

FROM TABOO TO ACCEPTED: INCREASING GUN SAFETY COUNSELING IN PEDIATRIC
PRIMARY CARE

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Dedication

This is dedicated to my three amazing daughters. You are my inspiration, my joy, my challenge, my cheerleaders, my troublemakers, my world changers, my everything. You are my heart, walking outside of my chest. You are the absolute best thing I have ever done in life. Always hold your heads high, my beautiful girls. You bring a fire and passion for life that this world desperately needs. If I could bubble wrap you and protect you from anything that could possibly bring you harm, I would. But you are stronger than you know, wiser than you realize, kinder than is necessary, and amazing in too many ways to count. This work is an outpouring of my desire to make this world a better, safer, more beautiful place for you. I know that you will take what you are given and run with it to make it better still.

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Abstract

Firearm injuries are a leading cause of death among the pediatric population. Previous studies have shown that gun safety at home, meaning that firearms are locked up, unloaded, with ammunition locked up in a separate location, can help to reduce pediatric firearm injuries. Effective interventions, such as pediatric primary care health care providers (HCPs) doing firearm injury prevention (FIP) counseling while giving anticipatory guidance during a well child check, can have a strong impact on decreasing the number of firearm injuries. The evidence-based practice project used an existing evidence-based bundle approach to educate and train HCPs from primary care clinics within a large pediatric healthcare organization to consistently offer FIP counseling during as many well child checks (WCC) as possible. A pre-intervention survey distributed to HCPs was used for baseline measurements, with a bundled educational intervention and post-intervention survey 4 weeks later to assess for anticipated increased confidence, self-efficacy, and frequency in providing FIP counseling. Based on the findings of the project, recommendations were made for ongoing FIP training for HCPs.

Keywords: Firearm, pediatric, screening, prevention, anticipatory guidance, primary care

From Taboo to Accepted: Increasing Gun Safety Counseling in Pediatric Primary Care

Section I: Introduction of the Problem

In the United States (US), firearm related injuries are the second leading cause of death for children, and the leading cause of death for adolescents who were 14 to 17 years of age, surpassing deaths cause by motor vehicle accidents and opioid/drug overdose (Cunningham, et al., 2019). More than 60% of those injuries were caused by homicide, 35% were suicides, and 4% were unintentional injuries, such as an accidental discharge of the gun (Cunningham, et al., 2019). An estimated one in three homes with children under the age of 18 have firearms in them, and 43% of those homes have a firearm that is unlocked and loaded (Cunningham, et al., 2019). Pediatric firearm injuries, now labeled by many professional healthcare organizations as a public health crisis, are tragedies that can be prevented with implementation of evidence-based practices, and healthcare providers are uniquely positioned to lead the way for prevention of these injuries (Azrael, et al., 2018).

Background

According to the Web-based Injury Statistics and Query System (WISQARS), Center for Disease Control and Prevention (CDC), in 2017 there were 21,670 pediatric firearm injuries nationwide, with 3,443 of those injuries being fatal (*WISQARS Data Visualization*, 2020). Over the span of the past ten years, an average of 3,100 children and adolescents, ages 0-19 years old, die annually in the US (WISQARS, 2020). In Texas, there were 346 pediatric firearm fatalities, more than any other state in the nation (Children's Defense Fund, 2019).

Studies have revealed that guns stored in the home are associated with a threefold increase in the risk of homicide, and a fivefold increase in the risk of suicide (Herrin et al., 2018). The very presence of a firearm in the home is linked to an increased risk of unintentional firearm deaths and suicide (Bauchner et al., 2017; Monuteaux et al., 2019). An estimated 36% of Texas households own at least one gun, and nearly 200,000 Texas children are living in a home with a loaded and unlocked firearm (Texas Gun Sense, n.d.).

In Texas, over 500 children are injured or killed every year by firearms, and while many parents believe that they can model responsible gun handling to prevent such injuries and fatalities, studies show that the developmental stage of the child may lead to poor decision-making and fatal accidents.

Children as young as three to four years of age, who are often curious, impulsive, and adventurous, have enough strength in their hands to be able to pull the trigger of most handguns (Cunningham, et al., 2018). A lack of self-control or understanding of long-term consequences for school age children poses a risk when they have access to such lethal weapons.

Prior studies posit that safe storage of guns is associated with a 75% reduction in the risk of firearm suicide and unintentional shootings among children and teenagers up to 19 years old (Grossman et al., 2005). An estimated 6% to 32% of pediatric firearm injuries and fatalities could be prevented with the increase of safe gun storage practices. Studies note that pediatric primary care providers have the ability to make a significant difference in the implementation of this safety measure (Monuteaux, et al., 2019).

Multiple previously published studies demonstrate that the anticipatory guidance for injury prevention that is given conducted during routine well child checks (WCC) is overall very effective (Rosales & Allen, 2012; Azrael et al., 2000; Barkin et al., 1998; Betz & Wintemute, 2015). HCPs are able to tailor anticipatory guidance discussions about injury prevention based on what is age- appropriate. This should consistently be done at every WCC (Hagan et al., 2017). Guidance on these discussions and other topics to be covered are all evidence-based and provided by resources such as Bright Futures. This is published by the American Academy of Pediatrics (AAP) and includes FIP in the safety portion of the discussion starting at two years of age. While a majority of pediatric HCPs agree on integrating firearm injury prevention (FIP) counseling into their anticipatory guidance for parents, a very small percentage of providers routinely do the counseling (Hoops & Crifasi, 2019; Kwong, et al., 2019; Ngo et al., 2019). Many HCPs have reported low confidence and self-efficacy in FIP counseling, as well as inadequate or absent formal FIP training, whether in their educational preparation or continuing education, as common barriers to engaging in these discussions (Hoops & Crifasi, 2019).

Clinical Significance

Previously published studies have looked at increasing the self-efficacy and confidence in medical students by adding in a formal training session on firearm injury prevention (Kwong, Gray, Rein, Liu & Melzer-Lange, 2019). Kwong et al. demonstrated that a 20-minutes education intervention increased the self-efficacy of third-year medical students but found that results waned six months after going through the training. This project will provide an educational bundle to pediatric primary care providers who are currently in practice. The benefit of this intervention is that it will be done in established practice settings, where providers are routinely doing well child checks on a daily basis. The project will be done within a large pediatric organization with many primary care clinics spread out over a metroplex, with a diverse patient population from one practice setting to the next. It will provide an opportunity to expand to other primary care offices and allow for follow up or reinforcement in the future.

Program Description

This is an evidence-based project that assesses the effect of a bundled evidence-based practice approach to educate and empower pediatric primary care providers. It entails a pre-intervention survey that will ask pediatric primary care providers about their practices surrounding anticipatory guidance, and more specifically, about firearm injury prevention and safe gun storage. After the initial survey was filled out, the providers viewed a recorded educational presentation about firearm injury prevention (FIP), they received gun locks that can be given to families who own guns, as well as a handout for their own reference and brochures for families about gun safety. Four weeks later, the providers filled out a follow up survey to demonstrate any changes in knowledge, self-efficacy, and practice habits.

Organization

This project took place at a large pediatric healthcare organization in North Texas. It is a level 1 trauma center, a teaching facility, and is comprised of primary and specialty care clinics, ambulatory surgery centers and home health services. The organization treats just under 75 firearm injuries a year, with approximately 3.5% of those resulting in fatalities. At least 32 children in the North Texas region were killed in 29 from an unintentional shooting (Guzman, 2020). With 41 primary care clinics spread out

across the North Texas metroplex and over approximately 150 pediatric primary care providers, the aforementioned pediatric organization had just under 532,000 pediatric office visits annually (*Cook Children's 2019 Annual Report*, 2020). These providers have access to thousands of families and children every year and have the ability to make a significant impact on ensuring that children are safe from these preventable tragedies.

Inquiry Question

For pediatric primary care HCPs, will a bundled intervention consisting of a brief web-based educational module, a reference card for the HCP to refer to and slip card of facts and recommendations for patients, and the provision of a cable gun lock, increase the HCPs knowledge, self-efficacy and practice habits in routinely conducting FIP counseling during wellness visits, compared with prior to the intervention?

Table 1
Operational Definitions for the Project

Operational Term	Operational Description	Reference
Knowledge	Facts, information, or skills acquired from education or experience, such as demonstration or curriculum covering statistics and epidemiology of firearm injuries	Naughton, et al., 2020 Kwong, et al., 2019 Hoops & Crifasi, 2019
Self-efficacy	Bandura's social cognitive theory as confidence in one's ability to perform a particular behavior	Bandura, 2004
Practice habits	Practice habits is referring to how often healthcare providers conduct and document gun safety discussions in the primary care setting	Gastineau, et al., 2020
Web-based educational module	Asynchronous web-based video module that can be accessed at the provider's convenience, with a defined FIP curriculum	Naughton, et al., 2020 Dingeldein, et al, 2012
Reference card	Easily accessible handout for providers with relevant takeaways from the web-based teaching	Naughton, et al., 2020 Kwong, et al., 2019 Hoops & Crifasi, 2019
Slip card	Slender page-length card with facts and quick reminders about	Gastineau, et al., 2020

	safe gun storage in the home that can be easily attached to any patient handout or discharge paperwork.	
Cable gun lock	A cable that runs through the barrel or the action of the firearm, preventing it from being fired and requiring a key or combination to unlock it.	Gastineau, et al., 2020 Parikh, et al., 2017

Purpose/Aim/Objectives

The purpose of this project is to determine if a bundled educational approach will increase the self-efficacy, knowledge and practice habits of HCPs regarding FIP counseling, thereby increasing the frequency with which pediatric HCPs conduct FIP counseling with other routine anticipatory guidance recommended during WCCs (Hagan, et al., 2017). When a family presents in a pediatric primary care clinic for a yearly WCC, a standard of practice is to conduct anticipatory guidance for the family.

The overall objective is to normalize the conversation of firearm injury prevention within healthcare settings, thereby removing the political stigma of the topic and putting it back into the realm of safety and injury prevention counseling. The bundled intervention would include a short educational presentation that would be presented electronically, as well as providing each participating HCP with a gun trigger lock, a convenience card for the providers with talking points of facts and figures from the presentation for fast and easy reference, as well as a slip card to be included in all new patient packets and WCC discharge paperwork. Through this bundled evidence-based practice approach, HCPs in pediatric primary care clinics would have increased self-efficacy, knowledge, and consistent practice habits to effectively provide FIP counseling to all families with children three years of age and older, as recommended by the American Academy of Pediatrics.

Needs Assessment and Problem

Several studies have found that, while the majority of HCPs acknowledge the need and importance of providing FIP counseling during WCCs, a very small percentage of those HCPs actually do it (Barkin, et al., 1998; Zonfrillo, et al., 2018; Gastineau, et al., 2020). Conferring national statistics on to

the local pediatric healthcare system, one could surmise that a low percentage of HCPs in the local healthcare system are providing FIP counseling as well. Currently, within the aforementioned local pediatric organization, there is no standing policy requiring FIP counseling, nor is there standardized evidence-based practice documentation of the needed anticipatory guidance.

When assessing the need for a project, an assessment of strengths, weaknesses, opportunities, and threats, also known as a SWOT analysis (see Appendix A), can be very useful to assess the organization's current position and strategy prior to proceeding. First, considering the strengths of the organization as whole, it is a very well-known health system within the North Texas region, with a very established reputation for providing excellent care to the children of this region. The organization already has an established gun safety program that focuses on increasing gun safety awareness in the community, so it would be spreading the message now into the primary care settings.

Weaknesses to consider would include having to navigate a large healthcare organization and trying to get HCPS from 41 different clinics involved in the project. There are cable trigger locks that were provided by ChildSafe Project via the local police department but ensuring that there is a supply for more locks could be a potential challenge. Whenever projects are using electronics, there is a possibility for user error or technology failures. Lastly, Texas is known for being a gun-loving state, and there is a possibility of running into conflict when trying to discuss gun safety with families. This is a weakness that will need to be navigated carefully.

There are several potential exciting opportunities that could stem from this project. When the organization is able to build a stronger bond with community, embracing initiatives to keep children safe, the community is stronger for it. Through this project, we will be able to explore implementation of a prompt in the electronic health record (EHR) to further improve documentation of FIP counseling. Through the conclusion of this project, it will open up opportunities to implement FIP counseling in more clinical locations, such as emergency room visits or specialty clinics.

Threats to the project will have to be evaluated carefully, as they could be the undoing of the project. It is possible that some HCPs may be resistant to participating in the surveys and intervention, for

fear that it would affect their relationships with families who might be offended by such conversations.

This project will have the ability to equip HCPs with facts and figures and emphasize the importance and impact of conducting FIP counseling.

Theoretical/Conceptual Framework

Three conceptual frameworks provide structure and guidance for the direction of this project: Pender's Health Promotion Model (HPM), Badura's social cognitive theory, and the Spectrum of Prevention. Pender's Health Promotion Model (HPM) guides the assumptions and measurements of this project, providing insight into decisions that are made for guiding patients in injury prevention and wellness. The model proposes that a person's health-related behavior depends greatly on the person's perception of need for intervention, effectiveness of interventions, and severity of the disease or problem, and weighs out the barriers to taking action (Pender, 2011). When discussing HCPs' ability or desire to conduct FIP counseling to families, there is a psychological component involved that allows that HCP to decide whether or not to take that action. The HPM will help to address some of those barriers.

The HPM states 14 theoretical positions, or statements that would provide a basis for investigative work. According to Pender's "Health Promotion in Nursing Practice" (2011) there are eight identified propositions that will play a role in this project:

1. Prior behavior and inherited and acquired characteristics influence beliefs, affect, and enactment of health-promoting behavior.
2. Persons commit to engaging in behaviors from which they anticipate deriving personally valued benefits.
3. Perceived barriers can constrain commitment to action, a mediator of behavior as well as actual behavior.
4. Perceived competence or self-efficacy to execute a given behavior increases the likelihood of commitment to action and actual performance of the behavior.
5. Greater perceived self-efficacy results in fewer perceived barriers to a specific health behavior.

6. Positive affect toward a behavior results in greater perceived self-efficacy.
7. Families, peers, and health care providers are important sources of interpersonal influence that can increase or decrease commitment to and engagement in health-promoting behavior.
8. Situational influences in the external environment can increase or decrease commitment to or participation in health-promoting behavior.

Self-efficacy is described in Bandura's social cognitive theory as confidence in one's ability to perform a particular behavior (Bandura, 2004). A provider's self-efficacy, in combination with outcome expectations (a person's expectation that performing an action will lead to a specific result), and perceived environmental barriers will work to influence behavior. In order for providers to have increased confidence to providing FIP counseling, they must feel confident in what they are doing, and believe that what they are doing will be effective. Providers need to know that the FIP counseling that they are giving in a healthcare setting has been shown to increase gun safety in the home, thereby decreasing firearm injuries and fatalities. Self-efficacy will be a point of focus throughout the project.

