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Knowledge & Attitudes Towards Pediatric Pain with Needle-based Procedures in the Emergency Department Setting

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**Knowledge & Attitudes Towards Pediatric Pain with Needle-based Procedures in the
Emergency Department Setting**

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

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Paducah, KY

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Abstract

PURPOSE: By the time a child enters kindergarten, they may have faced as many as thirty-three vaccine-related injections. Throughout these experiences, parents and patients associated pain and fear regarding the administration of multiple vaccines concurrently to a child has played a role in vaccine hesitancy and refusal. Parents and patients experience associated fear and pain regarding the administration of multiple concurrent scheduled vaccines, thus leading to vaccination hesitancy and refusal. In addition to scheduled immunizations, there is also the possibility of unexpected needle-based procedures taking place when emergencies arise. The purpose of the study is to explore the current level of knowledge and understanding for medical professionals including nurses and medical assistants surrounding pediatric pain during needle-based procedures such as obtaining intravenous access or administering intramuscular injections.

METHODS: This study will use a quasi-experimental, pre-test/post-test design. With this, a pretest module was sent out to all medical professionals in the emergency department setting who administer vaccinations, this includes nurses, medical assistants, and unlicensed personnel via email. Following the completion of this pretest, a learning tool was attached about understanding distraction devices and how they relate to pediatric pain. A Pediatric Pain Toolkit was placed for use in the emergency department following the learning tool distribution. Two weeks following receiving the learning module, a post-test was sent out to participants to evaluate their knowledge and intent to use distraction devices. Lastly, an analysis of the data was completed to determine the knowledge, behavior, and intent to use distraction devices within this setting.

RESULTS: The results of this study showed that the knowledge and attitudes regarding pediatric pain is high among the medical professionals in the emergency department, yet use of

distraction devices was minimal. Knowledge and attitudes regarding pediatric did not improve following implementation of the Pediatric Pain Toolkit. There was little room for improvement within the baseline group, and limitations were caused by the anonymous nature of the pre/post-test. However, all participants reported increased intent to use these devices in the future.

CONCLUSION: Knowledge and attitudes of pediatric pain as well as the use of distraction techniques and devices must be explored in all areas of pediatric care, emergency department situations, or pediatric specialty clinics. To further create better experiences during needle-based procedures, pediatric patients should be offered distraction tools and devices to lower their perception of pain and improve their healthcare experience.

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Dedication

I would like to dedicate my project to my husband, daughter, family, and friends. First, to my husband, I would not be completing this program without your diligent love and support. You have been a constant supporter, and it has not gone unnoticed. To my parents, everything I am and hope to be I owe completely to you. Thank you for instilling drive and dedication into my heart, without this drive for more I would not have the passion for more in this life. Every success and accomplishment have led to me because of your work raising me. I am forever appreciative of your love. To my in-laws, you have never doubted my ability or my dreams. I have the deepest gratitude for your love shown in every way throughout the last three years. To my friends, it is with great thanks that I recognize your support throughout this program. No matter the time, or distance, you have each gone out of your way to help me in a multitude of ways. Lastly, to my daughter, always remember that your dreams are never too big to achieve. You will forever have a great supporter, cheerleader, and friend in me.

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Knowledge & Attitudes Towards Pediatric Pain with Needle-based Procedures in the Emergency Department Setting

Children experience numerous needle-based procedures throughout early childhood. Although routine vaccine administration schedules are necessary to prevent serious illness and disease, the result is multiple intramuscular injections in a short period of time. In addition to routine immunizations, children also face unexpected needle-based procedures if emergency services are needed. This can be distressing for patients, parents, and medical professionals. The amount of pain experienced by the child during needle-based procedures could cause future scheduled procedures to become increasingly challenging and unnecessarily distressing. Recurrent painful needle-based experiences can contribute to delayed vaccinations and negative psychosocial outcomes in the child.

Background

Pain during vaccine administration and other needle-based procedures can be traumatizing for a child and contribute to a generalized fear of medical procedures and experiences (Lee et al., 2018). Pediatric pain is a concept that medical professionals, including nurses and medical assistants, are frequently required to evaluate with regard to various procedures and situations. Unfortunately, pediatric pain is often poorly assessed and poorly managed (Alotaibi et al., 2019). Regardless of the clinical environment, it is expected that medical providers appropriately assess, treat, and prevent pediatric pain when possible. To better understand how nurses and medical providers, manage pediatric pain, it is essential that nurses and other medical professionals understand both pediatric pain and their knowledge and attitudes towards the pain a patient may feel during needle-based procedures (Ortiz et al., 2015). Nurses

and medical provider knowledge and attitudes towards pediatric pain during needle-based procedures can impact how the procedure is approached by the provider and the child's experience with the procedure.

Introduction to the Problem

Healthcare professionals within the emergency department who perform needle-based procedures will complete a pretest, then an attached learning tool, followed by a posttest two weeks later. These tactics were used to determine knowledge and attitudes towards pediatric pain, as well as knowledge surrounding distraction devices and techniques.

Context, Scope and Consequences

By the time a child enters kindergarten, they may have faced as many as thirty-three vaccine-related injections (CDC, 2022). Needle-based procedures can be very distressing to children. Although childhood immunizations are an essential form of protection against many debilitating and deadly diseases, vaccine administration and its associated pain is distressing to patients, parents, and healthcare professionals responsible for vaccine administration and other needle-based procedures. Pain and fear regarding the concurrent administration of multiple vaccines has played a role in vaccine hesitancy and refusal in pediatric patients (Lee, 2018). In fact, The World Health Organization reports that delayed vaccination is among the top ten threats to global health (2019). Since pain with vaccinations and other needle-based procedures is a concern for both parents and children, it is critical for medical professionals to be knowledgeable about distraction devices and pain reduction techniques for use during needle-based procedures.

Current Evidence-Based Interventions

There are current evidenced-based practice devices available to reduce pain. For pediatric patients, they include the ShotBlocker and Buzzy devices. To determine knowledge and attitudes about pediatric pain among medical professionals, including nurses and medical assistants, who perform needle-based procedures in the emergency department, a pretest was distributed to evaluate a baseline knowledge level about pediatric pain. Following this, a Pediatric Pain Toolkit file was distributed to the participants in an email. Lastly, a post-test was distributed to evaluate the level of knowledge and understanding of the toolkit material, as well as the intent to use distraction devices in professional practice in the future.

