

PEDIATRIC PROVIDERS KNOWLEDGE ON UNINTENTIONAL  
CHILDHOOD INJURY

by

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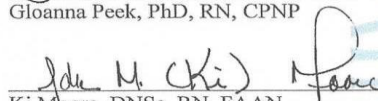
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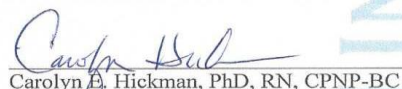
As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Mariah Karyn Welch entitled "Pediatric Provider Knowledge on Unintentional Childhood Injuries" and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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

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SIGNED:     Mariah Karyn Welch

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## ABSTRACT

**Background:** Unintentional childhood injuries are ranked as the fourth leading cause of death in the United States, with an average of 31 million children each year arriving in hospital emergency departments across the nation with accidental trauma related injuries (CDC, 2016). Pediatric providers are in a key position to assess, identify, and implement interventions to improve the rates of unintentional injuries that occur within the pediatric population.

**Purpose:** This study will examine pediatric providers' knowledge of injury prevention and practice behaviors regarding educating families and/or caregivers regarding injury prevention, and the frequency that patients and/or caregivers are provided with safety education.

**Method:** An evidence-based educational intervention regarding home and environmental safety measure was delivered during a Phoenix Children's Hospital "Grand Rounds". The data was collected using a pre-test and post-test survey to assess providers' pre-knowledge of unintentional injury and their practice behaviors.

**Aim 1:** (a) assess the knowledge of pediatric healthcare providers regarding home and environmental age-appropriate safety measures for children, (b) determine the practice behaviors of pediatric healthcare providers in educating patients and/or families regarding injury prevention, and (c) examine the frequency that patients and/or caregivers are provided safety education by their healthcare provider.

**Aim 2:** To evaluate the impact of the educational session on provider knowledge regarding unintentional injury in children.

**Results:** The McNemar test was used to analyze changes in providers scores from pre- to post-test. The level of significance was set at 0.05. The McNemar test revealed a significant increase

in the providers' knowledge of injury prevention between pre- and post-test in the following areas: providers' definitions of injury; providers' knowledge of the organization that developed the Children Risk Assessment; the approach providers take to educate caregivers about age-appropriate injury prevention measures in the infant/child home and environment; and examination of how often providers assess patient developmental age.

**Conclusion:** The results of the study showed a statistically significant improvement in providers' understanding of the prevalence of unintentional childhood injuries from pre- to post-test and the importance of providing patients and families with information that aid in their understanding of injury prevention and home environmental safety interventions.

## **BACKGROUND AND SIGNIFICANCE**

### **Introduction**

Healthcare providers have numerous opportunities to intervene with parents and children in order to reduce the rates of unintentional injuries and to promote child safety practices (DiGuseppi & Roberts, 2000, p. 53); however, there is evidence in the literature that shows that injury and injury prevention is not a priority for some pediatric healthcare providers (Elboray et al., 2017). Through the implementation of an educational system into each practice arena, care providers will have access to and the ability to share anticipatory guidance and injury prevention knowledge with caregivers of children at different developmental stages. Pediatric providers are in key positions to assess, identify, and implement interventions to improve the rates of unintentional injuries that occur within the pediatric population. Due to this integral position, it is vital that providers practice based on evidence-based guidelines about injury prevention and best-practice safety measures. Providers must incorporate an assessment of caregiver knowledge, education, and resources and make this a priority at each routine check-up. Findings from this study will inform us of knowledge gaps and practice behaviors of pediatric health care providers in a small region of the southwest portion of the United States (U.S.) that may be contributing to unintentional injuries within a large metropolitan area in this portion of the country.

### **Overview**

Unintentional childhood injuries are a leading cause for childhood morbidity and mortality in the United States (CDC, 2016). They are the leading cause of death among children over one year of age (NGG, 2013). The 2009 Center of Disease Control (CDC) Childhood Injury Report showed that approximately 12,175 children ages 0 to 19 years of age die annually

secondary to an unintentional injury. This statistic raises the following questions; would unintentional injuries in children decrease if health care providers address the integral aspects of the family's environment including lifestyle and risk factors.

### **Provider Perceptions**

Pediatric healthcare providers should have an awareness that they play a vital role in educating parents and caregivers about risk factor for unintentional injuries and that their practice behaviors influence the prevalence of unintentional injury. As a result, this awareness and practice change may ultimately decrease the prevalence of unintentional injury in this country. A number of studies have linked physicians and nurse's awareness, attitudes, and practices regarding childhood injury prevention and treatment to parents and patients understanding of unintentional injuries (Elboray et al., 2017). Elboray and colleagues (2017) postulated that making injury mortality and morbidity statistics readily obtainable for primary care experts could enhance their knowledge and sensitivity of the problem.

Although additional healthcare demands have decreased the amount of time providers are able to spend educating their patients during visits, it is believed that making tailored educational materials, incorporating injury prevention teaching throughout the care visit and making time during appointment visits to address childhood developmental education needs will assist in the reduction of risk potential for unintentional childhood injuries. Bazelmans et al., (2004) stated that physicians, although willing to educate about accident prevention, identified lack of adequate time during a routine consultation as an obstacle that limits their ability to accomplish this task. The low prioritizations of unintentional injury by some pediatric providers increases the

need for making accident mortality and morbidity statistics more readily available in order to improve their overall understanding of the extent of the problem (Bazelmans et al., 2004).

It is understood that children age five and younger are more likely to sustain a serious injury that leads to adverse outcomes (Crnica et al., 2013). Our position as advance practice nurses and health care providers lends to an ongoing opportunity for educating children and parents about injury prevention in that the anticipatory guidance provided about injury prevention can help improve parent's knowledge and decrease risks of unintentional injury (Crnica et al., 2013). Despite having knowledge that anticipatory guidance is beneficial in decreasing injury, few studies have assessed the healthcare provider's competency on the subject of injury prevention (Crnica et al., 2013).

### **Clinical Guideline to Assist Healthcare Providers**

#### **Prevention Services for Children and Adolescents Guideline**

Early detection and prevention through education and implementation of health literacy methods can be a leading facilitator of change in the estimated 9.2 million children annually who receive treatment related to unintentional injuries (CDC, 2009). A correlation exists between lower socioeconomic status and injuries within the home (Olsen, Bottorff, Raina, & Frankish, 2008). Other influencing factors are low health literacy and a paucity of supportive resources. Several studies have shown that children in the lower socioeconomic class are at an increasingly higher risk for unintentional injuries, thereby raising the level of concern for this population of children (Olsen et al., 2008; Soori & Khodakarim, 2016). Early parental and childhood interventions are needed to provide education and anticipatory guidance to these families in order to minimize environmental risk factors. Welch (2016) concluded that as a society we tend

to be more reactive than proactive. She also postulated that education and the appropriate resources, especially in low-income communities, could make all the difference in regards to environmental safety. The integration and implementation of a clinical practice guideline such as NGC-010044-Prevention Services for Children and Adolescents is a proposed mechanism for educating and providing guidance to providers about age appropriate home and environmental safety issues. This descriptive study will add to this area of science by assessing healthcare providers' knowledge and practices behaviors regarding injury prevention measures in children based on the NGC-010044 guidelines and will identify opportunities for improvement in providers' practice and knowledge regarding injury prevention in children. It will also evaluate the efficiency of the future implementation of National Clinical Practice guidelines regarding unintentional injuries in children.

### **Local Problem/Knowledge Gap**

The American Academy of Pediatrics' position is that pediatric providers, through anticipatory guidance and education, can have an impact in minimizing the risk of unintentional childhood injuries (Weaver et al., 2008). Studies have shown that a child is more likely to die secondary to an injury after their first birthday (Weaver et al., 2008). Lack of anticipatory guidance and provider education correlated with these findings (Weaver et al., 2008). Within this study it was indicated that injury prevention is often not discussed or briefly covered during routine visits (Weaver et al., 2008). Whether there is a lack of integration of tailored education provided, lack of provider knowledge, or lack of attention to pediatric injuries, the issue remains that unintentional injuries are on the increase.

Elboray and colleagues (2017) assessed the baseline knowledge and implementation practices of injury prevention among primary care physicians and nurses. They found that approximately 60% of the health care professionals surveyed knew the terms “unintentional injuries” and “injury prevention” (Elboray et al., 2017, p. 24). Of those surveyed only 25% of participants understood that children of all ages are at risk for injuries and require prevention education. Approximately 40% of those primary care providers and nurses stated, injuries are not a priority for them (Elboray et al., 2017). Although this is seen to not be the case for every pediatric provider but this is still an issue.

### **Significance to Advance Practice Nursing**

The Advance Practice Nurse (APN) especially the pediatric nurse practitioner is responsible for providing care throughout the child’s life span. APNs are critical in recognizing signs and symptoms of both the common and uncommon childhood illness. Providers’ awareness of high-risk injury situations, understanding of correlation of health literacy and injuries, and delivery of age appropriate anticipatory guidance utilizing a clinical practice guideline may aid in the reduction of unintentional childhood illnesses. Providing the APN with a guideline for assessing a pediatric patient and their family for educational needs regarding safety and injury prevention will dramatically affect the healthcare system. Reducing the number of children arriving in the emergency departments across the nation who are seeking treatment related to an unintentional injury (CDC, 2016) along with the cost benefit in reducing the 9.2 million annually who are treated during a hospitalization related to an unintentional injury (CDC, 2009). Implementing the existing clinical guideline available for the National Guideline Database will

generate data needed to evaluate the efficiency of the implementation of the guideline in correlation to the reduction of childhood unintentional injuries.

### **Purpose and Aim of the DNP Project**

The purpose of this quality improvement initiative is to assess providers' knowledge and practice behaviors about safety methods, injury prevention, and age-appropriate developmental safety concerns. The primary aims of this project are to: (a) assess the knowledge of pediatric healthcare providers regarding home and environmental age-appropriate safety measures for children, (b) determine the practice behaviors of pediatric healthcare providers in educating patients and/or families regarding injury prevention, and (c) examine the frequency that patients and/or caregivers are provided safety education by their healthcare provider. In addition, this study will evaluate the impact of the educational session on provider knowledge in regards to unintentional childhood injury. The goal of this study is to examine clinicians' factors that may impact the safety of children in their home and environmental settings. A specific Population, Intervention, Comparison, Outcome (PICO) question has been developed to guide literature search and study design: How will knowledge and practice behaviors of pediatric healthcare providers be impacted by injury prevention education at Phoenix Children's Hospital (P) as evidenced by findings from a pre-test assessment of provider knowledge and practice behaviors regarding unintentional childhood injuries (I) compared to the post-test assessment at the conclusion of the evidence-based educational session (C) which was designed to convey the importance of integrating injury prevention education in discharge teaching? An educational intervention with pre- and post-test measures targeting pediatric healthcare providers was utilized.

