

**UTILIZATION OF EVIDENCE-BASED HEALTH TEACHING BY PROVIDERS TO
IMPROVE PARENTS PERCEPTION OF IMMUNIZATIONS AND VACCINE
SCHEDULES**

by

Jo A. Silvaroli

JOHN SCHMIDT, DNP, MSN, RN, EMT-P, Faculty Mentor and Chair

DIANA SHAW HOOPINGARNER, DNP, CERT, MSN, BSN, Committee Member

CHRISTOPHER E. BENEY, MD, Committee Member

Patrick Robinson, PhD, Dean, School of Nursing and Health Sciences

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Abstract

Parental refusal or delay in administering vaccines for their children has become a public health concern, contributing to an increased risk of vaccine-preventable diseases. Informed decision-making is necessary for parents deciding to immunize, helping parents understand the evidence-based information will aid in reducing concerns. The method was providing a parental education about immunizations and vaccine schedules, with the use of a health teaching corroborate, about me, science, explain/advise a (CASE) method to help families in making an informed decision to immunize. Scientific information was discussed, and take-home information and websites were provided for parents to review. A provider-parent discussion took place, with parents discussion of nonevidence-based concerns and for provider explanation, advice, and recommendations. This open dialog took place at the first and second well exam appointment, with a pre-and post-questionnaire administered before and after all discussions. A convenience sample of 25 parents with newborn children, currently new patients in a family practice of about 10,000 patients with about 25 newborns during April and May 2017 participated. The results included a response rate for the survey of 100% (25/25). A paired *t-test* procedure examined the difference between the pre-and post-questionnaire means. The mean score of 4.67 with the value of $t=2.325273$ and a value of $p=0.024259$ showed a significant result at a $p < 0.05$ level. The project assumption that education with evidence-based information and provider communications is valuable to parents when making an informed decision was confirmed.

Keywords: vaccines, immunizations, immunization schedules, informed decision-making, parental hesitancy.

Utilization of Evidence-Base Health Teaching by Providers to Improve Parents Perception of Immunization and Vaccine Schedules

Parents should be informed of the safety and side effects of immunizations and vaccine schedules in addition to understanding the importance of protecting their children against vaccine-preventable diseases. An informative appointment should be provided, before the Centers for Disease Control and Prevention (CDC) recommended schedule appointment, for the newborn and its parents. Opel et al. (2015) indicated a growing public health concern of parental refusal or delay of childhood vaccines, which is identified as a contributing factor to an under-immunized population and an increased risk of vaccine-preventable diseases. The way that providers initiate immunization recommendations to parents during the first visits appears to be an important contributing factor for parents' resistance to immunization and vaccine schedules (Opel et al., 2015). Some of the greatest achievements in science and medicine have included the development of necessary vaccines to battle against diseases. Kennedy, LaVail, Nowak, Basket, and Landry (2011), stated that in the United States the declining incidence of polio, measles, mumps, rubella, Haemophilus influenza B, hepatitis, and varicella is attributed to the routine recommendations of immunizations and vaccine schedules for infants and children. In this same study, it was identified that almost all parents -- including ones who did choose to immunize and follow the recommended vaccine schedule -- continued to have questions, concerns and some misconceptions over the recommendations. Continued communications and dialogue with parents will help disentangle the complicated interaction between parents' behavior and attitudes towards immunizations and vaccine schedules (Kennedy et al., 2011).

The goal of an early appointment is to provide information about to parental concerns about immunizations and vaccine schedules to give parents the tools to make informed decisions.

This project focuses on increasing and spreading accurate knowledge and evidence-based information by providing resources to parents including two standardized teaching videos created by the CDC, Parents' guide to childhood immunizations booklet, and websites. An increase in informed decision-making was identified with the use of these tools, which means that it is imperative that these devices are implemented on social media to target this population and to help in clarifying misconceptions within the social media world. Shoup, Wagner, Kraus, Goddard, and Glanz (2015), identified that 60% of studies on parents who delayed or accepted vaccines indicated that parents would trust information from a tool on social media. The goal of a successful project is to obtain 30% in parental signed statements for immunization identified from the parental informed decision-making project.

