Full Length Research Paper

The Effect of Parental Presence in Decreasing Pain Level for Children during Venipuncture

Tariq Mustafa Al-Abbass1, Raghad Hussein Abdelkader2*, Noordeen Shoqirat3 and Hala Obeidat4

1RN, MSC: Emergency Department, Queen Rania Hospital for Children, Amman, Jordan.
2RN, PhD: Pediatric Nursing Department, Applied Science Private University, Shafa Badran, Jordan.
3RN, PhD: Dean of Nursing faculty, Mutah University, Karak, Jordan.
4RN, PhD: Head of Maternal Child Health Nursing Department, Princess Muna College of Nursing, Mutah University, Karak, Jordan.

Accepted 17th October 2016

Abstract

Purpose: To examine the effect of parental presence in decreasing pain level in children during venipuncture. Methods: The quasi experimental study was designed to determine the effectiveness of parental presence on the pain level of children undergoing venipuncture. The study sample consisted of children aged 4 to 9 years at the emergency department of pediatric hospital in Amman, Jordan. A total of 102 children were conveniently sampled and evenly randomized into two groups: experimental group (n=53 children) with parental presence and control group (n= 49 children) parental absence during venipuncture. The primary instrument used to test pain level was the Wong-Backer faces. Results: The mean pain level in all children pre venipuncture was (0.8); the mean pain level in the control group during venipuncture was (3.3) and post venipuncture it was (1.97), higher than the mean of pain level in the experimental group, which was (2.4) during and (1) post venipuncture (p <. 05). Conclusion: Parental presence has a significant impact on decreasing pain levels in children during venipuncture. Recommendation is for administrators that should develop policy regarding allowing parental presence during invasive procedures.

Keyword: Parental present, venipuncture, Jordan, Pain scale.

INTRODUCTION

Medical procedures can be unpleasant experiences for both children and their parents, in addition to health care providers (Wente, 2013). In the US, where approximately one-third of patients visiting the emergency department (ED) are children and adolescents, about 77% of patients admitted are in pain and/or require painful procedures (Drendle, Brouseau & Gorelick, 2006). Whereas, in Jordan children and adolescents who visit emergency department and complaining pain through any medical procedure there is no any statistical for this issue. Hockenberry & Wilson (2012) considered parental presence during invasive procedures to be the cornerstone of family-centered care, particularly in traumatic therapeutic care. The National Center for Cultural Competence (2007) considered parental presence during medical procedures to be one of the

Corresponding author email: r.abdelkader96@yahoo.com
aspects of family-centered care philosophy that considers the family to be a constant in children’s lives, while the service systems and personnel within those systems fluctuate. Dougal, et al., (2011) argued that the family members are the most important supportive persons for their loved ones during vulnerable times such as when undergoing invasive procedures.

The concept of parental presence was first presented in the early 1980s when Foote Hospital in Michigan began a program to facilitate the practice of family member presence during resuscitation as a response to demands by families (Doyle, et al., 1987). The Emergency Nurses Association (2010) defined family presence as the attendance of family member(s) in a location that affords visual or physical contact with the patient during resuscitation or an invasive procedure (EN Association, 2010).

Family members are those individuals who are relatives or significant others with whom the patient shares an established relationship (National Consensus Project for Quality Palliative Care, 2004). Operationally, parental presence in this study was measured in terms of allowing any family members (father or mother or both) to be present during the pre-procedural, procedural, and post-procedural periods. The pre-procedural period was defined as the time from obtaining consent to just before the tourniquet was placed on the child’s arm; the procedural period was the time from tourniquet placement to placement of the tape on the intravenous site; and the post-procedural period was five minutes following the procedure. Pain scores were obtained throughout this time series (Ozcetin, et al., 2011).

By nature, pain is a subjective experience which is affected by cognitive, emotional and social factors (Fein, et al., 2012). American academy of pediatrics has been reported that the emotional component is more important in children; a child who experiences pain in an unsecured environment (i.e., away from his or her family) can suffer from a lack of confidence and stress that is comparable to the pain associated with the wound itself (Fein et al., 2012), consequently the American academy of pediatrics (2014) supported allowing parental presence practice during unpleasant medical procedures for children, such as blood sampling procedures (venipuncture), in order to help in decreasing children’s anxiety, fear.

The International association for the study of pain (1986) defines pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. McCaffery, et al., (2003) defined pain as whatever the experiencing person says it is, existing whenever he or she say it does. For the purpose of this study pain level is measured by the Wong-Baker Faces Pain Rating Scale (WBS), whereby faces indicate a range of pain experience from a happy face with no pain (hurt) to a weeping face indicating intense pain (Figure 1).

