



University of Kentucky
UKnowledge

DNP Projects

College of Nursing

2019

Parental Knowledge of Car Seat Safety

Breanne P. Webb

University of Kentucky, breanne.webb473@uky.edu

Follow this and additional works at: https://uknowledge.uky.edu/dnp_etds



Part of the [Pediatric Nursing Commons](#)

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

Recommended Citation

Webb, Breanne P., "Parental Knowledge of Car Seat Safety" (2019). *DNP Projects*. 293.
https://uknowledge.uky.edu/dnp_etds/293

This Practice Inquiry Project is brought to you for free and open access by the College of Nursing at UKnowledge. It has been accepted for inclusion in DNP Projects by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

STUDENT AGREEMENT:

I represent that my DNP Project is my original work. Proper attribution has been given to all outside sources. I understand that I am solely responsible for obtaining any needed copyright permissions. I have obtained and attached hereto needed written permission statements(s) from the owner(s) of each third-party copyrighted matter to be included in my work, allowing electronic distribution (if such use is not permitted by the fair use doctrine).

I hereby grant to The University of Kentucky and its agents a royalty-free, non-exclusive and irrevocable license to archive and make accessible my work in whole or in part in all forms of media, now or hereafter known. I agree that the document mentioned above may be made available immediately for worldwide access unless a preapproved embargo applies. I also authorize that the bibliographic information of the document be accessible for harvesting and reuse by third-party discovery tools such as search engines and indexing services in order to maximize the online discoverability of the document. I retain all other ownership rights to the copyright of my work. I also retain the right to use in future works (such as articles or books) all or part of my work. I understand that I am free to register the copyright to my work.

REVIEW, APPROVAL AND ACCEPTANCE

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Assistant Dean for MSN and DNP Studies, on behalf of the program; we verify that this is the final, approved version of the student's DNP Project including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Breanne P. Webb, Student

Dr. Leslie Scott, Advisor

Parental Knowledge of Car Seat Safety

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of
Nursing Practice at the University of Kentucky

By

Breanne P. Webb RN, BSN

Lexington, Kentucky

2019

Abstract

Background: Injuries sustained from motor vehicle accidents are one of the leading causes of death in children every year. In one year, more than 618,000 children 0-12 years of age rode in vehicles without the use of a proper restraint device at least some of the time. Of the children ages 12 years and younger who died in a motor vehicle accident in 2016 (for which safety restraint use was known), 35% were not buckled up (Centers for Disease Control and Prevention, 2017).

Purpose: The purpose of this project is to evaluate parental knowledge and understanding of car seat and booster seat use in children.

Methods: A cross-sectional pre-test intervention design was used. Parents of children seen at the Family Care Center meeting inclusion criteria were provided a 15-question survey to evaluate current knowledge of car seat and booster seat guidelines. Upon completion of the survey, parents were provided with a brief educational session on car seat and booster seat recommendations by the American Academy of Pediatrics and questions were addressed.

Findings: Fifty-six surveys were completed, and data analysis indicated that most parents had an adequate understanding of car seat and booster seat use. However, many parents had a misunderstanding on the proper age and weight recommendations for transition to a different restraint device.

Conclusion: As death of children and adolescents by motor vehicle accidents due to improper use of safety restraints continues to be a major epidemic in the United States, parental education on height, weight, age, and transition recommendations for car seats and booster seats remains a mandatory intervention.

Acknowledgements

Leslie Scott, APRN, PPCNP-BC, CDE, MLDE- Committee Member/Faculty Advisor

Diana Inman, DNP, RN, APRN, CPNP, PMHS, PMHNP- Committee Member/Consultant

Jessica Murray, DNP, APRN, FNP-C, CPNP-PC- Committee Member/Consultant

Susan Robbins, MD, FAAP- Committee Member/Medical Supervisor

Dr. Leslie Scott, thank you for the countless hours that you spent with me rehearsing my project presentation and reviewing my final paper. Thank you for your words of encouragement and always reassuring me during the times that I doubted myself. Your support, kind words, and wisdom helped push me to finish this program with the hopes of one day becoming as great of a provider as you are. Dr. Diana Inman, thank you for being a mentor throughout this program, allowing me to do clinical hours with you, and always supporting me and helping guide me through this program alongside Dr. Leslie Scott. I cannot thank the two of you enough for all of your help during my years in this program. Your patience, encouragement, and positivity meant more to me than I can ever put into words, thank you.