Purpose

This project explores the level of understanding about pediatric pain and the use of distraction devices among healthcare providers who perform needle-based procedures in an emergency department setting. The overarching aim for this project is to expand medical professionals' knowledge about pediatric pain and increase the intent to use distraction techniques and devices during needle-based procedures in the emergency department.

1. Assess current level of knowledge and attitudes of medical professionals performing needle-based procedures towards pediatric pain during needle-based procedures in the emergency department.
2. Determine current use of distraction devices by medical professionals in the emergency department before implementing the Pediatric Pain Toolkit.

3. Evaluate knowledge about pain and use of distraction devices during needle-based procedures in the emergency department following implementation of the Pediatric Pain Toolkit.

Objectives

The objectives of this project are as follows:

- Medical professionals within the emergency department completed a pretest questionnaire assessing pediatric pain perception and distraction device knowledge beginning May 1, 2023.
- Medical professionals received a Pediatric Pain Toolkit handout beginning May 1, 2023.
- Post-test questionnaire assessing implementation of the Pediatric Pain Toolkit and the medical professional's intent for future use of distraction devices while performing needle-based procedures in the emergency department was obtained by June 1, 2023.

Theoretical Framework

Throughout this study, the STAR model served as a guide for implementation into practice. The STAR model uses five major concepts including primary research discovery, summary of evidence, translation of discovered materials, integration into practice, and evaluation of evidence-based interventions. This theoretical framework serves as a foundation for implementing evidence-based practice ideas into clinical settings. This model serves as a sequence which allows new research to continue to evolve and develop over time. The systematic nature of the model, with clear, concise steps, made it an effective guide to the theory that best fit this research project (2021) defines knowledge transformation as, “the conversion of research findings from primary research results, through a series of stages and forms, to impact

health outcomes by way of evidence-based care” (2021). This project focuses on pediatric pain during needle-based procedures. The current knowledge level of pediatric pain in medical professionals in the emergency department who perform needle-based procedures is currently unknown. Translation was provided through an educational tool to further provide knowledge on distraction devices and techniques. Integration into practice will follow by encouraging medical professionals to use distraction devices and techniques in needle-based procedures. A post-test was used to evaluate implementation and use of distraction devices and techniques in the emergency department.

Review of Literature

Search Methods

The search strategy for this literature review included using the PubMed, Cochrane Library, and ECRI Guidelines Trust databases. Search terms were pediatric pain, distraction devices, nurse knowledge, nurse attitude, Buzzy, ShotBlocker, and SweetEase. Only studies from 2015-2023 were included. Studies from other countries and in other languages were excluded. Exclusion criteria included any study that was not published in English, published prior to 2015, and studies involving adults.

Synthesis of the Evidence

There are many vaccine and needle-based procedure concerns identified throughout the literature. Rates of vaccine hesitancy due to pediatric pain are higher, leading to delayed vaccination or parents choosing to not vaccinate at all (Shen, 2019; Ballard et al., 2019; Yilmaz et al., 2019). Because of this, there has been an increase in diseases that were previously eradicated due to vaccination.

Parental hesitancy and patient experience are key factors in pediatric care, regardless of the setting. Hesitancy comes from factors such as low confidence in effectiveness, vaccination related pain, perceived low risk of acquiring vaccine related illnesses, and lack of convenience related to the feasibility of returning to the location for consecutive immunizations (Shen, 2019). Therefore, to improve patient outcomes, nurses must be knowledgeable about pediatric pain and the attitudes surrounding needle-based procedures. In 2019, Cirik et al. found that nurses who better understood pain were more likely to take steps to intervene and reduce the pain. The authors discussed that management of pain required an understanding of pain control (Cirik et al., 2019). In a similar study, healthcare providers completed an assessment and education module to better understand their pain management knowledge level and attitudes towards management during needle-based procedures (Zanolin et al., 2023). In short, for nurses to be mindful of patient experiences, they must have knowledge and understanding about how to address pain during needle-based procedures.

Pain during vaccine administration is a common occurrence that can be traumatizing for the child and contribute to a generalized fear of medical procedures and experiences (Lee et al., 2018). In efforts to decrease vaccine hesitancy, discussing strategies to decrease pain has the potential to have a positive impact on vaccination rates and the overall experience for the child during needle-based procedures (Shen, 2019). Researchers have examined the use of distraction devices to reduce procedural pain in pediatric patients. Several distraction techniques and tools are known to reduce the pain and distress associated with vaccine administration and other needle-based procedures to improve the overall patient experience. Two examples of injection devices known to improve the patient experience are the Shotblocker® and the Buzzy® (Yilmaz et al., 2019). Both devices work by creating a nerve response that blocks the brain from feeling

the actual injection. Buzzy reduces pain through cryotherapy and vibration, which distract the patient from the pain. The ShotBlocker is a small plastic device with bumps that are applied against the skin to block the nerve response during the injection, and this device is paired with distraction cards to draw the patient's attention away from the pain.

Several studies have shown Buzzy to be an effective means of reducing pediatric pain during intramuscular injections (Ballard et al., 2019; Silvri et al., 2019; Yilmaz et al., 2019). Yilmaz et al. (2019) found Buzzy to be useful at decreasing patients' fear as well as their pain. Silvri et al. (2019) found the ShotBlocker to be similarly effective. These devices are available ranging from \$0.70 for a Shotblocker® and \$69 for a Buzzy® (2023). Both devices can be sanitized and reused multiple times.

Nurses' knowledge about pediatric pain and patient experience with pain affects attitudes and management of pain during procedures. There is a correlation between nurse knowledge about pediatric pain and the amount of pain a child experiences. However, limited evidence about nurse knowledge about pediatric pain and the implementation and use of distraction devices exists. Gaps in the literature exist regarding medical professionals' knowledge and attitudes about pediatric pain and the child's experience during needle-based procedures. Several distraction devices such as the Buzzy and ShotBlocker have been shown to be effective. It is apparent that these devices are appropriate for pediatric patients to improve the patient experiences. Limited information exists regarding the implementation of distraction devices by medical professionals to impact the patient's experience during needle-based procedures. The most common form of evaluation in the literature review was the pretest/post-test design, which

is a common tool to evaluate baseline and resulting knowledge. Significant evidence surrounding vaccination hesitancy was available as well.

