-Category Using Paired Samples t-Tests.

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>Significance</th>
<th>Mean Difference</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Difference in Self-Efficacy</strong></td>
<td>4.69</td>
<td>13</td>
<td>p = 0.001</td>
<td>7.93</td>
<td>4.28</td>
</tr>
<tr>
<td><strong>Difference in Knowledge</strong></td>
<td>8.36</td>
<td>13</td>
<td>p &lt; 0.001</td>
<td>14.29</td>
<td>10.60</td>
</tr>
</tbody>
</table>

The improvements seen in both sub-categories of self-efficacy and knowledge following the learning module were significant and unlikely to be due to error. It did appear the students’ perceptions of C.A.S.E. Approach knowledge increased more substantially than did their perceptions of self-efficacy (mean difference scores of +14.29 points in knowledge improvements versus +7.93 points in self-efficacy improvements). The module appeared to have increased both knowledge and self-efficacy perceptions, but improved students’ perceptions of their C.A.S.E. Approach knowledge more than their confidence in using it.
DISCUSSION

Key findings included an observed increase in participating student’s perceived knowledge regarding the C.A.S.E. Approach as well as an observed increase in participating student’s perceived self-efficacy in using the C.A.S.E. Approach. More precisely, the statistical evidence ($p \leq 0.05$) suggests that, following participation in the C.A.S.E. Approach training, family nurse practitioner students at the University of Arizona experienced a 38% increase in perceived self-efficacy regarding this approach, and a 49% increase in perceived C.A.S.E. Approach knowledge.

Although completing this module was associated with increases in both perceived knowledge and self-efficacy, perceived knowledge was more greatly impacted. This outcome may have been observed as students already felt self-confident and self-assured in discussing vaccines with vaccine-hesitant parents before taking part in the intervention. Therefore, the intervention did not seem to have as great of an effect on this quality of self-efficacy. Students may have felt less strongly about needing a guided approach to talking with VHPs to increase their confidence (self-efficacy), than they did about learning and retaining information about a completely new approach (knowledge).

The intervention may have had a greater impact on knowledge scores simply because students did not know of the C.A.S.E. Approach or its methods before beginning the module. The C.A.S.E. Approach was new and was likely foreign to most, if not all, of the students participating in this DNP project. Therefore, it was easier to increase knowledge regarding the approach, rather than increase confidence within a population of participants who were likely
already very confident in many of their abilities – including those in working with vaccine hesitant patients and parents.

Overall, those reported increases in perceptions of C.A.S.E. Approach knowledge and self-efficacy reported by students, will serve these future FNPs in their upcoming practice. When faced with hesitance or resistance from a parent regarding vaccination, these students should be able to recall those four components of the C.A.S.E. Approach, comprise an appropriate and helpful response, and then work together with that parent to make a wise, well-informed medical decision. Thus, findings from this study support the use of this training intervention to educate nurse practitioner students regarding the C.A.S.E. Approach and its practice. Using this learning module in FNP education programs may bridge those gaps in communications which currently exist between many primary providers and vaccine hesitant parents.

**Strengths**

A major strength of this study included the fact that it was the first of its kind, having never been done before. Other strengths included this project’s use of a developed theory-based intervention, and potential for a wider impact with additional study. and could serve as a pilot study for additional study of reception to the C.A.S.E. Approach by students and/or HCPs.

**Pilot Study**

This project could serve as a pilot study for additional research regarding student or provider reception to C.A.S.E. Approach training. FNP students participating in this DNP project showed excellent response to the training, which foretells potential for success in conducting similar studies in the future.
Theory-Based Intervention

This project’s intervention was strongly based in nursing and philosophical theory. Materials published only by those closest to the C.A.S.E. Approach and its construction (including its creator, Dr. Alison Singer and top researcher, Robert Martin Jacobson) were carefully adapted to Power Point slides in order to present the best teaching module possible. The module was simple, yet interactive, and encouraged students to think through realistic scenarios highly applicable to future work as a nurse practitioner. The outcomes observed following the application of this learning module, suggested the module was very appropriate for this particular group of participants.