The Spectrum of Prevention, developed in 1983 by Dr. Marshall Swift, is a framework for developing multifaceted approaches to injury prevention. It was born out of the belief that preventive practice was too frequently trivialized, and that complex problems require comprehensive solutions (Cohen & Swift, 1999). According to Cohen and Swift, the Spectrum of Prevention is comprised of six interrelated action levels: (1) strengthening individual knowledge and skills, (2) promoting community education, (3) educating providers, (4) fostering coalitions and networks, (5) changing organizational practices, and (6) influencing policy and legislation (1999). An activity at any of the Spectrum's six levels constitutes an intervention, and when initiatives are used in combination, the Spectrum becomes a more transformative force for collective health (Cohen & Swift, 1999).

For the purposes of this project, levels 1, 3, and 5 will be utilized, but all six steps of the spectrum have significant implications for the improvement of firearm injury prevention. The individual knowledge and skill of each participating HCP will be strengthened through the intervention. HCP advice has been

associated with reductions in morbidity, mortality, and risky behaviors, and has been shown to have an increase in healthy behaviors (Cohen & Swift, 1999). When an HCP asks parents about proper storage of firearms and ammunition, such advice has been shown to increase the likelihood of proper storage at home. Level three is educating providers and equipping HCPs to provide skills and motivation to patients to make positive changes. It is essential that HCPs receiving the training that is needed to increase their own self-efficacy in order to feel confident about the message they are conveying to their patients (Cohen & Swift, 1999). Level five focuses on changing organizational practices. When organizations are able to look internally at its own regulations and norms, it has the capacity to affect the health of the greater community. When the HCPS are trained and equipped, their self-efficacy increases, thereby increasing the frequency with which they provide FIP counseling during WCCs. With HCPs across the organization consistently counseling their patients and families with the message of proper and safe firearm storage in the home, the conversation becomes as normalized as asking if kids wear helmets on bikes, seatbelts in vehicles and if they are vaccinated. It removes the political stigma of discussing firearms and allows HCPs to address the safety aspect of firearms in the home, as they would with any other recommended safety topic.

Section II: Presentation of Evidence

Review of Evidence

Section II includes a review of the literature on firearm injury prevention (FIP) in the pediatric population. The literature search was performed from the online library at Texas Woman's University (TWU) for English-language studies on FIP in pediatric settings. The databases selected for the review included CINAHL Complete, EBSCOHost, PubMed, ProQuest Nursing and Allied Health, and Google Scholar for original research studies on FIP in pediatric settings using keywords "firearm," "gun," "firearm injury," "injury," "prevention," "guidance," "counseling," and "anticipatory guidance," combined with the keyword "pediatric" or "paediatric." The first of three searches was limited to full text, English language, and peer reviewed. Date delimitations were 2000 to the present, as sociocultural norms, legislation and FIP-related policies have changed over time. The search yielded 68 studies.

In order to narrow down the results to high level, quality research that is also manageable, inclusion criteria were applied. The inclusion criteria were original research studies or systematic reviews in peer-reviewed journals that examined FIP in pediatric settings in Western countries. Non-Western countries were not included because of cultural differences and perceptions regarding firearms. Exclusion criteria were studies that had a narrow focus, such as anticipatory guidance for early childhood education or wearing helmets; studies that focused on injury prevention but did not include firearm injuries; studies that were not specific to the pediatric population or primary care settings. In addition, studies of prevalence and incidence prior to 2000 were excluded to include the most recent statistics. Once filtering mechanisms were put into place, 25 studies were determined to be suitable for the purposes of this project. Of these, two were systematic reviews, two were meta-analyses, three were randomized control trials, one was quantitative, two were prospective qualitative, 13 were qualitative, one was cross-sectional survey, and one implementation study. Using the Johns Hopkins critical appraisal tool to evaluate the 25 articles, the evidence ranged from moderate to strong evidence (Dang & Dearholt, 2017). The levels of evidence ranged from one to three, indicating strong to moderately strong evidence (Dang & Dearholt, 2017).

After applying the inclusion criteria as outlined below, there were 25 studies remaining. Additional articles were identified from the references annotated within chosen articles. Five themes were identified, including: 1) Barriers to initiating FIP discussions, 2) FIP education for healthcare providers (HCPs), 3) HCP motivational interviewing and patient education, 4) Increasing HCP self-efficacy, and 5) Practice and implementation of FIP strategies in pediatric primary care settings.

Evidence Synthesis

With at least one in three American households owning firearms, and 30-40% of those remaining unlocked and loaded, firearm injury prevention (FIP) discussions are an absolute necessity for the safety and well-being of children. While the overwhelming majority of healthcare providers (HCPs) acknowledge the importance and positive impact of FIP discussions, firearm storage is discussed less than 25% of the time during wellness visits (Zonfrillo, et al., 2018). The literature review identifies the barriers and apprehensions to conducting FIP discussion in pediatric primary care, and also reveals a growing commitment to make it a priority. There may be a myriad of reasons for not discussing FIP, such as concerns for a plethora of topics to cover and not enough time to cover them, concerns for the patient-provider relationship, and overall lack of confidence in being able to deliver an effective message about safe firearm storage. This then informs what needs to be addressed in order to have a unified FIP message for every family that enters pediatric primary care.

There is an increasing interest in evidence-based practice for the strongest impact in order to reduce pediatric firearm injuries, including methods for consistent screening during well child checks (WCC). The literature supports a brief educational intervention for HCPs in order to equip knowledge for building confidence and self-efficacy. There has also been a significantly positive demonstration in the practice of supplying firearm safety locks to families during WCCs (Rowhani-Rahbar, et al., 2015). There are recommendations for firearm safety to become part of HCP curriculum while still in training, as well as bring educational modules for HCPs already in practice, citing a gap in education that has led to a decreased self-efficacy for FIP (Naughton, et al., 2020). Motivational interviewing-informed discussions will allow the HCP to enter into family-centered discussions with empathy and without judgment,

preserving the patient-provider relationship (Barkin, et al., 2015). A compiled synthesis of literature can be found in Appendix B.

Gaps in the Literature

There do exist gaps in the literature, as extensive research on firearm injury prevention (FIP) has only been happening more recently in the past decade due to the entanglement of politics with this public health issue. Therefore, more high-quality studies need to be conducted on the overall impact of the various interventions, assessing rates of safe firearm storage and mortality rates from pediatric firearm injuries. Studies assessing the retention of epidemiological and statistical data would be helpful when looking at curriculum formats for firearm safety modules, both while in educational training programs, and post-education settings.

Utility and Feasibility

While anticipatory guidance (AG) is a recommendation for all well child checks (WCC), and FIP discussions are considered a topic of AG, in the absence of institutional policies or support, FIP is a topic that may be overlooked due to the barriers discussed above. With the usage of Electronic Health Records (EHR), standardization of AG during WCC would streamline the process for FIP discussions, as well as the other recommended topics of discussion for AG. Any educational intervention for healthcare providers (HCPs), nursing staff or medical assistants should be kept as brief as possible, while still conveying necessary information to make it effective. Delivering the educational presentation via asynchronous recorded video would allow all stakeholders involved to view it when the timing is convenient for them. This method could also make it possible to review the material several times in order to increase the HCPs comfort level with the information to be discussed. It would also ensure a standardized message. Because the pediatric institution involved already has a firearm safety program in place, there are also established relationships within the community to provide firearm safety locks and handouts for HCPs and families.

Themes

Barriers to Initiating FIP Discussions

Anticipatory guidance (AG) is oft considered a cornerstone of pediatric wellness visits. Recommended by the American Academy of Pediatrics (AAP) to be included in every wellness visit, AG is the HCP's opportunity to learn about the patient's health and safety practices at home and provide education and guidance on best practices (Hagan et al., 2017). Despite the recommendation for routine AG to include the topic of FIP, and the awareness of the effectiveness to decrease risky behavior, increase knowledge and reduce injury occurrence, FIP discussions are not consistently conducted (Zonfrillo, et al, 2018). A myriad of barriers has been cited in the literature, including lack of time during visits, a plethora of topics to be covered, inadequate training in or comfort with counseling (Zonfrillo, et al., 2018; Gastineau, et al., 2020; DeMello, et al., 2020). Studies have also identified that when AG is done consistently, the discussion of firearm injury prevention is done with even less frequency due to lack of time, lack of training and concerns about harming the patient-provider relationship (DeMello, et al., 2020).

The lack of knowledge of the benefits and risk of firearm ownership, what to say regarding firearm counseling, and how to say it, and fear of seeming intrusive were also cited as barriers (Rajaram Siva & Tatebe, 2020). There is also an uncertainty of the overall effects of providing FIP counseling, and so, with no reimbursement by insurance companies for the efforts, FIP conversations may be less emphasized and given less time during visits (Zonfrillo, et al., 2018). DeMello et al. found that, while firearm safety was perceived by HCPs to be a contentious topic, the majority of families who participated in their study did not put up resistance. Furthermore, the families found it appropriate for HCPs to discuss firearm safety, and helpful to receive a safety lock from the pediatric office (DeMello, et al., 2020). Despite the identified barriers, whether they are perceived or actual, studies have shown that almost all patients, especially members of high-risk populations, are open to non-judgmental counseling (Jager-Hyman, et al., 2019).

FIP Education for HCP

According to Naughton, et al. (2020), there is a significant need to develop comprehensive FIP curriculum to be incorporated into HCPs' trainings. A lack of education or training in FIP counseling was

previously identified as a barrier to providing the counseling. Studies have shown that HCPs who were provided training, provide education about firearm safety commonly (Beidas, et al., 2018). Trainings should focus on providing technical education about safe storage techniques and knowledge about access to written firearm safety resources (Naughton, et al., 2020). The study conducted by Naughton, et al. found that a self-paced online curriculum, including video demonstration of firearms, safe storage options, and counseling methods for families improved overall self-efficacy, confidence and knowledge regarding FIP counseling (2020). The online presentations were integrated into medical residents' required Pediatric Community Health (PCH) rotation.

A study conducted by Kwong, et al. in 2019 determined that educational efforts found that a 20-minute educational intervention for third-year medical students improved their confidence and frequency of conducting FIP counseling. The educational intervention was presented lecture-style, and included two clinical vignettes, summary of FIP legislation and epidemiology, a brief discussion about the importance of FIP, and suggestions for clinical integration (Kwong, et al., 2019). The medical students were also presented with a cable gun lock and a demonstration on how to use them. Following the educational intervention, students were also provided with additional web-based resources immediately after the intervention. The study recommended including FIP training at multiple levels at different time points of medical education (Kwong, et al., 2019).

Puttagunta, et al., (2016) found that few residency programs provide specific training on appropriate counseling, and the ones that were available varied greatly from lecture-based teaching, case-based teaching, large group discussions with expert panel, small group discussion, and trainings that provided education via audiotapes (2016). The topics covered in the trainings ranged from when and how to inquire about firearm safety and counseling, risk factors for violence, legal obligations, discipline strategies for children, limiting access to firearms, and providing tools such as cable gun locks for safe storage (Puttagunta, et al., 2016).

One study hosted a two-hour workshop for pediatric residents at an urban program, consisting of three segments (McKay, et al., 2020). The three segments consisted of firearm safety instructions by a

police officer, a faculty-led didactic session on epidemiology of firearm injury and principles of counseling, and an interactive role-play session about firearms and how to counsel based on the risks presented to them (McKay, et al., 2020). The study looked at overall comfort level and confidence for conducting FIP counseling and found that the multimodal workshop was very effective to improve knowledge base, comfort levels and practice patterns (McKay, et al., 2020).

Motivational Interviewing and Patient Education

Motivational interviewing (MI) is an assessment of family interest and confidence in changing behavior that generates patient-centered solutions (Barkin, et al., 2015). MI shifts the conversation from the authoritarian expert providing advice to a more family-centered, collaborative model (Gance-Cleveland, 2007). When discussing firearm safety, it is critical that the provider is not prescriptive about firearm ownership or safety counseling, but instead focuses on the well-being of the child (Rajaram Siva & Tatebe, 2020). Utilizing MI allows the HCP to approach the discussion in a respectful way that acknowledges local cultural norms and preferences, and results in improved adherence to counsel provided (Rajaram Siva & Tatebe, 2020).

Counseling using the MI techniques is effective in improving safe storage when combined with providing a firearm safe storage device. In one of the largest randomized control trials that has been conducted, HCPs delivered motivational-interviewing based patient education on a range of safety behaviors and it was found to have a significant increase in safe firearm storage (Ngo, et al., 2019). The tone of an MI encounter is nonjudgmental, empathic, and encouraging (Resnicow, et al., 2002). MI incorporates empathy, open-ended questions, and reflective listening as techniques to explore patient ambivalence and to decrease patient resistance to behavior change. In a 2004 study in which first year medical students were trained in MI techniques, there was notable enhancement of confidence in and knowledge of providing counseling to their patients regarding changes in health behavior (Poirier, et al., 2004).

Increasing HCP Self-Efficacy

Self-efficacy is described in Bandura's social cognitive theory as confidence in the ability to perform a particular behavior (Bandura, 2004). According to Finch, et al., (2016) it is "one's own competence to perform the behavior needed to influence outcomes, whereas confidence is the feeling or consciousness of one's powers or of reliance on one's circumstances. Individuals can feel confident in their ability to perform a specific task but not feel effective at changing others' behaviors related to that task" (p. 78). HCP self-efficacy in counseling is a determining factor of the likelihood of counseling behaviors in practice, and specifically appears to be a key influence of FIP counseling (Kwong, et al., 2019). At the provider level, reluctance to engage in discussions with patients about firearms may stem from low self-efficacy or lack of knowledge about best practices for firearm safety promotion and/or suicide prevention (Wolk, et al., 2017). Pediatricians with a higher perceived self-efficacy in discussing such practices are more likely to discuss these topics with families (Naughton, et al., 2020).

A provider's self-efficacy is influenced by the level of training or education on the topic. Clinicians who lacked formal training, who felt that suicide was not preventable, or who felt that patients were unlikely to follow their advice were unlikely to screen and counsel on firearm safety among any population (Finch, et al., 2016). Clinicians who had high confidence in the process and high self-efficacy toward counseling were more likely to screen (Finch, et al., 2016). Increasing an HCP's self-efficacy seems to be a key component to increasing the frequency of FIP discussions during wellness visits, and several studies have cited rates of FIP training as an important factor in building self-efficacy (Kwong, et al., 2019; Finch, et al., 2016).

Practice and Implementation of FIP Strategies in Pediatric Primary Settings

A cluster randomized trial was conducted among 137 pediatric primary care settings and found that implementing the evidence-based approach known as Safety Check was effective in increasing gun storage over a six-month period. Safety Check is an approach that has been bundled with other strategies, such as reduced screen time, and had a firearm component (Wolk, et al., 2017). The firearm component is referred to the Firearm Safety Check, composed of screening about access to firearms in the home, brief motivational interviewing-informed counseling regarding safe storage, and provision of free firearm locks

(Wolk, et al., 2018). Use of the Safety Check has been associated with safer parental firearm storage in youths ages 2 to 11 years, with parents 21.4% more likely to engage in safe gun storage after 6 months compared with parents in the control group (Wolk, et al., 2018).