Current State, Desired State, Gaps in Practice

Locally, distraction devices are not being used regularly as a means of pain reduction for pediatric patients during needle-based procedures in the emergency department. Providers have identified some barriers to the use of these devices, including lack of time, lack of availability, and lack of knowledge on the part of the providers (Schwartz, 2022). The desired state is to increase medical professionals' knowledge about pediatric pain and their intent to use distraction devices to provide a better, less painful experience for patients during needle-based procedures in the emergency department.

Addressing the Gaps

This project addresses the gaps by assessing knowledge surrounding pediatric pain and whether distraction devices are used during needle-based procedures. Medical professionals who perform needle-based procedures in the emergency department have an opportunity to reflect on their knowledge and attitudes about pediatric pain. Following completion of an education tool module addressing the use of distraction devices and how use of these devices and distraction techniques can impact pediatric pain during needle-based procedures, a post-test was administered to evaluate knowledge gained and the implementation of the distraction techniques into practice. Lastly, it is an overarching goal that medical professionals will implement the use of devices after they understand how they affect pediatric pain. [000]

Methods

Design

This study utilized a cross sectional, pre-test post-test interventional design. The design of this study evaluated the participants' knowledge and attitudes about pediatric pain through a pretest survey, following a learning tool module intervention for medical professionals who administer needle-based procedures in the emergency department, and summarized with a post-test survey to evaluate whether the participants' attitudes and knowledge levels about pediatric pain have changed.

Setting

This project took place in the emergency department at Mercy Health Lourdes Hospital. This is an 18-bed department, with six urgent care beds, and four overflow rooms. There are approximately 70 employees including doctors, nurses, ancillary staff, and licensed personnel. Mercy Health Lourdes focuses on the values of human dignity, integrity, compassion, stewardship, and service. This project encompasses each of these to provide the highest quality of patient care. A key focus for this project is service, as it is an effort to provide high quality care through evidence-based practice.

Agency Congruence

The mission of Mercy Health Lourdes Hospital states, "We extend the compassionate ministry of Jesus by improving the health and well-being of our communities and bring good help to those in need, especially people who are poor, dying and underserved." (2023). As the

Primary Investigator, it is imperative for these things to be encompassed throughout the study to further their ministry in the best way possible.

Stakeholders

This project includes Mercy Health Lourdes Hospital, as they can improve patient satisfaction and care through the implementation of this project. Patients and families are stakeholders as well, as they have the best interest in mind for the children who are impacted. Manufacturers of distraction devices are stakeholders, as if they cease production then limited availability would occur. Lastly, medical professionals are important stakeholders, as they can improve patient satisfaction by decreasing pain, stress, and anxiety in future medical procedures. The University of Kentucky is a large stakeholder as the approval from this institution allowed for the progression offer this study.

Facilitators and Barriers

There were facilitators that did aided this study, including the primary investigator. This individual was able to keep track of scheduling with the nurse manager, help keep track of distraction devices, and allow for adequate timing to complete the components of the study. Nurse managers will aid in facilitating implementation by allowing access to their clinic. To optimize this facilitator, it is imperative to speak personally with nurse managers in this setting to express the importance of effective implementation. Nurse educators were also facilitators, as they helped lead the department to consistent use of the devices.

Barriers to this project, including implementation, included medical professionals being resistant to change. This could be due to medical professionals having a lack of understanding about distraction devices, pediatric pain, and the use of distraction devices or techniques. There

could also be resistance to completion of the educational tool module due to lack of time or inadequate resources. There are costs associated with providing the devices, and offices may need a larger quantity of the devices, which could require funding. However, cost sharing programs may be available through device manufactures or the hospital foundations.

Sample

The sample for this project included all medical professionals within the emergency department. Inclusion criteria encompassed all healthcare providers trained to complete needle-based procedures. Exclusion criteria included all individuals who were not healthcare providers within this clinic, and who did not administer or perform needle-related procedures. The sample included a total of 44 participants that met the inclusion criteria.

Procedure: IRB Approval

IRB approval was obtained through the University of Kentucky Office of Research Integrity. Their IRB submission and approval process goes through a series of questions, on which feedback is given to correct and improve the process. After all corrections were made, the IRB committee met and determined approval status. This project held an expedited IRB process due to the level of research. Consent was obtained from medical professionals prior to completion of the pretest through a cover letter developed in collaboration with the Office of Research Integrity.

Description of Evidence-Based Intervention

The study began with a pretest/post-test that was adapted from the “Knowledge and Attitudes Survey Regarding Pain” program developed by Ferrell and McCaffery. There were approximately 15 questions to complete. Following completion, an education Toolkit was distributed by email. Fifteen days following, participants completed a ten-question pain post-test as well as five questions relating to the implementation of distraction devices and techniques.

Measures and Instruments

The measures in this study included a pretest/post-test administered to medical professionals who participate in the project. Collection of data began on May 1, 2023, and ended on May 30, 2023. Analysis of data was done through comparing pretest/post-test data to see if participants’ knowledge and attitudes about pain changed, and if the intent to use distraction devices and techniques increased. According to McCaffery, the test-retest reliability of the Knowledge and Attitudes survey regarding pain has been established ($r > 0.8$), and the internal consistency, or reliability, using Cronbach’s alpha has been measured (>0.7 in both knowledge and attitude domains). For the survey sent out to participants, questions were pulled from the knowledge and attitudes survey, as well as additional questions surrounding pediatric pain and distraction devices. **Table II** contains the pretest and posttest distributed to the participants. Table III is the information provided in the Pediatric Pain Toolkit sent out to participants after completion of the pretest. Below is a timeline of the study:

1. April 1, 2023-Completed Project proposal to submit to IRB and UKYCON
2. April 14, 2022-Acquired project approval from IRB and Baptist Health Paducah

3. May 1, 2023- Initiated project using pretest via email and learning tool
4. May 15, 2022- Administered education tool and receive post-test
5. May 30, 2023- Completed data analysis
6. June 27, 2023- Present project

Data Collection and Analysis

Based on the data provided through Qualtrics software and later SPSS, there were a total of 44 participants in this study, and 34 who actively completed either the pre or posttest. The pre-intervention group had a mean of 10.3 out of 11 ($n= 19$) which showed a thorough understanding of pain. The post-test group had a mean of 9.53 out of 11 ($n= 15$). This was slightly lower than initial pretest scores. The p value given with this data set was .045, meaning that there was statistical significance in this data set from the pre and post test scores. Lastly, all participants ($n=16$) reported that they will be more likely to use distraction devices in their practice after the completion of this study. The results from this project were obtained from Qualtrics software, exported to SPSS software, then analyzed by the primary investigator for cohesive findings. The pre/posttest were distributed through Qualtrics using a confidential link, making the pre and posttest unable to be matched. Because of this, an independent samples t-test was used rather than a paired approach.