## Conceptual Framework

### Model that Guided the Intervention: Donabedian Model of Care

The Donabedian Model of Care is the theoretical framework that was used to provide the underpinnings for this study. The main constructs of this model are structure, process, and outcomes (Donabedian, 1988).

**Structure.** Structure refers to attributes of the infrastructure, people, materials, or the technology in questions (Moran, 2017).

**Process.** Process is how care is delivered and the affect it has on patient satisfaction, changes in health behavior, or the change in health status (Moran, 2017).

**Outcome.** Outcome is the end result of how utilization of the data drives the change forward and assessment of patient outcomes and societal impacts (Moran, 2017).

Through the guide of Donabedian's Model of Care, the author examined the following: (1) healthcare providers' knowledge regarding unintentional injury (structure), (2) what educational materials are used for educating patients and families (structure), (3) healthcare providers' practice behaviors as to how they educate patients and/or parents about unintentional injury (process), and (4) the frequency at which healthcare providers provide safety education to their patients and/or families (process). The outcomes or findings of this study will identify opportunities for improvement or praise.

Findings from this assessment, through the guide of Donabedian's Model of Care, will identify physician practice behaviors that may have impact on patients and parents' knowledge about injury prevention measures in the home and environmental settings. In addition, the findings may lead to the reinforcement of the already developed evidence-based clinical practice

guideline to help serve as guidance for all healthcare providers at Phoenix Children's Hospital regarding the approach to educating patients and/or families regarding unintentional injury.

Dissemination of the findings will include submission of a manuscript for publication to a peer reviewed professional journal and a presentation to the staff at Phoenix Children's Hospital. The findings will also be compiled and presented as a poster and podium presentation at a national conference. A synopsis of the findings with recommendations will be sent to the National Clinical Practice Guideline Board in efforts to update the CPG with any appropriate injury safety recommendations.

### **SYNTHESIS OF EVIDENCE**

Understanding the importance of evidence-based practice (EBP) research and how evidence can impact the process of incorporating and implementing a process of change is integral to the practice of an advance practice registered nurse. Two major resource engines were utilized in conducting a search of EBP information on unintentional childhood injuries and provider knowledge of educational strategies and utilization to prevent unintentional injuries. Through this EBP search, the author will forge a deeper understanding of pediatric healthcare provider knowledge and practice behaviors regarding the education of patient and families about home safety measures. In addition, this project will identify opportunities for improvement and needed changes to Clinical Practice Guideline: NGC-010044 in order to effect change for 31 million children each and every year who arrive into hospital emergency departments across the nation with unintentional traumas/injuries (CDC, 2016). In an evidence-based practice database search of the following topic, the following key words were used: childhood, injury, prevention, provider knowledge, safety practices.

The investigator utilized two major search engines in order to create a successful yield of credible evidence-based articles, PubMed and EMBASE. Within the search, the following inclusion criteria were added: publication within the last 10 years, English, children population, and human species as well as the additional relational of: qualitative, descriptive, ethnography, grounded theory, and mixed methods to identify relevant articles. When incorporating the clinical question of unintentional childhood injuries associated with provider knowledge of understanding regarding safety education methods, preferences, and implementation the PubMed research engine yielded three articles while the same search within the EMBASE engine yielded 174 additional articles. Based on the clinical question several articles then were excluded if topic of the article did not relate as seen within (Appendix A). The final articles were retained in the application of evidence-based research to give evidence and understanding of the incidences of provider implementation practices and knowledge on childhood unintentional injury and practices.

The CDC reported in a childhood injury report that on average about 12,175 children 0 to 19 years of age die every year in the United States from an unintentional injury (CDC, 2009). It is estimated that annually approximately 9.2 million children receive treatment in an emergency department due to an unintentional injury (CDC, 2009) that could have been prevented. Unfortunately, most injuries primarily occur in the home and in young children, “particularly those who are poor. Within this population of children, unintentional injuries in the home environment represent an important health issue” (Olsen et al., 2008).

Elboray and colleagues (2017) stated that over 60% of health care professionals knew the terms “unintentional injuries” and ‘injury prevention.’ Of those providers 25% acknowledged an

understanding that children of all ages are at risk for injuries and require prevention education. Unfortunately, these authors also noted that 40% of the pediatric healthcare providers did not feel that education regarding injury prevention was a priority. Findings from this literature review raise the following question: would unintentional injuries in pediatric patients across the nation decrease if health care providers address the integral pieces of the family's environment, health literacy, and safety practices? Crnica and colleagues (2013) postulated that through implementation of age-appropriate anticipatory guidance health providers could provide adequate education regarding injury prevention, which could improve parent knowledge and decrease the risks for unintentional injury. It was noted by Olsen, Bottorff, Raina, and Frankish (2008) that a correlation between lower socioeconomic class and higher risk for injuries were present, raising the concerns for this specific population. Studies also show that children in lower socioemotional countries and/ or families from more economical incline countries are the most vulnerable for exposure to unintentional injury (Soori & Khodakarim, 2016). More than 95% of deaths due to injury among children occur in such countries. Approximately 40% of the deaths among those under 18 years of age in high-income countries are the result of an injury – an indication of the fact that these countries, although doing better, still have a serious problem. A synthesis of the literature revealed that healthcare providers have varying knowledge regarding injury prevention and do not consistently discuss injury prevention with patients and families. In addition, the review revealed that the practice behaviors of pediatric healthcare providers could have a direct impact on safety in the home and environmental settings. The earlier pediatric health care providers can institute proper safety methods and education, the more likely they are to reduce environmental risk factors (Olsen et al., 2008).

Beelen and colleagues (2014) examined the safety behaviors of parents that participated in a randomized controlled trial of an E-Health4Uth Home Safety Program using a treatment and a controlled group. The study utilized a baseline measurement before the intervention and a follow-up segment for six months' post intervention. Parents in the treatment group received information about injury prevention and interventions to implement in the home setting to reduce the risk of injuries. Parents in the controlled group received basic provider counseling using generic safety information leaflets at this well-baby visit.

The E-Health4Uth home safety intervention showed continued effectiveness in promoting several relevant parents' child safety behaviors (Beelen et al., 2014). Both parents and primary care providers expressed positive feedback about the educational module and its use in well-child checks. Findings revealed a decrease risk in childhood unintentional injury with the implementation of a web-based education module placed within primary care. Parents who initially participated in the module were at decrease risk for unintentional injury with their young children (Beelen et al., 2014). Parents in the intervention condition showed significantly less unsafe behaviors at follow-up for falls, poisoning, and burns comparatively to the parents in the control condition. However, the prevalence of unsafe behaviors in bathing of the child and in kitchen areas increased in both the intervention and control condition. This could have been due to the change in age and the growth and development of the child in between the baseline and follow-up time frames. As exemplified by as the patient ages it may become more difficult to keep the child out of the kitchen as well as parents might assume as the child grows it they are able to leave the child alone in the bathtub (Beelen et al., 2014). At time of follow-up, parents in the intervention group had a significantly lower total risk score compared to those in the control

group, which supports the concept that the utilization of proper age appropriate education lowers the risk of unintentional injuries for young children (Beelen et al., 2014). The web-based tailored education correlated with an increase effectiveness of parental safety advice and implementation practices (Beelen et al. 2014).

DiGuisseppi and Roberts (2000) evaluated the written educational materials combined with strategies of implementation and education delivered by the pediatric healthcare provider to assess the effectiveness of safety methods and devices used within the home. These authors noted an exponential difference in risk potential for children for fall injuries, drownings, and burns due to the implementation of provider recommended safety measures within the home setting. The feasibility created through the implementation of the web-based educational system helps to strengthen the evidence-based research question, ‘If parents were to receive guided educational information about measures to reduce home and environmental risk factors for injury, would there be a lower prevalence of unintentional injury in these settings?’

The implications of these findings for the advanced practice nurse (APN) is that APNs are in a key position to help educate families regarding injury prevention and to implement clinical practice guidelines that aid in the consistency of the education that is being provided to patients and families. In addition, advanced practice nurses can serve as advocates for patients and families safety initiatives at both the local and national levels. Given that injuries are a leading cause of death and disability among children, providers have the opportunity to institute injury programs and provide child health education focusing on age-appropriate risk factors, which will play a pivotal role in injury prevention reduction (Soori & Khodakarim, 2016).

There are limited studies that examined the prevalence of provider of education to families about unintentional injuries and the impact of reduced this education in reducing unintentional injuries. McDonald and colleagues (2016) examined opportunities for health care providers to engage in home injury prevention. These researchers concluded that clinicians could play a key role in promoting their patient's safety by focusing their attention on prevention and educational strategies, which results in reduction of unintentional home injuries and optimal health for all (McDonald, Mach, Shields, Lee, & Gielen, 2016, p. 1). A paucity of pediatric studies suggested a relationship between provider knowledge and injuries (McDonald et al., 2016; Crnica et al., 2013; Bazelman et al., 2004). A better understanding is needed in order to reduce home unintentional injuries. A focused attention on preventing unintentional home injuries by primary care providers can contribute to the reduction of injuries and result in optimal health for all (McDonald et al., 2016; Crnica et al., 2013; Bazelman et al., 2004).

The gaps in the evidence leads to the desire for a greater understanding of how providers implement teaching in the practice setting, what methods are deemed best practice, and how often providers institute family/caregiver education. Findings from this proposed study will help fill this gap. The focus of evidence-based practice implementations is to help improve care for our patients. There is a new provider emphasis on addressing unintentional home injuries due to the overall population health initiative to reduce health care costs because unintentional injuries have been noted to be costly and often preventable (McDonald, Mach, Shields, Lee, & Gielen, 2016). The review of literature showed inconsistency in provider practice behaviors regarding injury prevention and that appropriate and consistent patient and/or family education about injury and age-appropriate home safety measures had a positive impact on the reduction of

unintentional injuries. Regardless of the socioeconomic status of the families, providers' degree of busyness, or the method use to educate families, providers must ensure that all families receive the appropriate education and resources regarding home and environmental risk factors for injury and safety mechanisms to prevent unintentional injury in children. While the long-term goal is to evaluate the effectiveness of the guideline in decreasing unintentional childhood injuries and the clinicians' factors that may impact the safety of the children in their home and environmental settings, the DNP project was the first step to achieving the long-term goal by assessing healthcare provider knowledge of unintentional children injuries.

## **METHODOLOGY**

### **Study Aims**

This DNP project examined the knowledge of pediatric healthcare providers regarding home and environmental age-appropriate safety measures for children, determined the practice behaviors of pediatric healthcare providers in educating patients and/or families regarding injury prevention, and examined the frequency that patients and/or caregivers were provided safety education by their healthcare provider, and assessed the impact of the educational session on provider knowledge regarding unintentional injury in children. This section describes the setting, the sample, design, study variables, data collection, and data analysis.

