

Anxiety and pain related to injections in pediatric patients



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Abstract

Injections are an unavoidable part of pediatric health and, unfortunately, are a common source of pain and anxiety for children. In current nursing practice, interventions exist to reduce pain and anxiety in the pediatric population. However, they may vary in approach and effectiveness. Current research includes vibration stimulation, visual aids, music therapy, child positioning, and other distraction techniques. This paper examines research that pertains to reducing the pain and anxiety with injections in pediatric patients.

Keywords : injections, fear, anxiety, pediatric, immunizations, distractions, child-life services, Buzzy

Introduction

A child may have as many as 22 routine vaccinations by one year of age and a total of 34 vaccinations by age 11. The majority of which are received through an injection (Stevens & Marvicsin, 2016). Vaccines prevent two to three million deaths per year worldwide by eradicating and limiting the incidence of certain diseases (Benjamin, Hendrix, & Woody, 2016). Thus, preventative injections are essential in preventing avoidable debilitating diseases. As a result, pain and anxiety caused by injections is a major concern in pediatric nursing practice. Routinely scheduled immunizations are the number-one cause of childhood procedural pain (Benjamin et al., 2016). Additionally, when a children are hospitalized, they are often overwhelmed with many painful and potentially frightening procedures. This iatrogenic pain and anxiety can cause traumatic experiences and potentially lead to <https://assignbuster.com/anxiety-and-pain-related-to-injections-in-pediatric-patients/>

non-compliance and avoidance of important medical care later in life.

According to Redfern, Chen, & Sibrel (2018), a significant percentage of needle phobias result from traumatic encounters when interventions were not implemented to reduce pain and anxiety. Lack of interventions to reduce injection related fear and anxiety might also cause non-adherence to the vaccination regimen and cause further health issues for society.

Due to the lasting impact of injections in the pediatric population, interventions have become an important part of nursing care (Redfern, Chen, & Sibrel, 2018). Patients are at risk for impaired coping mechanisms for future invasive nursing procedures if they have had a negative experience due to lack of interventions to help mitigate pain and anxiety. This study focuses on surveying pediatric registered nurses in the acute care setting to gather subjective data on the effectiveness of different interventions to curtail pain and anxiety during routine injections. It also reviews several different studies centered on finding effective interventions in reducing the unavoidable fear and anxiety that children often experience when they must undergo invasive procedures, such as injections, venipuncture, and intravenous cannulation.

Literature Review

Tactile

According to Redfern et al. (2018), the Buzzy device is a plastic multi-use vibrating device that can be used alone or combined with ice packs with the goal of reducing pain and anxiety using Gate Control Theory and distraction.

Sabiner, Inal, and Akbay (2015) completed a study in which they took two <https://assignbuster.com/anxiety-and-pain-related-to-injections-in-pediatric-patients/>

groups of 7-year-olds, with a combined total of 104 participants, and tested one group with the application of Buzzy with cold packs, and the other group without any interventions. For this study, the same two nurses with five years of experience were trained by the researcher to maintain consistency and continuity. One nurse was giving the vaccinations and the second nurse observed the children's pain and anxiety levels during the procedure. The tools used to assess the pain and anxiety levels were Wong-Baker FACES scale and Children Fear Scale. The group using the Buzzy applications showed remarkably decreased pain and anxiety levels compared to the group without the Buzzy intervention.

In a similar study, researchers Redfern et al. (2018) conducted a prospective, open-label, randomized controlled trial to determine the efficacy of thermo-mechanical stimulation. The control group used no interventions during routine vaccinations. To determine the effectiveness, the Wong Baker Faces scale was implemented to assess the child's pain. The parents' perception of the child's fear and anxiety was also used to assess the child's pain. There was a scale to determine the parents' perception of the overall visit as well. The parents were asked to state whether it was the same, better, or worse than they anticipated. Researchers used a sample size of 100 participants. Fifty of the participants were a part of the control group with no interventions, and the other 50 were provided thermo-mechanical stimulation as the intervention. Participants aged 3 to 18 years were given the Buzzy device along with a cold pack to be placed on the surrounding areas of where the injection would take place. Redfern et al. (2018) found that anxiety ratings were not significantly different between the two groups,

but those in the Buzzy group experienced significantly decreased pain post injection.