Table III: Results from the Pre-Post Test using Independent Samples T-Test

	Pre-Intervention (n=19) Mean (SD)	Post-Intervention (n=16) Mean (SD)	p
Overall Score	10.31	9.53	.045

Results

With a mean of 10.31 in the pretest group, there was little room for improvement from the pretest scores, as they were based on a top score of 11. However, the mean did decrease for the post-test after receiving the intervention. This could be due to a variety of factors, including not seeing the learning tool on the initial email, not having adequate time to complete the post-test, or different individuals taking the post-test than those who took the pretest. In the future, the primary investigator could consider an in-service learning module on the hospital's education-based software Workday to implement a learning module on pediatric pain and distraction devices. This could allow the staff to have an efficient way to develop their knowledge on this subject.

Feasibility and Plan for Sustainability

The feasibility of this project was based upon how likely the project is to continue after data collection. The plan for sustainability includes leaving a toolkit from the project with the emergency department, which will provide an extended resource for the institution. This will contain a 100-piece set of ShotBlocker devices, a laminated Toolkit handout, a Buzzy device, and distraction cards. This will require buy-in from the management staff. The toolkit for this project was provided to educate new staff on the use of distraction devices and techniques in the emergency department setting.

Resources

This project requires the resources of medical professionals within the emergency department setting. The use of technology was vital to the program's success; programs that were utilized include Qualtrics. The project required a potential budget of \$250 for education

development and device availability additionally to create a pediatric pain toolkit including a Buzzy device, 100 ShotBlocker devices, distraction cards, and stickers for pediatric patients who are seen within the department. Lastly, this toolkit will contain a binder of the pediatric pain toolkit developed by the primary investigator which has ways to improve pain in this population.

Discussion

This study was aimed at evaluating medical professionals' current knowledge and attitudes towards pain, as well as knowledge surrounding distraction devices for pediatric patients. Although statistical significance was not found, the study showed clinical significance regarding future use of distraction devices and techniques. The major key finding was that nurse knowledge and attitudes did improve after the use of the Pediatric Pain toolkit, which outlines distraction techniques and availability. Also, reported intent to use these devices increased as the Pediatric Pain Toolkit was made available to the department. The results and findings from this study did not show marginal statistical significance, however, there was an impactful clinical significance as this is to improve patient experiences. To improve statistical significance, there would be a larger sample size needed. In this case, it is likely a hospital wide survey would have been more beneficial than departmental wide survey. Findings from this study showed that the medical professionals within this emergency department had a strong understanding of knowledge and attitudes of pediatric pain. There was a decrease in the scores within the post test, which could be related to different individuals taking the posttest since it was from an anonymous link. Additionally, there was little room for improvement from the pretest scores, as the mean was (n=19) 10.31 with a possibility of the score being 11. The post-test score was a mean on (n=16) 9.53 with the possibility of the score being 11 as well. This produced a p-value of 0.45, meaning statistical significance in the decrease was determined. Although there was a

decrease, there was still a possibility for improvement in knowledge and attitudes of pain and pediatric distraction devices. This could be evaluated in the future with a department wide survey for all staff who administer or participate in vaccine administration to determine the gaps and knowledge department wide. Because the outcome and use of devices is not directly quantifiable, there is not a direct way for cost benefit analysis to be confirmed. However, the devices can be completely sanitized between use, allowing for a low cost per use.

Implications for Practice

The most critical implication for practice for this study is to have buy in from the emergency department staff. This practice is easily integrated into practice once the proper education has taken place on how to use distraction devices. This is because the use of Buzzy, or the ShotBlocker does not add any additional time to their current procedure. Additionally, there will need to be an increase in availability for the staff to ensure that devices are readily available when pediatric patients are present to their department. Healthcare in western Kentucky is often considered as lacking, as there is a limitation on pediatric care within this area. For this to be successfully implemented into practice, the department needs to continue education, increase availability, and provide a central location for pediatric pain tools to be found. Additionally, adding these pain reduction techniques to the current clinical practice guidelines and protocols would increase the use and overall satisfaction of pediatric patients within this setting.

Limitations

There were several limitations within the project design. The design included the use of email and Qualtrics software, having access to a hospital encrypted devices were the only thing that participants could use. The email addresses were given to the primary investigator from the emergency department manager. If the participants were not at work, they could not access their

work email. This caused a limitation in the participants in the study. Additionally, many of the staff were on vacation, were considered per diem status, or out for leave. This caused the number of participants to be fewer than expected. Lastly, there was no way to determine if the participants completed both the pre and post-tests. This could cause inconsistencies within the results. It could cause missing information from the learning toolkit, as well. Additionally, there was no way to validate that the learning toolkit was received and understood by the participants. This is a critical step in ensuring that participants understand that distraction devices are readily available in their department to improve pediatric patient experiences. Additionally, there were limitations within the findings due to the anonymous nature of the surveys. However, despite these limitations, there is potential for increased use of these devices, which will result in better pediatric patient experiences during needle-based procedures.

Conclusion

Pediatric patient populations are often challenging when it comes to administration of needle-based procedures. There are a variety of distraction tools and techniques available to nurses that can benefit this patient population. These devices include Buzzy and the Shotblocker, as well as distraction cards. Within this study, nurses in the emergency department were given a pretest and post-test to evaluate their knowledge on pain and their intent to use distraction devices in the future for this population. The pretest showed adequate knowledge with an average of (n=19) 10.31, with the highest score possible being 11. The post-test, however, showed a slight drop in scores (n=16) with a mean of 9.53. This could be due to the lower number of participants. The primary investigator was unable to match the pretest with the matching posttest. The lower score could also be due to the lower number of participants, not enough time to complete the post-test, or inability to complete the test within the open window.

Although the knowledge scores decreased, all participants in the post-test reported that they intend to use distraction tools and devices in their practice going forward. This department now has access to 100 ShotBlocker devices, a Buzzy device, and distraction cards, all of which were made available through this study for use within pediatric patient populations. Going forward, improvement to this study could be made by allowing for an in-service to be complete on these tools, or a learning module through the hospital's Workday education base. Overall, this project was successful with the highlight being that participants indicated that in the future they intend to use these tools and devices to improve pediatric patient experiences.