Potentially Wide Impact

This DNP project could be easily replicated with a larger group of students or other health care professionals. The learning module and questionnaire were designed by the PI specifically for this project, and could be used again in additional research. In using these already-developed tools for further study, C.A.S.E. Approach knowledge could be propagated on a much larger scale. Thus, this pilot DNP project has the potential to provide a much greater impact with additional study.

Limitations

There were limitations within this study which stood to devalue its observed results. Low sample size, selection bias, the testing effect, and imprecision of the questionnaire used were all limitations to this DNP project.
Sample Size

The greatest limitation to this study involved its small sample size of $N=14$. A study using less than 20 subjects is often likely to be too small for most quantitative investigations (Hackshaw, 2012).

Selection Bias

Participating students within this study were self-selected. This selection effect may have skewed results for the better, as those students who participated may have been more invested in the topic, showing better results following the intervention. Those students who may have been more resistant to learning through this module were unlikely to have self-selected themselves then to participate in this voluntary intervention in the first place. Given the small sample size and selection bias, this project cannot be generalized to a larger sample of FNP students. More work is needed to evaluate the module within a larger sample population.

The Testing Effect

The use of the same questions on both pretest and posttest likely influenced students’ responses to the posttest. This is called the “testing effect” and is a well-established psychological effect.

Questionnaire Imprecision

It may have been more appropriate to test actual knowledge, rather than perceptions of knowledge for this project. For example, surveys could have incorporated questions about the C.A.S.E. Approach itself -- what it involved, how and when to use it and the type of scenarios in which it would have proven itself useful. If the tool had been designed like an exam with only one correct answer choice, and three incorrect answer choices, it may have more accurately
measured levels of knowledge attained through the module intervention. This may have been a better way to measure improvements in C.A.S.E. Approach knowledge following the module training rather than posing questions to the way participants felt about their experience.

This questionnaire also lacked content and face validity. Having been designed specifically for this DNP project, the questionnaire was not subjected to prior evaluation before use within this study. This made it difficult to know whether this questionnaire did, in fact, measure that which it claimed to be measuring – student perceptions of C.A.S.E. Approach knowledge and self-efficacy.

**Conclusions**

Overall, it appeared this learning module for the C.A.S.E. Approach did increase participants’ levels of perceived knowledge and self-efficacy regarding the approach. The results of this study suggested it would be beneficial to use this learning module to propagate C.A.S.E. Approach information to other FNP students. This study also proposed the need for C.A.S.E. Approach training as little was known about the approach (according to knowledge scores) before the intervention of the module. This module could be used on a wider scale to educate providers or students across the country. The module could also be adapted to different types of scenarios rather than only those suggested within this study. It appears there is a need for C.A.S.E. Approach knowledge and a good response to its teachings.

This was one of very few studies conducted with FNP students about the C.A.S.E. Approach and what it has to offer. Yet, the nature of this type of C.A.S.E. Approach intervention could be replicated easily. There is great potential for the C.A.S.E. Approach, even when spread to other contexts. Combating parental vaccine hesitancy with confidence and
increased knowledge was the focus of this study, but the C.A.S.E. Approach could also be used to discuss many other topics with patients. Above all, it is a method of communication which encourages corroboration, understanding and trust. Therefore, implications for further practice using this method or additional study to follow its impact are limitless. There were no studies at the time of this DNP project which follow the implementation of the C.A.S.E. Approach in the clinical setting. A study designed with this intent would be a very appropriate next step in continuing the building of the C.A.S.E. Approach’s foundation.
APPENDIX A

C.A.S.E. APPROACH QUESTIONNAIRE PRETEST AND POSTTEST
C.A.S.E. Approach Questionnaire Pretest and Posttest

Please take a moment to create an individualized user name. We will use this user name to link together your pretest and posttest. PLEASE ENTER THE FOLLOWING BELOW: first two letters of your mother's name followed by the first two numbers of your street address followed by the first two letters of your father's name. Examples: ja33ma, ca15ph, kr72mi.