A systematic review conducted by Rowhani-Rahbar, et al., found that studies that provided a firearm safety device significantly improved firearm storage practice (2015). Another study found that the use of a tablet-based firearm safety module in the outpatient setting was feasible and that the majority of parents were receptive to receiving AG on firearm safety (Campbell, et al., 2019).

When interviewed about firearm safety promotion in pediatric primary care settings, stakeholders in one study broadly indicated that it is viewed as a priority, with education being vital to increase confidence (Wolk, et al., 2018). Consensus among several studies shows that successful implementation of firearm injury prevention counseling would be most plausible with a system-wide, unified message of firearm safety with approval of health system leadership and stakeholders (Wolk, et al., 2018; Beidas, et al., 2018; Gastineau, et al., 2020). Providing education regarding the use of firearm locks, as well as training on how to engage in the discussion of firearm safety are necessary for standardized firearm safety practices (Wolk, et al., 2018). Utilizing MI techniques will allow the HCP to approach from a nonjudgmental stance. Training regarding screening and firearm locks would also need to extend to the medical assistants or nursing staff, as they would likely be the ones to complete those tasks, while HCPs would conduct the counseling during wellness visits (Wolk, et al., 2018). Bundling the Firearm Safety Check with other screening questions that are typical of anticipatory guidance (AG) will relieve any notion that firearms are being singled out (Wolk, et al., 2018).

A Quality Improvement (QI) study conducted at the Medical University of South Carolina Pediatric Primary Care Clinic demonstrated a multi-step implementation process to increase the frequency and documentation of gun safety discussions during well-child checks (Gastineau, et al., 2020). The QI study had many of the previously recommended components, including system-wide involvement, education of HCPs about epidemiology and importance of FIP and provision of firearm safety locks. That study also added in an electronic health record (EHR) prompt that asked 3 questions about gun ownership

and storage. Posters for the safe firearm storage campaign were displayed in the clinic exam rooms and common areas, and informational handouts and gunlocks were stocked in the clinic (Gastineau, et al., 2020). The clinic kicked off the firearm safety campaign with a system-wide “wear orange day” with buttons for HCPs to wear on their badges (Gastineau, et al., 2020). After system-wide implementation, and most notable after implementation of the EHR prompt, there was a demonstrated 81% increase in documentation of gun safety discussions during well child visits (Gastineau, et al., 2020).

Section III: Methodological Framework

The evidence synthesis demonstrated a need for this EBP project to increase the knowledge, self-efficacy, and practice habits of conducting FIP of healthcare providers (HCPs) in pediatric primary care settings. The framework of the project is based on the Iowa Model of Evidence-Based Practice to Promote Excellence in Healthcare (Cullen, et al., 2018). The question of the project is as stated: For pediatric primary care HCPs, will a bundled intervention consisting of a bring web-based educational module, a reference card for the HCP to refer to and slip card of facts and safety recommendations for patients, and the provision of a cable gun lock, increase the HCPs knowledge, self-efficacy and practice habits in routinely conducting FIP counseling during wellness visits, compared with prior to the intervention? See Appendix C for an illustration of the Iowa Model. See Appendix D for permissions for use.

Firearm injury prevention (FIP) counseling has been shown to be effective in reducing unintentional firearm injuries in the pediatric population, therefore HCPs must be adequately equipped and prepared, so that they may have an increased sense of self-efficacy and confidence in completing the task (Kwong, et al., 2019). The conceptual frameworks, Penders' Health Promotion Model, Bandura's Social Cognitive Theory and the Spectrum of Prevention, helped to guide the creation of the intervention specifically for pediatric primary care clinics, and, in order to be most effective in reaching out to all 39 clinics, the use of email, online surveys, and a pre-recorded educational PowerPoint presentation were used.

Characteristics of Sample

A recruitment email was sent to all 150 providers of the 41 primary care clinics associated with the pediatric healthcare organization seeking clinic champions to encourage involvement within their practice site. Of the 150 providers, five providers responded, offering their clinic as participating sites. Within those five clinics, there were a total of 26 providers, consisting of physicians and advanced practice providers (MD, DO, PA, NP). The pre- and post-intervention surveys were distributed to the 5 clinic champions via email, who then forwarded the email with links to the surveys to their clinical

colleagues. Of the 26 providers available in the five clinics, 13 providers responded to the pre-intervention survey, and 14 providers from the same group responded to the post-intervention survey. The survey responses were anonymous and unmatched.

Participation in the project was voluntary and the completion of the survey signified consent to participate in the evidence-based practice project. A waiver was provided by the Cook Children's Health Care System's Institutional Review Board (IRB), as the project was determined to be exempt. See Appendix E for waiver.

Implementation Framework

Having clinical practice that is guided by strong, relevant evidence has been the goal for healthcare for decades, yet full adoption of evidence-based practice (EBP) remains a challenge (Buckwalter et al., 2017). The Iowa Model of Evidence-Based Practice (Iowa Model) framework was developed by a team of nurses at the University of Iowa in the 1990s to guide clinicians in evaluating and infusing research findings into patient care (Titler et al., 2001). It is an application-oriented guide for each step of the EBP process and is being used with permission from the University of Iowa.

The Iowa Model was developed to aid clinicians in translating research to practice, starting with identifying an issue or opportunity to improve quality care (Buckwalter et al., 2017). While numerous studies have identified the benefit of providing FIP counseling in a primary care setting, the overall percentage of HCPs who adhere to this recommendation remains low (Solomon et al., 2002; Cassel et al., 1998; Olson et al., 2007). Addressing some of the most commonly raised concerns through the project intervention will help to overcome the hesitation and increase the frequency with which firearm injury prevention (FIP) counseling is being given during wellness exams. The overall aim of this project was to increase the knowledge, self-efficacy, and practice habits with which HCPs conduct FIP during routine wellness visits.

Applying the Iowa Model, after demonstrating sufficient evidence for the inquiry question, the next step was to form a team to design and implement the practice change (Cullen, et al., 2018). Forming key partnerships with organizations, such as the Fort Worth Police Department, non-profit organizations

focused on gun safety, and organizational leadership aided in engaging HCPs in the project and obtaining the necessary handouts and cable trigger locks. As the project moved forward, the team grew to include the director of clinical operations, the clinic champions, and the community outreach arm of the pediatric organization. The project employed a multifaceted approach, including a brief pre-recorded educational video that gave a focused overview of statistics and epidemiology of pediatric firearm injuries, the Texas penal code regarding access to firearms, case studies, and rationale for the guidance, as well as sample wording for providers to conduct FIP counseling. In addition to the educational presentation, HCPs were provided with a reference sheet to keep for themselves for easy access to talking points during appointments, as well an informational brochure handout to provide to families with new patient packets and discharge paperwork. Having identified an important issue, determined the issue to be a priority, forming a team and synthesizing a body of evidence to determine that there was sufficient research published on this topic, the next step was to design and implement the plan.

Data Analysis Plan

The plan involved a number of steps, including the introduction of the project into each of the primary care clinics and having the healthcare providers (HCPs) complete a pre-intervention survey to establish a baseline. The next step was to send all of the HCPs a link to the web-based pre-recorded educational module for them to view after filling out the pre-intervention survey. The full curriculum for the presentation focused on integration of FIP in clinical visits, and recommendations for effective FIP counseling during wellness visits. The presentation was a modified version of two previously created presentations described in peer-reviewed and published studies, adapted with the authors' permission to reflect local relevance (Kwong, Gray & Melzer-Lange, 2019; Gastineau, 2020). The HCPs were then given their own cable gun lock, provided by Project Child Safe via the local police department, as well as a reference sheet for HCPs to have quick access to talking point, and brochures for patients, provided by the Center for Children's Health. These were all available prior to viewing the presentation to enable a hands-on experience and firsthand knowledge of what the lock looks like and how it works. The handout was an easy-to-read brochure with a message about gun safety and safe gun storage that is in alignment

with American Academy of Pediatrics, and the pediatric healthcare organization. The handout reinforced the FIP counseling done during the clinic appointment with the HCP. Measurements were a comparison of responses from the initial pre-intervention survey to the 4-week post-intervention survey responses, reassessing knowledge, self-efficacy, and practice habits surrounding FIP counseling. The use of the Iowa Model's systematic approach to incorporate research into successful implementation of the bundled intervention based on evidence-based practice was essential for increasing self-efficacy and frequency of FIP counseling.

Data Collection Approach

The knowledge, self-efficacy, and practice habits of HCPs were evaluated by using an electronic survey that was sent to the HCPs before the intervention, and then again 4 weeks after the intervention. The survey consisted of 22 items in total: 15 multiple choice questions, 6 questions using Likert scale, and one open space at the end for individual comment. There are two questions addressing knowledge, 12 questions addressing self-efficacy, and seven questions about practice habits. In the post-intervention survey, the same questions were used, with the addition of two open-ended narrative questions.

The survey that was used was an adapted version of the survey used in a previously published study of FIP anticipatory guidance among pediatric residents (Hoops & Crifassi, 2019). Hoops and Crifasi used the survey to gather information about "medical residents' values related to firearms, firearm-specific counseling practices, barriers to providing counseling, and education needs related to firearms" (p. 29, 2019). That study demonstrated that, while 96% of the medical residents believed that it was the HCP's responsibility to counsel patients on the risks of firearms, over two-thirds of them never provided this counsel (Hoops & Crifasi, 2019). The survey was developed by the original authors of the study and pilot tested with pediatricians to ensure face validity. It was adapted for the purposes of this project with permission from the original authors in order to meet the IRB recommendations for a waiver. There were ten questions from the original survey that were removed at the request of the IRB, as some were either demographic identification that was not pertinent to this project or focused on the personal beliefs of the HCP. See Appendix F for permission to use the survey with adaptations. As noted, HCPs

were provided with a link to a recorded education video that gave a focused overview of statistics and epidemiology of pediatric firearm injuries. Permission was requested from Kwong, Gray & Melzer-Lange (2019) and Gastineau (2020) to use the curriculum content. See Appendices G and H for permission to use and modify presentations. Appendix I includes content from the presentation. The responses to the surveys were analyzed by comparing the pre-intervention to the post-intervention results in the form of bar charts. The tool used for this project can be found in Appendix J.

Proposed Timeline

The local pediatric healthcare organization consists of a total of 41 primary care clinics across the metroplex. The HCPs who work in these clinics are physicians, nurse practitioners, and physician assistants. The proposed plan was to send out the recruitment email at the beginning of January, with the intent of launching the pre-intervention survey by the end of January. A reminder email would be sent to the HCPs one week later. During the weeks between the recruitment email being sent and the pre-intervention survey launch, deliveries of boxes of cable gun locks, patient/family brochures, and reference handouts for the HCPs were delivered to clinics where a provider had volunteered to be the clinic champion. The post-intervention survey would be sent out four weeks later.

Upon initial launch of the pre-intervention survey, the HCPs received a link to view the educational pre-recorded presentation after they filled out the survey. Participating HCPs also had access to the presentation online, as well as other web-based resources, immediately after the intervention. Four weeks after the intervention was completed, the same electronic survey was sent a final time to all participating HCPs. Responses to the surveys were compared to the baseline survey responses and analyzed for changes.

Data Evaluation Plan

The electronically administered survey was sent out to clinic champions at 5 pediatric primary care clinics consisting of a total of 26 providers via email in partnership with the research department of the children's hospital organization. HCPs responded to the surveys via RedCap, which allowed for easy export of survey responses into Statistical Package for the Social Sciences (SPSS) software for data

analysis. HCPs were self-reporting on the 22-question survey that asked about current practice habits and patient visit purposes, previous education for firearm injury prevention, comfort and confidence levels in counseling about firearm safety, as well as confidence and familiarity with the technical aspects of firearm safety, such as gun locks. They were asked about their perception of effectiveness and their confidence to provide thorough and competent counseling.

One month after sending the initial survey and viewing the educational video and having access to handouts and gun locks, a post-intervention survey was sent out in the same manner. This post-intervention survey consisted of the same questions as the first survey, as well as 2 additional open-ended narrative style questions, thereby allowing for a comparison of responses to the survey questions to assess for changes. The data was a mixture of nominal, ordinal, and categorical data and was exported from RedCap to Excel and SPSS for analysis using non-parametric testing. The plan was to perform the Mann-Whitney U Test for each survey item, comparing pre- and post- responses. This test was designed for use with independent measures, meaning the same group will be measured on two separate occasions. McNemar-Bowker test was to be used with the three categorical questions in the survey: Knowledge, Self-Efficacy, and Practice Habits. However, with the limited number of HCPs who participated in the project, these tests were not feasible. Instead, the pre- and post-intervention survey results were compared side by side. Any comments that were included in the open space questions were evaluated individually for further insight.

The determination of reaching identified outcomes were derived from the comparison of pre- and post- survey responses of knowledge, self-efficacy, and practice habits when conducting FIP counseling during WCC. Specifically, the survey responses determined if there was a change in the comfort level of conducting FIP counseling, which should enable the HCP to conduct FIP counseling with higher frequency. It assessed for any changes in perception of effectiveness, and a change in the knowledge and comfort with the technical aspects of safe storage. In order to consider the project a successful one, there should be an increase in these metrics when comparing the pre- and post-intervention survey results. These results are demonstrated using bar charts and tables.

Section IV: Findings/Results

The project was launched on February 11th when the introductory email was sent to clinic champions, who then forwarded the introduction to the other HCPs in their clinic. The initial email contained an introduction to the project, a link to the RedCap survey, and a link to watch the video of the recorded educational presentation. The pre-intervention survey was left open for two weeks to allow the providers time to complete it. At the end of the two weeks, 13 of the 26 providers in the five clinics completed the survey (50% participation rate). At the end of the two weeks, survey responses were exported from RedCap into SPSS for data analysis (Pallant, 2020). Data analysis was performed in collaboration with a statistician on faculty at Texas Woman's University. Each question in the survey was evaluated, as it relates to the contribution to the overall statistical impact of the educational presentation and bundle.

Pre-Intervention Outcomes

Table 2 presents the findings related to demographic information on respondents and behaviors related to anticipatory guidance for firearms. A total of 13 participants anonymously filled out the pre-intervention survey. Based on question one of the survey, over half (61.5%) of the HCPs had never received any sort of didactic education on topics related to firearms and firearm safety. The HCPs who had previously received education about firearm safety received it from a workplace presentation or continuing education module (CME). The HCPs identified several topics that would help with gun safety related counseling, with the majority (75%) of HCPs identifying the technical aspects of firearms and locking devices as an area to learn more about.

Table 2	
Survey participants knowledge level regarding gun safety	
	n = 13 (%)
Have you received didactic education on topics related to firearms and firearm safety?	
Yes	5 (38.5%)
No	8 (61.5%)
I think that receiving education on certain topics would help me to provide better anticipatory guidance to my patients.	
Technical aspects of firearms and locking devices	9 (75.0%)
Literature supporting or refuting child access prevention practices	4 (33.3%)
Specific language to use when talking to families	6 (50.0%)

Other	0 (0%)
-------	--------

Table 3 presents the survey participants self-assessments beliefs and barriers to firearm counseling. When asked about responsibility, 83% of respondents felt that it was the responsibility of HCPs to counsel on the risks that firearms pose, yet only 7.7% of HCPs identified gun safety as a high priority in their practice. Time during a WCC was identified as a limiting factor by 83% of HCPs to be able to provide gun safety counseling. When questioned about what to say and comfort level of saying it, 78% of HCPs stated that they know what to tell families about how to prevent firearm injuries in the home, and 83% of respondents stated that they feel comfortable providing that counseling. The HCPs who responded that they are not comfortable with counseling on preventing firearm injuries identified two contributing factors for this: a lack of familiarity with the technical aspects of firearm safety, and a concern for negatively affecting patient-provider relationship.