This project is significant to the nursing field because it could result in policies and actions to educate the new parent population on the safeness and side effects of immunizations and vaccine schedules through widely used social media networks. The American Association of College of Nursing (2006) addresses DNP essential I: Scientific Underpinnings for Practice, keeping current with trends such as social media and its impact along with continuing to be current with new ideas and innovations for implementation into practice. This project also addresses DNP essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking, discussing the quality improvement of parents making an informed decision based on evidence-based information in addition to essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice; providing logical methods of teaching the evidence-based information to parents. Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care, with the use of new technology of a CDC standardized teaching tool (STT); video and social media exposure

increases the improvement and transformation of healthcare information to increase patient care. Essential V: Inter-professional Collaboration for Improving Patient and Population Health Outcomes, providing information and tools for Primary Care Providers (PCP) to use in the health teaching of new parents on immunizations and vaccine schedules will aid in the advanced practice nurse (APN) skills in educating and health teaching. Through the use of essential VI: Clinical Prevention and Population Health for Improving the Nation's Health, the hope is to increase the informed decision-making of new parents in the safeness and side effects of immunization and vaccine schedules. For an increase of at least a 30%, by spreading knowledge of evidence-based information about vaccine-preventable diseases and about improving the overall nation's health. APNs are key stakeholders in the education and health teaching for informed decisions related to immunizations and vaccine schedules.

Problem Description

The identified gap in practice is the communication between parent-provider, which must establish trust and evidence-based knowledge to assist parents in making an informed decision for immunizations and recommended schedules. One study published by Lieu, Zikmund-Fisher, Chou, Ray, and Wittenberg, (2016) identified key findings, such as that parents would like information early in regards to vaccines, their side effects, and safeness. Parents also expressed the desire to engage in discussion of a more flexible vaccine schedule with their providers. A case-control study published by Salmon et al. (2005) addresses the factors associated with the rate of nonmedical exemption from school immunization requirements. The study identified that an increased effort should be made to educate parents about the efficacy and safety of immunization. Increasing the understanding of evidence-based information to the parents, about immunizations and the importance of keeping your child up-to-date with a regular vaccine

schedule, can reduce the fears and concerns for them. Increasing the awareness for parents' informed consent for immunizations and staying compliant with the vaccine schedules, thereby reducing the number of parental requests for nonmedical exemptions from school immunizations. Early information is especially important for parents who have sought nonmedical exemptions for their children from the New York State required school immunizations (Salmon et al., 2005).

This project started due to the high number of patients being discharged from Primary Care Practices after refusing to immunize their child. Most parents then search out a method that would accept their decision not to immunize. In the practice that was chosen for this project, providers believe that a parent needs evidence-based information to make an informed decision. Also, the parent is encouraged to bring the provider any information that was investigated for their decision against immunization and vaccine schedules to start the conversation about the pros and cons for safety and effectiveness of immunizations. Mergler et al. (2013) conclude that there is a direct correlation between provider beliefs and parental decisions to accept, delay or forgo immunizations, as well as evidence showing parents' ability to select providers who have similar beliefs and views. Over 90% of parents attribute the main source for gaining information about immunizations is from their child's PCP (Mergler et al., 2013).

Social media provides and spreads information, opinions or points-of-view based on hearsay and nonevidence-based researchable information, resulting in misinformed parents and poor decision-making. It is more important to provide current information to websites that provide evidence-based information for new parents to review. Brunson (2013) concluded that strong results are suggesting that parents' social networking play's an important role in parental knowledge when deciding to vaccinate their children. One of the primary goals for this DNP

project is to have the STT video published as an evidence-based informational resource on social media. Studies such as the one issued by Pepin and Endresz (2014) on topics of body image and social media have identified that the targeted population tends to believe that if the information is published on social media, it must be true. To bridge the gap in practice for the targeted population, it is vital to provide evidence-based information within the groups' social arenas. Providing sound evidence-based information on the sites most visited by parents of newborns would expose the individuals to valid information regarding vaccines.

Available Knowledge

A comprehensive systematic literature review was conducted on the unknown risks and parental hesitation about immunizations and vaccine schedules. The databases used to carry out the exhaustive systematic literature review included Google Scholar, Cumulative Index to Nursing and Allied Health (CINAHL), Sage Publication (sagepub), Elton B Stephens Company (EBSCO), Medline (PubMed) and OVID through Capella Library.

The terms *parental concerns* and *immunization* resulted in 32,500 results which were then narrowed down by including only the current year of 2015 resulting in 2,370 articles. Adding the keyword *vaccine schedule* to the search of *parental concerns* led to an additional 1,610 articles that were reviewed and if chosen further investigation of the cited articles were reviewed. The investigation was expanded by examining relevant articles mentioned within the accepted articles resulted in valuable articles, which were also used for this literature review.

An advanced search using the same databases mentioned above changing the keywords to *Social network impacts on the parental decision of immunization* resulting in 12,900 articles which again was decreased to 1,930 items by keeping the most current date of 2015-16. Once valid articles have obtained a review of cited articles was investigated for validity and relevance.

Lastly, a keyword search of *provider perspective of parental concerns* resulted in 7,690 articles for review when keeping the current date of 2015. The literature review date was not considered higher than the current year of 2016. Although, an extensive review of articles that were cited within all articles reviewed were looked over or chosen if indicated that there was validity or relevance to this project.