Dr. Susan Robbins, I sincerely thank you for allowing me to implement this project at the Family Care Center. Thank you for being so welcoming and helpful during my time there and for investing your time and energy in helping me complete this project. Dr. Jessica Murray, thank you for your time working with me in clinic as well as throughout this project. The kindness and support that you all showed me during my time working with you means so much to me.

Lastly, I would like to thank the rest of the employees at the University of Kentucky who helped me achieve my goals and complete this program. Thank you for all that you do.

Dedication

I would like to dedicate this project to my family- my mother, father, and brother for always pushing me to work my hardest and reminding me every day that all my hard work would pay off. I would also like to acknowledge my fiancé, Devin Belleville for being my biggest supporter and showing me kindness and patience throughout this whole process. If it wasn't for each of you pushing me and encouraging me, I wouldn't be where I am today. Thank you, from the bottom of my heart.

Table of Contents

Abstract.....	ii
Acknowledgments.....	1
Dedication.....	2
Background and Significance.....	6
Problem Identification.....	6
Context of the Problem.....	6
Scope of the Problem.....	7
Consequences of the Problem.....	8
Evidence-Based Intervention.....	8
Purpose of the Project.....	9
Theoretical Framework.....	10
Review of Literature.....	10
Project Design and Methods.....	12
Agency Description.....	13
Setting.....	13
Target Population.....	14
Congruence of DNP Project.....	14
Stakeholders.....	15
Facilitators and Barriers to Implementation.....	15
Evidence-Based Intervention.....	16
Procedure.....	16
IRB approval.....	17
Sample.....	17

Measures and Instruments.....	18
Implementation.....	19
Results.....	19
Discussion.....	21
Implications for Practice.....	23
Limitations.....	24
Conclusion.....	24
References.....	25

List of Tables

Table 1 - Inclusion and exclusion criteria for involvement in study.....	18
Table 2 - Summary of knowledge of car seat safety (N =).....	20

Background and Significance

Problem Identification

One of the leading causes of death for children in the United States every year is motor vehicle accidents (Centers for Disease Control and Prevention, 2017). Each year, there are over 600,000 children between the ages of 0-12 years who are not properly restrained in a vehicle and in 2016, 35% of those children who were improperly restrained were killed in a motor vehicle accident (Centers for Disease Control and Prevention, 2017). Studies have shown that educating parents on safety restraint use in vehicles, including proper height, weight, age and transition times can significantly decrease the number of parents who seat their children incorrectly in motor vehicles. Healthcare workers have the opportunity to educate parents on proper motor vehicle restraint use, which could potentially save many children's lives.

Context of the Problem

Healthcare workers are faced with interactions with families and children daily and it is not only their responsibility to make sure they are healthy during their clinic visits, but as advocates, it is also important to educate on safe and healthy choices in their patient's day to day lives. Many parents lack a clear understanding of car seat and booster seat safety use. According to Beck, Kresnow, & Bergen (2018) passengers who are not properly restrained in the car make up about 50% of deaths caused by motor vehicle accidents. There are many families who are lacking knowledge on car seat and booster seat safety and if more providers ensured an understanding of its importance, they could possibly make a positive impact on the amount of fatalities in children from motor vehicle accidents (Hoffman, Gallardo, and Carlson, 2016). Another major issue that is seen with motor vehicle accidents and deaths related to improper car

seat safety are the healthcare costs. Yearly, treating injuries and deaths of children caused by motor vehicle accidents costs about \$31 billion. Healthcare workers and providers interact frequently with children and their families. They are an integral part of advocating for child safety and ensuring appropriate education of the parent (family) and proper use of car seat/booster seat restraint devices. If provided with the proper education and training, car seat safety could help reduce that cost by almost \$4 million (Centers for Disease Control and Prevention, 2010).

Scope of the Problem

In 2016 about 1,500 children and adolescents between the ages of 0-15 years died in a motor vehicle accident and of those children who died, 35% of them were not properly restrained (Xu, Murphy, Kochanek, Bastian, and Arias, 2018). Car seats and booster seats are designed with specific height, weight, and age requirements to keep children safe when they are riding in a motor vehicle. Even with the specific guidelines in place for families to follow, there continues to be a large quantity of people in the United States that do not use car seats and booster seats properly, putting their children at risk. According to the Centers for Disease Control and Prevention (2017) one of the leading causes of death for children in the United States is motor vehicle accidents and in most of the fatalities, children were not properly wearing their seatbelts or riding in the appropriate car seat or booster seat. Although it is ultimately the responsibility of the parent or guardian to ensure that their child is riding safely in a motor vehicle, many people do not properly follow car seat and booster seat guidelines due to a poor understanding of its importance and a lack of education on the issue (Beck, Kresnow, & Bergen, 2018).