Patients are asked the person to choose the face that best describes how they are feeling. This scale is recommended for patients aged three and older (Cohen, et al., 2008; von Baeyer, 2006). There are very few studies in Jordan and other Arabic countries that examined the effect of parental presence in pain perception for children during venipuncture. This study is expected to add something new to nursing knowledge and practices via examining the effect of allowing parental presence with their children during intravenous insertion in decreasing pain level.
LITERATURE REVIEW

Children in the hospital may undergo a wide range of interventions, many of which can be traumatic stressful and painful (Drendel, Brousseau, & Gorelick, 2006). The various settings in which children receive care can be scary and overwhelming to the child and family, and interacting with various health care personnel in various settings can itself cause anxiety (Kyle, 2012). In addition, they perceive physicians and nurses as sources of pain. Parents are the natural protectors and an important source of comfort for their children, especially during physical and emotional crises (Sparks, Setlik, & Luhman, 2007). When their children become sick, parents feel an obligation to serve and to assume dual roles when their child visits the emergency department. Parents usually wish to function as member of helping team; in addition, they become stressed and anxious and may feel some guilty over their child’s illness (Wente, 2013).

During the last two decades, parental presence during pediatric procedures has become an important issue for emergency departments (Young, 2014). Surveys of parents demonstrate that they express a clear preference to be with their children during procedures (Dingeman, Mitchell, Meyer, & Curley, 2007). Young (2014) conducted observational study in a PED of an urban public general hospital in the US to observe the proportion of family member who choose to remain present during children’s pediatric emergency department procedures, the most common of which were vascular access (25), laceration repair (11), and urethral catheterization (9) in actual clinical situations. The results were that 59 children were undergoing 66 procedures accompanied by 83 family member enrolled; 73% of family members stayed during the child's procedure, 18% left and 9% showed some mixture of staying and leaving (Young, 2014).

The American Academy of Pediatrics (2014) supported that patients and families are key decision makers regarding patient’s medical care, and they recommended the option that family members should be encouraged to be present during all aspects of emergency department care, including invasive procedures, in order to promote patient dignity, comfort and autonomy, and they recommended that information regarding the invasive procedures should be provided to families, regardless of their decision to be present or not. Rennick, et al., (2011) explored mothers’ experiences using a touch and talk intervention to comfort their children during invasive procedures, exploring overarching theme that giving parents the choice of being involved in their child’s care using touch and distraction techniques during painful procedures can make children feel comfortable, make parents become more confident about participating in care, and provide an invaluable opportunity to foster parenting and support the child during a difficult experience. Karlsson and his colleague found that parental presence and conversation is the cornerstone for meeting children’s needs during needle-related medical procedures. They reported that parental presence plays a central role in the child’s feeling of security and helps the child to understand these actions based on his level of understanding and given conditions (Karlsson, et al., 2014).

Despite the majority of parents believing that parental presence can be beneficial during invasive procedures, some parents believe that being present during invasive procedures will interrupt professionals’ work, parents will not be able to calm the child and they will suffer greater anxiety (Gonzalez, Tomas & Etxaniz, 2010). However, this study was composed of children who were relatively older; older children may have better coping skills, which would affect their pain during procedures and which could account for the differences in findings between the study groups (Wolfram, Turner, & Philput, 1997). The aim of this study was to examine the effect of parental presence in decreasing pain level in children during venipuncture.

Research questions
1) What are the pain levels in children prior to venipuncture?
2) What are the pain levels in children during and after venipuncture?
3) Are there differences in pain levels during venipuncture between children who have parental presence compared to other children who do not have parental presence?

METHODOLOGY

Design

Experimental pre-posttest design was used with two groups. Children were assigned into control and experimental group, then the manipulation of independent variable (parental presence) and measurement of dependent variable (pain) was conducted in order to compare between the two groups’ outcomes (pain measurement). The study took place in an ED in a Jordanian pediatric hospital.

Sample, population and description

Convenient purposive sampling method was used in this study to choose children coming to the ED in a pediatric hospital with their parents, complaining of signs and symptom of dehydration (due to diarrhea, vomiting and/or poor fluid intake). Parents were defined as one or two of
the child’s legal guardians, including mother, father, grandparent, authorized sibling or foster parent. The subjects were distributed into experimental and control randomly by tossing a coin. The software G Power version 3.0.10 was used to determine the appropriate sample size for study, which was identified as 102 children, comprising 53 in the experimental and 49 in the control group.