### **Methods**

This convenience prospective study utilized one group pre-test and post-test quantitative approach to assess healthcare provider knowledge of unintentional childhood injuries and their proactive behaviors. A mechanism commonly used to assess behavioral research is through the use of pre-tests and post-tests as it aids researchers to measure change that resulted from the

intervention (Dimitrov & Rumrill, 2003; Polit & Beck, 2012). For this DNP project, the intervention was an Educational Session during Phoenix Children's Hospital Grand Rounds discussing Unintentional Childhood Injuries. The pre-test and post-test (Appendix C & D) was developed by the primary investigator and reviewed by three experts in the area of pediatric injury prevention/trauma. The pre-test and post-test questions were identical surveys in present and future tense that specifically pertained to injury prevention. Types of questions consisted of demographics; the healthcare provider's knowledge of U.S. rates of injury, definitions, and injury prevention; and knowledge and skills specific to their practice as a pediatric provider. The pre-test, post-test, and disclosure statement were provided at the Grand Rounds Educational Session.

The method of administering the pre-test and post-test at Grand Rounds was as follows:

### **Part One**

1. Participants were reminded via email and newsletter from Phoenix Children's Hospital regarding a Grand Rounds Presentation given by Dr. David Notrica, Pediatric Surgeon and Trauma Specialist and Mariah Welch RN, BSN.
  - a. E-mail was sent on September 15, 2017.
  - b. The e-mail reached 300 Pediatric Providers.
2. Reminder e-mail was sent 1 weeks after the first e-mail.
  - a. E-mail was sent on October 27, 2017.
  - b. The e-mail reached 300 Pediatric Providers.
3. Part one ended on October 30, 2017.

**Part Two**

1. After part one was completed, participants who attended Grand Rounds on October 31, 2017 and took the pre-test. Their completed of the pre-test served as their willingness (Appendix C). The pre-test was immediately collected.
2. Participates then received education regarding unintentional childhood injuries. Following the intervention, participants were given the post-test survey to complete along with an evaluation of the session (Appendix D).
  - a. Pre-test and post-test was provided and completed by participates on October 31, 2017
  - b. 30 Pediatric Providers completed the pre-test and 30 providers completed the post-test.
3. An evaluation was provided post survey testing and was collected October 31, 2017.
  - a. 32 Pediatric Providers participated in the evaluation.

**Setting and Sample**

The setting is an acute inpatient hospital with outpatient ambulatory and satellite offices in Phoenix and its metropolitan areas. A total of 78 participants at Phoenix Children's Hospital and from the surrounding areas-attended the educational session which addressed unintentional injuries across all pediatric ages were screened. Of these, only 30 participants were providers thereby meeting criteria for the study. The education intervention was delivered via presentation during a Grand Round Conference in October 2017 at Phoenix Children's Hospital, which is a level 1 trauma hospital in the southwestern region of the United States.

Purposive sampling was used and inclusion criteria were as follows: be attendees at the respective injury prevention education offering that were pediatric healthcare providers and that were willing to participate in the study. During the implementation time, Grand Rounds had an average of 75 attendees. The goal was to achieve a response rate of 20%; therefore, 15 respondents was the target sample size ( $75 \times 0.2 = 15$ ). These inclusion criteria were assessed via the participants who attended Grand Rounds prior to taking the pre-test and post-test. Attendees that were not a MD, DO, or nurse practitioner were excluded from the study.

### **Protection of Human Subjects**

The University of Arizona College of Nursing Departmental Review Committee, The University of Arizona Institutional Review Board, and the Phoenix Children's Hospital Institutional Review Board reviewed this study prior to the implementation and data collection. A disclosure statement was provided prior to participating in the study (Appendix G). Anonymity of participants was ensured due to subjects not being required to put their names on the questionnaire. The participants were instructed to create a unique identifier that had the following: first two letters of first name, first two digits of social security number, year of high school graduation (YYYY), and first two letters of mother's maiden name. This unique identifier was needed to match the pre-test and post-test results to the same participant and to not risk the participant forgetting an identifier that he/she created. Participants were also required to circle on of the following that pertains to their roles: MD/DO Resident (I, II, III, IV), NP, and Attending Physicians. Demographics of the provider such as year of residency, gender, age, previous pediatric exposure, involvement in injury prevention, and knowledge to better understand characteristics of the participants.

### **Data Collection**

Pre-test scores, post-test scores, and demographic data was collected after the participants had taken the pre-test prior to and post-test following the educational presentation at Grand Rounds. The pre-test and post-test surveys were collected the day of the presentation (October 31, 2017). The data collected was transferred into SPSS, a password protected statistical database, with no questionnaire or participate identifications.

### **Data Analysis**

The data analyses included descriptive statistics using the McNemar Test (non-parametric). It was suggested that the non-parametric test such as the McNemar Test would be the best method to analyze the outcomes of two tests on a sample of subject; therefore, this project of a one-design study utilizing a pre-and post-test survey was accurate (Kellar & Kelvin, 2013; Polit & Beck, 2012).

Data analysis began with a review of the data to get a better understanding of the data. An analysis was performed examining the descriptive statistics (i.e., mean, means, SD, frequencies, and distribution). The pre- and post-test measurement tool underwent validity screenings by four content experts to analyze the questions used for each questionnaire (Polit & Beck, 2012). Educational outcomes were determined by measuring the pre-and post-test assessments of knowledge and practice behaviors after the evidence-based educational intervention session. The McNemar test was used to analyze the changes in providers pre- and post-test scores. The level of significance for the McNemar test was set at 0.05.

## RESULTS

### Description of Sample

The sample included Pediatricians (DO & MD), Pediatric Nurse Practitioners, and residents. All participants were members of Phoenix Children's hospital or affiliates to the surrounding hospitals and/or primary care settings. There were 41 participants who agreed to participate in the study and 37 participants that disagreed after reading the disclosure statement. Only 30 participants meet the inclusion criteria of being a pediatric provider; seven were excluded due to being either a pharmacy student, public health administrator, or registered nurse, while four failed to match a pre-test or post-test using the participant's unique code identifier. Of the 30 participants that had matched tests available for data analysis, 11 (37%) were MD/DO's, 16 (53%) were MD/DO residents, and three (10%) were Pediatric Nurse Practitioners (Table 1). Experience as a provider ranged from less than 1 year to greater than 42 years. Specialties of practice ranged from general pediatrics, without clear distinction of inpatient versus primary care, to more acute inpatient care, and or outpatient specialty care clinic. Results showed that 20 (67%) of the participants practiced in general pediatrics, 1 (3%) in neonatology, 1 (3%) in the cardiovascular intensive care unit (CVICU), 1 (3%) in outpatient hematology/oncology and 1 (3%) in hepatology. Six (20%) of the participants did not specify a practice specialty (Table 1). Of the 30 pediatric providers, there was a range of 22-76 years of age, with an average of 21.4 years of experience in pediatrics and of those providers 15 (50%) were male and 15 (50%) were female.

TABLE 1. *Descriptive Information of Sample*

	<b>Number of Participants (N=30)</b>
Professional Background	MD/DO: 11 (37%) MD/DO Residents: 16 (53%) PNP: 3 (10%)
Years of Experience	Less than 1 year: 0 1-5 years: 17 (56%) 5-10 years: 2 (7%) Greater than 10 years: 11 (37%)
Specialty of Practice	CVICU: 1 (3%) Hematology/Oncology: 1 (3%) Hepatology: 1 (3%) Neonatology: 1 (3%) Pediatrics: 20 (67%) Unspecified: 6 (20%)
Gender	Male: 15 (50%) Female: 15 (50%)
Age	22 – 24 years: N (3.3%) 25 – 29 years: N (33.3%) 30 – 35 years: N (16.7%) 36 – 40 years: N (6.7%) 41 – 50 years: N (13.4%) 51 – 60 years: N (13.3%) 61 or above: N (13.3%)

### **Comparison of Analysis among Specific Questions of the Pre-Test and Post-Test**

The McNemar test was used to analyze changes in providers scores from pre- to post-test.

The null hypothesis is that the distribution of different values across all the questions pre-intervention and each of the questions post-intervention is equally likely. In essence, the null hypothesis is that the pre- and post-intervention percentages are equal in the providers.

### Provider Knowledge of Injury Prevention: McNemar Test Output

TABLE 2. *Analysis of Providers Knowledge Pre- and Post- Test Intervention (N = 30)*

<b>Question</b>	<b>P-value</b>	<b>Decision</b>
<b>Question 1</b>	.500	Retain the Null Hypothesis
<b>Question 2</b>	<.001	Reject the Null Hypothesis
<b>Question 3</b>	1.00	Retain the Null Hypothesis
<b>Question 4</b>	<.001	Reject the Null Hypothesis
<b>Question 5</b>	.625	Retain the Null Hypothesis
<b>Question 6</b>	.057	Retain the Null Hypothesis
<b>Question 7</b>	1.00	Retain the Null Hypothesis
<b>Question 8</b>	.508	Retain the Null Hypothesis
<b>Question 9</b>	1.00	Retain the Null Hypothesis
<b>Question 13</b>	.344	Retain the Null Hypothesis
<b>Question 14</b>	.581	Retain the Null Hypothesis
<b>Question 16</b>	1.00	Retain the Null Hypothesis
<b>Question 17</b>	1.00	Retain the Null Hypothesis
<b>Question 20</b>	.062	Retain the Null Hypothesis
<b>Question 21</b>	1.00	Retain the Null Hypothesis

To assess provider knowledge, participants were asked to respond to the following questions: 1) Unintentional injuries in children based on the Center of Disease Control (CDC) statistics is ranked which leading cause of death? 2) Which of the following is the BEST definition of injury? 3) The Centers for Disease Control and Prevention stated that unintentional childhood injuries are among the most under-recognized public health problems facing the United States today. 4) In March of 2014, what organization developed a Childhood Injury Risk Assessment tool in hopes to provide a screening method for providers to assess unintentional injury risk factors within the home? 5) Studies have found that there is an association between unintentional injuries and increased incidences of injuries in all the following except? 6) Childhood unintentional injuries are the leading cause of death among children ages 1 to 19 years, representing nearly what percent of all deaths in this age group? 7) Common causes of fatal and nonfatal unintentional childhood injuries (ages 0-5 years of age) include which of the

following? 8) Every year, 9 million, children ages 0–19 are treated for injuries in emergency departments and more than what percentage require hospitalization? 9) True or False: Childhood injury related hospitalizations cost around \$87 billion dollars in medical and societal funds each year? 13) When will you talk about pool/fence safety? 14) When do you recommend a baby gate? 16) At what age will you tell caregivers that a child can be placed in a front facing car seat? 17) When should will encourage caregivers to become CPR certified? 20) How often should you provide home and environmental safety materials focused on injury prevention to caregivers? 21) At what developmental age, will you encourage families to move poisonous materials away their child's reach?