Consequences of the Problem

The dangers of riding in a motor vehicle without the proper safe seating for a child can have a wide variety of consequences. According to Kroeker, Teddy, and Macy (2016) there are many children in the United States within the age range of 4-12 years who are riding in motor vehicles without a car seat or booster seat far too prematurely. This is leading to a great deal of severe and even life-threatening injuries. The children in this age range are more likely to suffer from trauma to the abdomen, head injuries, and neck and spinal injuries when they are not in the proper car seating. Not only can these injuries cause permanent damage, but injuries to any of these areas are much more likely to result in death (Kroeker, Teddy, and Macy, 2016). Parents may be properly educated but are still not appropriately securing their child in the motor vehicle. If the importance of this issue is not discussed more in healthcare settings, there could potentially continue to be a high number of fatalities related to motor vehicle accidents with children across the United States.

Evidence-Based Intervention

In a study evaluating how car seat and booster seat safety education helps with parent's comprehension and compliance, Will, Decina, Maple, and Perkins (2015) found that there was an increase in family's understanding and compliance with education that was provided to them through using strategies such as providing the families with rationales to support what was being taught to them about car seat and booster seat safety. In another study on educational interventions, it was found that based on their post-education surveys, parents gained many benefits through the teachings they were given on car seat and booster seat safety and had a large increase in knowledge and understanding on the topic (Soares Silva et al., 2016). According to

Violano et al., (2019) there could be a significant reduction in the number of deaths related to motor vehicle accidents if caregivers were provided with the proper education, restraint devices, and follow ups.

Healthcare providers have an opportunity and obligation to educate families on proper car seat and booster seat use and safety. Studies have shown that there is a strong correlation between improper restraint use and a lack of understanding of the importance of car seat and booster seat safety (Beck, Kresnow, & Bergen, 2018). Therefore, the plan is to guide education and teaching based upon the current recommendations and the importance of proper restraint use supported by evidence. A convenience sample was collected of parents in primary care settings where they were offered a pre-education survey, asking them questions about their understanding of car seat safety. Ensuring parent understanding of car seat and booster seat safety, as well as proper use will hopefully help decrease the great deal of fatalities seen from this issue.

Purpose of the Project

The purpose of this project was to determine parent awareness and understanding of car seat and booster seat use. There are three main objectives for the proposed project and they are: to assess current parent knowledge of car seat and booster seat use; to assess parent compliance with current car seat and booster seat recommendations; and to provide information to parents on the current recommendations from the American Academy of Pediatrics for car seat and booster seat use in motor vehicles.

Theoretical Framework

The theoretical framework that was used to guide this project was Lewin's Change Theory. The concept behind this theory is to reframe a person's way of thinking by replacing old habits with new, healthier habits. This is done through a three-step process which consists of unfreezing, changing, and refreezing a person's way of thinking and behaving (Cummings, Bridgman, and Brown, 2015). The unfreezing aspect would be removing any incorrect thoughts or misconceptions that parents have on car seat and booster seat safety; the change would be educating families on proper car seat and booster seat safety; and the refreezing would consist of ensuring their understanding of the teaching and evaluating their likeliness to comply. The overall plan was to correct any misunderstandings that the families have on car seat and booster seat safety and to provide them with the most current and safe practices to help prevent injuries and reduce the number of fatalities in children caused by motor vehicle accidents and improper car seat and booster seat use.

Review of Literature

According to the Centers for Disease Control and Prevention (2017) annually one of the leading causes of death in children is motor vehicle accidents. Of those that have died in a motor vehicle accident, over half of them were not properly restrained (Beck, Kresnow, & Bergen 2018). There are an alarming amount of statistics found in the literature on how many children die in motor vehicle accidents each year who were not properly restrained. According to Beck, Kresnow, & Bergen (2018) passengers who are not properly restrained in the car make up about 50% of deaths caused by motor vehicle accidents. According to Kroeker, Teddy, & Macy (2016)

multiple children in the United States are being placed in vehicles and are not being put in the proper safe seating or any type of car seat/booster seat at all.