However, the study conducted by Benjamin, Hendrix, and Woody (2016) had different results. A total of 100 children varying from 2-months-old to 7-years-old were a part of this study. One group was the control group, which received no intervention, while the other group received the Buzzy intervention. They hypothesized that the group with the Buzzy device would have a lower pain score than the children in the control group. They concluded that with the application of the Buzzy, there were no statistically significant results in pain reduction between the two groups. In this specific study, a cold appliance was not used in conjunction with the Buzzy. These findings suggest that cold application combined with Buzzy may be superior to using Buzzy by itself.

Visual

Encompassing visual aids as a distraction method has been used to reduce fear and anxiety in pediatric patients. In the systematic review done by Brice and Wyatt (2017), they found that distraction methods using things such as interactive toys, screen time, and guided imagery during invasive procedures, is prevalent in the literature. One interactive distraction often used is drawing. A randomized controlled clinical trial conducted by Stinley, Norris, and Hinds (2015) explored possible interventions to diminish anxiety and physical pain associated with injections among pediatric patients with the use of drawing mandalas. Art therapy, specifically mandalas, was chosen for the study because it has been proven to reduce anxiety and fear in the

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adult population. Mandalas are a geometric figure found in every culture and religion. They achieve a relaxation response by maintaining the patient's engagement and focus. The ages of participants in the study ranged from 7 to 18 years consisting of 20 females and 20 males. I pads were used with a circle template and the children were instructed to draw or paint anything they desired for five minutes prior to, throughout, and after the procedure. The treatment group with the mandala experienced fewer stress behaviors such as crying, screaming, and physical struggle. There was a 50% decrease in physiological signs of anxiety, such as heart rate and oxygen saturation. Stevens and Marvicsin (2016) examined the use of picture books and movies and found that they were successful forms of distraction in school-aged children. Brice and Wyatt (2017) found that the use of tablets or television as an intervention had varying results. They discussed how the use of screen time and tablets hold promise for comfort measures for pediatric patients because the distraction can be quickly accessed, is easily stored, and is easy to use, but more research needs to be conducted.

Using guided imagery and teaching a child to blow away the pain while having an injection showed significantly decreased pain behaviors. It also allows the child to be a part of their treatment by giving them a sense of control. This technique may not work with certain age groups or children that are already severely distressed and unable to focus (Brice & Wyatt, 2017).

Auditory

Although distraction is found to help patients, it is even more beneficial when multiple senses are being utilized at once (Benjamin et al., 2016). Using

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verbal and auditory cues and questions is a successful distraction method that has been used to help children reduce fear and anxiety related to injections. A relatively newer form of technology, virtual reality, uses both audio and visual technology. It is potentially effective in reducing pain and distress in children undergoing invasive procedures, but limited studies have been done; therefore, evidence for this form of technology is limited (Brice & Wyatt, 2017). Stevens and Marvicsin (2016) researched each developmental stage and found that different types of auditory methods were used for distraction. Infants did not benefit from any auditory forms of distraction, as they cannot process that type of stimulation. Toddlers sing songs and listen to stories to distract them from the injection process. Explanations of the preparation process should also be simple, concrete, and appropriate for the specific age group that is receiving the vaccination. Non-procedural talk with school-aged children such as asking the patient about their pets, what their favorite color is, or who their best friend at school is also assists in taking the child's mind away from the vaccination.

Brice and Wyatt (2017) report that music therapy, including passive and active music participation, shows positive results in reducing anxiety and pain in children undergoing invasive procedures. In some of the studies, children did not self-report that the music helped in decreasing anxiety and stress, but markers such as heart rate in the experimental groups were lower than the control groups. Stevens and Marvicsin's (2016) research showed that adolescents benefited from listening to music that was played out loud on speakers. They also benefited from talking about their lives, such as what

they did last summer and what they plan to do when they graduate high school.

Caregiver Facilitation

Children often seek comfort from a loved one when they are experiencing distress, anxiety, or fear. Brice and Wyatt (2017) reported on numerous studies that looked at how caregivers can play a significant role in comfort interventions when children underwent distressing procedures. Caregiver interventions included parental coaching, encouragement, positioning of the patient, and distraction. The parental coaching studies showed mixed results. Stevens and Marvicsin (2016) found that it is important to educate the parents on using non-procedural talk. Parents should be honest, instead of telling the child that it is not going to hurt very much or that it will just be a quick poke. When caregivers were taught proper ways to encourage and distract, distress levels were decreased; however, the studies showed no differences in pain or anxiety when parental coaching was used (Brice & Wyatt, 2017).