____________________________

1. As a student and future provider, I would feel confident talking about the importance of vaccination with a vaccine-hesitant parent in the clinical setting (doctor’s office, hospital, instacare, etc).

   Strongly Agree
   Agree
   Disagree
   Strongly Disagree

2. As a student and future provider, if I were met with resistance after asking about a parent’s choice to postpone vaccines, I would feel confident in directing additional discussion regarding the importance of vaccination.

   Strongly Agree
   Agree
   Disagree
   Strongly Disagree

3. I feel that a standardized approach to communicating with vaccine-hesitant parents about vaccines would help me feel more confident in initiating a vaccine discussion.

   Strongly Agree
   Agree
   Disagree
   Strongly Disagree
Appendix A – Continued

C.A.S.E. Approach Questionnaire Pretest and Posttest

4. I am currently familiar with a communication method to be used to discuss vaccination in the clinical setting, specifically with vaccine-hesitant parents.

Strongly Agree
Agree
Disagree
Strongly Disagree

5. I am familiar with the C.A.S.E. Approach and its four components.

Strongly Agree
Agree
Disagree
Strongly Disagree

6. As a student and future provider, I understand the importance of corroborating with the vaccine-hesitant parent in order to prompt a more successful conversation regarding vaccines.

Strongly Agree
Agree
Disagree
Strongly Disagree

7. As a student and future provider, I understand how effectively to corroborate with the vaccine-hesitant parent in order to prompt a more successful conversation regarding vaccines.

Strongly Agree
Agree
Disagree
Strongly Disagree
Appendix A – Continued

C.A.S.E. Approach Questionnaire Pretest and Posttest

8. As a student and future provider, I understand the importance of describing my knowledge base and expertise to the vaccine-hesitant parent in order to prompt a more successful conversation regarding vaccines.

   Strongly Agree
   Agree
   Disagree
   Strongly Disagree

9. As a student and future provider, I understand how to describe my knowledge base and expertise to the vaccine-hesitant parent in order to prompt a more successful conversation regarding vaccines.

   Strongly Agree
   Agree
   Disagree
   Strongly Disagree

10. As a student and future provider, I understand the importance of relating vaccination’s scientific evidence to the vaccine-hesitant parent in order to prompt a more successful conversation regarding vaccines.

    Strongly Agree
    Agree
    Disagree
    Strongly Disagree

11. As a student and future provider, I understand how to relate vaccination’s scientific evidence to the vaccine-hesitant parent in order to prompt a more successful conversation regarding vaccines.

    Strongly Agree
    Agree
    Disagree
    Strongly Disagree
Appendix A – Continued

C.A.S.E. Approach Questionnaire Pretest and Posttest

12. As a student and future provider, I understand the importance of providing scientifically-based advice to the vaccine-hesitant parent in order to prompt a more successful conversation regarding vaccines.

Strongly Agree
Agree
Disagree
Strongly Disagree

13. As a student and future provider, I understand how to provide scientifically-based advice to the vaccine-hesitant parent in order to prompt a more successful conversation regarding vaccines.

Strongly Agree
Agree
Disagree
Strongly Disagree

14. As a student and future provider, I would feel confident in addressing the following parental concern: “Vaccines cause autism.”

Strongly Agree
Agree
Disagree
Strongly Disagree

15. As a student and future provider, I would feel confident in addressing the following parental concern: “Too many vaccines will overload the immune system.”

Strongly Agree
Agree
Disagree
Strongly Disagree
Appendix A – *Continued*

C.A.S.E. Approach Questionnaire Pretest and Posttest

16. As a student and future provider, I would feel confident in addressing the following parental concern: “Vaccines are no longer necessary.”