Inclusion criteria for the children included: children aged 4-9 years; having a family; normal level of consciousness (Glasgow Coma Scale, GCS=15); no previous history of venipuncture within the last one year; no previous history of hospitalization; main complaint is medical (such as dehydration due to gastroenteritis) with absence of surgical pain (such as acute abdomen or falling down, because children with surgical causes are usually in moderate to severe pain, making it impossible to study pain due to venipuncture). Exclusion criteria included children younger than 4 or older than 9 years, because older children have more coping skills and are embarrassed to say that they are in severe pain during venipuncture (Wolfram et al., 1997); child with previous history of hospitalization, as past experiences with venipuncture effect on pain perception (Ozcetin, 2011); child with congenital anomalies or chronic medical diseases; concurrent analgesic treatment during the study, as analgesia affects pain perception during venipuncture (Ozcetin, 2011); an extreme pain reaction (if the child was consoled for more than five minutes); demonstrated agitated movements; and if more than one venipuncture had been attempted. The exclusion criteria for parents included a psychiatric diagnosis within the past 4 years.

Inclusion criteria for the nursing staff included venipuncture procedures performed by the same registered nurse with experience of at least three years in pediatric emergency ward. Exclusion criteria for nursing staff included registered nurses working in the ED currently holding management positions. Management registered nurses do not routinely provide direct patient care and perform venipuncture procedure in ED.

**Instruments**

**Pain assessment**

Facial expression scales are the preferred method for eliciting reports of pain from children (Keck, Gerkensmeyer, Joyce, & Schade, 1996). The WBS measures pain experienced during medical procedures by presenting patients aged 3-18 years with different facial expressions that are scored from “no hurt” (0) to “hurts worst” (5) (Blount & Loiselle, 2009). A score of ≥3 has been accepted as representing severe distress (Cohen et al., 2008). The WBS is widely acceptable and preferred to all other faces pain scales by children of all ages, parents and practitioners because it is quick, simple (translated into ≥10 languages), easy to use (minimal instruction required), has adequate psychometric properties and is inexpensive to reproduce (Wong & Baker, 1988). Furthermore, it lacks any specific ethnic or sex-related features (von Baeyer, 2006). The major disadvantage of the face scales is that children may not choose the right face and the confounding of emotion with pain intensity as represented in the faces; male children in particular may avoid selecting the maximum pain indicator of 10 because the associated face is crying (Cohen et al., 2008). Nevertheless, the WBS has been widely used to rate pain severity among children, and it has been validated outside the ED, mostly for chronic pain; the pain severity ratings on the WBS were highly correlated (Spearman’s rho > 0.80) with those on a visual assessment scale (VAS) (Garra et al., 2010).

Before using this tool we explained to the children and their parents that each faces in the tool represent a level of pain, with words to the effect: “Face 0 is very happy because he does not hurt at all. Face 1 hurts just a little bit. Face 2 hurts a little more. Face 3 hurts even more. Face 4 hurts a whole lot. Face 5 hurts as much as you can imagine, although you do not have to be crying to feel this bad”. We then asked the patients to choose the face that best described how they were feeling. Other questions related to demographical characteristics such as child’s variables: included age, sex, number of admissions and illness category.

**Data collection**

The study began on third March, 2016. A brief presentation about the study was introduced to nursing staff in the pediatric ED. In this study, the same female registered nurse performed the venipuncture procedure to the children in the procedure room, to ensure that each child was exposed to the same conditions. This was done after full explanation of the study to the participants and their families, whereupon the first data gathered after obtaining informed consent (signed on the relevant form) was demographic data about the child and family, which included questions about age, gender, resident place, primary care giver, and the closest person to the child at home. The children were then randomly assigned into the experimental and control groups by tossing a coin. The experimental group comprised 53 children while the control group included 49. The period of selection and intervention was four months.

In experimental group the child had parental presence during the procedure and the parents were instructed by the registered nurse about how to calm and relax their child during the procedure via touch and sound. The parents were asked to sit at the head of the bed and talk to, touch and maintain eye contact with their children and these instructions were given to parents before entering into procedure room. Children in the control group had no parental presence during the procedure. An experienced
Table 1. Result of pain level in children at venipuncture

<table>
<thead>
<tr>
<th>Variables</th>
<th>N (%)</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (year)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group (ranged)</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>Control group (ranged)</td>
<td>4-9</td>
<td>6.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.4)</td>
</tr>
<tr>
<td><strong>Pain estimation at baseline (all)</strong></td>
<td>102</td>
<td>0.8</td>
</tr>
<tr>
<td>Pain estimation (experimental)</td>
<td>53</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain estimation (control)</td>
<td>49</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note: N=sample size, M=mean, SD=standard deviation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

registered nurse performed venipuncture procedure using only butterfly syringe size 23 in the left or right ante-cubital veins after application of alcohol swabs. All venipuncture procedures were performed by the same nurse. The pain scores for each child from each group (experimental and control) were recorded before, during, and after the procedure using the WBS by the same registered nurse who performed the venipuncture.