Caregiver-assisted positioning and distraction makes the child feel more comfortable and provides a sense of security while receiving an injection. Comfort hold positions are taught to parents so that they can be involved in the injection process, while keeping the limbs accessible (Stevens & Marvicsin, 2016). The comfort hold positions are shown to parents using handouts and demonstration. Infants benefit from swaddling or snugly wrapping the child's upper body in a blanket while leaving the lower limbs exposed for easy access for injections. It is also beneficial for the parents to

receive simple instructions prior to the injection on how to hold the child to allow for the injection site to remain visible. Stevens and Marvicsin (2016) also explored the use of security objects such as blankets, stuffed animals, and toys to see if it would help with fears and anxiety related to vaccinations. They found that security objects made the patients feel more comfortable and mildly reduced their fear and anxiety.

Multifaceted Approach

Much of the literature shows that using numerous methods and a multifaceted approach might be the best way to reduce anxiety and distress among pediatric patients undergoing invasive procedures such as injections. Brice and Wyatt (2017) discussed the use of pharmacological and nonpharmacological interventions together. Numerous studies integrate nonpharmacological adjunctive therapy with pharmacological measures such as analgesic cream. Implementing a mixture of interventions is a more holistic approach to comforting a patient. Numbing cream provides local anesthesia, which can dramatically decrease pain; however, it requires a minimum application time of at least 15 to 60 minutes, which is often not feasible (Sabiner, Inal, & Akbay, 2015). Nurses do not typically have that amount of time to apply an analgesic cream and wait for it to take effect before administering the injection. Benjamin et al. (2016) research also established that numbing creams might offer some pain relief; however, the downside to this specific intervention is cost and time.

Another highly effective collaborative approach is the use of child life services. Child life services integrate several modalities of providing stress

relieving and pain reducing interventions. Certified Child Life Specialists (CCLS) are an integral member of the healthcare team. They are college-educated individuals with in-depth knowledge of child development and specialized training. They use a multifaceted approach in aiding pediatric patients and their families to adjust and cope in stressful situations while in the healthcare setting. CCLS gather information from both the treatment team and medical record. They complete a developmental and coping assessment through interacting with the child and family. They use a dynamic approach with behavioral, cognitive, physical, and complementary techniques to help decrease anxiety and distress through education, preparation, self-expression, and play (Duda, 2018). CCLS help a child understand the procedure at an age appropriate level, they help to distract a child when having an invasive procedure, and they assist the child in coping with their anxiety and fear. Duda (2018) states that “ having a child life specialist as part of the healthcare team is beneficial to decrease patient anxiety, stress, and trauma while in the hospital” (p. 98).

Data Collection Process

Sample Size and Collection

A six-question survey was created to gather information from the nurses on the pediatric floor. The survey received approval, by the clinical nurse specialist of the pediatric units, prior to administration. The beginning of the survey asked for the nurse's initials, the shift they were working, and what unit they worked on. The nurses were asked to provide their initials in order to avoid asking them the same questions twice and skew the results of the

provided survey. The sample size included a total of 16 surveys, which included 13 day-shift nurses and three night-shift nurses. This survey was conducted on the Pediatric floor and the Pediatric Intensive Care Unit at UCHHealth Memorial Hospital Central in Colorado Springs, Colorado. Some questions asked for specific answers from the nurses based on personal experience, while others were simple yes or no questions.

Limitations

Several limitations exist within this study. One of these limitations is having a small sample size. Due to limited time for data collection and a minimal number of nurses per clinical shift, the surveyors were unable to interview a large sample of nurses. Additionally, this survey was only performed in the acute care setting. Thus, the diversity in the types of healthcare settings is limited (i. e. community medical centers, family practice offices, or urgent care and other emergency settings). Relative to setting, the survey was only completed across two units at one hospital. Furthermore, the nursing staff were either preoccupied with patient care and/or showed disinterest in the survey. As a result, answers were often short and lacked detail. For example, when asked questions regarding age in which interventions were most effective, the response was often, “ it depends,” without offering further feedback. When feedback was offered, it was extremely inconsistent making it difficult to find a consensus. In some cases, if feedback was given, not all questions were filled out, leaving a blank result. When the nurses were provided the survey to fill out instead of verbally surveyed, the majority stated they were occupied with a heavy patient load and did not have time to complete it. A small number of nurses opted-out of the survey altogether

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and did not want to contribute to the study. This noncompliance led to incomplete data collection and vague results. Lastly, this survey was subjective and relied on the nurses' personal experience with interventions to reduce pain and anxiety during injections.