In 2015 in the United States, 26,638 children between the ages of 1-4 years and 61,222 children between the ages of 5-9 years died from motor vehicle accidents (Ballesteros, Williams, Mack, Simon, and Sleet, 2018). Thirty-five percent of children 12 years and below who were killed in motor vehicle accidents in 2015 were not properly restrained (Penmetsa, Wang, & Nambisan, 2018). In another study on fatalities of children from motor vehicle accidents it was found that only 50% of children between the ages of 0 to 9 years were being properly restrained in motor vehicles from 2001 to 2010 and 20% of those children were in the front seat of the car (Lee, Farrell, & Mannix, 2015). Another major issue that is seen with motor vehicle accidents and deaths related to improper car seat safety are the healthcare costs. Yearly, treating injuries and deaths of children caused by motor vehicle accidents costs about \$31 billion (Centers for Disease Control and Prevention, 2010). With healthcare providers interacting with families and children on a regular basis, they can address and educate families on the importance of car seat and booster seat safety and review with them the specific guidelines for each so that more children are riding safely in a motor vehicle.

With the amount of evidence indicating that children are continuing to be put in motor vehicles and not being properly restrained, ultimately leading to a large number of deaths, it is important to find the source of the problem to help find a solution. Throughout the literature it has been found that there is a positive correlation between parents not properly restraining their children in motor vehicles and a lack of understanding of the benefits and importance of being in the proper seating (Beck, Kresnow, & Bergen, 2018). Although it is ultimately the parent's or guardian's responsibility to ensure that their child is riding safely in a motor vehicle, many

people do not properly follow car seat and booster seat guidelines due to a poor understanding of its importance and a lack of education on the issue (Soares Silva et al., 2016). In a study looking at the effects of car seat and booster seat education for parents in healthcare settings, it was found that a lack of education on car seat and booster safety was directly related to not using a car seat properly or at all by some parents (Rok Simon, Korošec, & Bilban, 2017).

According to Hall, et al. (2018) information on proper restraint use for children in motor vehicles is poorly understood by parents and most restraints used in vehicles are not used correctly or at all. Another study found that many parents do not fully understand how to properly restrain a child in a motor vehicle and do not know the weight, height, and age recommendations on the proper safety seating made for children, with fathers being more likely to not understand or comply with the guidelines (Black, Lattimore, Myers, Carothers, & Anderson, 2018). If caregivers better understood the benefits of proper restraint use, they would be more likely to put their children in them (Beck, Kresnow, & Bergen, 2018). With this information, healthcare providers can see that this is a huge issue that needs to be addressed in nursing practice and in healthcare settings. In these settings, clinicians are provided with the perfect opportunity to educate parents and caregivers on proper restraint use in motor vehicles, evaluate their understanding, and assess their likeliness to comply with the teaching.

Project Design and Methods

This project was a cross-sectional pre-test intervention study of parents of pediatric patients between the ages of 0 to 15 years who were seen at UK Health Care Family Care Center in Lexington Kentucky for well-child or episodic visits. The goal was to evaluate parental use of car seat and booster seats for children, their understanding of proper restraint uses for their

child's height and weight, and compliance of restraint guidelines. This project occurred after IRB approval was obtained and was implemented at the primary care setting at the UK Healthcare Family Care Center in Lexington Kentucky. When the child meeting inclusion criteria arrived for their appointments, the nurse practitioner or doctor asked parents if they would like to be included in the study and if they agreed, then the PI entered the room to obtain consent. Once consent was obtained and the children were seen for their appointment, the parents were given a pre-education survey on their knowledge/understanding of car seat and booster seat safety. Afterwards, surveys were collected and an educational session on car seat and booster seat safety was provided to the parents and questions were addressed. Information gathered from the surveys, as well as consent were securely maintained in a binder for data interpretation.

Agency Description

Setting

Car seat safety education should be a top priority in healthcare settings considering that one of the leading causes of childhood deaths is caused by motor vehicle accidents (Centers for Disease Control and Prevention, 2017). The agency specifically that this project will be implemented in will be a pediatric primary care setting. In these healthcare settings, providers are given the perfect opportunity to educate on car seat safety and accident prevention by meeting with children and their families on a regular basis for well-child checks, episodic visits, and follow ups (Kelly, Sein, & McCarthy, 1987). The study will be conducted at UK Health Care Family Care Center in Lexington Kentucky. The Family Care Center sees patients for primary care, wellness education, and preventative health services for children from birth to 18 years of

age. The Family Care Center has rooms for families to complete the pre-education survey and receive educational information on current car seat and booster seat recommendations.