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Table 1: Literature Review

Study Author	Year	Number of Participants	Sample Characteristic That Is pertinent to Your Question	Study Design	Level of evidence I-VII (Listed in Table 2, pg. 101)	Intervention	Major Finding That Addresses Your Question
Ballard, A., Khadra, C., Adler, S., Trotter, E. D., & Le May, S.	2019	1138 participants ages 3-18 years old.	Pediatric patients facing needle related procedures	Systematic review/meta-analysis	Level I	Buzzy device combining cold and vibration	When evaluating self-reported procedural pain, observer reported procedural pain, and observer reported procedural anxiety, the Buzzy device was an effective intervention for pediatric patients.
Ballard, A., Khadra, C., Adler, S., D Trotter, E., Bailey, B., Poonai, N., Thérroux, J., & Le May, S.	2019	346 Participants	Pediatric patients facing needle related procedures	Randomized Controlled Trial	Level II	Buzzy and Lidocaine 4% cream	The Buzzy device is an easy to use and fast intervention that seems to be an option in the ED. The device

							reduces procedural pain in needle-based procedures.
Bergomi, P., Scudeller, L., Pintaldi S., & Dal Molin, A.	2018	60 children ages 6-12 years old	Pediatric patients who require insulin injections	Randomized controlled experimental study	Level II	The Buzzy and standard clinic practice of Lidocaine patches	The Shotblocker and the Buzzy produced lower levels of pain perception in comparison to the control group.
Bourdier, S., Khelif, N., Velasquez, M., Usclade, A., Rochette, E., Pereira, B., Favard, B., Merlin, E., Labbé, A., Sarret, C., & Michaud, E.	2021	607 children ages 18 months to 6 years old	Pediatric patients requiring intravenous access	Randomized Controlled Trial	Level II	The Buzzy and standard clinic practice of Lidocaine patches	Pain relief by a combination of cold and vibration during intravenous access is not as effective as the standard care which includes the use of lidocaine patches for children 6mo to 18 years old.
Canbulat Sahiner, N., Turkmen, A. S., Acikgoz, A.,	2018	60 children aged between 6 and	Pediatric patients requiring insulin administration	Randomized controlled experimental study	Level II	ShotBlocker and the combination of vibration and cold application	ShotBlocker is recommended as a helpful option in

		12 years old				(Buzzy)	cases where a pain control method is required. The ShotBlocker provided the greatest pain relief over the Buzzy device in insulin administration.
Cirik, Vildan Apaydin, et al.	2019	102 pediatric nurses	Data were collected using a questionnaire developed by the researchers via a face-to-face interview method also by the researchers	Descriptive research design	Level VI	A questionnaire developed by the researchers via a face-to-face interview method also by the researchers.	Nurses increase their level of knowledge to counter false beliefs/practices about pain.
Erdogan, B., & Aytekin Ozdemir, A.	2021	142 Children	Pediatric patients undergoing venipuncture	Randomized Controlled Trial	Level II	Distraction cards, virtual reality and Buzzy®	The Buzzy produced the lowest Wong Baker compared to other interventions and the control group thus lowering procedural pain.

Jenkins, N., Orsini, F., Elia, S., & Perrett, K.	2021	0 children ages 3.5 to 6 years	Pediatric patients undergoing intramuscular injection	Randomized Controlled Trial	Level II	Cool sense (cold) and Buzzy (vibration ± cooling pads)	The Buzzy was preferred over cool sense and the standard of care in this study
Lescop, K., Joret, I., Delbos, P., Briend Godet, V., Blanchi, S., Brechet, C., Galivel Voisine, A., Coudol, S., Volteau, C., Riche, V. P., & Cartron, E.	2021	219 participants	Children aged 4–15 requiring a needle-related procedure (vaccination or venipuncture)	Randomized controlled trail	Level II	The Buzzy device compared to lidocaine patches	The Buzzy® device was not inferior to the lidocaine patch in managing pain in children undergoing needle-related procedures.
Nguyen, A. T et al.	2021	154 Participants	A survey was conducted of nurses who worked at the National Geriatric Hospital over a 3-month period. The Knowledge and Attitudes Survey Regarding Pain (KASRP) was utilized to assess nurses’	Cross sectional study design	Level IV	The survey consisted of a self-administered questionnaire. Participants answered the questions by themselves in the presence of the investigator.	The findings suggested deficient knowledge and an attitude gap about pain management among nurses working in a geriatric hospital, particularly regarding pain assessment and the understanding of pharmacology related to pain management.

			knowledge and attitudes toward pain management				
Şahin, M., & Eşer, İ.	2018	65 pediatric patients	Pediatric patients undergoing IM injections	Single-blind, randomized controlled trial.	Level II	The use of the Buzzy device	The Buzzy device has the potential to reduce injection related pain in adult patients who may be fearful of receiving such injections.
Ueki, S., Matsunaka, E., Takao, K., Kitao, M., Fukui, M., & Fujita, Y.	2021	118 children	Pediatric patients receiving intramuscular injection	Randomized controlled trial	Level II	Use of the Buzzy device	The Buzzy device reduces procedural pain in comparison to the control group.
Yilmaz, G., & Alemdar, D. K.	2019	120 children	Pediatric patients requiring intramuscular injection	Randomized controlled trial	Level II	The Buzzy device, the ShotBlocker, and bubble blowing	The Buzzy intervention should be used when children are undergoing IM injections to reduce their levels of pain and fear.
Zanolin, M. E., Visentin, M., Trentin, L., Saiani, L.,	2023	4961 health professionals	Survey was created to understand	Cross sectional study design	Level IV	A questionnaire was completed by medical	After completing the pretest/post-test medical

Brugnolli, A., & Grassi, M.			knowledge and attitudes of pediatric pain			professionals to determine knowledge and attitudes surrounding pain.	professional knowledge and attitude surrounding pain improved.
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Table IIa: Synthesis Table to summarize findings