The literature about informed decision-making in regards to immunization and vaccine schedules for parents is very complex and multifaceted. The first step is to understand the PCP communication strategies and to determine if they are effective in decreasing parental concerns or hesitancy within the primary care setting (Hoekstra & Margolis, 2016). Some of the concerns noted in this study were overwhelming the immune systems, vaccine side effects and safety, in addition to disbelief in science and the government. The study also addressed the use of nurses for the health teaching of parental vaccine hesitancy. Nurses' use of therapeutic communication skills helps develop interaction between parent and nurse, which in turn establishes a successful vaccine program. The nurse is a key member of the team that educates parents about the safety and effectiveness of vaccines.

Dubé, Gagnon, and MacDonald (2015) study reviewed parents' beliefs and experiences, finding an indication that parents who completely refuse vaccines for their children are well-informed and actively seek information on a holistic, natural or alternative method, usually making a firm decision not to immunize. This study identified that the vaccine-favorable mothers often follow the CDC recommendations and felt confident with some hesitancy to new vaccines acceptance. Also, this study showed the influence that social media has on the decision to exempt from a particular new vaccine. Both the consideration of vaccine-preventable disease and side effects of the vaccines were valued but about the parents' children rather than the public health or

universal concern. This study indicates the need for education to all parents especially the parents, who are willing and accepting the vaccines without hesitation so they too can make an informed decision.

The study published by Blaisdell, Cuthell, Hootsmans, and Han (2015) states that the American Academy of Pediatrics (2002) survey indicated that 85% of pediatricians annually meet parents who do not comply with immunization administration or the vaccine schedule for philosophical reasons. This study identified the increased research in interpreting the causes of this hesitancy in parents. Clinical communication strategies can detect subtle differences in concerns parents have with immunizations and vaccine schedules (Blaisdell et al., 2015). This study identifies that parents rely on stories, personal experience and their own beliefs for their perception of risks that confirms that education and knowledge are needed for parents to make informed decisions in immunizations and vaccine schedules.

Clear communication is required to provide evidence-based information to assist the parent in making an informed decision. Moss, Reiter, Rimer, and Brewer (2016) concluded that efficient communication from the provider in the recommendation of vaccines had surpassed the Healthy People 2020 goals for two different vaccinations. Provider recommendation for vaccination could have a positive association for adolescent's parents in accepting the vaccine. Also, a second assumption found an association between the communication style and the resulting parental decision. It was identified that informed communication, shared communication, and paternalistic communication was effective. This type of communication also gives the provider an opportunity to provide information to the parents. Included in this project is an STT video that will be offered to the parent during the wait time between the nurse or medical assistant and the provider, clarifying some concerns for patents about immunizations. This STT

video may also spark questions that may need additional clarification. The CDC Parents' guide to childhood immunizations booklet will serve as a tool for the parent to take home, read and share with others. Within the CDC Parents' guide to childhood immunizations booklet, there will be websites for the parent to investigate about immunizations and vaccine schedules. Opel et al. (2015) determines that how providers initiate their recommendations of immunizations and vaccine schedules is a major factor for parent engagement with the communication and information provided. It was identified that the significance of initiation communication practice in immunization discussions with parents was positive in the increase of parent's informed decision-making. This project will provide the tools that will aid in the initiation of communication using evidence-based information embedded in an STT video and within the CDC Parents' guide to childhood immunizations booklet as reinforcement and additional resources for investigation. This will also aid in the continued communication at follow-up visits between the parent and provider. Also, Opel et al. (2015) identify evidence that suggests if there is improved provider-parent communication about immunizations and vaccine schedules, parents are more inclined to accept the recommendations. Provider-parent communication aids the parent in making an informed decision for their child.

Additional literature about parents' perceptions of how the immunization process can be improved can help providers find better ways to engage parents with evidence-based information. Lieu et al. (2016) addresses that offering information about side effects and the willingness of the provider to be open to a flexible vaccine schedule before the visit of inoculation was key to improvement of the process. Improved access to information in regards to immunizations from PCP is identified to foster better immunization knowledge and a favorable impact of informed decisions making of immunization and vaccine schedules (Weiner, Fisher,

Nowak, Basket & Gellin, 2015). An increase in nonmedical exemption requests for school immunizations requirements has been prevalent, so efforts to educate parents about safety and effectiveness is especially important (Salmon et al., 2005). It was identified in the study published by Wang, Baras and Buttenheim (2015) parents are overwhelmed by the amount and vagueness of information that they have sought out from social networks or media, usually resulting in decisions based on personal instinct or judgment. Clarification and evidence-based information provided by PCP will be helpful for parents making informed decisions about immunizations and vaccine schedules.