Of these responses, only two of them showed statistically significant results. Question 2 which assessed provider definitions of injury was significant at the  $p < .001$  level. Question 4 which assessed knowledge of the organization that developed the Children Risk Assessment was also significant at the  $p < .001$  level. There were no statistical differences in regards to prevalence of unintentional injuries and recognition of unintentional injury as a public health problem (Questions 1, 3, 6, 8); risk factors and common causes of unintentional injuries (Questions 5, 7); age-appropriate anticipatory guidance (Questions 13, 14, 16, 17, and 21). There was also not a statistically significant difference in the providers' understanding of the financial burden of childhood injuries (Question 9) from pre- to post-test.

## Practice Behaviors of Healthcare Providers Regarding Injury Prevention: McNemar Test

### Output

TABLE 3. *Analysis of Providers' Practice Behavior Pre- and Post- Test Intervention (N = 30)*

<b>Question</b>	<b>P-value</b>	<b>Decision</b>
<b>Question 10</b>	1.00	Retain the Null Hypothesis
<b>Question 11</b>		
• Pamphlets		
• One-on-one Education	.039	Retain
• Online Education	1.00	Retain
• Web-Based Learning Modules	.001	Reject
• None Currently	.001	Reject
	1.00	Retain
<b>Question 12</b>		
• Verbal Acknowledgment	.887	
• Teach-Back Method		Retain the Null Hypothesis
• I don't assess their understanding		
• Selected both verbal acknowledgement and teach-back method		
<b>Question 15</b>	.062	Retain the Null Hypothesis
<b>Question 19</b>	.031	Reject the Null Hypothesis
<b>Question 20</b>		
• At every visit		
• Only at well child checks	.062	Retain the Null Hypothesis

To assess provider practice regarding injury prevention, participants were asked the following questions: 10) Do you as a provider educate your families on injury prevention measures? 11) What approach do you take to educate caregivers about age-appropriate injury prevention measures in the infant/child home and environment? 12) What form of verification do you use to assess health literacy for caregivers understanding of injury prevention education in the office setting? 15) Do you assess caregiver's knowledge of how to properly restrain an

infant? 19) How often do you assess patient's developmental age? 20) How often do you provide home and environmental safety materials focused on injury prevention to caregivers?

Of these responses, the only item that showed a statistically significant change from pre- to post-test was how often providers assessed the patient's developmental age ( $p < .001$  level). There were no statistical differences in regards to practice behaviors that assessed if the provider educated patients and families about injury prevention or if providers assessed caregiver's knowledge of how to properly restrain an infant (Questions 10 & 15). Examination of methods used to educate caregivers about age-appropriate anticipatory guidance, the form of verification used to assess caregiver understanding of the provided education, and the frequency at which providers educate caregivers regarding home and environmental injury prevention (Questions 11, 12, & 20, respectively) showed providers' willingness to change behavior but the findings were not statistically significant.

Pre-test findings of the approach providers take to educate caregivers about age-appropriate injury prevention measures in the home and environment revealed the following: 53% of the participants used pamphlets, 97% use one-on-one education, 40% used online education modules, and 40% used web-based learning modules. Of the participants, 3% did not have a method for educating patients and families. On post-test, 78% of the participants identified that they would use pamphlets, 97% expressed that they would use one-on-one education, 77% identified their willingness to use online education modules, and 77% expressed that they would use web-based learning modules for educating patients and families. The findings were statistically significant from pre- to post-test for the following education approaches: online education and web-based learning at the  $p=.001$ ,  $p=.001$ , respectively. These

findings showed a significant improvement in the awareness of the pediatric providers regarding the impact of implementing different injury prevention interventions and the overall impact that these interventions can make on the rates of unintentional childhood injuries. Overall, there was an increase in the number of provider showing preference for the online and web-based education interventions. There were no significant pre- to post-test of provider' change regarding the use of pamphlets and one-on-one education (Table 3).

Upon examination of the method(s) used for verifying family/caregiver understanding of the injury prevention education provided, it was noted on the pre-test that 10% of providers chose verbal acknowledgement, 63% selected the teach-back method, and 4% selected that they do not assess their understanding. Approximately 13% of the providers, selected both verbal acknowledgment and teach-back method, although, the question was not written as a 'select all that apply' question. In assessing the results post-education, it was found that 13% of providers selected verbal acknowledgment, 67% selected the teach-back method, and 20% selected both verbal acknowledgement and the teach-back method with no providers selecting to not assess their parent/caregiver's knowledge. There were no statistical significant differences regarding the type of verification method the provider used or will used to assess caregiver understanding of the injury prevention education provided ( $p=.887$ ) from pre- to post-test (Table 3).

Lastly, the frequency at which pediatric providers educate parents/caregivers about age-appropriate anticipatory guidance measures regarding injury prevention was assessed by asking "How often do you provided home and environmental safety materials focused on injury prevention to caregivers (Question 20)?" In the pre-test, 67% of the providers stated, "at every visit" and 26% stated "only at well child checks." On post-test, 83% stated "at every visit" and

10% stated “only at well-child visits.” Of the respondents, 16% indicated an increase in their understanding of the impact of age-appropriate education regarding home and environmental safety measures at every patient contact and the impact of education on the prevalence of unintentional injuries. However, there was no statistical significant differences from pre- to post-test in the assessment of when the provider will provide education to parents/ caregivers ( $p=.062$ ) (Table 3).

## **DISCUSSION**

This chapter summarizes and provides interpretation of the findings from this study. The primary aims of this study were to assess the knowledge of pediatric healthcare providers regarding home and environmental age-appropriate measures for children, determine the practice behaviors of pediatric healthcare providers in educating patients and/or families regarding injury prevention, and examine the frequency that patient and/or caregivers are provided with safety education by their provider through the guidance of the Donabedian Model of Care. The anticipated outcome was that providers would have increase knowledge of injury prevention and would indicate a willingness to change practice behaviors regarding how they educate caregivers/patients about childhood injuries after delivery of a well-designed evidence-based injury prevention educational intervention. The study’s strengths and limitations, theoretical underpinnings, and implications for clinical practice and research are also discussed.

### **Effects on Provider Knowledge of Injury Prevention**

The effects on provider knowledge of injury prevention was examined by evaluating provider’s answers on the pre-test and post-test surveys after receiving education regarding unintentional childhood injuries at Grand Rounds using the McNemar’s Test. Providers

demonstrated an increased understanding that was statistically significant on Question 2 which assessed provider definitions of injury was significant at the  $p < .001$  level. Question 4 which assessed knowledge of the organization that developed the Children Risk Assessment was also significant at the  $p < .001$  level (Table 4). This finding help demonstrate an effective increase in provider knowledge regarding injury prevention in regards to their understanding of how an injury is best defined as well as who the Childhood Injury Risk Assessment Tool. A correlation between provider knowledge and the rate of unintentional childhood injuries has been deemed a part of a very important public health issue within the United States (McDonald et al., 2016; Crnica et al., 2013; Bazelman et al., 2004). Based on these findings, there was an increase in provider knowledge, which may contribute to the potential reduction of the 9.2 million children affected annually by unintentional childhood injuries (CDC, 2016).

#### **Effects on Practice Behaviors of Healthcare Providers Pre- and Post- Intervention**

The effects on practice behaviors was also examined by evaluating provider's answers on the pre-test and post-test surveys after receiving education regarding unintentional childhood injuries at Grand Rounds using the McNemar's Test. Providers demonstrated an increased understanding that was statistically significant on Question 19, which assessed how often providers assess patient's developmental age at the  $p < .001$  level, and on Question 11, which examined the approach providers take to educate caregivers about age-appropriate injury prevention measures in the infant/child home and environment. The findings were statistically significant for the following education approaches: online education and web-based learning at the  $p=.001$ ,  $p=.001$ , respectively (Table 5). Therefore, indicating a potential change in the

materials providers will begin to use as they educate their parents/caregivers regarding injury prevention in their home and environment.

### **Summary**

The results indicated that providers are willing to change their current practice of how they educate patients and families about childhood injury following the intervention. These results were not surprising because according to Crnica and colleagues (2013), through their implementation of educating the providers on the Centers for Disease Control's statistics of unintentional injuries and comprising clinical decision support tools and educational materials for health care providers to utilize as injury prevention techniques, found that there was a decrease in falls specifically among children following provider education. This finding suggests that the providers changed their practice behaviors following the intervention and as a result, that was reduction in the number of falls. It was determined that offering pediatric providers with tools, statistics, and the understanding of the prevalence of unintentional childhood injuries that they can play a key role in promoting their patient's safety which should result in a reduction of injuries and optimal health for all.

### **Integration of the Donabedian Model of Care**

The Donabedian Model of Care was the theoretical framework that guided this study. The concepts of this study were structure, process, and outcome. In this study, the examination of the (1) healthcare provider knowledge regarding unintentional injury (structure), (2) what educational materials are used for educating patients and families (structure), (3) healthcare providers' practice behaviors as to how they educate patients and/or parents about unintentional

injury (process), and (4) the frequency in which pediatric providers provide safety education to families (process) were assessed during a presentation of an injury prevention intervention.

Analyses of provider knowledge and of the educational materials used to educate patient and families about childhood injury revealed that providers' understanding of injury and knowledge regarding the Childhood Injury Risk Assessment increased significantly from pre- to post-test. This would suggest that the evidence-based injury prevention educational offering guided this change in knowledge (**structure**). Providers demonstrated a willingness or plan to change how (**process**) they were educating families and the frequency at which they provided injury prevention education to patient and families, which indicates an anticipated change in how (**process**) they plan to educate patients and families.

### **Strengths and Limitations**

There were multiple strengths within this study. Overall strengths of this study included: (a) improved knowledge of injury prevention after the educational session intervention; (b) increased willingness/desire of healthcare providers to change practice behaviors regarding injury prevention, and (c) increase willingness of pediatric healthcare providers to give caregivers/patients educational material(s) regarding injury prevention. The utilization of a pre-test enhanced the probability that the assessment of knowledge gained was a result of educational materials and the interventions provided. Secondly, there was a significant enhancement of awareness concerning the prevalence of unintentional childhood injuries, integral Clinical Practice Guidelines and injury assessment tools/strategies in hopes to aid in decreasing unintentional childhood injuries, as well as the significant increase in understanding regarding the implementation of age-appropriate anticipatory guidance regarding injury prevention.

This study has a few limitations. Limitations are noted to impact the integrity of the results from this study (Polit & Beck, 2012). The survey methods relied on self-report, which raised concern about the reliability of the data. The convenience sample limits the generalizability of the results. This project's internal validity was affected due to the having only one group design instead of having a comparison group; therefore, the improvement of scores from the pre-test to the post-test can only be concluded from this one design study. Secondly, the internal validity was affected due to the participants choice to withdraw at any time threatening the results of the study as evidenced by 78 pediatric professionals attending, 40 gathered surveys, and only 30 pre-test and post-test surveys used for analysis. Finally, the internal validity may have been threatened by testing effect, meaning that the pre-test could have sensitized the participants in unforeseen ways therefore altering the participants performance on the post-test due to the level of the pre-test exposure and not based on the Grand Rounds educational session.