   Strongly Agree
   Agree
   Disagree
   Strongly Disagree

17. As a student and future provider, I feel confident in my ability to discuss the importance of vaccines with vaccine-hesitant parents in the clinical setting.

   Strongly Agree
   Agree
   Disagree
   Strongly Disagree

18. As a student and future provider, I feel prepared to use the components of the C.A.S.E. Approach in order to form a quick, organized response to vaccine-hesitant parents in the clinical setting.

   Strongly Agree
   Agree
   Disagree
   Strongly Disagree

19. My knowledge of the C.A.S.E. Approach is very strong.

   Strongly Agree
   Agree
   Disagree
   Strongly Disagree

20. My self-efficacy (confidence) in using the C.A.S.E. Approach is very strong.

   Strongly Agree
   Agree
   Disagree
   Strongly Disagree
APPENDIX B

INTRODUCTION TO THE PROJECT
Attention NURS 612 Students!

I will be conducting a teaching module focused upon a new communication approach for Family Nurse Practitioners to use in improving their communication efforts with vaccine-hesitant parents. This topic is extremely relevant to your future practice as a nurse practitioner and I would greatly appreciate your participation! This is my final DNP project and involves just 1 hour of your time (that’s being very generous – it may take as few as 10 minutes). Participants will be asked to complete a pretest, followed by a learning module, finishing with a final posttest. Your participation is vital to this project’s success! If you are enrolled full-time or part-time, and are within the DNP-FNP track, I would ask that you follow the links below in order to complete your pretest, learning module, and posttest! The survey is prefaced with a disclosure form below, so please read through before beginning this process. The pre- and posttests each consist of 20 questions regarding your knowledge and comfort level in addressing the issue of vaccines with vaccine-hesitant parents. Your willingness to participate is greatly appreciated and valued! Thank you!

Sincerely, Jessica Stevens, MSN, APRN, FNP-C

#1: PRETEST LINK:  
https://qtrial2016q1az1.az1.qualtrics.com/SE/?SID=SV_9B0A3Ps8G1V4iu9

#2: MODULE LINK:  
https://drive.google.com/file/d/0B2C2cglVCFDicGdabHhXVDlaTVNmQmlMYS16N3F0bkV0UFZR/view?usp=sharing

#3: POSTTEST LINK:  
https://qtrial2016q2az1.qualtrics.com/SE/?SID=SV_8jfaGZAXsDXWlvf

Please direct any questions to jcestevens84@email.arizona.edu
APPENDIX C

LEARNING MODULE POWER POINT SLIDES
Learning Module Power Point Slides

1

The C.A.S.E. Approach
Improving communication with vaccine-hesitant parents

2

Learning Objectives

- Obtain a working knowledge of the CASE Approach
- Identify each of its four components
- Apply these four components to primary care scenarios and conversations
  - Scenario 1: The CASE against Autism
  - Scenario 2: The CASE against Vaccine Overload
  - Scenario 3: The CASE against Unnecessary

3

What is the C.A.S.E. Approach?

- Systematic, easy-to-remember method of communication for use by primary care providers
- Used to engage vaccine-hesitant parents (VHPs) in meaningful conversation regarding vaccines
- Acronym (C.A.S.E.) helps providers organize a rapid, useful response when VHPs resist vaccines

What is the C.A.S.E. Approach?

- Developed by Alison Singer, MD in 2010, who is also the co-founder and president of the Autism Science Foundation
- Communication model of choice for the Minnesota Chapter of the American Academy of Pediatrics
- Lacks published studies of its efficacy, but has face validity, historical roots, and there are few competing alternative VHP communication methods

Why do we need the C.A.S.E. Approach?

- Anti-vaccine movement very present in today's media
  - Example: Donald Trump, currently running for republican candidate, is a popular "anti-vaxxer" and has recently voiced his anti-vaccination opinion during a televised debate
- Parents continue to question vaccines and their:
  - Association with autism
  - Safety, especially with number given in one visit
  - Necessity

Why do we need the C.A.S.E. Approach?