In the new age of technology, parents are turning to social media for guidance and education on topics such as immunization and vaccine schedules. Shoup et al. (2015) learned that parents with concerns and who delay immunizations would use and benefit from an interactive web-based tool. Engaging the target population about health problems and behaviors is critical. Social media is just one platform that can be used to elicit behavior changes and should be carefully established with research terms and available to PCP for face-to-face interaction (Shoup et al., 2015). The results from Brunson (2013) strongly suggest social networks play a major role in the informed decision-making of immunization and vaccine schedules for parents. After validation of the STT video to show at least a 30% increase in knowledge in the pre-and post-questionnaire, the goal is to provide this tool on social media for parents to view evidence-based information for informed decision-making.

Rationale

The goal is to provide information about parental concerns of immunizations and vaccine schedules. Offering time for discussion, providing STT video and take home information, so parents have the tools to make an informed decision. This project focused on increasing

knowledge and understanding of the evidenced-based information provided to parents through an STT video, CDC Parents' guide to childhood immunizations booklet, and websites. Once an increase was proven in an informed decision by the parents was made. The STT video along with the other tools used to aid in the informed choice for parents should be available on social media to target this population and help in clarifying misconceptions within the social media world.

The theoretical framework of the Health Belief Model was unutilized by the providers for an educational interaction with the new parents. The model consists of four identities, including a perceived susceptibility, or the individual's perceived feeling of risk and safeness of immunizations. The second character is a perceived severity, identifying how sincere the parent feelings are and where their beliefs are validated. The third is perceived benefits, addressing the parent's perception of benefit verse risk of immunizations and complying with the recommended vaccine schedule. The fourth concept is perceived barriers, which include the information on social media and peer pressure or fear of the information that is evidence-based (Eby, 2017). The STT video and informational booklet provided by the CDC on immunizations targeted all four levels of the model. In addition to the CASE-method tool, which also utilizes all four levels of the Health belief model. The providers used the CASE-method tool for an educational plan with the new parents during the patients first well visit prior to making the decision for immunizations was required. This method is dependent on the existence and recognition of different values (McNergney, Ducharme, & Ducharme, 1999). The CASE stands for Corroboration, About Me, Science, and Explain/advice. The study published by Jacobson, Sauver and Finney Rutten (2015) illustrates the use of a CASE approach, which suggests an auspicious method in addressing parental concerns for immunizations and vaccine schedules. This project has adopted the use of the CASE method with an open dialog rationale regarding immunization and vaccine schedules,

specifically with parents of newborns at the first well appointment. The outcome was to identify a shared goal or aspiration. In the About Me section, the provider established or re-established their attitude or professional standing about the topic. The STT video, CDC Parents' guide to childhood immunizations booklet, and websites for the parent to review and research provide the scientific or evidence-based information. Explanation and advice were offered to parent after discussion and further clarification at the patient's first well appointment. Then again at the second well date, establishing the ability for the parent to be able to make an informed decision by the patient's 2-month well-check, when immunizations and the start of the recommended vaccine schedule are initiated. The Health Belief Model supports the idea that if parents are provided the evidence-based information identifying the health risk of refusing immunizations or delaying the recommended vaccine schedule, they acquire the tools needed to make an informed decision (Eby, 2017).

This study assumptions included a prevalent response of the parent's refusal to immunizations or a request to allow for an alternative to the recommended vaccine schedule. Even with the evidence-based information provided the information that is embedded in the social media arenas and the peer pressure of this population is challenging. One contributing factor maybe the observation of the significant variable which was responsible for the studies assumption to be invalidate with this group of the population. One of the significant variables in this project was the institutions of a new policy for the project site. The policy is that new parents have to agree to immunizations and to keep current with the recommended vaccine schedule for their children to be accepted as a patient within the practice. Since parents have already been pre-screened as parents, who are accepting immunizations for their children. Another variable is the

fact that even if the parent did not agree may feel uneasy about answering the questionnaire honestly due to the new policy.

Specific Aims

The project goal was to establish a curriculum that would bridge the gap in parental education about immunization and vaccine schedules. The educational objectives included the recognition and description of vaccine-preventable illnesses, summarizing the most commonly circulated concerns associated with immunizations and vaccine schedule, safety and side effects. Communication using the CASE method to encourage families to immunize their children was employed. Lastly, a standard vaccine informative STT video was available for the parents to view.

Methods

Context

The project took place in a family practice of about 10,000 patients, with a newborn patient pediatric population of about 25 between April and May 2017. All new parents agreed to participate in the project. The provider community includes one-physician, one-doctoral level pediatric nurse practitioner, one-doctoral level family nurse practitioner and two-physician assistant. The practice also includes a second family nurse practitioner, who did not participate in the project collection of data or teaching of either parents or providers, as this practitioner is the project author who could be viewed as a conflict of interest. This practice has two locations although the project subjects were all parents of young patients with appointments at the primary location.