The external validity was also affected due to generalizability due to the limitation of a small sample size and that it was a sample in one geographical location of Arizona. The sample was a homogenous sample of pediatric healthcare providers; therefore, may not be generalizable to healthcare providers caring that provider care to other populations of patients.

### **Implications for Advance Practice Nurses**

Pediatric Nurse Practitioners (PNPs) are advance practice register nurses who are recognized within the state of Arizona as independent practitioners who are responsible for identifying, diagnosing, and treating common and uncommon childhood illnesses. In clinical practice, there are a vast number of times children can be seen by a PNP; whether for a well-child check, a sick visit, or an injury related etiology. In those times, understanding what age-

appropriate anticipatory guidance interventions and/or injury prevention clinical practice guidelines that are available for providers is integral. These intervention and guidelines can aid in the education of parents/caregivers to reduce unintentional childhood injuries. Noting that the CDC has created a National Action Plan to raise awareness, highlight prevention, and mobilize a national action plan to reduce the rate of 9.2 million children annually who are affected by unintentional injuries as well as the instituted Childhood Injury Risk Assessment Tool can be integral in the practice of a PNP in reference to the care and treatment provided to every single patient (CDC, 2016).

PNPs can be significant advocates and transformational leaders in ways to affect change in the way age-appropriate anticipatory guidance is provide to families/caregivers regarding injury prevention. PNPs can ensure that with every visit regardless of sick or well teaching strategies whether web-based or handouts can be provided with every single interaction due to the understanding that parent/caregiver education can reduce unintentional childhood injuries drastically (Crnica et al., 2013; CDC, 2016; Beelen et al., 2014). Furthermore, PNPs have capabilities not only to affect change at national levels in accordance to patient care within the clinical setting by providing consistent age-appropriate anticipatory guidance, but also as a doctoral prepared nurse practitioner additional research can be conducted to affect changes in the establish Prevention Services for Children and Adolescents Clinical Practice Guideline (NGC-010044). PNPs can aid in the further research and data collection to assess provider knowledge of unintentional childhood injuries and aid is establishing risk assessment tools and educational evidence-based strategies to improve patient and population health in unintentional childhood injuries. The findings from this study support the need for clinical practice guidelines outlining

the best practice behaviors regarding injury prevention. Findings also indicate that pediatric healthcare providers should be routinely assessed regarding their knowledge and practice behaviors regarding injury prevention to ensure that families are receiving education that will help them to optimize their child's health.

Due to the advancement of the advance practice nurse now receiving their Doctorate in Nursing Practice (DNP) degree, it is understood that with the higher level of education, training, and scope of practice, the doctoral prepared nurse can ensure that the best evidence-based interventions are researched and chosen to disseminate knowledge and to create clinical practice guidelines to aid in the reduction of unintentional childhood injuries which, are the leading cause of mortality and morbidity in the United States.

### **Conclusion**

This study addressed pediatric provider knowledge of unintentional childhood injuries and practice behaviors regarding injury prevention in Phoenix, Arizona with a select number of participants. A large and longer full-scale randomized-controlled study is needed to determine both the short- and long-term effects of the program. Longitudinal research is needed to help validate the effectiveness of the intervention over time to in regards to proper age-appropriate anticipatory guidance education and provider distribution of educational materials to families/ caregiver and the impact of these behaviors on the rate of unintentional childhood injury. The affect can be made through pediatric providers understanding of the importance of unintentional childhood injuries and the focus on prevention and educational strategies to reduce unintentional childhood injuries. The implementation of corrections to the established Clinical Practice Guidelines, home safety intervention checklists, risk assessment tools, and age-appropriate

anticipatory guidance at every patient interaction must be the focus in order to affect and reduce the incidence of unintentional childhood injuries. Other research studies should be designed and conducted to determine how many providers implemented different educational tools such as pamphlet, web-based education, or home safety checklists following an injury prevention education intervention.

Findings from this study will be disseminated in multiple ways including submission of a manuscript for publication to a peer reviewed professional journal, publishing the study on the University of Arizona College of Nursing website, and presenting the finding of the study to the staff at Phoenix Children's Hospital. Secondly, findings will be presented as a poster and podium presentation at a national conference such as during a National Association of Pediatric Nurse Practitioners (NAPNAP) Conference. Finally, a synopsis of the findings with recommendations will be sent to the National Clinical Practice Guideline Board in efforts to update the CPG with any appropriate injury safety recommendations. The overall goal for the disseminate this DNP project is to aid in the increase of pediatric provider knowledge regarding the importance of unintentional childhood injuries and that as a result institute practice changes to aid in the reduce of the nationally occurring rates of unintentional injuries.

In summary, this DNP project assessed pediatric provider knowledge on unintentional childhood injuries using a pre-test and post-test survey design by providing them with a pre-test prior to an educational session at Phoenix Children's Hospital Grand Rounds followed by a post-test assessment of the knowledge gained. It was determined that education can have an impact on provider knowledge in respect to the understanding of childhood injury prevention and can aid in practice behavior changes. Again, further research is needed to examine whether providers

actually integrated their acquired knowledge and their expressed willingness to change practice behaviors into their practice setting. If this integration is operationalized in the respective practice settings, there would likely be a significant reduction in the 12,175 children annually who die from unintentional injuries (CDC, 2016).

APPENDIX A:  
SYNTHESIS OF EVIDENCE TABLE

Reference	Type of Study	Sample and Setting	Methods for Data Collection and Data Analysis	Findings	Credibility and Grade of Evidence, Design, and Theoretical Framework
Gallagher, Reifsnider& Gill, (2009).	Qualitative Descriptive Study	<p><b>Sample:</b> There was a sample size used of nine mothers (n=9) who have preschool children ages 31 to 35</p> <p><b>Setting:</b> Low-income mothers who reside in San Antonio, TX</p>	<p><b>Data Collection:</b> The data included within the article includes specific descriptors of the demographics, a focus on home observations recorded, and audio-recorded semi-structured ethnographic interviews.</p> <p><b>Data Analysis:</b> Recordings were transcribed verbatim by the primary author who was bilingual.</p> <p>Two nurses who were fluent in Spanish and the primary author then checked the transcripts for accuracy.</p>	<p>There were two major findings within the data collected: the spectrum of proximity and the use of injury prevention techniques.</p> <p>The participants saw themselves as injury prevention agents within their home and used proximity to protect their children from physical harm. However, the effects of:</p> <ul style="list-style-type: none"> <li>- Childs behavior</li> <li>- Childs age</li> <li>- Presence of other family members in the home</li> </ul> <p>All played a factor</p>	<p>Peer transcriptions and double checks enhanced the credibility. Due to two nurses checking the data and Removed the bias and assessing the codes through the Atlas TI software dependability was found.</p> <p>Because three researchers checked the data quality for bias and checked the transcription confirmability was assessed.</p> <p>Transferability was seen within the researcher's ability to collect data and implement a depiction of implementation from health care workers to help low-income mothers in this situation.</p> <p><b>Grade of the Evidence:</b> Type of Evidence- RCT (high) Some (-1) uncertainty about directness Very strong evidence of association- Significant relative risk of &gt;2 (+1) Evidence of a dose-response gradient (+1) <b>Final Grade of Recommendation:</b> B</p>

Reference	Type of Study	Sample and Setting	Methods for Data Collection and Data Analysis	Findings	Credibility and Grade of Evidence, Design, and Theoretical Framework
Barczyk, et al., (2015).	Grounded Theory	<p><b>Sample:</b> 21 mothers of teen parents (n=21) mothers aged 25 to 70 years old who were parents of a currently parenting teenager,</p> <p><b>Setting:</b> Six AISD high schools were assessed within this study</p>	<p><b>Data Collection:</b> The data was collected within two phases.</p> <p>First was focus groups chosen due to dynamics based on perceptions and opinions stimulated within a conversation. Participants (n=21) were divided based on preferred language.</p> <p>Second was recorded and utilized a discussion guide to conduct a semi structured focus.</p> <p>Prior to focus groups consent forms were given.</p> <p><b>Data Analysis:</b> Discussions transcribed verbatim by professional transcriptionist who was bilingual</p>	<p><b>Findings:</b> Categories and subcategories emerged from the data:</p> <ul style="list-style-type: none"> <li>- Familial adjustments</li> <li>- Adjustments to the knowledge of pregnancy</li> <li>- Adjustment to parenthood</li> <li>- Adjusting to the role of grandmother</li> <li>- Injury prevention</li> <li>- Risk factors</li> <li>- Beliefs</li> <li>- Injury prevention practices</li> </ul> <p>Barriers</p>	<p><b>Trustworthiness:</b> Generalization was limited due to it being a qualitative focus group of the results of other mothers of teen parents.</p> <p>Future research should explore the beliefs and perceptions of mothers of teen father's in greater details to look more into the cultural differences of mothers of teen parents who predominantly speak Spanish.</p> <p>Frequency of injury prevention belief and practices need additional assessment.</p> <p><b>Grade of the Evidence:</b> Type of Evidence- RCT (high) Some (-1) uncertainty about directness Imprecise or sparse data (-1) High Probability of reporting bias (-1) Very strong evidence of association- Significant relative risk of &gt;2 (+1) Evidence of a dose-response gradient (+1)</p> <p><b>Final Grade of Recommendation: C</b></p>

Reference	Type of Study	Sample and Setting	Methods for Data Collection and Data Analysis	Findings	Credibility and Grade of Evidence, Design, and Theoretical Framework
Olsen, et. al., (2008).	Focused Ethnography	<p><b>Sample:</b> 17 mothers ages 19 to 73 years of age (n=17) with an income ranging from less than \$10,000 a year to between \$20,000 and \$40,000 per year. There were 21 children, 13 boys (n=13) and 8 girls (n=8)</p> <p><b>Setting:</b> Mothers who lived in single family homes, mobile homes, townhouses, and apartment buildings in Fraser Valley of British Columbia</p>	<p><b>Data Collection:</b> In-home interviews lasting 60 minutes and in-home observations lasting 2 hours.  28 home visits were made with 6 participants visited once and 11 visit twice</p> <p>Semi-structured interviews addressed mother's safety concerns.</p> <p><b>Data Analysis:</b> Coding the interview and observation data. The broke the analysis into four stages. Verification was made contributing to internal validity by situating the project bracketing, following the study design, and sampling theoretical saturation.</p>	<p><b>Findings:</b> The mothers within the study provided rich descriptions of their activities to protect their children through the nature of mother's safeguarding work. Detailed analysis and findings of how they implement safeguarding works and the physical and social environments that affect the safeguarding work of the mothers.</p> <p>This study provided a unique contribution on child home safety by depicting the value of ethnographic research in exploring a range of strategies that mothers within low-income household use to keep their children safe.</p>	<p><b>Trustworthiness:</b> Credibility and validity was found in this study due to the internal verification stages within the research process.</p> <p>The participants of the research were found in low-income households within the U.S. allowing for dependability.</p> <p>A noted limited transferability due to the geographical area.</p> <p><b>Grade of the Evidence:</b> Type of Evidence- RCT (high) Very strong evidence of Association-Significant relative risk of &gt;2 (+1) Evidence of a dose-response gradient (+1) All plausible cofounders would have reduced Effect (+1)</p> <p><b>Final Grade of Recommendation: A</b></p>