Target Population

According to Xu, Murphy, Kochanek, Bastian, and Arias, (2018) in 2016 about 1,500 children and adolescents between the ages of 0-15 years died in a motor vehicle accident and of those children who died, 35% of them were not properly restrained. Therefore, the target population is parents of children between the ages of 0-15 years. Inclusion criteria (Table 1) for enrollment into the study will include parent(s) of children 0-15 years of age being seen for well-child or episodic visits at UK Health Care Family Care Center whose primary language is English. Recruitment began upon receiving IRB approval and continued through November of 2019. Parents must be able to read and understand English and able to complete a written pre-test. Exclusion criteria (Table 1) included parents of children older than 15 years of age, who were unable to read and/or understand spoken/written English. Children not accompanied by their parent/legal guardian were excluded from participation. No exclusions based on gender or race/ethnicity were made. They were asked if they would like to participate in the study by the nurse practitioner and if they agreed, the PI entered the room to obtain consent, provided parents with a survey as well as an educational session during that visit.

Congruence of DNP Project

There are many ways that the goal of the DNP project implemented at the Family Care Center aligned with their mission and the services offered there. The goal of implementing car seat safety educational sessions in primary care settings is to decrease the annual number of

deaths related to motor vehicle accidents and improper restraints for children, increase children's safety, educate parents on the importance of proper restraint use in motor vehicles, and decrease health care costs of treatments of serious injuries and emergency room visits related to motor vehicle accidents. The Family Care Center is a team of registered nurses, pediatric nurse practitioners, and medical doctors who provide quality and compassionate care and "lead the way for every patient, every time" (UK Healthcare, 2019).

Stakeholders

The project intervention that occurred at the Family Care Center was implemented by the PI with the assistance of the doctors and nurse practitioners at the Family Care Center. The physicians, nurses, clerks, and medical director at the Family Care Center were the primary stakeholders involved in the project implementation. These people played a major role in assisting the PI in obtaining IRB approval and ensuring that the project was implemented correctly and efficiently. They provided advice on their opinions on the project and what their experiences have been in practice with this major health disparity.

Facilitators and Barriers to Implementation

There are many benefits to implementing a car seat safety education project at the Family Care Center but there were a few barriers identified that made implementation difficult. One of the main barriers that affected implementation was time and space to provide an educational session. Depending on the number of patients seen in the clinic that day, the amount of time for each educational session as well as the amount of space could be limited. The number of patients that were seen at the Family Care Center were limited considering that those who don't speak

English were excluded from the study and the Family Care Center has a large population of immigrants and Spanish speaking families. The main facilitator at the Family Care Center was Dr. Susan Robbins, the medical director at the facility. She helped the PI determine which patients would meet inclusion criteria and which ones would be good candidates for the study. Other site-specific facilitators would include the 5 nurses who assisted the PI in finding materials and space to implement the educational session.

Evidence-Based Intervention

Throughout the literature it has been found that there is a positive correlation between parents not properly restraining their children in motor vehicles and a lack of understanding of the benefits and importance of being in the proper seating (Beck, Kresnow, & Bergen, 2018). The evidence-based intervention was to evaluate parent's knowledge and understanding of proper child restraint use in motor vehicles and to educate them on car seat and booster seat guidelines, height and weight recommendations, and the importance of using the proper restraints in motor vehicles for their children.

Procedure

When a child (between the ages of 0-15 years) arrived for their appointment, an informational flyer was distributed to the parent by the clerk. Interested parents were further screened for eligibility by the nurse practitioner/health provider. Parents of children meeting eligibility requirements were asked if they would like to be included in the study. If they agreed, then the PI would enter the room to obtain consent. Once consent was obtained and the child's appointment was concluded, the parents were given a pre-education survey on their

knowledge/understanding of car seat and booster seat safety. After the pre-education survey was completed, surveys were collected and an educational session on car seat and booster seat safety was verbally provided to the parent(s). An opportunity for questions and any needed clarification was addressed at that time.

IRB Approval

IRB approval was granted in September of 2019, and the project implementation began in the month of September and ended in November of 2019. The project time was not funded so the time and resources were provided by donation. This project was very feasible considering there was no fundraising to be completed, a location was easily determined, and resources were easily accessible. Findings from the study were presented on December 6, 2019 at the University of Kentucky's College of Nursing.