Data Analyses

For the following questions refer to Appendix A and B. Appendix A shows a replica of the survey given, and Appendix B displays the answers to each question given by the nurses. The first question in the survey asked the nurses if they used distractions when giving an injection to reduce anxiety and fear. All nurses reported that distractions were used. However, in some cases distractions were not utilized if the nurses did not have additional help. Regarding the second question in the survey, the results are as follows. When asked about the most effective tool to relieve pain and anxiety when receiving the injection, the nurses reported that child life services, parent involvement, and electronics are the tools they find most effective. The fourth question of the survey pertained to what age the nurses thought the distractions were no longer effective. The survey showed differing results. Some nurses felt that distraction was always effective and not dependent on age, while others described specific age ranges such as 3 to 5 years, school-aged children, and teens. Other nurses felt through experiences, that children with chronic conditions and children younger than 4-months-old did not benefit from distractions. The nurses felt that infants to school-aged children experienced the most benefit regarding the question related to the age group that was most positively impacted by distractions. All the day-shift nurses reported that they utilize child life services; however, the night-shift

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nurses had a different perception due to lack of availability and access to child life services.

The questions on the survey, as seen on Appendix A, were chosen for specific reasons. The first question was chosen specifically to see what techniques are currently being used in the pediatric setting and to see if the nurses are using distractions in general when giving injections. The survey led into the second question in order to see what practices the nurses personally use to relieve pain and/or anxiety in the pediatric population. This question was on the survey to get feedback on real world clinical situations. The third question on the survey was then asked to identify which distraction method is the most effective based on their personal experiences and expertise. Each nurse has a different way they conduct themselves and how they handle patients on the floor. Question three gets the nurse's personal input on their experiences with different distraction methods. According to Appendix A, question four was needed to determine if distractions are always necessary, or if at a certain point they are a waste of time, for not only the child, but also the healthcare team. Question five was used to clarify which distraction measures are found to have the best results in certain age groups, or if age determined the effectiveness of the intervention. The use of child life services was asked to see if the nurses utilize it because child life services has been proven to be extremely beneficial in decreasing not only pediatric patient anxiety and stress, but also trauma in the hospital setting (Duda, 2018).

Discussion

The purpose of this paper was to research interventions that are effective in alleviating the anticipated anxiety and pain associated with injections among the pediatric population. The survey was conducted in a pediatric care unit of an acute care hospital. Pediatric nurses were asked a series of questions pertaining to interventions used to reduce pain and anxiety during injections in the patient population they serve.

Several nurses surveyed in this study reported tablets being an effective distraction method during injections. The study conducted by Stinley et al. (2015) using Ipads to create mandalas confirmed these findings. Supporting evidence showed a decrease in heart rates, oxygen saturation, and negative stress behavior responses in pediatric patients in response to the use of Ipads as a distraction.

One study using tactile stimulation via the Buzzy device displayed positive results when compared to a group using no intervention. Two studies have demonstrated positive results using thermo-mechanical simulation, which combines vibration to reduce pain via tactile stimulation, cold analgesia, and distraction (Redfern et al., 2018; Sabiner et al., 2015). This study demonstrated that tactile stimulation combined with cold analgesia provides superior pain relief compared to using tactile stimulation by itself. However, neither provided significant anxiety relief.

Much of the literature supports using various distractions to reduce fear and pain in pediatric patients during any type of invasive nursing procedure. All children may have a different baseline and different comfort needs. Brice and Wyatt (2017) found that numerous distraction interventions have a

positive effect and can be easily used such as blowing away the pain with guided imagery, music therapy, and amusement for distraction.

Unfortunately, many of the studies contradicted themselves with their results and further research with larger sample sizes is necessary.