Reference	Type of Study	Sample and Setting	Methods for Data Collection and Data Analysis	Findings	Credibility and Grade of Evidence, Design, and Theoretical Framework
Al-Yateem, et. al., (2015).	Mixed Methods Study	<p><b>Sample:</b> 117 health care professionals participated in the study (n=117)</p> <p><b>Setting:</b> UAE hospital setting</p>	<p><b>Data Collection:</b> Utilized both qualitative and quantitative data to gather pertinent research.</p> <p>Quantitative Data → a close ended survey</p> <p>Qualitative Data → a open ended survey</p> <p>Semi-structured interviews.</p> <p>Responses recorded by audio-recorder.</p>	<p><b>Findings:</b> The study focused on two objectives, first to assess healthcare professionals' awareness of the stressful and potentially traumatic nature of healthcare settings and treatment for children. Secondly, the study explored the views of healthcare participants regarding possible strategies to minimize medically induced stress and trauma for children and adolescents in healthcare settings.</p>	<p><b>Trustworthiness:</b> Credibility was notably altered due to the understanding that focus groups could have the ability to have influences.</p> <p>The dependability of healthcare worker's views cannot be truly reliable due to the possible changes over time.</p> <p>Limited transferability was noted due to the Healthcare workers being unaware of the limited sample size.</p> <p><b>Grade of the Evidence:</b> Type of Evidence- RCT (high) Some (-1) uncertainty about directness Imprecise or sparse data (-1) Very strong evidence of association- Significant relative risk of &gt;2 (+1) Evidence of a dose-response gradient (+1) All plausible cofounders would have reduced Effect (+1)</p> <p><b>Final Grade of Recommendation:</b> B</p>

Reference	Type of Study	Sample and Setting	Methods for Data Collection and Data Analysis	Findings	Credibility and Grade of Evidence, Design, and Theoretical Framework
DiGuiseppi & Roberts (2000).	Systematic Review	<p><b>Sample</b> Several depending on the RCT being utilized</p> <p><b>Setting</b> Several depending on the RCT being utilized</p>	<p><b>Data Collection</b> Included 22 relevant randomized control trials the met above the grading criteria of the study and collectivity noted a system of prevention and “childproofing”</p> <p><b>Data Analysis</b> Assesses the written educational materials combined with strategies of implementation and message delivered by the care provider to assess the effect of use of safety methods and devices.</p>	<p><b>Findings</b> Through the evaluation of individual level prevention strategies studies included were able to depict the interventions deliver within physician offices, clinics, and emergency departments.</p> <p>Assessments of effect were noted in car seat, motor vehicle safety, helmet use and safety, hot water safety, smoke alarm usage, and overall childproofing within the home.</p>	<p><b>Grade of the Evidence:</b> Type of Evidence- RCT (high) Some (-1) uncertainty about directness Very strong evidence of association- Significant relative risk of &gt;2 (+1) Evidence of a dose-response gradient (+1) All plausible cofounders would have reduced Effect (+1)</p> <p><b>Final Grade of Recommendation: A</b></p>

Reference	Type of Study	Sample and Setting	Methods for Data Collection and Data Analysis	Findings	Credibility and Grade of Evidence, Design, and Theoretical Framework
Crnica, et. al. (2016).	Quantitative stratified random sampling	<p><b><u>Sampling:</u></b> 3,871 licensed health care providers, 944 were selected for this survey</p> <p><b><u>Settings:</u></b> Croatia primary care settings/ providers</p>	<p><b><u>Data Collection:</u></b> Between May and July, 2007 the anonymous, self-administered paper-and-pencil survey. The survey= 46 questions in 15 min. The survey includes questions about the primary health care provider's demographics, practice characteristics, questions that addressed safety knowledge, attitudes, and questions asked participants to describe the frequency with which they provided injury prevention/ safety promotion advice to their patients.</p> <p><b><u>Data Analysis:</u></b> Responses from the survey was compared between the healthcare professional types, and Pearson Chi-square tests for association were calculated using pediatricians as the comparison group with the other types of providers.</p>	<p><b><u>Findings:</u></b> Research has indicated that health care providers can be effective in reducing the risk for traumatic injury through anticipatory guidance, but successful guidance requires that providers have injury knowledge and informed safety attitudes</p>	<p><b><u>Grade of the Evidence:</u></b> Type of Evidence- RCT (high) Some (-1) uncertainty about directness Very strong evidence of association- Significant relative risk of &gt;2 (+1) Evidence of a dose-response gradient (+1) All plausible cofounders would have reduced Effect (+1)</p> <p><b>Final Grade of Recommendation: A</b></p>

Reference	Type of Study	Sample and Setting	Methods for Data Collection and Data Analysis	Findings	Credibility and Grade of Evidence, Design, and Theoretical Framework
Bazelmans, et. al. (2004).	Quantitative phone sample survey	<p><b>Sample:</b> In all, 94% (198) of the GPs and 98% (133) of the pediatricians who met the eligibility criteria of actual practice and could be reached by phone participated in the study. (Total sample n = 331)</p> <p><b>Setting:</b> Providers in the French-speaking community of Belgium</p>	<p><b>Data Collection:</b> Phone Sample Survey</p> <p><b>Data Analysis:</b> Responses were analyzed using the SPSS version 10 software. The study variables were all analyzed with regard to age, gender, specialization (GPs vs. pediatricians), type of activity (single practice or in some facility) and the years of practice, using Pearson's chi square test, the Mann-Whitney test and Kruskal Wallis test</p>	<p><b>Findings:</b> Providers expectations, attitudes, priorities and demands in the area of promoting safety and preventing accidents in the home involving children under 15 years of age. The study clearly reveals the interest of physicians for accident prevention and puts forward the current obstacles to offering prevention advice during routine consultation. The obstacles mentioned are because the reason for the visit does not give such an opening, the lack of appropriate materials and information, the lack of time, the patient's lack of interest, the fact that the issue is not a priority, etc</p>	<p><b>Trustworthiness:</b> Peer transcriptions and double checks enhanced the credibility.</p> <p>Dependability was found through the utilization in the SPSS software and the analysis through the Mann-Whitney and Kruskal Wallis test.</p> <p>Because multiple researchers checked the data quality for bias and checked the transcription confirmability was assessed.</p> <p>Transferability was seen within the researcher's ability to collect data and implement a depiction of implementation from health care workers to help pediatric providers understand the importance of unintentional injuries and the importance of age-appropriate anticipatory guidance and education given</p>

Reference	Type of Study	Sample and Setting	Methods for Data Collection and Data Analysis	Findings	Credibility and Grade of Evidence, Design, and Theoretical Framework
Elboray, et. al. (2017).	Qualitative Descriptive Study	<p><b>Sample:</b> A survey of 99 family physicians and nurses from 10 family health centers sought to develop insight into their knowledge, attitudes, and practices regarding unintentional injury prevention for children</p> <p><b>Setting:</b> 10 centers were selected in Cairo, Egypt</p>	<p><b>Data Collection:</b> Primary health care physicians and nurses voluntarily chose whether to participate or not in this survey. The questionnaire was validated through pretesting on 10 physicians and nurses. The questions included attitudes to child injury prevention, do practice providers see their role in childhood injury prevention, attitudes toward injury prevention and counselling; involvement in preventing injuries; barriers to injury prevention counselling and the physicians' involvement in the treatment of injuries</p>	<p><b>Findings:</b> Cross-sectional interview survey of primary care physicians that show how physicians and nurses can play a key role in educating parents and caregivers about the risk for unintentional injuries. They can recommend specific measures that minimize those risks, including environmental modification and the use of safety equipment</p>	<p><b>Trustworthiness:</b> Credibility was notably due to how many other articles were cited and utilized within the study. However multiple researchers within the cross-sectional interview survey provided enhanced credibility.</p> <p>The dependability of healthcare worker's views cannot be truly reliable due to the possible changes over time.</p> <p>Limited transferability was noted due to the healthcare workers being unaware of the limited sample size.</p> <p><b>Grade of the Evidence:</b> Type of Evidence- RCT (high) Some (-1) uncertainty about directness Very strong evidence of association- Significant relative risk of &gt;2 (+1) Evidence of a dose-response gradient (+1)</p> <p><b>Final Grade of Recommendation: B</b></p>

Reference	Type of Study	Sample and Setting	Methods for Data Collection and Data Analysis	Findings	Credibility and Grade of Evidence, Design, and Theoretical Framework
McDonald, et. al. (2016).	Systematic Review	<p><b><u>Sample</u></b> Several depending on the RCT being utilized</p> <p><b><u>Setting</u></b> Several depending on the RCT being utilized</p>	<p><b><u>Data Analysis:</u></b> Data were coded, entered, and analyzed using the Statistical Package for Social Science. Pearson's chi-squared test, Fisher's exact test and independent student's <i>t</i>-test were used to evaluate the relation between injury prevention practice and other variables such as age, years of clinical work, and being involved in injury treatment.</p> <p><b><u>Data Collection</u></b> Included 7 specific childhood injury incidences of prevention success and opportunities relevant randomized control trials the met above the grading criteria of the study and collectivity noted a system of prevention and providing education to promote safe childhood behaviors.</p>	<p><b><u>Findings:</u></b> The review notes that many injuries can be prevented through policies, programs, and resources that ensure safe environments and promote safe behavior. Primary care clinicians can play a foundational role in their patient's safety by utilizing the 3 Es (education, enforcement, engineering) of injury prevention in their practices and their communities.</p>	<p><b><u>Grade of the Evidence:</u></b> Type of Evidence- RCT (high) Some (-1) uncertainty about directness Imprecise or sparse data (-1) Very strong evidence of association- Significant relative risk of &gt;2 (+1) Evidence of a dose-response gradient (+1) All plausible cofounders would have reduced Effect (+1)</p> <p><b>Final Grade of Recommendation: B</b></p>