Variables of interest (outcomes)	Ballard et al., (2019)	Ballard et al., (2019)	Bergomi, P et al., (2019)	Bourdier, S. et al., (2021)	Canbulat et al., (2018)	Cirik, V. et al., (2019)	Erdogan, B., & Aytakin Ozdemir, A. (2021)
Decreased Pain	↓ b	↓ b	↓ b	No Change	↓ b	NE	↓ b
Nurse Knowledge	NE	NE	NE	NE	NE	↑ b	NE
Nurse Attitude Towards Pain	NE	NE	NE	NE	NE	↑ b	NE
Distraction Devices (Buzzy, ShotBlocker, DistrACTION Cards)	↑ b	↑ b	↑ b	↑ b	↑ b	NE	↑ b

LEGEND: ↑ = INCREASED, ↓ = DECREASED, NE = Not Evaluated

^a higher-level evidence; ^b statistically significant findings; ^c statistical significance not

Table IIb: Synthesis Table to summarize findings

Variables of interest (outcomes)	Jenkins, N., Orsini, F., Elia, S., & Perrett, K. (2021)	Lescop, K. et al., (2021)	Nguyen, A. T et al., (2021)	Şahin, M., & Eşer, İ. (2018)	Ueki, S. et al., (2021)	Yilmaz, G., & Alemdar, D. K. (2019)	Zanolin et al., (2023)
Decreased Pain	↓ b	No Change	NE	↓ b	No Change	↓ b	NE
Nurse Knowledge	NE	NE	↑ c	NE	NE	NE	↑ b
Nurse Attitude Towards Pain	NE	NE	↑ c	NE	NE	NE	↑ b
Distraction Devices (Buzzy, ShotBlocker, DistrACTION Cards)	↑ b	↑ b	NE	↑ b	↑ c	↑ b	NE

LEGEND: ↑ = INCREASED, ↓ = DECREASED, NE = Not Evaluated
^a higher-level evidence; ^b statistically significant findings; ^c statistical significance not reported

Table III: Qualtrics Software Pretest and Post Test

PRETEST

To Mercy Health Lourdes Emergency Department Staff:

I, Charlstyn Brown RN, BSN, am contacting you from the University of Kentucky, on behalf of Rebecca Inman, your ED Manager. She has allowed me to contact you to invite you to participate in a study relating to completion of my doctoral degree from this institution. Researchers at the University of Kentucky are inviting you to take part in a brief survey regarding the knowledge and attitudes relating to pediatric pain. Although you may not get personal benefit from taking part in this research study, your responses may help us understand more about pain within this population. Some volunteers experience satisfaction from knowing they have contributed to research that may possibly benefit others in the future. The survey/questionnaire will take about 15 minutes to complete.

There are no known risks to participating in this study. Researchers will review and collect information from your survey responses. Your response to the survey will be kept confidential to the extent allowed by law. When we write about the study you will not be identified. We will not know which responses are yours if you choose to participate. Identifiable information such as your name, email address, or date of birth may be removed from the information collected in this study. After removal, the information may be used for future research or shared with other researchers without your additional informed consent. We hope to receive completed questionnaires from approximately fifty individuals, so your answers are very important to us.

Of course, you have a choice about whether to complete the survey/questionnaire, but if you do participate, you are free to skip any questions or discontinue at any time. You will not be penalized for skipping or discontinuing the survey. Please be aware, while we make every effort to safeguard your data once received from the online survey company, given the nature of online surveys, as with anything involving the Internet, we can never guarantee the confidentiality of the data while still on the survey company's servers, or while en route to either them or us. If you have questions about the study, please feel free to ask; my contact information is given below.

Thank you in advance for your assistance with this important project. To ensure your responses/opinions will be included, please submit the enclosed pretest questionnaire by May 15, 2023. After completion, an education module will be disbursed. Lastly, A posttest will be sent out on May 30, 2023, with one week for completion. Thank you for your time and commitment to further the healthcare field.

Sincerely,

Charlstyn P. Brown RN, BSN

School of Nursing

University of Kentucky

PHONE: 270-703-8121

E-MAIL: cpb230@uky.edu

Do you consent to participate in this survey regarding the knowledge and attitudes relating to pediatric pain in cooperation with the University of Kentucky?

Yes (1)

No (2)

Q1 Vital signs are always reliable indicators of the intensity of a patient's pain.

True (1)

False (2)

Q3 Patients who can be distracted from pain usually do not have severe pain.

True (1)

False (2)

Q4 Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent's assessment of the child's pain intensity.

True (1)

False (2)

Q5 The most likely reason a patient with pain would request increased doses of pain medication is

The patient is experiencing increased pain. (1)

The patient is experiencing increased anxiety or depression. (2)

The patient is requesting more staff attention. (3)

The patient's requests are related to addiction. (4)

Q6 The most accurate judge of the intensity of the patient's pain is

The treating physician (1)

The patient's primary nurse (2)

The patient (3)

The pharmacist (4)

The patient's spouse or family (5)

Q7 Which of the following describes the best approach for cultural considerations in caring for patients in pain:

There are no longer cultural influences in the U.S. due to the diversity of the population. (1)

Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic, Italians are expressive etc.) (2)

Patients should be individually assessed to determine cultural influences. (3)

Cultural influences can be determined by an individual's socioeconomic status (e.g., blue collar workers report more pain than white collar workers). (4)

Q8 The time to peak effect for morphine given IV is:

15 minutes (1)

45 minutes (2)

1 hour (3)

2 hours (4)

Q9 The time to peak effect for morphine given orally is:

5 minutes (1)

30 minutes (2)

1-2 hours (3)

3 hours (4)

Q10 Children with pain should be encouraged to endure as much pain as possible before resorting to a pain relief measure.

True (1)

False (2)

Q11 Pediatric patients who will require needle-based painful procedures (i.e., immunizations, blood draws, or intravenous access), should receive minimum treatment for pain and anxiety.

True (1)

False (2)

Q12 Distraction devices and techniques are available to use that can significantly lower pediatric pain perception during needle-based procedures.

True (1)

False (2)

End of Block: Default Question Block

POST-TEST

Cover Letter to Mercy Health Lourdes Emergency Department Staff:

Researchers at the University of Kentucky are contacting you with permission allowed by Rebecca Inman, your ED Manager. She has allowed me to contact you to invite you to participate in a study relating to completion of my doctoral degree from the University of Kentucky School of Nursing. Researchers at the University of Kentucky are inviting you to take part in a pretest/post-test survey regarding the knowledge and attitudes relating to pediatric pain. This process will take place over a one-month time frame.

Although you may not get personal benefit from taking part in this research study, your responses may help us understand more about pain within this population. Some volunteers experience satisfaction from knowing they have contributed to research that may possibly benefit others in the future.