- CDC reports increasing number of measles and pertussis outbreaks nationwide
- National vaccination coverage (2014) leaves room for improvement:
  - MMR: Hep B, Polio: Varicella: 90% vaccination rate
  - DTaP: 83% vaccination rate
  - Rotavirus: 72%
  - Hep A: 54%
Appendix C – Continued

Learning Module Power Point Slides

The C.A.S.E. Acronym

Provider: “We have 2 vaccines to give today…”
VHP: “Oh, we aren’t doing vaccines.”

-- As a provider, where should the conversation go from here? --

• Formulate a response using C.A.S.E.
• C – Corroborate
• A – About Me
• S – Science
• E – Explain/Advise

C – Corroborate

• Acknowledge the parent’s concerns
• Provide validation
• Set the tone for a respectful discussion

“...there have certainly been many stories and opinions in the media regarding autism and vaccines, so I can understand your concerns.”

A – About Me

• Describe what you have done to build your knowledge and expertise
• Assure VHP that you are qualified in your expert opinion

“...I actually just returned from a professional conference where scientific evidence was presented concerning this issue. I need to be sure I stay informed with the most recent data, so I can make the very best recommendations for my patients.”

S – Science

• Briefly present the science which supports vaccination

“The scientific evidence does not support a link between vaccines and autism. In fact, a new meta-analysis of 10 studies involving more than 1.2 million children reaffirmed that no relationship exists.”

E – Explain/Advise

• Explain your advice to the patient
• Give final recommendation
• Make it personal, “if this were my child...”

“...choosing not to vaccinate does not protect your child from autism, but does leave him at increased risk for serious diseases. I highly recommend this vaccine, and if it were my own son, I would be vaccinating him today.”

Common Concerns

• Three common concerns the primary care provider may see in regards to vaccination:
  1) Vaccines cause autism
  2) Too many vaccines will overload immune system
  3) Vaccines are no longer necessary
Appendix C – Continued

Learning Module Power Point Slides

Scenario 1: The C.A.S.E. against Autism

VI: “We aren’t doing vaccines because we’ve heard it causes autism, and we don’t want to take that risk.”

- C – Corroborate: “I can understand your concerns. There have certainly been many opinions on TV and the Internet about vaccines and autism.”
- A – About Me: “I’ve researched this thoroughly. In fact, I just returned from a conference reviewing national vaccination data.”

Scenario 2: The C.A.S.E. against Vaccine Overload

VI: “We aren’t doing vaccines because we don’t want our child’s immune system overwhelmed.”

- S – Science: “Technology available today allows us vaccines which contain killed or weakened germs, not active germs. Some contain only part of the disease germ. This allows the body to produce antibodies, exactly as if you were actually exposed to the deadly disease. The immunological challenge to the child’s immune system with this type of vaccine is far less than a simple ear infection.”
- E – Explain/Advise: “I’ve seen children with these vaccine-preventable diseases, and the stress on their small bodies is significant. If this were my daughter, sitting on my lap, I would have her vaccinated today.”

Scenario 3: The C.A.S.E. against Unnecessary

VI: “We aren’t doing vaccines because we no longer see those diseases.”

- C – Corroborate: “I can understand why you might feel that way. We are lucky to live in a region and generation where vaccination has greatly improved our rates of serious disease.”
- A – About Me: “With recent outbreaks being reported in the news, I took it upon myself to research these disease incidences and trends in population health.”

Scenario 2: The C.A.S.E. against Vaccine Overload

VI: “We aren’t doing vaccines because we don’t want our child’s immune system overwhelmed.”

- A – About Me: “This clinic follows the vaccination schedule as outlined by the CDC because it is designed to offer protection at that time children are most susceptible to disease. I’ve read through and follow this schedule carefully.”
REFERENCES