The majority (83%) of respondents stated that they feel comfortable providing counseling on safe storage of firearms, while a few of the providers stated that they are unfamiliar with the technical aspects of firearm storage, including use of trigger locks, and others stated that they were concerned that families would not be receptive to this topic of counseling. When talking about the specifics of safe gun storage, 75% of respondents answered that they were not comfortable discussing the use of trigger locks, gun safes, or other storage devices, with almost 88% of those stating that they are unfamiliar with how the devices work, therefore, do not feel comfortable discussing them.

A small percentage of HCPs stated that they are concerned that discussing firearm safety during WCCs will adversely affect their relationship with patients/families. Some of the HCPs have encountered resistance from families to discussing firearm safety and gun-related safety topics, with 15% identifying as rarely, 15% as sometimes, and 23% encountering it often.

Table 3 Survey participants perceived self-efficacy regarding FIP counseling	
	n = 13 (%)
Physicians have a responsibility to counsel patients on risks posed by firearms	
Strongly disagree	0 (0%)
Disagree	0 (0%)

Agree	11 (84.6%)
Strongly agree	2 (15.4%)
Counseling patients and families on guns safety is a high priority in my practice	
Strongly disagree	1 (7.7%)
Disagree	7 (53.8%)
Agree	4 (30.8%)
Strongly agree	1 (7.7%)
I have too little time allotted to each patient to counsel patients effectively on gun safety	
Strongly disagree	0 (0%)
Disagree	2 (15.4%)
Agree	11 (84.6%)
Strongly agree	0 (0%)
I do not know what to tell families about how to prevent gun injury in their homes	
Strongly disagree	1 (7.7%)
Disagree	10 (76.9%)
Agree	2 (15.4%)
Strongly agree	0 (0%)
Do you feel comfortable counseling patients and families on the risks posed by firearm ownership?	
Yes	11 (84.6%)
No	2 (15.4%)
Do you feel comfortable counseling patients on safe gun storage?	
Yes	10 (76.9%)
No	3 (23.1%)
Do you feel comfortable counseling patients and families on the use of trigger locks, safes, and other storage devices?	
Yes	5 (38.5%)
No	8 (61.5%)
I am concerned that by counseling patients and families on firearm safety, I will damage my relationship with that family.	
Strongly disagree	1 (7.1%)
Disagree	10 (76.9%)
Agree	2 (15.4%)
Strongly agree	0 (0%)
How often do you encounter resistance from families when you provide gun-related anticipatory guidance?	
Never	3 (23.1%)
Rarely	2 (15.4%)
Sometimes	3 (23.1%)
Often	2 (15.4%)
Always	0 (0%)
I do not provide gun-related anticipatory guidance	3 (23.1%)

Table 4 presents the routine practice habits for healthcare providers, including their pre-intervention routine practices on firearm counseling. Questions two through eight of the survey focused on practice habits during wellness visits, revealing that well child checks (WCC) make up over half of the daily case load for HCPs, with each WCC lasting approximately 15-20 minutes long for ages 0 to 11 years and up.

Among the HCPs participating in the survey, the amount of time spent on anticipatory guidance (AG) during WCC was fairly evenly split with 30.8% spending less than five minutes providing AG, 30.8% spending five to ten minutes on AG, and 38.5% spending more than 15 minutes providing AG. When asked about how often firearm safety is part of the AG provided, only 15.2% of HCPs counsel about firearm safety in more than 76% of their WCCs, and another 15.2% talking about firearm safety only 6% - 25% of the WCCs. 38.5% of HCPs talk about firearm safety less than 5% of WCCs, and the last 30.8% never talk about firearm safety. Discussions about firearm safety are most often prompted by questions from parents or patients, as well as concern for patient's level of risk for firearm injury. When discussions about safe storage of firearms are conducted during WCCs, the advice that is given close to 77% of the time is that firearms in the home should be locked unloaded with ammunition locked up separately. The participating HCPs never recommend removing guns from the home altogether, and over 15% of the HCPs stated that they do not provide counsel on firearm safety at all.

In order to improve the anticipatory guidance that is provided about firearm safety, HCPs identified several teaching topics that they would find helpful, including: technical aspects of firearms and locking devices (61.5%), literature supporting or refuting child access prevention practices (38.5%), laws and statistics specific to their state (30.8%), and specific language to use when talking to families (46.2%).

Table 4	
Survey participant practice habits	
	n = 13 (%)
Well child examinations comprise what percentage of your clinical practice?	
Less than 10%	0 (0%)
10% - 25%	1 (7.7%)
26% - 50%	4 (30.8%)
Greater than 50%	8 (61.5%)
For children ages 1-10years, how much times is schedule for well child appointments?	
Less than 15 minutes	1 (7.7%)
15 – 20 minutes	10 (76.9%)
25 – 30 minutes	2 (15.4%)
30 – 45 minutes	0 (0%)
Greater than 45 minutes	0 (0%)
For children 11 years and older, how much time is scheduled for adolescent well child appointments?	
Less than 15 minutes	1 (7.7%)

15 – 20 minutes	8 (61.5%)
25 – 30 minutes	4 (30.8%)
30 – 45 minutes	0 (0%)
Greater than 45 minutes	0 (0%)
On average, how much time do you spend providing anticipatory guidance in each well child appointment?	
Less than 5 minutes	4 (30.8%)
5 – 10 minutes	4 (30.8%)
11 – 15 minutes	5 (38.5%)
More than 15 minutes	0 (0%)
Survey Participant practice habits surrounding gun safety	
How often do you counsel families or patients on any aspect of firearm safety?	
Never	4 (30.8%)
1% - 5% of well child visits	5 (38.5%)
6% - 25% of well child visits	2 (15.4%)
26% - 50% of well child visits	0 (0%)
51% - 75% of well child visits	0 (0%)
More than 76% of well child visits	2 (15.4%)
What circumstances lead you to ask about gun ownership?	
Parents or patients ask questions	6 (46.2%)
Age of the child	3 (23.1%)
Concern for patient's mental health problem	5 (38.5%)
Concern for patient's level of risk for firearm injury	6 (46.2%)
Organizational/professional recommendation	1 (7.7%)
Societal violence	1 (7.7%)
I always ask about gun ownership	3 (23.1%)
I do not ask about gun ownership	3 (23.1%)
Other	1 (7.7%)
When you talk to families about firearms, what advice to you typically give?	
I recommend removing guns from the home	0 (0%)
I recommend that guns are stored separately from ammunition and in a location children cannot access	10 (76.9%)
I recommend that guns are secured with a trigger lock or internal/barrel lock	1 (7.7%)
I recommend that guns are stored in a locked gun safe or cabinet	4 (30.8%)
I do not talk to families about gun storage	2 (15.4%)

Post-Intervention Outcomes

After answering the questions to the pre-intervention survey, the healthcare providers (HCPs) had a 26-minute recorded educational video to view, and then one month to apply what they had learned from the presentation, as well as utilize the gun locks, patient brochures, and HCP reference sheet. After one month, a post-intervention survey was sent back to the same group of pediatric HCPs. The post-intervention survey was meant to assess for the effectiveness of the bundle intervention, including the educational presentation, access to gun locks to provide to families, and a brochure for families and reference sheet for providers. The responses to the survey questions would demonstrate changes in

perspectives, confidence, competence and knowledge of conducting firearm injury prevention (FIP) counseling during well child checks (WCCs).

(Question 6) The initial survey revealed that a little over 30% of providers never counsel on any aspect of firearm safety, and only 15.4% of the respondents counseled on firearm safety in more than 76% of WCC. The post-intervention survey showed that there was a slight improvement in the practice habits frequency of counseling, with a little more than 35% of HCPs providing FIP counseling more than 25% of their WCC.

Prior to the intervention, only 30.8% of HCPs considered gun safety to be a high priority in their practice. The post-intervention response showed a marked increase, with 71.4% of HCPs stating that gun safety is a high priority. See Appendices J through N for bar charts comparing pre- and post- survey responses.

Pre- and Post-Evaluation by Category

Survey responses were examined by comparing the pre- and post-intervention scores by category of question. The questions about “Advice about Firearms” were considered a *practice*-oriented series of questions. Table 5 depicts the comparison where the post-intervention score for two of the questions [2 and 3] increased.

Table 5

Pre- and Post-Intervention for Practice Items “Advice about Firearms”

Frequencies Pre-Post Intervention		Pre-Intervention		Post-Intervention	
		N	Percent	N	Percent
Advice about Firearms	1. When you talk to families about firearms, what advice do you typically give? Please select All That Apply. (choice=I recommend that guns are stored separate from ammunition and in a location children cannot access.)	10	58.8%	10	43.5%
	2. When you talk to families about firearms, what advice do you typically give? Please select All That Apply. (choice=I recommend that guns are secured with a trigger lock or internal/barrel lock.)	1	5.9%	3	13.0%

Frequencies Pre-Post Intervention		Pre-Intervention		Post-Intervention	
		N	Percent	N	Percent
3.	When you talk to families about firearms, what advice do you typically give? Please select All That Apply. (choice=I recommend that guns are stored in a locked gun safe or cabinet.)	4	23.5%	9	39.1%
4.	When you talk to families about firearms, what advice do you typically give? Please select All That Apply. (choice=I do not talk to families about gun storage.)	2	11.8%	1	4.3%
Total		17	100.0%	23	100.0%

The practice category of survey questions also applied to the series of questions about “circumstances when you would ask about gun ownership.” These questions were also categorized as relating to *practice*. The comparison of the pre- and post-intervention responses indicated that slightly more selections were made after intervention. See Table 6 for details.

Table 6

Pre- and Post-Intervention for Practices Item “Ask about Gun Ownership”

Pre- and Post-Intervention Frequencies		Responses			
		N=Pre	Percent	N=Post	Percent
Ask About Gun Ownership	1. What circumstances lead you to ask about gun ownership? Please select All that Apply. (choice=Parents or patients ask questions)	6	20.7%	5	15.6%
	2. What circumstances lead you to ask about gun ownership? Please select All that Apply. (choice=Age of the child)	3	10.3%	6	18.8%
	3. What circumstances lead you to ask about gun ownership? Please select All that Apply. (choice=Concern for patients mental health problem)	5	17.2%	6	18.8%
	4. What circumstances lead you to ask about gun ownership? Please select All that Apply. (choice=Concern for patients level of risk for firearm injury)	6	20.7%	7	21.9%
	5. What circumstances lead you to ask about gun ownership? Please select All that Apply. (choice=Organizational/professional recommendations)	1	3.4%	4	12.5%

Pre- and Post-Intervention Frequencies		Responses			
		N=Pre	Percent	N=Post	Percent
6.	What circumstances lead you to ask about gun ownership? Please select All that Apply. (choice=Societal violence)	1	3.4%	1	3.1%
7.	What circumstances lead you to ask about gun ownership? Please select All that Apply. (choice=I always ask about gun ownership)	3	10.3%	3	9.4%
8.	What circumstances lead you to ask about gun ownership? Please select All that Apply. (choice=I do not ask about gun ownership)	3	10.3%		
9.	What circumstances lead you to ask about gun ownership? Please select All that Apply. (choice=Other)	1	3.4%		
Total		29	100.0%	32	100.0%
a. Dichotomy group tabulated at value 1.					

Survey responses were also examined by comparing the pre- and post-intervention scores for the category of *self-efficacy*. The question on “Need for receiving education” were considered a *self-efficacy*-oriented series of questions. Table 7 depicts the comparison of the pre- and post-intervention score for these questions. The comparison indicated that post-intervention, some providers believed more education about the locking device and the specific language for communicating were warranted. Other providers may have believed they had received adequate education via the intervention.

Table 7

Pre- and Post-Intervention for Self-Efficacy Items “Need for Education”

Pre- and Post-Intervention Frequencies		Responses		Responses	
		N=Pre	Percent	N=Pre	Percent
Need for Education	10. I think that receiving education on certain topics would help me to provide better anticipatory guidance to my patients. Select All That Apply. (choice=Technical aspects of firearms and locking devices)	8	34.8%	9	42.9%
	11. I think that receiving education on certain topics would help me to provide better anticipatory guidance to my patients. Select All That Apply. (choice=Literature supporting or refuting child access prevention practices)	5	21.7%	4	19.0%

Pre- and Post-Intervention Frequencies		Responses		Responses	
		N=Pre	Percent	N=Pre	Percent
	12. I think that receiving education on certain topics would help me to provide better anticipatory guidance to my patients. Select All That Apply. (choice=Laws and statistics specific to my State)	4	17.4%	2	9.5%
	13. I think that receiving education on certain topics would help me to provide better anticipatory guidance to my patients. Select All That Apply. (choice=Specific language to use when talking to families)	6	26.1%	6	28.6%
Total		23	100.0%	21	100.0%
a. Dichotomy group tabulated at value 1.					

Survey responses were evaluated individually by categories of Knowledge, Self-Efficacy, and Practice. The evaluation was conducted to compare the pre- versus the post-intervention scores. Appendix K illustrates the provider responses reflecting their knowledge of specific components for firearm injury prevention (FIP). Findings suggested that post-intervention knowledge was increasingly of more importance for anticipatory guidance (AG), for example, the need for helmets, use of seat belts, etc.

Self-efficacy was evaluated by the components of self-efficacy overall (Appendix L), self-efficacy related to perceived barriers (Appendix M), and self-efficacy related to comfort (Appendix N). Findings in Appendix M, for example, suggested that the providers had more time, post-intervention, to address firearm injury prevention. Appendix N addressed self-efficacy and comfort specific to gun storage and responses reflected a greater degree of comfort in the post-intervention phase.

Appendix O represented the category of Practice. Details indicated that providers perceived themselves as having more time to address FIP in their practice. In the questions about frequency of counseling the family on gun safety, the trend in “agree” versus “disagree” responses shifts to more “agree” with the statement post-intervention.

Discussion/Conclusions

The original question for the project was as follows:

For pediatric primary care HCPs, will a bundled intervention consisting of a brief web-based educational module, a reference card for the HCP to refer to and slip card of facts and recommendations

for patients, and the provision of a cable gun lock, increase the HCPs knowledge, self-efficacy and frequency in routinely conducting firearm injury prevention (FIP) counseling during well child checks (WCC), compared with prior to the intervention?