Reference	Type of Study	Sample and Setting	Methods for Data Collection and Data Analysis	Findings	Credibility and Grade of Evidence, Design, and Theoretical Framework
Soori & Khodakarim (2016).	Quantitative secondary data analysis	<p><b>Sample</b> Several depending on the RCT being utilized</p> <p><b>Setting</b> Eastern Mediterranean Region</p>	<p><b>Data Collection</b> Included 7 specific childhood injury incidences of prevention success and opportunities relevant randomized control trials the met above the grading criteria of the study and collectivity noted a system of prevention and providing education to promote safe childhood behaviors.</p> <p><b>Data Analysis</b> Assesses the written educational materials combined with strategies of implementation and message delivered by the care provider to assess the effect of use of safety methods and devices.</p>	<p><b>Findings:</b> About 12% of all deaths due to unintentional injuries taking place globally under the age of 20 years took place in EMR with 113 327 deaths which is about 19% higher than the world rate. Injuries are the leading cause of death and disability among children in the EMR and that injury programmes focusing on major risk factors need to be integrated into other child health strategies, with ministries of health playing a pivotal role.</p>	<p><b>Grade of the Evidence:</b> Type of Evidence- RCT (high) Some (-1) uncertainty about directness Very strong evidence of association- Significant relative risk of &gt;2 (+1) Evidence of a dose-response gradient (+1) All plausible cofounders would have reduced Effect (+1)</p> <p><b>Final Grade of Recommendation:</b> A</p>
			<p><b>Data Collection</b> This is a secondary analysis and focuses on unintentional injuries specifically road traffic injuries, drowning, burns, falls and poisoning, and adjusted for countries from EMR.</p> <p><b>Data Analysis</b> This study aimed to present the epidemiological pattern of children's unintentional injuries in this region and compare the results for the EMR member states and the global status based on the findings of the World Report</p>		<p><b>Grade of the Evidence:</b> Type of Evidence- RCT (high) Some (-1) uncertainty about directness Very strong evidence of association- Significant relative risk of &gt;2 (+1) Evidence of a dose-response gradient (+1) All plausible cofounders would have reduced Effect (+1)</p> <p><b>Final Grade of Recommendation:</b> B</p>

APPENDIX B:  
PRE-TEST SURVEY

## PRE-TEST SURVEY

### Survey: Pediatric Unintentional Injury Prevention

1. Below, please indicate your decision to either participate in the study or withdraw from the study.
  - a. I agree (participate in study and take test)
  - b. I disagree (withdraw from study and end test)
  
2. Please make a unique identifier by using the following information: first two letters of first name, first two digits of social security number, year of high school graduation (YYYY), and first two letters of mother's maiden name. (Fill in the blank). \_\_\_\_\_

### **Demographic Questionnaire**

Please answer the following questions about yourself. **PLEASE DO NOT WRITE YOUR NAME ANYWHERE ON THIS FORM.**

1. How old are you? Please check appropriate range:

_____ 22 – 24 years	_____ 41 – 45 years	_____ 61 – 65 years
_____ 25 – 29 years	_____ 46 – 50 years	_____ 66 – 70 years
_____ 30 -35 years	_____ 51 – 55 years	_____ 61 – 75 years
_____ 36 – 40 years	_____ 56 – 60 years	_____ 76 and older

Gender: Male \_\_\_\_\_ Female \_\_\_\_\_

Year of MD Residency: 1<sup>st</sup> \_\_\_\_\_ 2<sup>nd</sup> \_\_\_\_\_ 3<sup>rd</sup> \_\_\_\_\_ 4<sup>th</sup> \_\_\_\_\_

Nurse Practitioner: \_\_\_\_\_ Years of Experience \_\_\_\_\_

Attending Physician: \_\_\_\_\_ Years of Experience \_\_\_\_\_

Number of Years at PCH: \_\_\_\_\_

Specialty: \_\_\_\_\_

**Pre-Test:**

P1Q1. Unintentional injuries in children based on the Center of Disease Control (CDC) statistics is ranked \_\_\_\_\_ as the leading cause of death?

- a. Fifth
- b. First
- c. Fourth
- d. Second

P1Q2. Which of the following is the BEST definition of injury?

- a. A body lesion at the organic level, resulting from an acute exposure to energy in amounts that exceed the threshold of physiological tolerance
- b. To inflict with physical pain or harm to the body; to suffer or to grieve
- c. Physical harm caused to something in such a way to impair its value, usefulness, or normal function
- d. All of the above

P1Q3. The Centers for Disease Control and Prevention stated that unintentional childhood injuries are among the most under-recognized public health problems facing the United States today?

- a. True
- b. False

P1Q4. In March of 2014, what organization developed a Childhood Injury Risk Assessment tool in hopes to provide a screening method for providers to assess unintentional injury risk factors within the home?

- a. National Association of Pediatric Nurse Practitioners (NAPNAP)
- b. American College of Preventive Medicine (ACPM)
- c. Academy of Pediatric Association (APA)
- d. American Academy of Pediatrics (AAP)

P1Q5. Studies have found that there is an association between unintentional injuries and increased incidences of injuries in all the following except?

- a. Low socio-economic families
- b. Female sex children
- c. Native American, or Native Alaskan race
- d. Attention-deficit/hyperactivity disorder children

P1Q6. Childhood unintentional injuries are the leading cause of death among children ages 1 to 19 years, representing nearly what percent of all deaths in this age group?

- a. 65%
- b. 20%
- c. 40%
- d. 34%

P1Q7. Common causes of fatal and nonfatal unintentional childhood injuries (ages 0-5 years of age) include which of the following:

- a. Drowning
- b. Falls
- c. Fires/burns
- d. Poisoning
- e. Suffocation
- f. Transportation-related injuries
- g. All the Above

P1Q8. Every year, 9 million, children ages 0–19 are treated for injuries in emergency departments and more than \_\_\_\_\_ percentage require hospitalization?

- a. 20%
- b. 30%
- c. 40%
- d. 60%

P1Q9. True or False: Childhood injury related hospitalizations cost around \$87 billion dollars in medical and societal funds each year?

- a. True
- b. False

P1Q10. Do you as a provider educate your families on injury prevention measures?

- a. Yes
- b. No

P1Q11. What approach should you take to educate caregivers about age-appropriate injury prevention measures in the infant/child home and environment?

Select all that apply.

- a. Pamphlets
- b. One-on-one education
- c. Online education modules
- d. Web-based learning modalities
- e. None currently

P1Q12. What form of verification should you use to assess health literacy for caregivers understanding of injury prevention education reviewed in the office setting?

- a. Verbal acknowledgement
- b. Teach-back method
- c. I don't assess their understanding
- d. Assume they understand the gravity of their child's safety
- e. Other: \_\_\_\_\_

P1Q13. When should you talk about pool/ fence safety?

- a. Once the child is born
- b. Only if the family has a pool
- c. When the child is at the age where swimming may occur
- d. Before the birth of the child even if the caregiver does not have a pool
- e. Other: \_\_\_\_\_

P1Q14. When should you recommend a baby gate?

- a. When the child is able to crawl
- b. When the child is able to walk
- c. Before the child is born
- d. At the child's 6-month visit
- e. Other: \_\_\_\_\_

P1Q15. Do you assess caregiver's knowledge of how to properly restrain an infant?

- a. No
- b. Yes

P1Q16. At what age should you tell caregivers that a child can be placed in a front facing car seat?

- a. 1 year or 20 lbs.
- b. 2 years or 30 lbs.
- c. Whenever the child starts hitting their feet on the back seat
- d. After they have reach all-maximum rear facing car seat limits
- e. Other: \_\_\_\_\_

P1Q17. When should you encourage caregivers to become CPR certified?

- a. When they find out they are pregnant
- b. A few weeks before delivery
- c. After the infant is a month old
- d. Once the child is of age that swimming could be a potential risk factor
- e. Never

f. Other:

---

P1Q18. Do you educate caregivers about sleeping arrangements for newborns/infants due to the boundaries of cultural preferences?

- a. Yes
- b. No

P1Q19. How often do you assess your patients developmental age?

- a. When I have time
- b. When I remember
- c. At every visit
- d. Only at well child checks
- e. Other: \_\_\_\_\_

P1Q20. How often should you provide home and environmental safety materials focused on injury prevention to caregivers?

- a. When I have time
- b. When I remember
- c. At every visit
- d. Only at well child checks
- e. Other: \_\_\_\_\_

P1Q21. At what developmental age, should you encourage families to move poisonous materials away their child's reach?

- a. 1 month
- b. 15 month
- c. Before birth
- d. 18 months
- e. Other:

APPENDIX C:  
POST-TEST SURVEY

CODE: \_\_\_\_\_

**Post-Test:**

P1Q1. Unintentional injuries in children based on the Center of Disease Control (CDC) statistics is ranked \_\_\_\_\_ as the leading cause of death?

- a. Fifth
- b. First
- c. Fourth
- d. Second

P1Q2. Which of the following is the BEST definition of injury?

- a. A body lesion at the organic level, resulting from an acute exposure to energy in amounts that exceed the threshold of physiological tolerance
- b. To inflict with physical pain or harm to the body; to suffer or to grieve
- c. Physical harm caused to something in such a way to impair its value, usefulness, or normal function
- d. All of the above

P1Q3. The Centers for Disease Control and Prevention stated that unintentional childhood injuries are among the most under-recognized public health problems facing the United States today?

- a. True
- b. False

P1Q4. In March of 2014, what organization developed a Childhood Injury Risk Assessment tool in hopes to provide a screening method for providers to assess unintentional injury risk factors within the home?

- a. National Association of Pediatric Nurse Practitioners (NAPNAP)
- b. American College of Preventive Medicine (ACPM)
- c. Academy of Pediatric Association (APA)
- d. American Academy of Pediatrics (AAP)

P1Q5. Studies have found that there is an association between unintentional injuries and increased incidences of injuries in all the following except?

- a. Low socio-economic families
- b. Female sex children
- c. Native American, or Native Alaskan race
- d. Attention-deficit/hyperactivity disorder children

P1Q6. Childhood unintentional injuries are the leading cause of death among children ages 1 to 19 years, representing nearly what percent of all deaths in this age group?

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- b. 20%
- c. 40%
- d. 34%

P1Q7. Common causes of fatal and nonfatal unintentional childhood injuries (ages 0-5 years of age) include which of the following:

- a. Drowning

- b. Falls
- c. Fires/burns
- d. Poisoning
- e. Suffocation
- f. Transportation-related injuries
- g. All the above

P1Q8. Every year, 9 million, children ages 0–19 are treated for injuries in emergency

departments and more than \_\_\_\_\_ percentage require hospitalization?

- a. 20%
- b. 30%
- c. 40%
- d. 60%

P1Q9. True or False: Childhood injury related hospitalizations cost around \$87 billion dollars in medical and societal funds each year?

- a. True
- b. False

P1Q10. Will you as a provider educate your families on injury prevention measures?

- a. Yes
- b. No

P1Q11. What approach should you take to educate caregivers about age-appropriate injury prevention measures in the infant/child home and environment?

Select all that apply.