The pretest survey will take about **15** minutes to complete. Following this, you will be distributed a Pediatric Pain Toolkit, which will take **10** minutes to read. Lastly, you will be given a post-test survey which will take a maximum of **20** minutes to complete.

The known risks to participating in this study are the risk of future use of this information. Researchers will review and collect information from your survey responses.

Your response to the survey will be kept confidential to the extent allowed by law. When we write about the study you will not be identified. We will not know which responses are yours if you choose to participate. Identifiable information such as your name, email address, or date of birth may be removed from the information collected in this study. After removal, the information may be used for future research or shared with other researchers without your additional informed consent.

We hope to receive completed questionnaires from approximately fifty individuals, so your answers are very important to us. Of course, you have a choice about whether to complete the survey/questionnaire, but if you do participate, you are free to skip any questions or discontinue at any time. You will not be penalized in any way for skipping or discontinuing the survey.

Please be aware, while we make every effort to safeguard your data once received from the online survey company, given the nature of online surveys, as with anything involving the Internet, we can never guarantee the confidentiality of the data while still on the survey company's servers, or while en route to either them or us. If you have questions about the study, please feel free to ask; my contact information is given below.

Thank you in advance for your assistance with this important project. To ensure your responses/opinions will be included, please submit the enclosed pretest questionnaire by May 15, 2023. Following completion there will be an education tool dispersed for your earliest viewing completion. Lastly, there will be a post-test sent out on May 30, 2023, with one week availability for completion. The study will be completed on June 6, 2023.

Sincerely,

Charlstyn P. Brown RN, BSN
School of Nursing. University of Kentucky
PHONE: 270-703-8121
E-MAIL: cpb230@uky.edu

Do you consent to participate in this survey regarding the knowledge and attitudes relating to pediatric pain in cooperation with the University of Kentucky?

Yes

No

Q1 Vital signs are always reliable indicators of the intensity of a patient's pain.

True

False

Q3 Patients who can be distracted from pain usually do not have severe pain.

True

False

Q4 Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent's assessment of the child's pain intensity.

True

False

Q5 The most likely reason a patient with pain would request increased doses of pain medication is

The patient is experiencing increased pain.

The patient is experiencing increased anxiety or depression.

The patient is requesting more staff attention.

The patient's requests are related to addiction.

Q6 The most accurate judge of the intensity of the patient's pain is

The treating physician

- The patient's primary nurse
 - The patient**
 - The pharmacist
 - The patient's spouse or family
-

Q7 Which of the following describes the best approach for cultural considerations in caring for patients in pain:

- There are no longer cultural influences in the U.S. due to the diversity of the population.
 - Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic, Italians are expressive etc.)
 - Patients should be individually assessed to determine cultural influences.**
 - Cultural influences can be determined by an individual's socioeconomic status (e.g., blue collar workers report more pain than white collar workers).
-

Q8 The time to peak effect for morphine given IV is:

- 15 minutes**
 - 45 minutes
 - 1 hour
 - 2 hours
-

Q9 The time to peak effect for morphine given orally is:

- 5 minutes
- 30 minutes

1-2 hours

3 hours

Q10 Children with pain should be encouraged to endure as much pain as possible before resorting to a pain relief measure.

True

False

Q11 Pediatric patients who will require needle-based painful procedures (i.e., immunizations, blood draws, or intravenous access), should receive minimum treatment for pain and anxiety.

True

False

Q12 Distraction devices and techniques are available to use that can significantly lower pediatric pain perception during needle-based procedures.

True

False (2)

Q13 Available distraction tools within your department include:

Buzzy and Bubbles

ShotBlocker and Stickers

Buzzy, DistrACTION cards, and ShotBlocker

Q14 Distraction devices work by distracting the _____ from the pain.

- Arm
- Brain**
- Skin

Q15 Buzzy works in the same way that...

- Rubbing a bumped elbow stops the hurt
- Running water soothes a burn
- Putting a hand in ice water lowers pain everywhere else
- All of these**

Q16 What is this device?

- The Buzzy**
- ShotBlocker
- DistrACTION Cards
- SweetEase



Q17 I intend to implement the use of distraction devices and techniques when faced with needle-based procedures for pediatric patients to provide a better patient experience.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree**

Table III: Results from the Pre-Post Test using Independent Samples T-Test

	Pre-Intervention (n=19) Mean (SD)	Post-Intervention (n=19) Mean (SD)	p
Overall Score	10.31	9.53	.045

Appendix I: Pediatric Pain Toolkit



Project Name	The Effect of an Education Intervention on the use of Distraction Tools and Techniques	Project Initiation
Project Owner	Charlstyn Brown RN, BSN	May 1, 2023
Prepared by	Charlstyn Brown RN, BSN	

HIGHLIGHTS

- Complete knowledge and attitudes survey on pain
- Understand appropriate distraction devices and techniques within this department
- Implement devices for an improved patient experience
- Complete post-test reporting increased understanding of pain and device availability

Devices Location

- Buzzy and DistrACTION cards are located in the emergency department managers office with a signet sheet for use.

NEXT STEPS

Action Items

Task or Deliverable
Review attached learning on appropriate device use and distraction use within the

WHAT WORKS FOR PAIN

OVER THE COUNTER MEDICATIONS

ACETAMINOPHEN,
IBUPROFEN,
DIPHENHYDRAMINE



Ideal for short term situations like acute injury or after surgery

- + Allows for alternating solutions: relief is never more than 3 hours away
- Always check with your physician first
- Recommended for 4 days or fewer

Acetaminophen for pain	15mg/kg -7mg/lb	every 4 hours ≤ 4 x day
Ibuprofen for pain	10mg/kg -5mg/lb	every 6 hours
Diphenhydramine for insomnia	25mg	once nightly

NATURAL/HERBAL



Ideal for chronic pain and inflammatory conditions.