The questionnaires were approved for our use from research published by Gust, Kennedy, Shui, Smith, Nowak, and Pickering (2005). The surveys identified three areas of interest, immunization attitudes, provider attitudes and immunization requirement/exemption approaches. The focus is to determine if parents identified an increase in positive feeling toward the opinions listed after education and investigation of evidence-based information was offered.

Approval from the CDC was obtained, and the CDC donated booklets for project educational purposes. These booklets were given to all parents of newborn patients in addition to the CDC video STT being played during the appointment time. The providers understood the CASE method of communication from a review on their means to limit the bias of direction in teaching techniques.

Intervention

A practice providing care for pediatric population targeted about 25 newborn pediatric parents with a pre-questionnaire. After the questionnaire was collected, the medical assistant started the STT video for the parents' review. Once the provider entered the exam room, a relationship was initiated with all first-time parents. Communication with the use of a CASE method was utilized for an open discussion, on the topic of immunizations safety and vaccine schedules. The provider used the About Me portion of the CASE communication method, to establish their professional standing about the topic. Once there was a clear understanding of the subject, and the physical exam of the infant was completed, the provider answered all questions the parents asked. A CDC Parents' guide to childhood immunizations booklet with websites that provide evidence-based scientific information was given for home review. At the newborn patient's second visit, the provider opened the conversation with the CASE method of communication to address any new concerns. After all, concerns were addressed the medical

assistant provided the post-questionnaire to the participating parents. The CDC's recommended vaccine schedule is initiated at the two-month visit where a signed refusal is required only. For this project the providers asked parents to confirm the following verbal statement, "I feel informed and understand the reason for immunizations and will comply with the vaccine schedule."

A Likert scale was used to analyze the questionnaire to evaluate the outcome. The project goal is to establish a curriculum to bridge the gap in parental education about immunization and vaccine schedules. The STT video, CDC Parents' guide to childhood immunizations booklet, website and communication between provider and parent was successful. The new procedure has been recommended to be instituted within the practice and offered to other providers within the community for their use. Having a policy that can be established for all providers to address the issue of informed decision-making can also be adopted for other matters where patient education is needed.

Study of the Intervention

To measure the perception of the intervention for parents of newborn patients regarding immunization safety and vaccine schedules, a questionnaire was offered pre and post collaboration with providers, as well as a review of a CDC video and take-home booklets and websites addressing this topic. The questionnaire was approved for use through a previously published article by Gust et al. (2005) that identifies specific factors affecting parent perceptions of vaccines. The questionnaire will address three topic areas: immunization attitudes, provider attitudes, and immunization requirement/exemption attitudes. Communication using the CASE method was used to clarify misconceptions of immunization and vaccine schedules for parents. A standard vaccine informative STT video, CDC Parents' guide to childhood immunizations

booklet, and websites from the CDC for supportive education were used to standardize the teaching information published by a reliable source.

Providers used the teaching and learning technique of the CASE-method tool for an education plan that is dependent on the existence of standardized values within a population group. The study published by Jacobson et al. (2015) explains the use of a CASE approach, suggesting an auspicious method in addressing parental concerns for immunizations and vaccine schedules.

Measures

A sample population of 25 parents of newborn patients were offered the questionnaire and tagged within the computerized medical record for identification of participation. The last participant completed the education and finished the post-questionnaire validated the completeness of the collection stage. Each questionnaire was completed and removed from the examination room, placed in a sealed envelope which was then picked up by the DNP student of the project. All questionnaires were anonymous with no identifying information attached to the data.

Data was collected from willing parents of newborns at their first and second PCP visit, during the months between April 2017 and June 2017. The group was selected based on first time visit to a provider, before discussion of immunizations and vaccine schedules. The project focused on education through information provided by the CDC.

A Likert scale was used to calculate the results. The Likert scale method tool for evaluation of the questionnaires was outlined in the article published by Maurer and Pierce (1998), as a traditional measure of self-efficacy when comparing knowledge pre- and post-informative teaching. The calculations were reviewed by two different statisticians to validate

estimates. A review was conducted of pre-and post-questionnaires to measure if an increase was identified in parents' positive feelings toward immunization attitudes, provider attitudes, and immunization requirements/exemptions. Only two parents left that question unanswered because they had not yet met the provider. These surveys were completed at an accepted family practice with a positive reputation for provider-parent communication.