Sample

The target population is parents of children between the ages of 0-15 years. The population aim was 100 parents of children and they were recruited each day that the PI was at the site by first determining inclusion and exclusion criteria. Once the nurse practitioner or doctor helped identify any conflicts of interest, at that specific well-child check or episodic visit, the parents were asked if they would be willing to participate in a study. Those who agreed to participate in the study were the sample and the aim was at least 50 participants. Those who consented were provided with the survey and an educational session.

Table 1-Inclusion and exclusion criteria for involvement in study

Inclusion Criteria	Exclusion Criteria
Children between the ages of 0-15 years	Children greater than 15 years
Patients who have established care at the Family Care Center	Patients who have not established care at the Family Care Center
Children accompanied by their legal guardian	Children not accompanied by legal guardian
English speaking	Non-English speaking

Measures and Instruments

A pre-education survey was provided to the families to determine their current understanding of car seat and booster seat use for children. The survey consisted of 15 questions that focused on current guidelines and recommendations for car seats and booster seats such as the direction the child should be facing and which age, height, and weight is recommended for each type of car seat. The current American Academy of Pediatric guidelines on car seats were used to develop the questions in the survey. The survey was also reviewed by a primary care pediatric nurse practitioner for accuracy and content validity. The demographics that were collected were the age, weight, and height of the children.

Data was gathered from parent surveys and was analyzed using SPSS to determine descriptive statistics and frequencies. The hypothesis for this project was that based on survey results, it would indicate that parents require more education on car seat and booster seat use. Through the surveys provided to the patient's parents, the PI was able to determine if the hypothesis was or was not rejected. The prediction was that the data collected would show a correlation between improper safety restraint use for children and lack of knowledge on car seat and booster seat safety.

Implementation

This project was implemented in the pediatric primary care office, UK Healthcare Family Care Center in Lexington Kentucky. IRB approval was granted in September of 2019. Immediately following, data was collected on patients between the months of October through the first week of November of 2019. The implementation was held at the Family Care Center during patient's well-child checks and episodic visits and occurred during the hours that the Family Care Center was open.

Results

Fifty-six surveys were completed, and data analysis was conducted using SPSS to determine descriptive statistics and frequencies. The age of children ranged from 0-12 years with the mean age being approximately 3 and a half years old resulting in most of them being seated in a forward-facing convertible car seat. The mean height of the children was 37 inches and the mean weight was 37 pounds. Eight percent of children no longer met car seat and booster seat criteria. The results from the surveys completed by the parents on car seat safety, indicated that most parents had a good understanding of the current guidelines and recommendations.

Results indicated that 71.4% of parents correctly identified the age of transition from rear-facing to forward-facing, which is 2 years old. When asked about the weight for a child to transition to a forward-facing car seat, only 28.6% of parents answered correctly (40 pounds). Nearly 52% of parents incorrectly identified 20 pounds as the appropriate weight of transition. Approximately 64% of parents correctly identified the appropriate time to transition from a forward-facing car seat to a booster seat. Ninety-five percent of parents identified that it was never "okay" for their child to ride without a car seat or booster seat. Ninety-three percent of

parents felt that their car seat or booster seat was installed correctly. Eighty percent of parents were aware that they could get free car seat safety checks in Lexington. Lastly, 76.8% of parents felt they were given an adequate amount of information on car seats when they first took their child home from the hospital. Yet, 1 out of 5 parents did not feel they received an adequate amount of information. This indicates that more thorough education should be provided to parents at the time of discharge when they are taking their newborn babies home.

Table 2- Summary of knowledge of car seat safety (N =)

Question	n (%)
Which type of car seat do you currently have in your car?	
o Forward facing convertible car seat	25.0
o Rear facing convertible car seat	21.4
o Infant car seat	19.6
o Booster seat with back rest	10.7
o Booster seat without back rest	10.7
When do you believe is the best time to change from a rear-facing to forward-facing seat?	
o At two years of age	71.4
o Once they reach around 20 pounds	21.4
o When they look big enough	5.4
o When other children their age are transitioning	1.8
When do you believe is the best time to change from forward-facing to booster seat?	
o Once they reach the maximum height and weight of their forward-facing seat	64.3
o Once they reach around 40 pounds	23.2
o When they look big enough	8.9
o When they ask for a booster seat	0%
How much should your child weigh before moving to a forward-facing car seat from a rear facing seat?	
o 20 pounds	57.1
o 40 pounds	28.6
o 65 pounds	7.1
o 15 pounds	1.8