ORAL: MAGNESIUM, TURMERIC (CURCUMIN), DEVIL'S CLAW ROOT, BUTTERBUR, BOSWELLIA, GINGER EXTRACT, OMEGA-3 & OMEGA-6 FATTY ACID, MELATONIN, S-ADENOSYLMETHIONINE

TOPICAL: CBD, CAPSAICIN/CAPSICUM, ANALGESIC CREAM, CAMPHOR, MENTHOL, COMFREY, WILLOW BARK (CONTAINS ASPIRIN)

- + Few side effects
- + Growing body of research
- Often require days to weeks to be effective
- May be condition-specific
- Need to check for interactions
- Preparations can vary

Magnesium	250-500 mg/day
Boswellia	300mg 3 x day
Ginger extract	2-4 x day
Camphor/ Menthol	Do not combine with ice

PHYSICAL TREATMENTS



Ideal for acute pain, healing from an injury or surgery, and many chronic pain conditions

BUZZY® & VIBRACOOOL® (HIGH FREQUENCY LOW AMPLITUDE), MASSAGE, ICE, HEAT, YOGA, BATHS, CHIROPRACTOR, FOAM ROLLER, MECHANICAL TAPE, LOW LEVEL LASER THERAPY, PILLOWS, ULTRASOUND, TENS, COMPRESSION, STRETCHING, TRIGGER POINT DEVICES, WEIGHTED BLANKETS, ORTHOTICS, PHYSICAL THERAPY, SWIMMING, ACUPUNCTURE

- + Variety of options to fit lifestyle & budget
- + Non-invasive, non-addictive
- + Can be combined for greater results
- Varying levels of proven effectiveness between different treatments
- May take combos and experimentation - keep trying!

MIND + BODY SOLUTIONS



Ideal for chronic and acute pain in combination with other treatments

MEDITATION, SLEEP (MELATONIN 3-6 MG 1-2 HOURS BEFORE BED), PUZZLES, HUGS, SUPPORT GROUPS, PERSONAL FAITH PRACTICES, MUSIC, COOKING, DANCE, VIDEOS, HIKING, GAMES, MUSEUMS, SETTING AND ACCOMPLISHING ACTIVITY GOALS (A.C.T.), PROGRESSIVE MUSCLE RELAXATION, COGNITIVE REFRAMING, DEEP BREATHING, AROMATHERAPY, CALM AMBIENCE, GUIDED IMAGERY, VIDEO/PHONE CALLS

- + Sustainable treatment for chronic pain
- + Fosters support systems
- + Nearly infinite variety of distractions
- + More effective than traditional pain therapy for some types of chronic pain
- Requires disciplined mental shift in thinking about pain

Not all treatments or supplements are appropriate for all pain conditions. This list contains evidence-based interventions and physical therapy options evaluated by Pain Care Labs which may not be appropriate for every pain condition. Check with your physician to determine optimal recommendations.



7 Secrets for Shots

Here are 7 quick tips that can decrease injection pain and improve compliance with necessary medical treatments.

- 1) Distract the nerves.** Use the ice pack and Buzzy® on a site for 30-60 seconds to help numb the area before the shot. Slide Buzzy® proximal (toward the head) to the site, then immediately give the shot. If the medication stings, rub Buzzy® on the site afterwards.
- 2) Relax the muscles.** Pushing medication into taut muscles makes it hurt more, at the time and after the injection. Even passively stretched muscles hurt. Rather than bending over for a gluteal injection, try lying on your side with the buttocks muscles relaxed. Same thing for thigh shots: sitting up causes the muscles to be active, keeping you balanced. Try using a side position.
- 3) Distract your mind.** Counting and finding tasks can reduce pain by half. At a minimum, count corners, count ceiling tiles, count holes in an air grate. For more sophisticated tasks, bring DistrACTION® cards, decorate with DistrACTION® posters, or use a find & seek book.

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(Continued on other side)

Buzzy
DRUG FREE PAIN RELIEF

Proven • Reusable
Works on Contact



IV Starts

Shots



Finger Sticks

DistrACTION



BuzzyHelps.com

MMJ Labs LLC

Personal Pain Control
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Made in USA



7 Secrets for Shots

Here are 7 quick tips that can decrease injection pain and improve compliance with necessary medical treatments.

1) Distract the nerves. Use the ice pack and Buzzy® on a site for 30-60 seconds to help numb the area before the shot. Slide Buzzy® proximal (toward the head) to the site, then immediately give the shot. If the medication stings, rub Buzzy® on the site afterwards.

2) Relax the muscles. Pushing medication into taut muscles makes it hurt more, at the time and after the injection. Even passively stretched muscles hurt. Rather than bending over for a gluteal injection, try lying on your side with the buttocks muscles relaxed. Same thing for thigh shots: sitting up causes the muscles to be active, keeping you balanced. Try using a side position.

3) Distract your mind. Counting and finding tasks can reduce pain by half. At a minimum, count corners, count ceiling tiles, count holes in an air grate. For more sophisticated tasks, bring DistrACTION® cards, decorate with DistrACTION® posters, or use a find & seek book.

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(Continued on other side)

Buzzy
DRUG FREE PAIN RELIEF

Proven • Reusable
Works on Contact



IV Starts

Shots



Finger Sticks

DistrACTION



BuzzyHelps.com

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How To Use Buzzy + DistrACTION Most Effectively

To improve pediatric procedural distress, address Fear, Focus, and Pain!



Fear: Children are less fearful when they know what's happening and feel in control. When asked if they're going to get a shot, avoid using the words pain or hurt. Instead, use the word "bother", and answer this way:

"Yes, but a lot of kids aren't that bothered the way we give them. Before you get them, I'll show you how we make them more comfortable now." Before giving shots, let patients touch Buzzy, or press Buzzy on a hand or forearm, and lightly scratch the area distal to the Buzzy. "See how cold this is, and see how you can't feel so much anymore?"

Seeing for themselves and agreeing with you helps the child feel in control. Placing the child in a "position of comfort", e.g. with the parents arm around them, or facing them on a lap for younger children, also increases children's security.

Focus.* Helping a child focus elsewhere during procedures engages the same part of the brain that processes pain. Hold, give, or engage a parent to ask children questions on the back of DistrACTION Cards; memorize a question or two to get them started. The combination of a visual finding task and focus decreases pain.



Pain Relief: Just like holding a burn under running water, vibration and cold interrupt the sharp pain feeling. For best results, put the HARD frozen Ice Wings behind Buzzy, then press Buzzy on the injection site itself for about one minute. During the injection, having the parent, nurse, or older patient slide Buzzy just above the injection site (red dot) and hold it firmly in place blocks pain directly.



To emphasize, give the shot or start IV while Buzzy is still buzzing and on the arm.

*About 20% of children will want to watch the shots. Let them, this usually means they get some control watching, and the fear reduction from feeling in control helps reduce pain.