- a. Pamphlets
- b. One-on-one education
- c. Online education modules
- d. Web-based learning modalities
- e. None currently

P1Q12. What form of verification should you use to assess health literacy for caregivers understanding of injury prevention education reviewed in the office setting?

- a. Verbal acknowledgement
- b. Teach-back method
- c. I don't assess their understanding
- d. Assume they understand the gravity of their child's safety
- e. Other: \_\_\_\_\_

P1Q13. When will you talk about pool/ fence safety?

- a. Once the child is born
- b. Only if the family has a pool
- c. When the child is at the age where swimming may occur
- d. Before the birth of the child even if the caregiver does not have a pool
- e. Other: \_\_\_\_\_

P1Q14. When do you recommend a baby gate?

- a. When the child is able to crawl
- b. When the child is able to walk
- c. Before the child is born

d. At the child's 6-month visit

e. Other: \_\_\_\_\_

P1Q15. Will you assess caregiver's knowledge of how to properly restrain an infant?

a. No

b. Yes

P1Q16. At what age will you tell caregivers that a child can be placed in a front facing car seat?

a. 1 year or 20 lbs.

b. 2 years or 30 lbs.

c. Whenever the child starts hitting their feet on the back seat

d. After they have reach all-maximum rear facing car seat limits

e. Other: \_\_\_\_\_

P1Q17. When should will encourage caregivers to become CPR certified?

a. When they find out they are pregnant

b. A few weeks before delivery

c. After the infant is a month old

d. Once the child is of age that swimming could be a potential risk factor

e. Never

f. Other:

\_\_\_\_\_

P1Q18. Will you educate caregivers about sleeping arrangements for newborns/infants due to the boundaries of cultural preferences?

a. Yes

- b. No

P1Q19. How often will you assess your patients developmental age?

- a. When I have time
- b. When I remember
- c. At every visit
- d. Only at well child checks
- e. Other: \_\_\_\_\_

P1Q20. How often should you provide home and environmental safety materials focused on injury prevention to caregivers?

- a. When I have time
- b. When I remember
- c. At every visit
- d. Only at well child checks
- e. Other: \_\_\_\_\_

P1Q21. At what developmental age, will you encourage families to move poisonous materials away their child's reach?

- a. 1 month
- b. 15 month
- c. Before birth
- d. 18 months
- e. Other:

APPENDIX D:  
EVALUATION QUESTIONNAIRE

### Evaluation Questionnaire

1. The guideline presented educated me more about pediatric unintentional childhood injuries.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
2. I feel that I have gained knowledge about pediatric unintentional childhood injuries.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
3. I am aware of the how to properly educate families regarding injury prevention based on the patient age after taking the pre-test, participating in the educational session, and taking the post-test.
  - a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
4. The combination of media format and test questions was an effective learning method.
  - a. Strongly Agree
  - b. Agree

- c. Disagree
  - d. Strongly Disagree
5. The combination of media format and test questions was appropriately organized to facilitate ease of information gathering and test taking.
- a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
6. The educational level was appropriate for my profession.
- a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
7. The content was presented with objectivity and without commercial bias.
- a. Strongly Agree
  - b. Agree
  - c. Disagree
  - d. Strongly Disagree
8. The educational materials presented were helpful in meeting my learning needs for continued competency.
- a. Strongly Agree
  - b. Agree

- c. Disagree
  - d. Strongly Disagree
9. Please document the time you spent on completing this pre-test and post-test.
- a. Less than 30 minutes
  - b. 30-44 minutes
  - c. 45-59 minutes
  - d. More than 60 minutes
10. Is there any additional information you would have liked to see? (Fill in the blank).

---

APPENDIX E:  
PRE-TEST AND POST-TEST ANSWERS

### Pre-Test and Post-Test Answers

P1Q1. Unintentional injuries in children based on the Center of Disease Control (CDC) statistics is ranked \_\_\_\_\_ as the leading cause of death? Answer: C, Fourth

P1Q2. Which of the following is the BEST definition of injury? Answer: A, A body lesion at the organic level, resulting from an acute exposure to energy in amounts that exceed the threshold of physiological tolerance

P1Q3. The Centers for Disease Control and Prevention stated that unintentional childhood injuries are among the most under-recognized public health problems facing the United States today? Answer: A, True

P1Q4. In March of 2014, what organization developed a Childhood Injury Risk Assessment tool in hopes to provide a screening method for providers to assess unintentional injury risk factors within the home? Answer: B, American College of Preventive Medicine (ACPM)

P1Q5. Studies have found that there is an association between unintentional injuries and increased incidences of injuries in all the following except? Answer: B, Female sex children

P1Q6. Childhood unintentional injuries are the leading cause of death among children ages 1 to 19 years, representing nearly what percent of all deaths in this age group? Answer: C, 40%

P1Q7. Common causes of fatal and nonfatal unintentional childhood injuries (ages 0-5 years of age) include which of the following? Answer: G, All the Above

P1Q8. Every year, 9 million, children ages 0–19 are treated for injuries in emergency departments and more than \_\_\_\_\_ percentage require hospitalization? Answer: B, 30%

P1Q9. True or False: Childhood injury related hospitalizations cost around \$87 billion dollars in medical and societal funds each year? Answer: A, True

P1Q10. Do you as a provider educate your families on injury prevention measures? Answer: A, Yes

P1Q11. What approach do you take to educate caregivers about age-appropriate injury prevention measures in the infant/child home and environment?

Select all that apply.

- a. Pamphlets
- b. One-on-one education
- c. Online education modules
- d. Web-based learning modalities
- e. None currently

P1Q12. What form of verification do you use to assess health literacy or caregivers understanding of injury prevention education reviewed in the office setting?

- a. Verbal acknowledgement
- b. Teach-back method
- c. I don't assess their understanding
- d. Assume they understand the gravity of their child's safety
- e. Other: \_\_\_\_\_

P1Q13. When do you talk about pool/ fence safety? Answer: D, Before the birth of the child even if the caregiver does not have a pool

P1Q14. When do you recommend a baby gate? Answer: C, Before the child is born

P1Q15. Do you assess caregiver's knowledge of how to properly restrain an infant? Answer: B, Yes

P1Q16. At what age do you tell caregivers that a child can be placed in a front facing car seat? Answer: D, After they have reach all-maximum rear facing car seat limits

P1Q17. When do you encourage caregivers to become CPR certified? Answer: A, When they find out they are pregnant

P1Q18. Do you educate caregivers about sleeping arrangements for newborns/infants due to the boundaries of cultural preferences?

- a. Yes
- b. No

P1Q19. How often do you assess your patients developmental age? Answer: C, At every visit

P1Q20. How often do you provide home and environmental safety materials focused on injury prevention to caregivers? Answer: C, At every visit

P1Q21. At what developmental age, do you encourage families to move poisonous materials away their child's reach? Answer: C, Before birth

APPENDIX F:  
DISCLOSURE STATEMENT

## **Pediatric Provider Knowledge on Unintentional Childhood Injuries**

**Dr. David Notrica MD and Mariah K. Welch RN, BSN**

This survey is part of a DNP project to assess pediatric provider knowledge regarding the injury prevention knowledge and practitioner preparedness when caring for children in home and environmental setting. You will be asked to complete a survey consisting of 21 questions. It will take you approximately 10-15 minutes to complete this survey. There are no foreseeable risks associated with participating in this research, and you will receive no immediate benefit from participating. However, results from this survey may benefit advanced practice nursing and society by raising awareness of the risks that children have associated to unintentional injuries. In addition, the results can be used for future research. Participation in this survey is voluntary and will remain anonymous.

If you choose to participate in this study, you may choose to discontinue participation at any time without penalty. You may skip any question that you choose not to answer. By participating, you do not give up any personal legal rights that you may have as a participant of this study. An Institutional Review Board responsible for human subjects' research at The University of Arizona reviewed this research project and found it to be acceptable, according to the applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research. For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact the Human Subjects Protection Program at 520-626-6721 or online at <http://rgw.arizona.edu/compliance/human-subjects-protection-program>.

The final date to complete the survey is October 31<sup>st</sup>, 2017. For questions, concerns, or complaints about the study, you may call Mariah Welch, RN, BSN,CM at (623)-363-8703 or via email at [mwelch1@email.arizona.edu](mailto:mwelch1@email.arizona.edu).

By taking this survey, you agree to have your responses used for research purposes.

APPENDIX G:

PHOENIX CHILDREN'S HOSPITAL PERMISSION LETTER



June 8, 2017

Mariah Welch  
Phoenix Children's Hospital  
Neurology  
1919 E. Thomas Road  
Phoenix, AZ 85016

RE: Grand Rounds Educational Session on Pediatric Providers Knowledge on Unintentional Injury

Dear Ms. Welch:

After review of the above project the Phoenix Children's Hospital (PCH) Institutional Review Board has determined that this project is quality improvement and does not meet the definition of research; therefore, the approval of the PCH Institutional Review Board is not required. Please contact Jason Olivea in the PCH Quality Department at 602-933-0706 for approval. As a reminder, any intent to publish would involve not classifying this project as research.

If you have questions please contact Shy Walker at [swalker@phoenixchildrens.com](mailto:swalker@phoenixchildrens.com)

Sincerely,

A handwritten signature in black ink, appearing to read "Mitchell Shub".

Mitchell Shub, MD  
Chair, PCH Institutional Review Board #1

cc: Carolyn Hickman, PhD

APPENDIX H:  
THE UNIVERSITY OF ARIZONA IRB APPROVAL



**Research**  
Office for Research & Discovery

Human Subjects  
Protection Program

1618 E. Helen St.  
P.O. Box 245137  
Tucson, AZ 85724-5137  
Tel: (520) 626-6721  
<http://rgw.arizona.edu/compliance/home>

<b>Date:</b>	June 29, 2017
<b>Principal Investigator:</b>	Maria Welch
<b>Protocol Number:</b>	1706585473
<b>Protocol Title:</b>	Pediatric Providers Knowledge and Practice Behaviors Regarding Unintentional Childhood Injury
<b>Determination:</b>	Human Subjects Review not Required

The project listed above does not require oversight by the University of Arizona because the project does not meet the definition of 'research' and/or 'human subject'.

- **Not Research as defined by 45 CFR 46.102(d):** As presented, the activities described above do not meet the definition of research as cited in the regulations issued by the U.S. Department of Health and Human Services which state that "research means a systematic investigation, including research development, testing and evaluation, designed to contribute to generalizable knowledge".
- **Not Human Subjects Research as defined by 45 CFR 46.102(f):** As presented, the activities described above do not meet the definition of research involving human subjects as cited in the regulations issued by the U.S. Department of Health and Human Services which state that "human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains data through intervention *or* interaction with the individual, or identifiable private information".

Note: Modifications to projects not requiring human subjects review that change the nature of the project should be submitted to the Human Subjects Protection Program (HSPP) for a new determination (e.g. addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the research question). Please contact the HSPP to consult on whether the proposed changes need further review.

The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).

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