This is a complex issue that requires a multilevel approach to management of such a sensitive topic. From the limited data of this project, it is clear that the objectives of the project were achieved. After providing healthcare providers (HCPs) with a bundled intervention, including the recorded presentation, an educational brochure for families, and a reference sheet for the HCPs to reference, there was an increase in the knowledge, self-efficacy and practice habits in conducting FIP during WCCs. When HCPs are empowered with information about what they should be doing and why they are doing it, they are more likely to do it. When HCPs know that the guidance, they provide makes a positive difference, they are more likely to consistently provide the needed guidance.

Actual Timeline

The project was delayed in starting as the content of the presentation was awaiting approval from the organizational leadership. The recruitment email was sent out in mid-January, but the project did not get final approval to launch until February 11th. In the two weeks following the recruitment email being sent, deliveries of the gun locks, brochures and handouts were made to each of the five participating clinics. As soon as approval was received, the initial email containing the link to the survey and educational presentation was sent to the five clinic champions who then sent it to their clinic colleagues. A reminder email was sent to the clinic champions one week later, and the pre-intervention survey was closed out 2 weeks after being sent. The post-intervention survey was sent out on March 11th, which was four weeks after the initial survey was sent.

Limitations

This project began as the COVID-19 pandemic was starting, and it created several barriers and limitations that made the project quite challenging to complete. The initial plan for the project was for the educational module to be presented in a “lunch and learn” session with providers in order to allow for live

interactions and questions. That plan had to be modified to a recorded presentation in order to comply with social distancing guidelines.

The particular topic of firearm injury prevention proved to be a barrier in and of itself, as there is still significant hesitation among organizations and providers to delve into the gun safety conversation. I was told many times leading up to implementation of the project that “this is Texas, and Texans love their guns.” This was identified as a very sensitive topic and came under scrutiny by some leadership within the pediatric organization because they were uncomfortable with the wording presented in the educational video. The concern was that the question “Are there any firearms present in the home?” would create tension between families. Some providers preferred to use the wording “Do you have any questions or concerns about firearm storage?” Because of the concern over the verbiage, the project stalled out for a couple of weeks waiting for approval from leadership to proceed. After presenting the literature review and references for the research supporting the original wording, it was approved to proceed with a disclaimer that the views in the educational presentation did not reflect the views of the pediatric organization. Out of 41 pediatric primary care clinics within the umbrella pediatric organization, only five clinics chose to be involved in the project, and only 13 of the 26 providers within those 5 clinics participated.

Section V: Recommendations and Implications for Practice

Parents bring their children to the pediatrician's office for wellness checks to assure them that their child is growing well, getting the nutrients needed, and recommendations for optimal health. During those visits, families receive information on topics such as screen time, dietary recommendations, sunscreen, water safety, vaccinations, helmets and seatbelts. They receive information that has been backed by research and is the best evidence for practice. There was a period of years when the topic of firearm safety was turned into a political tool, thus removing it from the healthcare discussion and making it taboo to discuss in a clinical setting. In recent decades, there has been more and more research about pediatric firearm injury prevention, and all of it supports counseling for safe gun storage in the home to prevent injuries and death.

Pediatric healthcare providers (HCPs) have shied away from discussing safe gun storage and firearm injury prevention (FIP) within the home, and one of the primary reasons identified was a lack of self-efficacy due to a lack of formal education about the topic. This project aimed to fill the gap in education, providing HCPs with knowledge of epidemiology and statistics, the science of safe gun storage and what works to save lives by decreasing firearm injuries, with the hopes of increasing their self-efficacy and confidence in providing FIP counseling. Based on the data from the survey responses, the bundled intervention provided the knowledge and information that they needed to more confidently provide FIP counseling during WCCs.

DNP Essentials

This project was underpinned by the DNP essentials, specifically Essentials I (Scientific underpinning for practice), III (Clinical scholarship and analytical methods for evidence-based practice), VII (Clinical prevention and population health for improving the nation's health), and VIII (Advanced nursing practice). The DNP Essentials describe the foundational competencies that are core to the advanced nursing practice role.

Essential I: Scientific underpinnings for practice.

Those within the healthcare community are guided by principles of science. The art and practice of nursing has grown based on science that guides what nurses do. There may be topics that are sensitive or draw a reaction from families, but that should not mean that the topic is avoided. In those instances, the HCP has science to back them up and provide reassurances that the recommendations are not opinion-based.

Essential III: Clinical scholarship and analytical methods for evidence-based practice.

The strength of this project was based on the numerous research studies that had previously been conducted which then informed the direction of the project. Where topics may make HCPs and/or families uncomfortable, the evidence supports the recommendations, which all point to the safety of the child. When HCPs practice based on the most accurate evidence available, their practice is guided by what is best known to increase the health and wellness of their patient population.

Essential VII: Clinical prevention and population health for improving the nation's health.

Clinical prevention is defined as health promotion and risk reduction/illness prevention for individuals and families, while population health is defined to include aggregate, community, environmental/occupational, and cultural/socioeconomic dimensions of health (). The implementation of clinical prevention and population health activities is central to achieving the national goal of improving the health status of the population of the United States. As firearm injuries have become known as a public health crisis, as practitioners, we must shift the focus to prevention rather than reaction. If a pediatric firearm injury or death can be prevented from happening altogether

Essential VIII: Advanced nursing practice.

The advanced practice nurse should be prepared as a DNP graduate to implement therapeutic interventions based on nursing science and research (American Association of Colleges of Nursing, 2006). A public health crisis must be met with a public health response, and so the advanced practice nursing skills of a DNP would aid in applying those principles for increased effect.

Recommendations for Practice

Based on the data presented from this project, as well as other research that has been previously

published on this topic, incorporation of education regarding firearm injury prevention and counseling into medical and nursing curriculums would be beneficial to lay the foundation for HCPs to feel confident in approaching such a sensitive topic. It would also be beneficial to have updated annual education available for HCPs, such as a continuing education module, to update and reinforce best practice approaches for firearm injury prevention.

Next Steps – Future Implications for Project

Implications for practice moving forward would be to acknowledge the continued need for education on this topic, and the continued encouragement and empowerment of HCPs to conduct FIP counseling as part of the anticipatory guidance at every well child check from ages 2 years and up. Adding firearm injury prevention and FIP counseling into educational curriculum would be an excellent foundation for HCPs to build on. According to Pender's "Health Promotion in Nursing practice" (2011), a perceived competence or self-efficacy to execute a given behavior increases the likelihood of commitment to action and actual performance of the behavior, and the greater the self-efficacy, the fewer perceived barriers to a specific health behavior. As Bandura described the concept of self-efficacy, with providers are equipped and empowered to perform a task that, not only are they comfortable and confident in the task, but they believe that what they are doing will make a difference, filling in the educational gap and providing resources and training will result in higher self-efficacy.

This project focused on enacting several action levels of the Spectrum of Prevention, specifically strengthening individual knowledge and skills, educating providers, and changing organizational practices. Much more work can be done to continue in these efforts, but this project engaged in the action levels as stated. As future implications are considered, it will be important to keep in mind the six levels of the Spectrum of Prevention in order to address such a complex and sensitive topic such as gun safety.

In spite of existing recommendations to screen and counsel for gun safety and firearm injury prevention, national data, as well as the data collected from this project, demonstrates that the percentage of healthcare providers (HCPs) who adhere to these recommendations is very low. Reasons identified for the low adherence to this recommendation include lack of training in the technical aspects of safe gun

storage, lack of familiarity with devices used in safe storage, and lack of knowledge surrounding firearm injury prevention. Providers have identified possible tension between provider and families as an obstacle, as well as lack of knowledge of how to effectively navigate a conversation about safe gun storage.

Due to the limitation of representation of HCPs, a good next step would be repeat the project, doing it with a quality improvement (QI) focus. This initial round of the project would be viewed as the first cycle of a PDSA, particularly from the clinics with HCPs who have instituted the practices into their standard of care while doing anticipatory guidance. Feedback that was received from this project would be very helpful to make changes so that the education and support HCPs receive is optimal. The QI framework, beginning with the first cycle, could inform future cycles that could eventually provide the opportunity to embed the evidence-based information into standards of care for anticipatory guidance.

With increased education and resources available to HCPs, the confidence in the effect and ability to conduct FIP counseling should result in increased frequency of having these conversations in the clinical setting. The data from this project demonstrated the ongoing need for intervention in order to provide healthcare providers (HCPs) with the education and empowerment that they need to be most effective in their practice. Any future plans for this project would need be more of a system-wide approach, with all providers at all primary care clinics involved in promoting firearm injury prevention. Possibilities for the system-wide approach would be to hang posters promoting safe gun storage in all clinics, as well as having the informational brochure for families readily visible to families. Providing education to the providers is imperative and allowing for settings where open discussions could happen will ensure that concerns are addressed for HCPs.

One approach to consider would be to build in standard anticipatory guidance (AG) prompts to the electronic health record (EHR) that would be consistent with the AG topics recommended by age by the American Academy of Pediatrics (AAP). The AG section would update based on current age of the child enabling the HCP to touch on each of the recommended topics during well child checks (WCC). This could also include an EHR prompt that would remind the HCP to address AG topics, including

firearm safety and safe gun storage. A system-wide involvement in these efforts will provide HCPs with the support and backing they need to push past any discomfort surrounding the topic of the conversation and allow them focus on the positive effect of promoting safe gun storage. As more HCPs develop comfort, confidence and competence to effectively conduct firearm injury prevention counseling, the topic will become as normalized as any of the routine safety topics HCPs discuss on a regular basis. A public health crisis demands a public health response.

The project will be presented via a poster presentation at the Students Creative Arts and Research Symposium at Texas Woman's University in April 2021. This is powerful demonstration of scholarly work and will be a great representation of nursing scholarly work. It will also be submitted to the Texas Woman's University eRepository, which goes out to Google Scholar and WorldCat. The manuscript will be submitted for publication to the Journal of Nursing Education and/or the Journal for Nurse Practitioners. The project reinforces the previously researched topic of the need for education regarding firearm injury prevention and so sharing that data with those within nursing education would be paramount.

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Appendix A - SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • 39 clinics across the metroplex, giving access to thousands of children and families. • Well established reputation for providing excellent pediatric care. • Affiliation with Aim for Safety, already focusing on increasing gun safety awareness 	<ul style="list-style-type: none"> • Texans are known to historically have very strong opinions on guns, may not be open to conversation with HCP • Large system can be difficult to establish new protocols • May be difficult to acquire more cable trigger locks to be successful • Delivery model via YouTube could be a challenge for some HCPs to access
Opportunities	Threats
<ul style="list-style-type: none"> • Build stronger relationships within the community by partnering with local police department. • Possibility to add an EHR prompt as a reminder to ask FIP questions • Organization has the opportunity to adopt a gun safety initiative across the system, normalizing the conversation for FIP counseling • Could be a model for other pediatric institutions to address gun safety nationwide. 	<ul style="list-style-type: none"> • Primary care clinics may decide that they do not want to participate • HCPs may resist, with the thought that FIP counseling will add to their work • Some families may be resistant to discussing firearms in the home • HCPs may worry that it will jeopardize their relationship with families

Appendix B – Synthesis of Literature and Levels of Evidence

Synthesis Section	Specific Themes	Variations: Concepts	Variations: Methods and Design	Citations: Author and Year	Level of Evidence
1	Barriers to initiating discussion of gun safety	Most common barriers were time, challenge integrating topic into visit, and cultural stigma; Introduction of prompt in EHR greatly improved documentation	Systematic Review	Zonfrillo, et al., 2018	IIA
			Quantitative	Cho & Dowdell, 2019	IIIB
			Quasi-experimental, Qualitative	Gastineau, et al., 2020	IIA
			Qualitative, non-experimental	DeMello, et al., 2020	IIIB
			CPG	Siva & Tatebe, 2020	IVB
			Qualitative	Jager-Hyman, et al., 2019	IIIA
2	FIP Education for healthcare providers	Web-based curriculum integrated into program	Systematic Review	Puttagunta, et al., 2016	IIB
			RTC	Sanci, et al., 2015	IB
			Quasi-experimental, Qualitative	Naughton, et al., 2019	IIA
			Prospective Qualitative	Kwong, et al., 2019	IIA
			Prospective Qualitative	McKay, et al., 2020	IIB
3	Provider-delivered motivational-interviewing based patient education	Combination of education and provision of a safe storage device more likely to implement safe storage practices. Safety Check: 3-pronged approach effective to increase storage practices	Meta-Analysis	Ngo, et al., 2019	IA
			Meta-Analysis	Oliphant, et al., 2019	IA
			RTC	Barkin et al., 2008	IA
			Implementation Study	Wolk, et al., 2017	IIIA
4	Increasing HCP self-efficacy	Pediatricians with higher perceived self-efficacy in discussing FIP are more likely to discuss these topics with families	Qualitative	Hoops & Crifasi, 2019	IIIA
			Cross-sectional survey	Solomon, et al., 2002	IIIB
			Qualitative	Juang, et al., 2019	IIIB
			Qualitative	Finch, et al., 2008	IIIA
5	Practice and implementation of FIP strategies in pediatric primary care settings	Safety check: 3-pronged approach, including screening, brief counseling, provision of firearm lock; provision of firearm lock was more effective	Systematic Review	Rowhani-Rahbar, et al., 2016	IA
			Systematic Review	Roszkowski, et al., 2016	IIA
			RTC	Grossman, et al., 2000	IA
			Qualitative	Campbell, et al., 2019	IIIA
			Qualitative	Beidas, et al., 2019	IIIA
			Qualitative	Wolk, et al., 2018	IIIB

Key to Johns Hopkins Nursing EBP Levels of Evidence:

Level I Evidence	Experimental study, randomized controlled trial (RCT); Systematic review of RCTs, with or without meta-analysis
Level II Evidence	Quasi-experimental study; Systematic review of a combination of RCTs, quasi-experimental studies only, w/ or w/o meta-analysis
Level III Evidence	Non-experimental study; Systematic review of a combination of RCTs, quasi-experimental and non-experimental, or non-experimental studies only, w/ or w/o meta-analysis; Qualitative study or systematic review, w/ or w/o meta-analysis
Level IV Evidence	Opinion of respected authorities and/or nationally recognized expert committees/consensus panels based on scientific evidence. Includes: Clinical practice guidelines and consensus panels
Level V Evidence	Based on experiential and non-research evidence. Includes: literature reviews, quality improvement, program, or financial evaluation, case reports, opinion of nationally recognized expert(s) based on experiential evidence