How old should your child be to sit in a forward-facing car seat? o 2 years old o 4 years old o 6 months o 2 months old	89.3% 7.1% 1.8% 0%
How old should your child be to ride in the front seat of your vehicle? o 13 years old o 10 years old o 5 years old o 6 years old	62.5% 28.6% 7.1% 1.8%
Do you feel that your child's car seat or booster seat or car seat is installed correctly in your car? o Yes o No	92.9% 3.6%
Did you know that you can get free car-seat safety checks in Lexington? o Yes o No	80.4% 19.6%
If your child is supposed to be in a booster seat or car seat, which of the following would make it okay for them to ride without it? o Never o If they are with a friend or family member o If I'm in a hurry o If I'm just going down the street	94.6% 3.6% 1.8% 0%
Do you feel like you were given the right amount of information about booster seat and car seat safety when you brought your child home for the first time? o Yes o No	76.8% 21.4%

Discussion

Motor vehicle accidents are one of the leading causes of death in children. According to the survey results, most parents had a good understanding of the current guidelines and recommendations for car seat and booster seat use. While many parents understood the appropriate age of transition from rear-facing to forward-facing, more education is needed

addressing weight guidelines for transitioning. It is important for parents to know the appropriate transition times because as indicated by the literature, premature transitioning could result in severe injury or even death. Though unindicated by survey results, many parents had older children as well as a newborn. Many parents are unaware that current car seat and booster seat guidelines have changed since their oldest child was last in a car seat or booster seat. A positive finding from the survey results indicated that many parents knew that children should not be in the front seat of the vehicle prior to 13 years of age. This is reassuring considering the risk of injury and even possibility of death from airbag deployment on young children. According to the literature, there have been many recorded injuries and deaths of children riding in the front seat before the recommended age.

Most parents identified that they were able to have free safety checks in Lexington, were provided with appropriate information when their baby was discharged home and felt as if their seats were installed correctly. However, there were still a concerning number of parents who did not feel as if they received an adequate amount of information when their baby was discharged home. Many parents expressed the overwhelming feelings they had taking their first-born child home from the hospital and explained how all the information they were provided with before discharge was easy to forget or misunderstand. With this information being verbally expressed by children's families who participated in the study, it provides us with a better insight on the importance of reinforcing car seat and booster seat safety in primary care settings and at well-child checks. Along with this, even though parents might have identified that they felt as if their child's seats were installed correctly, there is no way of guaranteeing that. For that reason, it is important to encourage them to actually take advantage of the free car seat safety checks offered

in their local area and to allow them the opportunity at their child's well visits to ask any questions they have about car seats and booster seats.

Overall, this study has shown that most parents have a good deal of knowledge on car seats and booster seats, however, there is still room for more education to be provided to families by health care providers to ensure their patient's safety. With the alarming number of deaths in children from motor vehicle accidents and improper restraint use each year, it is vital that health care providers stress the importance of car seat and booster seat use. Providers should also ensure that they are being used properly through evaluating parental knowledge on the current guidelines for car seats and booster seats as indicated by the American Academy of Pediatrics.

Implications for Practice

Implementing this project at the Family Care Center impacted this facility by providing a better understanding of which families might need further education and reassurance about car seat and booster seat use. This project opened an opportunity for providers to further answer questions that families might have about car seat and booster seat safety. Through implementing this project and presenting the findings to the public, this can encourage healthcare providers to ensure that they are providing thorough information about car seats and booster seats for parents. This can help healthcare providers identify the patients they see who might need further education and extra time to answer any questions that parents might have about car seats and booster seats. A potential future practice change could address the gap of parent's perception of initial instructions at time of discharge from the hospital with their baby.

Limitations

This study has some limitations in which findings should be interpreted carefully. First, this study is not generalizable because it was a convenience sample. Another limitation noted is that guidelines of car seat and booster seat use have changed, which may have impacted parent response and accuracy of their knowledge. It was also not identified whether parents completing surveys were first time parents or parents of multiple children. Lastly, the PI did not collect whether it was the mother or the father completing survey. This may be interesting to know based on the research that indicated that more often it was fathers who were less likely to comply with car seat and booster seat guidelines.