Analysis

A Likert scale was used to indicate whether the participants felt prepared to make an informed decision towards immunization attitudes, provider attitudes and immunizations requirement/exemption attitudes. A Four-point Likert scale was used to indicate whether the participants felt 4-*very confident*, 3-*confident*, 2-*somewhat confident* or 1-*not at all confident*. A two-point Likert scale was used to determine the importance of immunizations for children using 2-*important* and 1-*not important* about immunization attitudes. Also, the use of a three-point Likert scale was used to indicate whether the participants agreed with the providers' attitudes, 3-*agree*, 2-*neutral* and 1-*disagree*. After review of the questionnaires, some parents did not feel that they could answer this question based on having not met the provider before the questionnaire. The unanswered question was given a 0 for calculation. The questionnaire section identifying immunization requirement/exemption attitudes used a two-point Likert scale indicating 2-*yes* and 1-*no* and a 0-point *level for unanswered* questions. One question in this section was calculated with the 4-point scale for agreeing, neutral, disagree and not answered.

Two statisticians were used to validate the calculations of each question, and one of the two statisticians developed the graphs for review of the data. From this small sample population, it appears that evidence-based education does increase parents' positive feelings toward making an informed decision to immunize and follow the recommended vaccine schedule. One

statistician calculated a percentage increase finding that identified a rise in positive feelings towards attitudes after education and review of the evidence-based information. In fact, one participant changed from feelings of importance to feelings of not important when asked about the importance of immunization in keeping children healthy, validating the possible need of a comment option to address why they felt immunizations were not important in keeping children healthy.

Ethical Considerations

This project was submitted to the Capella University's Institutional Review Board (IRB) for review, and a formal letter was sent that oversight is not needed for this project. IRB ensures research complies with federal regulations and ethical practices for human protection. For this project, participants volunteered to complete an anonymous questionnaire to protect the privacy and confidentiality of participants. Also, IRB focuses on ensuring participants have adequate information when making an informed decision which was the focus of this project. Once the participants finished the completed questionnaires they were removed from the room and placed in a sealed envelope for the DNP learner to pick up. There are no identifying characteristics noted on the questionnaires. A popup indicator was included in the electronic medical record (EMR) indicating that this parent was participating in the DNP project to ensure all participants were offered the post-questionnaire at the newborn's second encounter with a provider. Once the post-questionnaire was completed, it was removed from the area and placed in a sealed envelope for the DNP learner to pick up. Again no identifying characteristics were noted on the questionnaire, and the pop-up was then removed from the EMR.

The DNP learner is currently a provider working limited hours during the project dates to ensure limited potential conflict(s) of interest. Also, the other providers were asked to assist in

the project with insufficient direction from the DNP learner to ensure that the providers were not biased in their teaching technique. The DNP student requested that they use the CASE method of communication and offer the CDC Parents’ guide to childhood immunizations booklet and websites for home review. Also, the medical assistants were given direction from the DNP learner to confirm that there were no identifying characteristics on the questionnaires and to confirm that the completed questionnaires were collected and placed in a sealed envelope. The DNP learner also made sure that the medical assistants started the video for parent review and placed the pop-up in the EMR to ensure continuity of the presentation of the project.

Results

The pre-questionnaire was offered before meeting the provider for the first visit of the newborn, though it was identified that about 88% of the parents, associated feelings of trust with the provider for giving them advice on vaccines. This project identified that there was a positive feeling in the attitudes of immunizations, providers and requirement/exemptions. Ongoing assessment of a larger population, such as surveying parents of newborns attending other practices and including providers who accept parents who choose not to immunize, would be beneficial for reviewing a greater and more balanced population that includes negative attitudes identified in the pre-questionnaire. There was a significant increase in positive responses in this small population, which validates ongoing research in a greater community including groups of parents who have negative feelings in the attitudes of immunization, providers and requirements/exemptions.

See Tables 1-3 for results from the Likert scale.

Table 1

Immunizations Attitudes

Questions	Pre-Education <i>N</i> (%)	Post-Education <i>N</i> (%)
How confident are you in the safety of routinely receiving immunizations?		
Very Confident	48 (58.5)	52 (61.2)

Confident	24 (29.3)	27 (31.8)
Somewhat Confident	10 (12.2)	6 (7.0)
Not at all confident	0 (0)	0 (0)
In general, how important do you think immunizations are for keeping children healthy?		
Important	50 (100)	6 (7.0)
Not Important	0 (0)	0 (0)

Table 2

Provider Attitudes

Questions	Pre-Education N (%)	Post-Education N (%)
I trust the vaccine advice my child’s primary care provider gives me?		
Agree	63 (88.7)	66 (91.7)
Neutral	8 (11.3)	6 (8.3)
Disagree	0 (0)	0 (0)
Unanswered	2 (0)	0 (0)
My Child’s primary care provider is easy to talk to?		
Agree	63 (94.0)	72 (97.3)
Neutral	4 (6.0)	2 (2.7)
Disagree	0 (0)	0 (0)