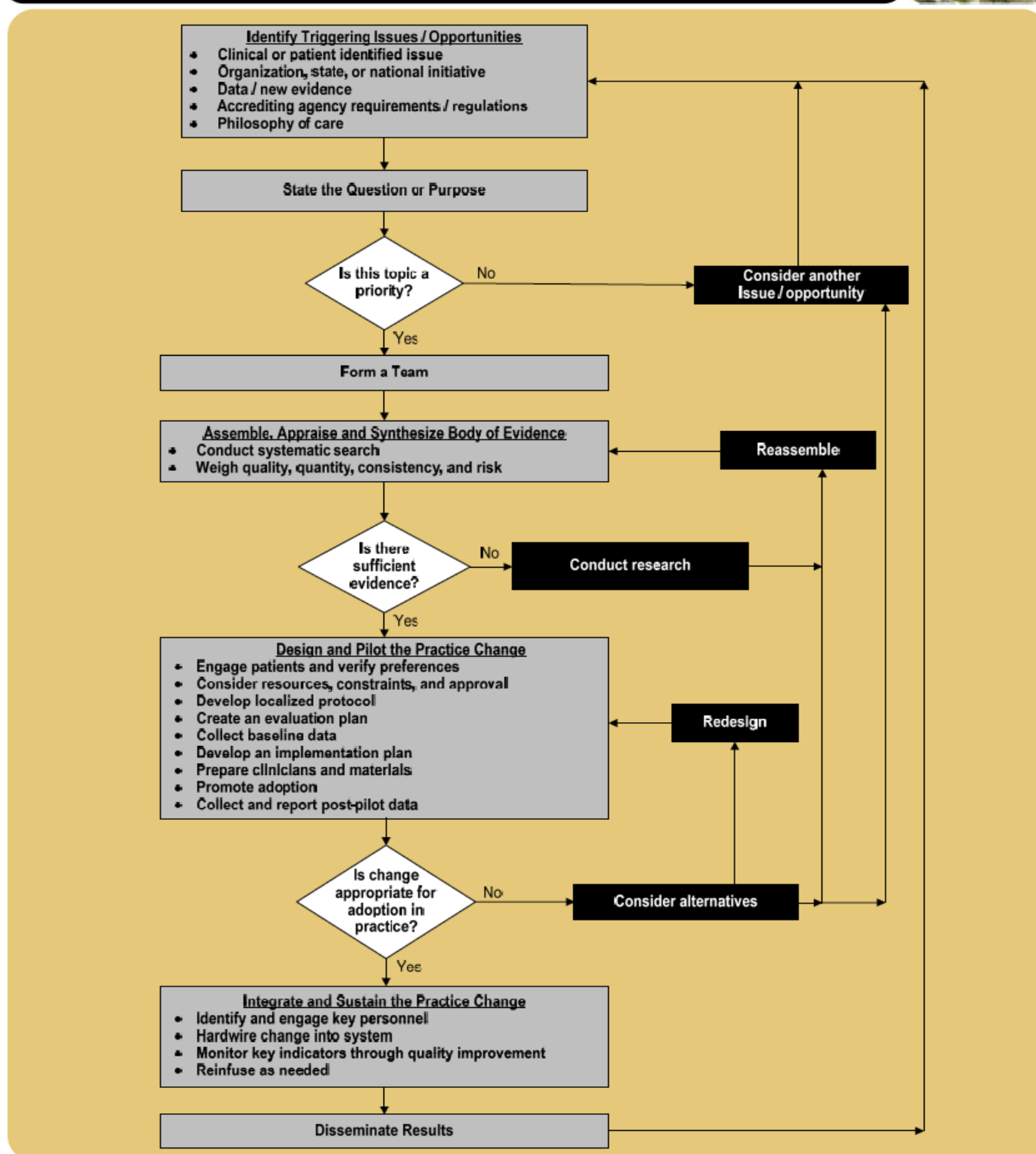
Quality Rating Base on Quality Appraisal

- A High Quality:** consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence
- B Good quality:** reasonably consistent results; sufficient sample size for the study design; some control, and fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence
- C Low quality or major flaws:** little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn

Adapted from Dang, D., & Dearholt, S.L. (2018). Johns Hopkins nursing evidence-based practice: Model & guidelines (3rd ed). Sigma Theta Tau International

Appendix C – The Iowa Model

The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care



◆ = a decision point

©University of Iowa Hospitals and Clinics, Revised June 2015

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Appendix D – Permission for the use of the Iowa Model



Shauna Okongo <sokongo@twu.edu>

Permission to Use and/or Reproduce The Iowa Model (1998)

1 message

Kimberly Jordan - University of Iowa Hospitals and Clinics <noreply@qualtrics-survey.com>

Tue, Oct 29, 2019 at 5:41 PM

Reply-To: Kimberly Jordan - University of Iowa Hospitals and Clinics <kimberly-jordan@uiowa.edu>

To: sokongo@twu.edu

You have permission, as requested today, to review and/or reproduce *The Iowa Model of Evidence-Based Practice to Promote Quality Care (Revised 1998)*. Click the link below to open.

[The Iowa Model of Evidence-Based Practice to Promote Quality Care \(Revised 1998\)](#)

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Citation: Titler, M. G., Kleiber, C., Steelman, V. J., Rakel, B.A., Budreau, G., Everett, L. Q., ...Goode, C. J. (2001). The Iowa model of evidence-based practice to promote quality care. *Critical Care Nursing Clinics of North America*, 13(4), 497-509.

In written material, please add the following statement:

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Please contact UHCNursingResearchandEBP@uiowa.edu or 319-384-9098 with questions.

Appendix E – IRB Waiver



November 1, 2019

Shauna Okongo, NP
Perioperative Services
Cook Children's Medical Center
801 Seventh Ave
Fort Worth, TX 76104

Re: Pediatric Primary Care Providers and Gun Safety: Equipping Providers to Talk with Families about Gun Safety in the Home

Ms. Okongo,

The Cook Children's Health Care System Institutional Review Board (CCHCS IRB) acknowledges that the purpose of the above entitled project is to determine how evidence-based education for anticipatory guidance for gun safety compared to no provider education for gun safety impacts providers confidence and competence to provide consistent counseling with patients. This project does not appear to constitute a systematic investigation and most likely will not contribute to generalizable knowledge. Therefore, the CCHCS IRB does not consider this project to rise to the level of the federal definition of research. The federal definition of research is:

"Research is a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge."

If you have any questions about this letter or the CCHCS IRB, please contact the IRB office at 682-885-5990. Good luck with your project.

Sincerely,

A handwritten signature in cursive script that reads "Andrea Keane".

Andrea Keane, MHSA, CIP
Director, Human Subject Protections
Cook Children's Health Care System

801 Seventh Avenue
Fort Worth, TX 76104-2796
682-885-4000
www.cookchildrens.org

Appendix F – Permission to use survey



Shauna Okongo <sokongo@twu.edu>

Request for permission to use Survey

Cassandra Crifasi <crifasi@jhu.edu>

Sat, Nov 2, 2019 at 7:02 AM

To: Shauna Okongo <sokongo@twu.edu>, Katherine Hoops <khoops1@jhmi.edu>

Hi Shauna,

I am glad to hear about your project. Yes, you are welcome to use the survey. Do you need a copy of it?

Best,

Cass

Cassandra Crifasi, PhD, MPH

Assistant Professor, Health Policy and Management

Deputy Director, Center for Gun Policy and Research

Johns Hopkins Bloomberg School of Public Health

624 N Broadway, Room 593

Baltimore, MD 21205

Office: 443.287.8040

Mobile: 443.228.6266

Twitter: @DrCrifasi

Check out our FREE online course: [Reducing Gun Violence in America: Evidence for Change](#)

[Quoted text hidden]

Appendix G – Permission to use presentation



Shauna Okongo <okongo@twu.edu>

Fwd: An educational intervention for medical students to improve self-efficacy in firearm injury prevention counseling

3 messages

Melzer-Lange, Marlene <mmler@mcw.edu> Sun, Nov 24, 2019 at 9:59 PM
 To: "okongo@twu.edu" <okongo@twu.edu>
 Cc: Jacky Kwong <jkwong13@gmail.com>

Hi there Shauna

Jacky Kwong has attached the file he along with Jennifer Gray used for our project. I'd appreciate if you credit them should you utilize all or part of it

Please let us know how things are going or if you have questions

Marlene

Begin forwarded message:

From: Jacky Kwong <jkwong13@gmail.com>
 Date: November 23, 2019 at 4:20:16 PM CST
 To: "Melzer-Lange, Marlene" <mmler@mcw.edu>
 Subject: Re: An educational intervention for medical students to improve self-efficacy in firearm injury prevention counseling

ATTENTION: This email originated from a sender outside of MCW. Use caution when clicking on links or opening attachments.

Absolutely! Attached was our presentation. Glad our work has not gone unnoticed!

Jacky

[Firearm Injury Prevention.pptx](#)

On Fri, Nov 22, 2019 at 1:16 PM Melzer-Lange, Marlene <mmler@mcw.edu> wrote:
 Jacky

Might you have a PowerPoint of your intervention that you would be willing to share with this person?

Marlene

Begin forwarded message:

From: "Shauna L. Okongo" <okongo@twu.edu>
 Date: November 22, 2019 at 1:10:16 PM CST
 To: "Melzer-Lange, Marlene" <mmler@mcw.edu>, "Shauna L. Okongo" <okongo@twu.edu>
 Subject: Re: An educational intervention for medical students to improve self-efficacy in firearm injury prevention counseling

Shauna Okongo <okongo@twu.edu> Mon, Nov 25, 2019 at 6:29 AM
 To: "Melzer-Lange, Marlene" <mmler@mcw.edu>

Good morning,

Thank you so much for sharing the powerpoint! I will absolutely give credit to Jacky and Jennifer. The work has definitely not gone unnoticed, and I am hoping to add to it from a primary care provider aspect. I am excited to see that this topic is picking up momentum. Would it be ok if I modified the powerpoint a bit, tailoring it for our Texas pediatric population? I really appreciate you sharing this work!

All the best,
 Shauna Okongo

Melzer-Lange, Marlene <mmler@mcw.edu> Mon, Nov 25, 2019 at 8:16 AM
 To: Shauna Okongo <okongo@twu.edu>

Shauna,

Altering it is just fine! Let me know how it goes or if you have any questions.

Marlene

From: Shauna Okongo <okongo@twu.edu>
 Sent: Monday, November 25, 2019 6:29 AM
 To: Melzer-Lange, Marlene <mmler@mcw.edu>
 Subject: Re: An educational intervention for medical students to improve self-efficacy in firearm injury prevention counseling

ATTENTION: This email originated from a sender outside of MCW. Use caution when clicking on links or opening attachments.

Good morning,

Thank you so much for sharing the powerpoint! I will absolutely give credit to Jacky and Jennifer. The work has definitely not gone unnoticed, and I am hoping to add to it from a primary care provider aspect. I am excited to see that this topic is picking up momentum. Would it be ok if I modified the powerpoint a bit, tailoring it for our Texas pediatric population? I really appreciate you sharing this work!

All the best,

Shauna Okongo

On Sun, Nov 24, 2019 at 10:02 PM Melzer-Lange, Marlene <mmler@mcw.edu> wrote:

Hi there Shauna

Jacky Kwong has attached the file he along with Jennifer Gray used for our project. I'd appreciate if you credit them should you utilize all or part of it

Please let us know how things are going or if you have questions

Marlene

Begin forwarded message:

From: Jacky Kwong <jkwong13@gmail.com>
 Date: November 23, 2019 at 4:20:16 PM CST
 To: "Melzer-Lange, Marlene" <mmler@mcw.edu>
 Subject: Re: An educational intervention for medical students to improve self-efficacy in firearm injury prevention counseling

ATTENTION: This email originated from a sender outside of MCW. Use caution when clicking on links or opening attachments.

Absolutely! Attached was our presentation. Glad our work has not gone unnoticed!

Jacky

Appendix H – Permission to use presentation

Shauna Okongo <sokongo@twu.edu>

Fwd: Request for supplemental material

1 message

Shauna Okongo <shaunaokongo@gmail.com>
To: Shauna MacFarlane-Okongo <sokongo@twu.edu>

Fri, Apr 2, 2021 at 9:03 AM

From: Gastineau, Kelsey Annette black <kelsey.gastineau@vumc.org>
Sent: Friday, December 18, 2020 11:08 AM
To: Shauna Okongo
Subject: RE: Request for supplemental material

EXTERNAL EMAIL – Use caution with any links or file attachments.

Hello!

I have reached out to my Be SMART partner, Dr. Annie Andrews who leads the Be SMART chapter in Charleston, and she has contacted the Dallas Be SMART lead (per your email address, it looks like Dallas/Fort Worth may be the best location to start?). As soon as I hear from her I will pass along the contact information of the people who would be most helpful in getting a presentation set up for your group. Also, if it helps, I have attached a PowerPoint presentation I have recently given to the residents here at Vanderbilt where I am now a fellow that outlines the epidemiology of pediatric firearms as well as some points on counseling. Feel free to use any information you would like. Please let me know if I can be of any additional assistance, thank you again for reaching out and best of luck with the remainder of your doctorate! I will be in touch with the Be SMART contact information soon.

Best,
Kelsey
Kelsey AB Gastineau, MD
Pediatric Hospital Medicine Fellow
Vanderbilt University Medical Center
kelsey.gastineau@vumc.org
812-521-0420
she/her/hers

Appendix I – Presentation Curriculum

Purpose

- Overview of current research on best practice recommendations
- Equip and empower you with strategies to approach a potentially sensitive topic
- Provide you with the science that supports prevention efforts
- Empower you with knowledge of firearm injury prevention practices

Objectives

- Identify the epidemiology of firearm injuries for children and adolescents
- Recognize at-risk populations
- Describe common myths and scenarios associated with gun injuries
- Understand the role of safe gun storage in reducing child and adolescent gun deaths
- Introduce prevention strategies for Pediatric Primary Care settings
- Empower and move toward normalizing the gun safety conversation as a safety topic

How are we doing?



<20%

Families identified as gun-owning received appropriate anticipatory guidance

5.1%

Screening for firearm access in only 5.1% of ER patients with:

- Suicidal ideation
- Suicide attempt
- Homicidal ideation

<3%

Providers screen for the presence of firearms

- Most frequent screening occurred with mood disorders

More
LON

Approaching the Conversation

Ask Permission

- I would like to discuss a few safety topics that I discuss with all my families. Would that be ok?

Create a Safe Environment

- Active listening
- Validate experiences
- Ask open-ended questions

Refer to the Science

- Research has shown us that when firearms are stored in a locked container, like a safe, and they are unloaded, and ammunition stored and locked separately, that's the safest way to store firearms.

Corporate Patients' Experiences and Knowledge

- Shift away from authoritarian or expert.

Collaborate for Patient Safety

- Focus on the well-being of the child

(Bertin, et al., 1996; Sica & Tansley, 2002; Kotler, et al., 2000)

Case Study #1



Appendix J - Survey

The purpose of this questionnaire is to assess for comfort and confidence among pediatric primary care providers in discussing anticipatory guidance regarding firearm safety in the home. Completing this survey is completely voluntary.

Your employment status with Cook Children's is not affected in any way with regard to whether or not you decide to complete this survey. The responses will remain completely anonymous and are for assessment purposes only.

Thank you so much for your willingness to participate.