Conclusion

With motor vehicle accidents being one of the leading causes of death in children, and improper safe seating being a culprit of many of the fatalities, educating parents about car seat safety and the importance of adhering to the current guidelines could save many lives. While parents had a good understanding of current guidelines there is still room for improvement due to misconceptions about age and weight transition times. Providing them with the correct information on recommended transition times could help them seat their children correctly while riding in a motor vehicle. Primary care providers have an opportunity and obligation to provide families with the current recommended guidelines of child restraint devices to ensure child safety.

References

- Ballesteros, M., Williams, D., Mack, K., Simon, T., & Sleet, D. (2018). The epidemiology of unintentional and violence-related injury morbidity and mortality among children and adolescents in the United States. *International Journal of Environmental Research and Public Health*, *15*(4), 1-19.
- Beck, L., Kresnow, M. & Bergen, G. (2018). Belief about seat belt use and seat belt wearing behavior among front and rear seat passengers in the United States. *Journal of Safety Research*, *68*(2018), 81-88.
- Black, A., Lattimore, C., Myers, J., Carothers, B., & Anderson, B. (2018). Identifying factors to improve safety seat use in children. *Pediatrics*, *141*(1), 68.
- Centers for Disease Control and Prevention (2010). CDC study finds annual cost of motor vehicle crashes exceeds \$99 billion. Retrieved from <https://www.cdc.gov/media/pressrel/2010/r100825.htm>
- Centers for Disease Control and Prevention (2017). Child passenger safety: get the facts. Retrieved from https://www.cdc.gov/motorvehiclesafety/child_passenger_safety/cpsfactsheet.html
- Cummings, S., Bridgman, T., & Brown, K. (2015). Unfreezing change as three steps: Rethinking Kurt Lewin's legacy for change management. *Sage Journal*, *69*(1), 33-60.
- Hall, A., Ho, C., Keay, L., McCaffery, K., Hunter, K., Charlton, J., Hayen, A., Bilston, L., & Brown, J. (2018). Barriers to correct child restraint use: A qualitative study of child restraint users and their needs. *Safety Science*, *109*(1), 186-194.

- Hoffman, B., Gallardo, A., Carlson, K. (2016). Unsafe from the start: serious misuse of car safety seats at newborn discharge. *The Journal of Pediatrics*, 171, 48-54.
- Kelly, B., Sein, C., & McCarthy, P. (1987). Safety education in a pediatric primary care setting. *Pediatrics*, 79(5), 1-9.
- Kroeker, A., Teddy, A., and Macy, M. (2016). Car seat inspection among children older than three: using data to drive practice in child passenger safety. *The Journal of Trauma and Acute Care Surgery*, 79(3), 48-54.
- Lee, L., Farrell, C., & Mannix, R. (2015). Restraint use in motor vehicle crash fatalities in children 0 year to 9 years old. *The Journal of Trauma and Acute Care Surgery*, 79(1), 55-60.
- Penmetsa, P., Wang, T., & Nambisan, S. (2018). An assessment of child restraint system misuse in the United States. *Research Gate*, 1-6.
- Rok Simon, M., Korošec, A., & Bilban, M. (2017). The influence of parental education and other socio-economic factors on child car seat use. *Slovenian Journal of Public Health*, 56(1), 55-64.
- Soares Silva, C., Fernandes, E., Neyrian, M., Souza, S., Gordon, L., Pereira, A., Costa, J. Carvalho, A., Maia, Q., Machado, C., Gubert, A., Silva, F., & Vieira, L. (2016). The effect of educational intervention regarding the knowledge of mothers on prevention of accidents in childhood. *The Open Nursing Journal*, 10, 113-121.
- UK HealthCare (2019). UK healthcare – the power of advanced medicine. Retrieved from <https://ukhealthcare.uky.edu/about#section-51976>

- Violano, P., Aysseh, N., Lucas, M., Gawel, M., Morrell, P., Norway Jr., C., Alfano, A. & Bechtel, K. (2019). Feasibility of providing child restraint devices after a motor vehicle crash in a pediatric emergency department. *Traffic Injury Prevention*, 1-8.
- Will, K., Decina, L., Maple, E., & Perkins, A. (2015). Examining the relative effectiveness of different message framing strategies for child passenger safety: Recommendations for increased comprehension and compliance. *Accident Analysis and Prevention*, 79, 170-181.
- Xu, J., Murphy, S., Kochanek, K., Bastian, B., and Arias, E. (2018). Deaths: final data for 2016. *National Vital Statistics Reports*, 67(5), 1-75.