Lastly, child life services utilize most of the interventions discussed. Child life specialists have a specialized set of skills and tools that help them to individualize care for each specific patient. The personalization can aid in the successful reduction of anxiety and pain while a child is undergoing invasive procedures, such as injections (Duda, 2018).

Suggestions for Future Studies

There are many areas that could be further researched to improve management of pediatric pain and anxiety during routine vaccination. Current research lacks diversity in terms of the healthcare setting and includes inadequate sample sizes. Future studies should include larger sample sizes, which could better reflect the population, increase the level of confidence, and reduce the margin of error. To increase diversity in future studies, research experiments and surveys should be conducted in a variety of healthcare settings to obtain a wider and more inclusive range of the pediatric population. A study including older pediatric participants capable of verbalizing their pain and anxiety may be conducted in order to better measure their pain to create a better baseline. Many of the current studies include younger pediatric participants, thus a study including older pediatric patients will help diversify the available research.

Additionally, in current studies, nurses are frequently the evaluator of pain and anxiety instead of the child. In the future, studies to reduce pain and anxiety caused by certain vaccinations may be beneficial to help healthcare providers determine when interventions are most useful because the level of pain caused by each individual vaccination would be more specific. Future studies should include more information on barriers that the clinical site may experience; for example, insufficient staffing, inadequate education, or parent anxiety. Nursing staff is less likely to use an intervention if it is perceived as an inconvenience. With these suggestions, pain and anxiety levels in pediatric patients may lead to more consistently positive results and a better compliance with the vaccination regimen.

Conclusion

Pain and anxiety related to injections is a big concern in the healthcare setting in the pediatric population. A distressing experience can have a lasting effect and can lead to future non-compliance and avoidance of seeking healthcare. Nurses can intervene with tools to help reduce pain and anxiety during injections and, thus subsequently prevent traumatic experiences. Current research is abundant regarding interventions for venipuncture and intravenous cannulation in pediatric patients but is lacking for routine injections. Implementation of various interventions to reduce pain and anxiety is also varied from nurse to nurse and patient to patient. Availability and convenience also differ for each specific intervention. Proper preparation and the use of multiple age appropriate modalities are the most effective method in achieving decreased anxiety and pain, in pediatric patients undergoing an injection.

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Appendix A:

Pediatric

Nursing Survey

Fall 2018:

1. When giving
an injection do
you use any
type of
distraction or
anxiety/ fear
relief?

2. If yes, what
type do you
most
commonly use?
IE buzzy bee,
Ipad, parents,
etc.

3. What do you
find the most
effective in
relieving
anxiety/ fear in

patients having
an injection?

4. At what age
do you think
the distractions
are no longer
effective?

5. What age
group do you
find the
distractions
most effective?

6. Do you
utilize child life
services?

Appendix B:

Pediatric

Nursing Survey

Results 2018

(For specific
questions see
Appendix A)

Question 1

Yes x 12

“ Try if I have
another set of
hands”

“ Child life or
Favorite toy”

“ Volunteer,
child life, buzzy
bee”

“ Ipads,
Cellphone,
Parents”

“ Distraction-
video on
Youtube”

Question 2

Child life,
Parents, phone,
toys

Parents hold,
favorite toy

Buzzy Bee,

Parents,

Movies, toys,

Child life

Buzzy, Ipad,

Parents x2

Child life, Ipad,

Age

appropriate

Child life x 3

Guided

imagery

Buzzy Bee,

Parents, Child

life

Distraction

Movies, Ipad,

Parents

Video

Depends on

age x 2

Questions 3

Age dependent

use numbing

cream

Age dependent

x 3

Parental

comfort,

showing how it

will go on Mom

Buzzy Bee,

Distraction with

movies or toys

Ipad x 2

Child life x 3

Parents know

best

Parents

Distraction x 3

Question 4

Always

effective x 5

8-years old x 2

6-7 years old

Teen x 3

4 months- use

sweeties

Age dependent

x 2

Middle school

age

Chronic kids

Question 5

Preschoolers

and up

Toddlers &

infants

Early school

age

4-5 years of

age

Toddler x 3

3-6 year olds

Depends

Under 6 years

old

All ages

Over 1 year old

School aged

Question 6

Yes- 12

No-1

When

available, but

on nights so

not usually- 3