1. Have you received didactic education on topics related to firearms and firearm safety?
 - a. Yes
 - b. No

Comments:

2. Well child examinations comprise what percentage of your clinical practice?
 - a. Less than 10%
 - b. 10% - 25%
 - c. 26-50%
 - d. 50%
3. For children ages 1 -10 years, how much time is scheduled for your well child appointments?
 - a. Less than 15 minutes
 - b. 15-20 minutes
 - c. 25-30 minutes
 - d. 30-45 minutes
 - e. > 45 minutes
4. For children 11 and older, how much times is scheduled for your adolescent well child appointments?
 - a. Less than 15minutes
 - b. 15-20 minutes
 - c. 25-30 minutes
 - d. 30-45 minutes
 - e. >45 minutes
5. On average, how much time do you spend providing anticipatory guidance in each well child appointment?
 - a. Less than 5 minutes
 - b. 5 – 10 minutes
 - c. 10 -15 minutes
 - d. More than 15 minutes

Comments:

6. How often do you counsel families or patients on any aspect of firearm safety?

- a. Never
- b. 1 – 5% of well child visits
- c. 6 – 25% of well child visits
- d. 26 – 50% of well child visits
- e. 51 – 75% of well child visits
- f. > 76% of well child visits

7. What circumstances lead you to ask about gun ownership?

- a. Parents or patients ask questions
- b. Age of the child
- c. Concern for patient mental health problem
- d. Concern for that patient's level of risk for firearm injury
- e. Organizational/Professional Recommendations
- f. Societal violence
- g. I always ask about gun ownership
- h. I do not ask about gun ownership
- i. Other

Comments:

8. When you talk to families about firearms, what advice do you typically give?

- a. I recommend removing guns from the home
- b. I recommend that guns are stored separate from ammunition and in a location children cannot access
- c. I recommend that guns are secured with a trigger lock or internal/barrel lock
- d. I recommend that guns are stored in a lock gun safe or cabinet
- e. I do not talk to families about gun storage

Rate your level of agreement with each of the following statements by circling the appropriate choice.

9. Physicians have a responsibility to counsel patients on risks posed by firearms

Strongly disagree Disagree Agree Strongly Agree

10. Counseling patients and families on gun safety is a high priority in my practice.

Strongly disagree Disagree Agree Strongly Agree

11. I have too little time allotted to each patient to counsel patients effectively on gun safety.

Strongly disagree Disagree Agree Strongly Agree

12. I do not know what to tell families about how to prevent gun injury in their homes.

Strongly disagree Disagree Agree Strongly Agree

13. Do you feel comfortable counseling patients and families on the risks posed by firearm ownership?

- a. Yes
- b. No

14. If you answered No to question 13, with which of the following statements do you most closely identify?

- a. I do not believe that firearm ownership poses risks to the owners' children
- b. I do not feel familiar with the data on pediatric firearm injury
- c. I do not feel familiar with the data on increased risk of firearm injury among children who live in homes with guns.
- d. I do not feel familiar enough with firearms to answer potential questions posed by gun-owning parents.
- e. I worry that parents will react negatively to these types of questions.
- f. Other

Comments:

15. Do you feel comfortable counseling patients on safe gun storage?

- a. Yes
- b. No

16. If you answered No to question 15, with which of the following statements do you most closely identify?

- a. I am unfamiliar with firearms and with technical/practical aspects of safe storage
- b. I am afraid that patients and families will not be receptive to this type of counseling
- c. I do not believe that providers should counsel families on safe storage practices.
- d. Other

Comments:

17. Do you feel comfortable counseling patients on the use of trigger locks, safes, and other storage devices?

- a. Yes
- b. No

18. If you answered No to question 17, with which of the following statements do you most closely identify?

- a. I am not familiar with how these devices work, so I do not feel that I can counsel my patients effectively on how to use them.
- b. I am not familiar with data supporting their efficacy, so I do not know if I should advise patients and families to use them.
- c. I do not think these devices work, so I am not comfortable telling my patients to use them.

Comments:

Rate your response to each of the following by circling the appropriate choice.

19. I am concerned that by counseling patients and families on firearm safety, I will damage my relationship with that family.

Strongly disagree

Disagree

Agree

Strongly Agree

20. How often do you encounter resistance from families when you provide gun-related anticipatory guidance?

Never

Rarely

Sometimes

Often

Always

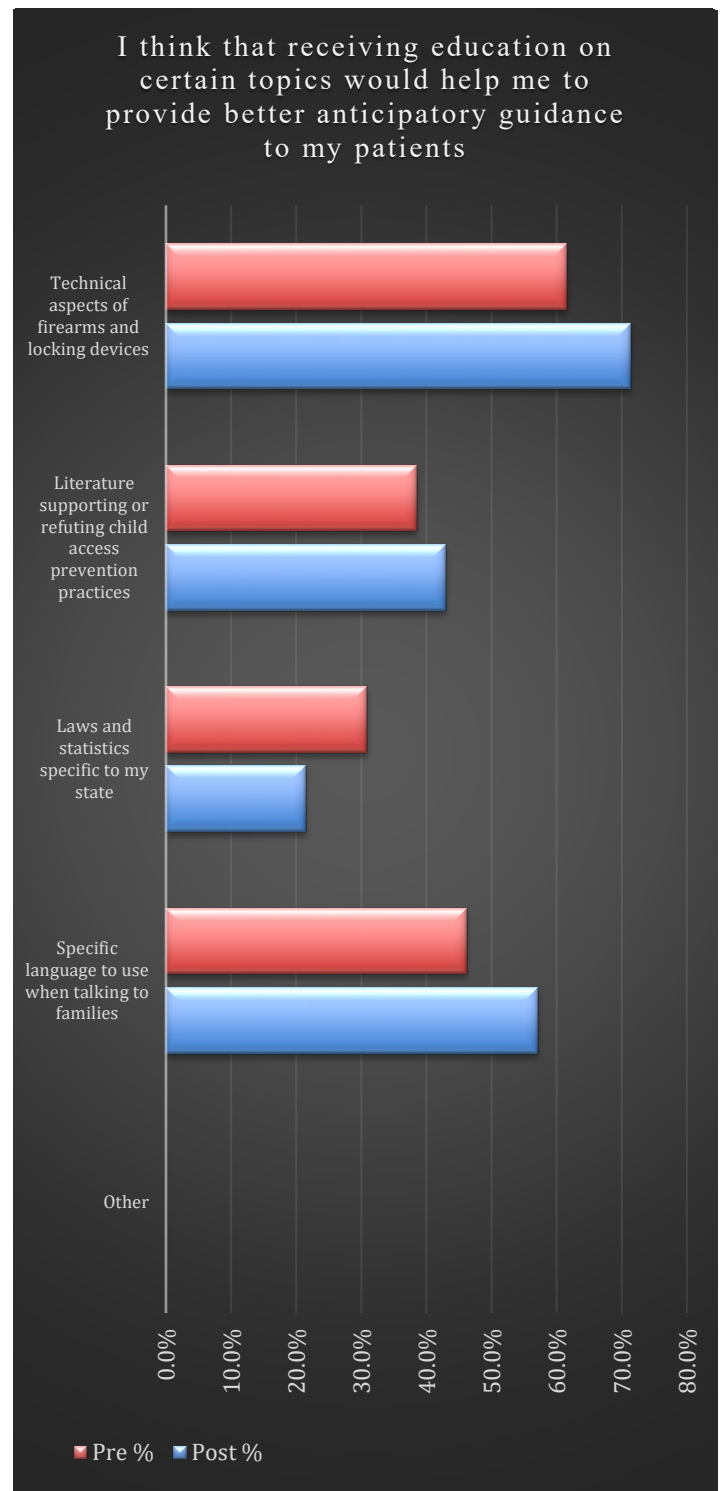
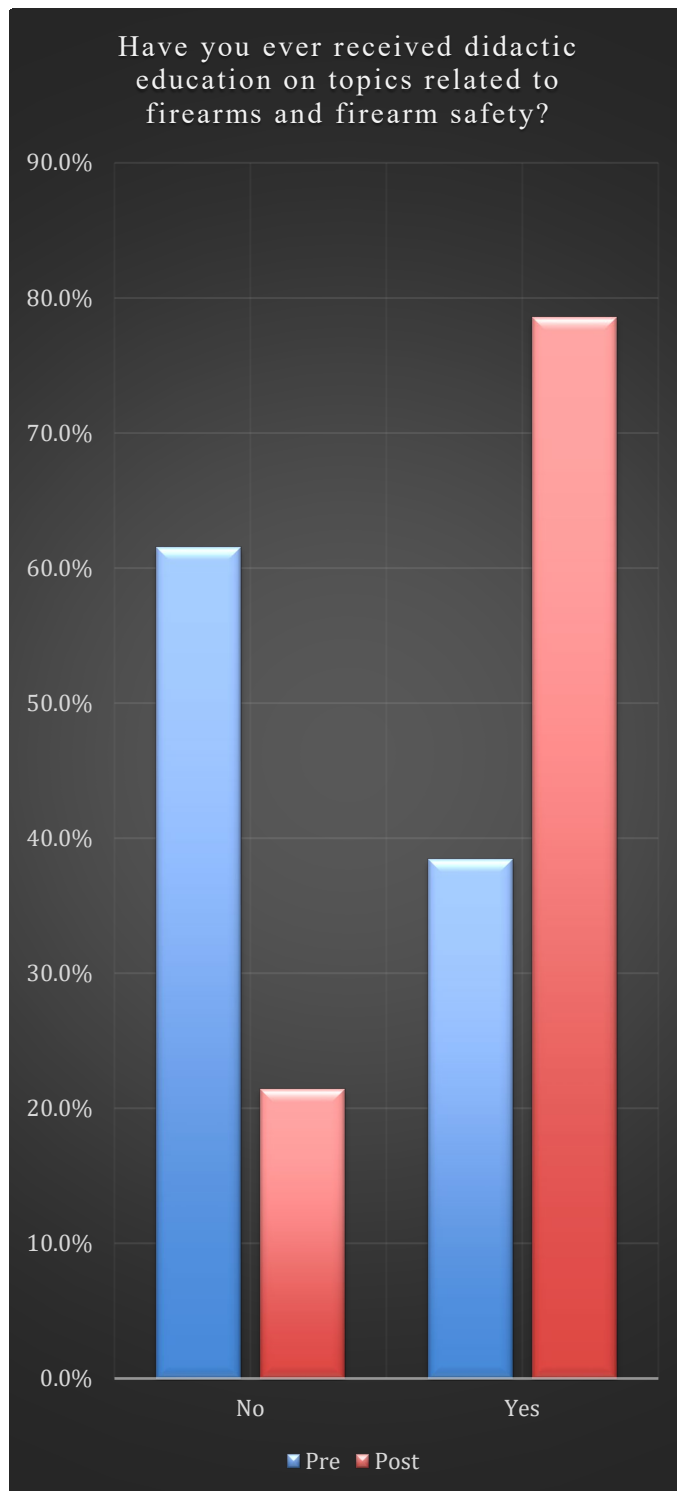
21. I think that receiving education on certain topics would help me to provide better anticipatory guidance to my patients. (Circle all that apply)

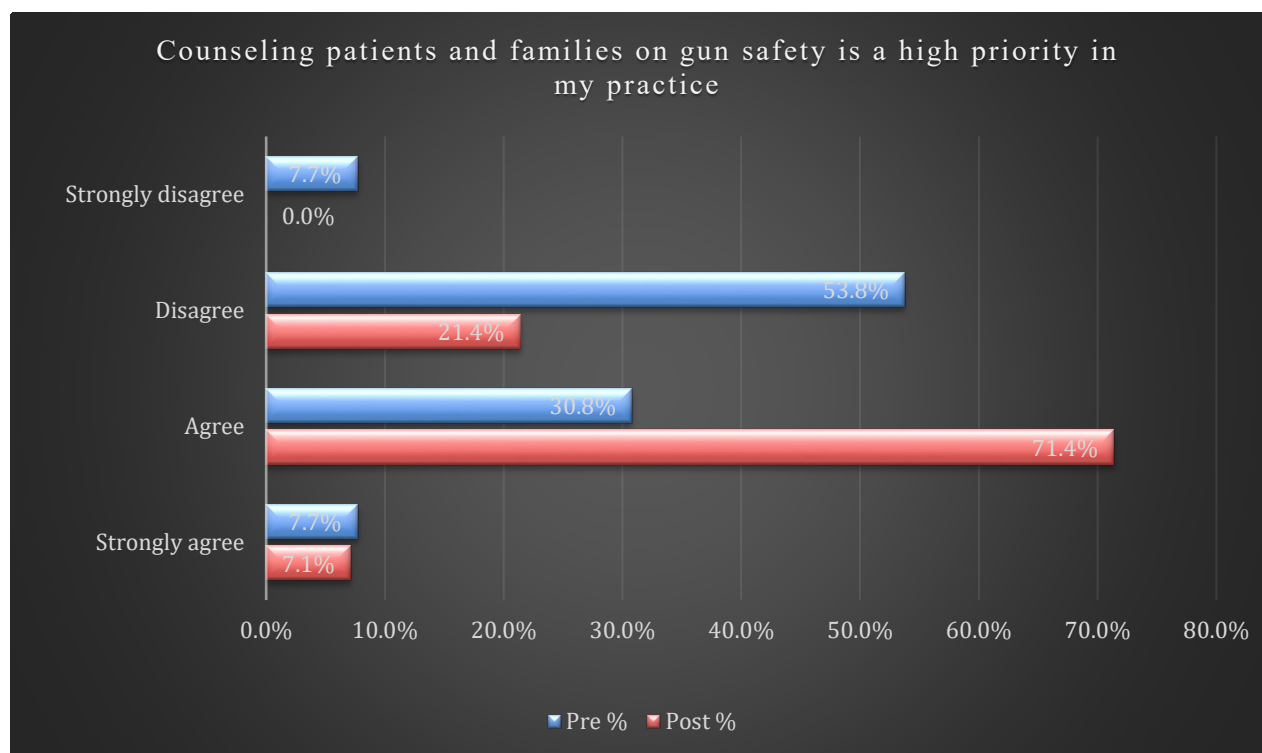
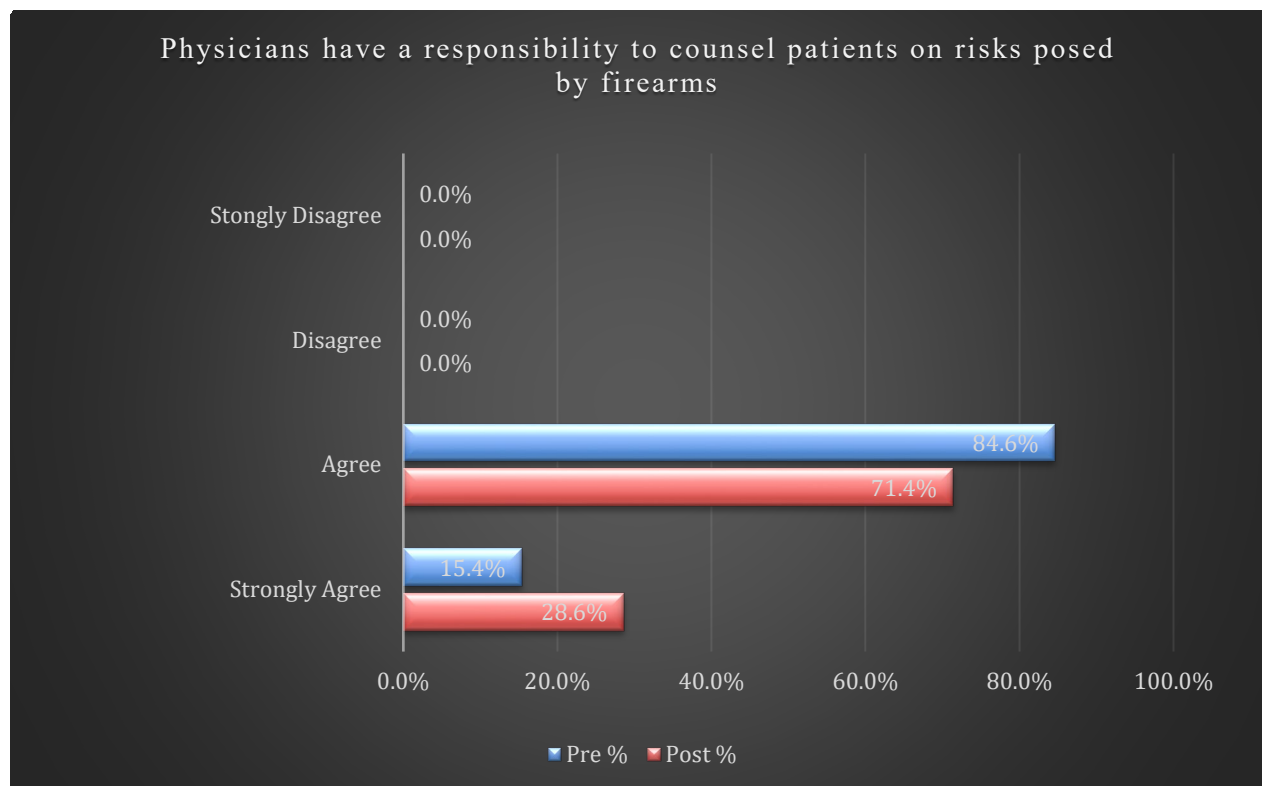
- a. Technical aspects of firearms and locking devices.
- b. Literature supporting or refuting child access prevention practices
- c. Laws and statistics specific to my state
- d. Specific language to use when talking to families