Table 3

Immunization Requirements/ Exemption Attitudes

Questions	Pre-Education N (%)	Post-Education N (%)
Would you have your child fully immunized if it were not required in order to enter daycare and/ or school?		
Yes	42 (91.3)	42 (91.3)
No	4 (8.7)	4 (8.7)
Parents should be allowed to get a religious or philosophical vaccine exemption for their child even if it were clear that it raised the risk of disease for everyone else?		
Agree	4 (8.0)	4 (6.9)
Neutral	28 (56.0)	18 (31.0)
Disagree	18 (36.0)	36 (62.1)
Unanswered	1 (0)	0 (0)
Should states grant childhood vaccination exemptions for parents based on religious beliefs?		
Yes	11 (31.4)	9 (23.1)
No	24 (68.6)	30 (76.9)
Unanswered	2 (0)	1 (0)

Do you trust public health agencies like the Centers for Disease Control and Prevention to set policy for childhood vaccines?

Yes	42 (91.3)	42 (91.3)
No	4 (8.7)	4 (8.7)

Elsevier and copyright center approved the use of this questionnaire

The use of a paired *t-test* procedure was initiated to examine the difference between the pre and post-questionnaire means. The mean score of 4.67 with the value of $t=2.325273$ and a value of $p=0.024259$ showed a significant result at a $p < 0.05$ level. In the small sample size of 25 participants from a grand population of parents of newborns within the United States confirmed the project assumed that education with evidence-based information and provider communications is valuable to parents when making an informed decision.

In a review of the data from this small sample population, it appears that the use of evidence-based education and provider communication causes an increase in positive feelings to make an informed decision to immunize and follow the recommended vaccine schedule. One statistician calculated the percentage and found an increase in participants' positive feelings towards attitudes after education and review of the evidence-based information. Presenting this information to the providers there was a mutual conscience to implement this projects teaching tools as a regular part of the newborn's well visit. The teaching tools can be obtained free of charge from the CDC. The office manager was able to establish an account to receive the CDC Parents' guide to childhood immunizations booklets for parental take-home information. The STT Video from the CDC has been downloaded to all the examination room computers and has been established as part of the medical assistance intake of new pediatric patients and their parents.

Providing recommendations for future practice would include expanding the STT videos on social media sites, which are frequently visited by this population group. In addition to

presenting a power point presentation to other pediatric, primary care providers for their use in their practice, in educating parents on immunizations and compliance of vaccine schedules.

Providing information about this project and on obtaining the CDC tools free of charge for their practice. Future endeavors would embrace an expansion of this project, which includes a greater population within a pediatric practice. In addition to a practice who accept parents have strong convictions to avoid immunizations or follow an alternative vaccine schedule.

Discussion

Summary

The purpose of this project was to identify a shared goal or aspiration between provider and parent about immunizations and vaccine schedules. With the use of the CASE method of communication, the key findings indicated an overall positive feeling of being informed when deciding to immunize. The use of evidence-based information and provider communication in the About Me section was employed by the provider to establish or reestablish their attitude or professional standing about the topic. The STT video, CDC Parents' guide to childhood immunizations booklet and website resources for parents to provide the scientific or evidence-based information. Explanation and advice were offered to the parent after discussion and further clarification at the newborn's first well appointment. Then again at the second well date, establishing the ability for the parent to be able to make an informed decision by the patient's two-month well-check, when immunizations and the start of the CDC recommended vaccine schedule is initiated.

The specific aim is to establish a curriculum that will bridge the gap in parental education about immunization and vaccine schedules. The educational objectives will include the recognition and description of vaccine-preventable illnesses, summarizing the most commonly

circulated concerns associated with immunizations and vaccine schedule, safety and side effects. Communication using the CASE method to encourage families to immunize their children will be utilized. Lastly, a standard vaccine informative STT video for the parents to view was completed. One strength in this project was the use of the STT video and the CDC Parents' guide to childhood immunizations booklet provided by the CDC as sound educational information that was evidence-based and readily available for parental investigation for validity.

Interpretation

Parents should be informed of the safeness and side effects of immunizations and vaccine schedules and should have a sense of understanding the need to protect their children against vaccine-preventable diseases. The study findings suggest, in the small sample population, there was an increased feeling of very confident in the safeness of routinely receiving immunizations, and an increased in parents' trust in the vaccines and post-education advice from the provider. Post-education, parents, were less likely to agree with allowing for religious or philosophical vaccine exemptions if it were clear that it increased the risk of disease for everyone else.