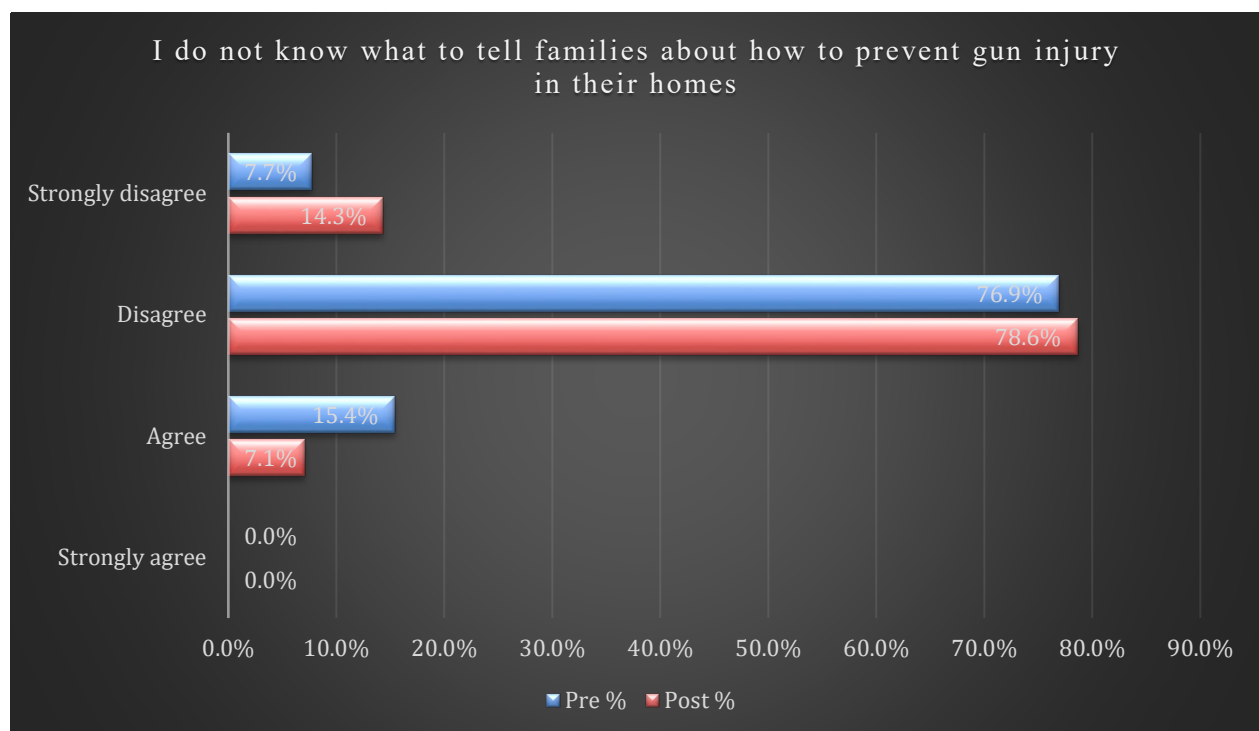
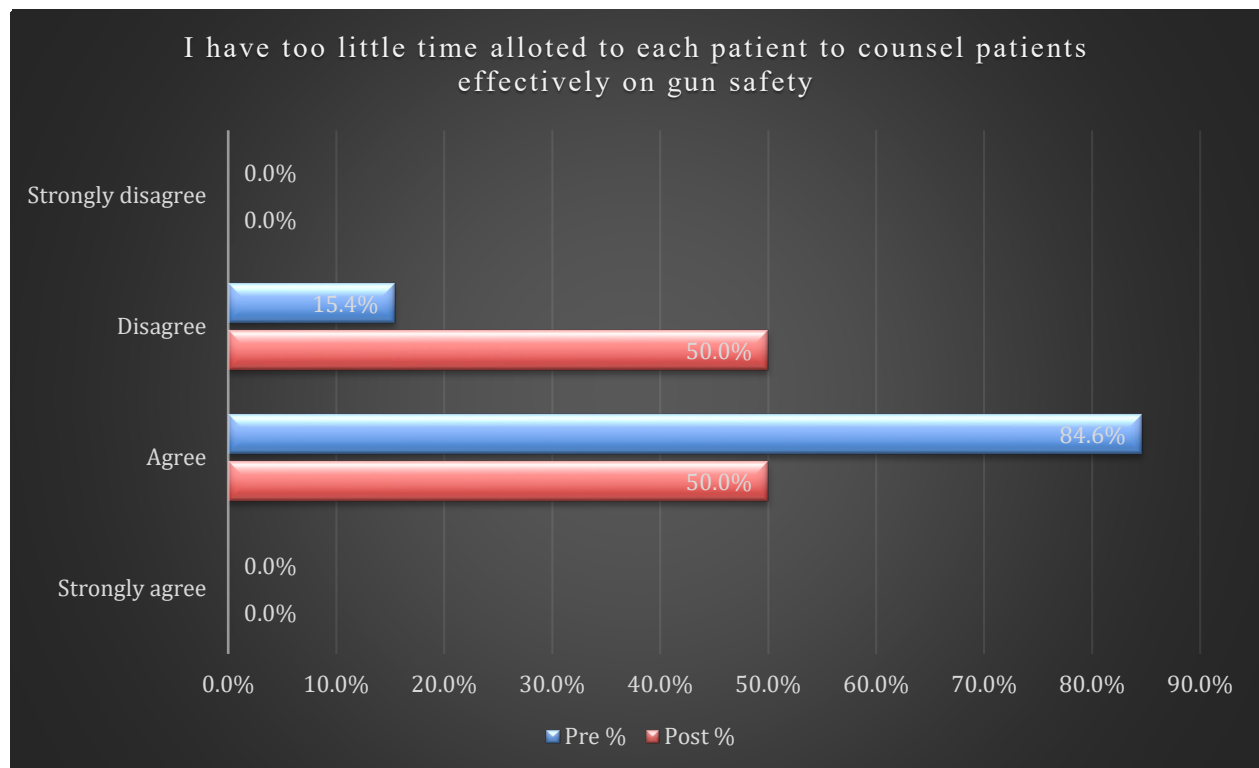
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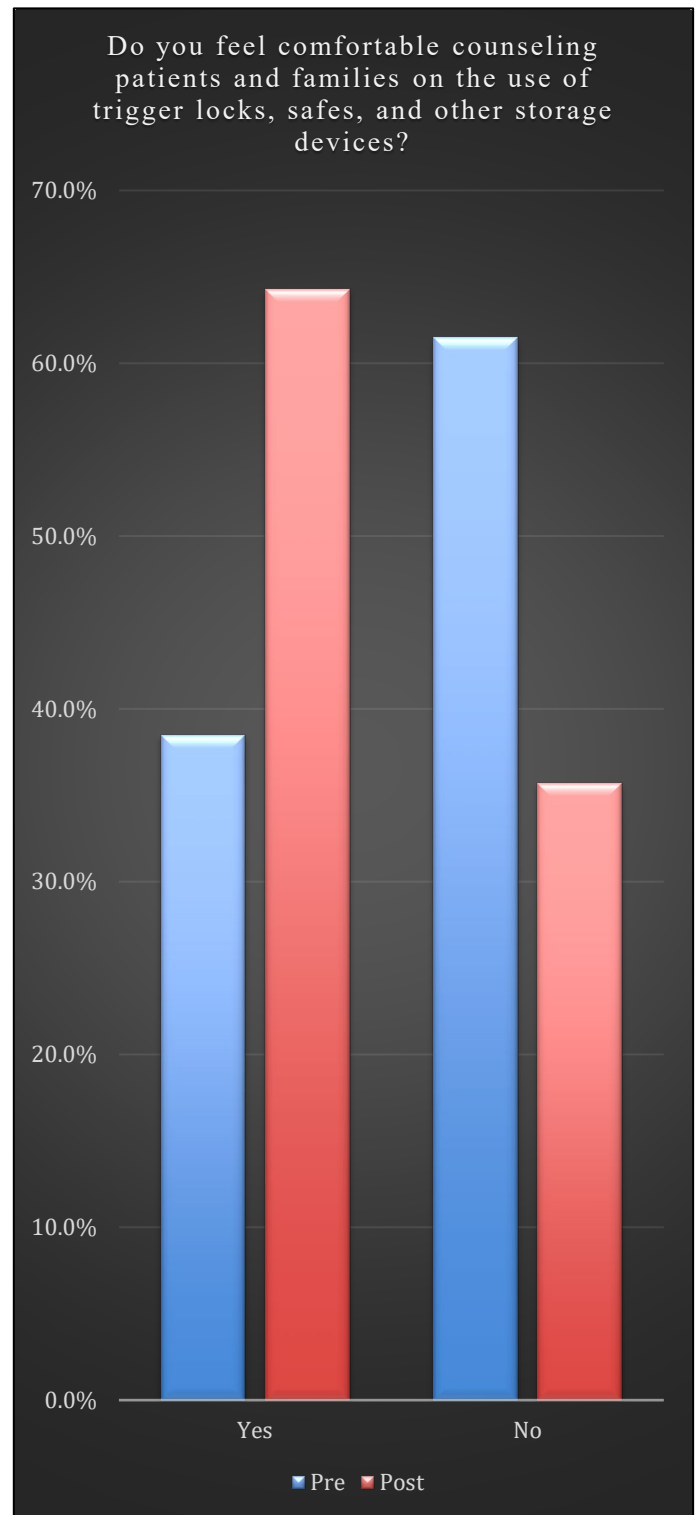
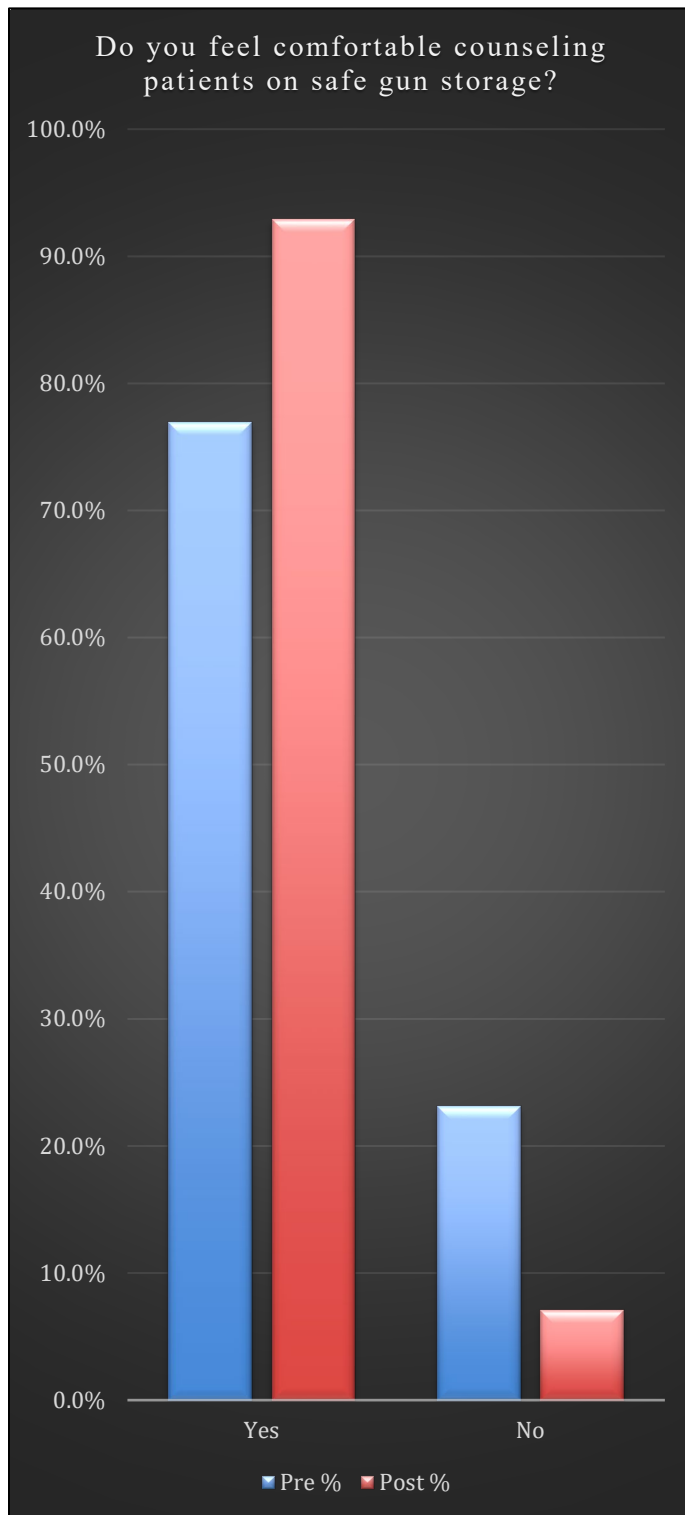
22. Is there anything else you'd like to share?

Appendix K – Knowledge Questions



Appendix L – Self-Efficacy Questions

Appendix M – Self-Efficacy & Perceived Barriers

Appendix N – Self-Efficacy & Comfort

Appendix O – Practice Habits