An informative appointment should be provided, before the CDC recommended schedule appointment, for the newborn. Opel et al. (2015) indicated a growing public health concern of parental refusal or delay of childhood vaccines, which is identified as a contributing factor to an under-immunized population and an increased risk of vaccine-preventable disease. The way that providers initiate immunization recommendations to parents during the first visits appears to be an important contributing factor for parents' resistance to immunization and vaccine schedules (Opel et al., 2015). The battle against disease through the development of vaccines has been one of the greatest achievements in science and medicine. Kennedy et al. (2011) stated that in the United States the declining incidence of polio, measles, mumps, rubella, Haemophilus influenza

B, hepatitis, and varicella is attributed to the routine recommendations of immunizations and vaccine schedule for infants and children. In this same study, it was identified that almost all parents including ones who did choose to immunize and follow the recommended vaccine schedule, continue to have questions, concerns and some misconceptions over the recommendations. Continued communications and dialogue with parents will help disentangle the complicated interaction between parent's behavior and attitudes towards immunizations and vaccine schedules (Kennedy et al., 2011).

The goal is to provide information to curb parental concerns of immunizations and vaccine schedules and to give parents the tools to make an informed decision about the safeness and side effects of immunizations and vaccine schedules. This project focuses on increasing the knowledge and understanding of the evidence-based information provided to parents through standardized teaching videos provided by the CDC, a Parent Guide-508 CDC booklet, and website resources. An increase in informed decision-making was identified with the use of these tools. One of the goals of this project is to make this information available through the use of social media to target this population and help in clarifying misconceptions within the social media world. Shoup, Wagner, Kraus, Goddard, and Glanz (2015), identified that 60% of parents who delayed or accepted vaccines indicated that they would trust information from a tool on social media. The goal of a successful project is to obtain a 30% increase through a verbal statement from the parents participating in this project for validations to place this tool on social media. At the completion of this project, every parent made the statement that they felt informed to decide to follow the CDC immunizations and vaccine schedule recommendation.

The impact and cost-effectiveness of this project and the implementation of this teaching tool on the stakeholders are limited, as the CDC does provide free-of-charge the teaching tools

used in this project. However, the initial newborn visits can at times be overwhelming for parents with questions on current concerns such as feeding, sleeping, jaundice, circumcision and umbilical cords, leaving very little time for parents to attend to future information.

One significant reason for the differences in the anticipated and observed outcome was the change in policy for this family practice. The new system of the practice is that if the parents had strong feelings about not immunizing their children, they were not accepted into the practice. When this project was in its beginning stages, this was not a policy, and it was perceived that there would be a greater population not feeling confident at all in the safety of routinely receiving immunizations and a significant percentage of parents who did not trust the governing agencies for immunizations. In reality, there was a greater population that already had positive feelings towards the project questions before the teaching. Still, there was a significant increase in an overall understanding when post evidence-based education was provided.

Limitations

One of the largest limitations of this project includes the small sample population of 25 participants. Also, participants were from only one family practice, which had just recently changed an impactful policy for the practice. This change in policy eliminated any parents with the feelings of opting out of immunizations or following an alternative schedule. One of the questionable limitations is also viewed as the strength of the project: teaching information provided from only the CDC publication. While the CDC information has proven to increase parents' positive feelings toward immunization schedules, the information given to parents is limited because there are no other resources or alternate points of view, aside from the website resources that rely on self-motivated parents to learn on their own time. Additionally, the teaching technique was left to the providers' discretion, although they were encouraged to use the

CASE method. The project also took place during April and May 2017 when a new electronic medical record program was being initiated.

To minimize the limitations data was collected from all the parents of newborn patients during a small window, adding in limiting the dissipate of the providers and assistants for completing the project. Using questionnaires that have been adopted from a previously used study provided proof that they did in fact measure what was claimed to be measured. The CDC handouts and video was used for continuity in evidence-based information which does show as both a limitation and strength.

Conclusions

This project appears to validate the need for a shared goal or aspiration between provider and parent to be established, about immunizations and vaccine schedules. It also confirms the need for the use of evidence-based teaching information to avoid misconceptions that are usually published on social media. This will also be beneficial for parents to understand and have the useful evidence-based knowledge to share with their peers.

The sustainability of this project is dependent on the providers' interest in continuing education for parents. In general, providers do teach parents on immunizations and vaccine schedules but to institute a practice that includes time for video review and handouts will be dependent on appointment time availability. It would be important to provide these tools to other providers caring for newborns and their parents to assist in the distribution of evidence-based information and implementation of these videos on social media for valuable education to this population.

The implications for instituting this project into practice could contribute to the eradication of more and more vaccine-preventable diseases within the United States. It is

suggested that evaluation of a larger and more diverse population be studied, on the effect of education regarding immunizations and vaccine schedules to parents in making an informed decision. It is also suggested to provide evidence-based information on social media and public announcements to provide parents information and knowledge on this very controversial topic.

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