Ethical Considerations

This study was approved by the ethics committee of the faculty of nursing at the University of Mutah, and the Institutional Review Board (IRB) from the hospital where the study was completed. Written informed consent from parents and verbal child assent was obtained. Children are a vulnerable research population. If the child did not assent to participation at any time during the study, even if their caregiver consented, the child was removed and all of their data collected were destroyed. Equally as important, even if the child assented to participate in the study, the caregiver first signed consent for the child to be included.

In this study, the researcher and research assistant identified themselves and presented their qualifications to conduct this study. Confidentiality and anonymity were monitored and maintained throughout the research study, and the subject selection process, purpose of study, procedure, and the right to refuse to participate or to withdraw (without this affecting their statutory rights or care received) was explained in full to all parents and children, along with the potential benefits and risks of the study, and they were invited to ask any questions they may have had.

The benefits to parents who were participating in this study may have included personal satisfaction and a sense of importance in participating in a study involving their child. Potential benefits to future children and parents included improved child/parent satisfaction, decreased child and parent distress and decreased intensity of child pain during intravenous insertion procedure and support use of a traumatic care and family centered care concepts in ED.

Direct potential benefits to current pediatric emergency department registered nurses included the opportunity to participate in a nursing research study, and improvement of the pediatric registered nurses’ role in supporting and promotion of a traumatic care and family-centered care approach. No potential risks and discomforts for children and parents were recognized during this study.

Analysis plan

The Statistical Package for Social Sciences (SPSS 20.0) was used to perform the data analyses. Descriptive data, including ranges, frequency distributions, percentages, means, and standard deviations, were computed to describe the study sample and answer research question number 1 and 2. Bivariate analyses were conducted using independent t-tests to compute differences between the mean score in research question number 3.

RESULTS

Presentation, analysis & interpretation of data

The distribution of the sample (N=102) in regards to gender was relatively even, with 54 males and 48 females (52.9% and 47.1%, respectively). The recorded age ranges in the experimental and control groups were 4-9 years, with a mean of (6.3, SD =1.4) and (6, SD =1.8) respectively. The distribution of sample in regard to parental presence was 53 (52%) children having parental presence, and 49 (48%) not having it (during intravenous insertion). The highest pain level was recorded in the control group during the intravenous insertion (M=3.3, SD=1.6), while the minimum pain level was recorded at pre-procedural period in all children (M= 0.8, SD =1.3) table 1.
The mean pain level in children at pre-procedural period was (0.8, SD = 1.3). The mean pain level in the experimental group (parental presence) at procedural period was (2.4, SD = 1.6), while the mean pain level in the control group (no parental presence) at procedural period was (3.3, SD = 1.6). A bivariate analyses independent samples t-test revealed a significant difference between experimental (parent present) mean (1.97, SD = 1.78) and control group (no parental present) mean (3.2, SD = 1.78), t(98) 3.2, p=0.002 (table 2).

<table>
<thead>
<tr>
<th>Study group</th>
<th>M</th>
<th>SD</th>
<th>t test</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>1</td>
<td>(1.3)</td>
<td>3.2</td>
<td>0.002*</td>
</tr>
<tr>
<td>Control</td>
<td>1.97</td>
<td>(1.78)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: *p < .001; **p < .05.

The mean pain level in children at pre-procedural period was (0.8, SD = 1.3). The mean pain level in the experimental group (parental presence) at procedural period was (2.4, SD = 1.6), while the mean pain level in the control group (no parental presence) at procedural period was (3.3, SD = 1.6). A bivariate analyses independent samples t-test revealed a significant difference between experimental (parent present) mean (1.97, SD = 1.78) and control group (no parental present) mean (3.2, SD = 1.78), t(98) 3.2, p=0.002 (table 2).

**DISCUSSION**

Children vary in age and developmental stage, but as a group, they generally have an innate fear of needles and medical procedures (Kyle, 2012). Pediatric nurses should assess comfort level of parents and holistic comfort for child before any procedure, and ask the child about the preferred person for participating in care and procedure in order to enhance patient comfort (Rennick et al., 2011). This study aimed to examine the effect of allowing parental presence in decreasing pain level in children during venipuncture by comparing pain levels between children who have parental presence compared with other children who do not have parental presence during venipuncture. The WBS was used to measure pain level in children before, during and after intravenous insertion. The findings imply that the mean pain level in experimental group was lower than in the control group (no parental presence) at procedural period (0.8, SD = 1.3) and in the control group (no parental present) mean (1.97, SD = 1.78), t(98) 3.2, p=0.002 (table 2).

In conclusion, these study findings showed that allowing parents to be present with their children during venipuncture procedure significantly decreased child pain levels. In addition to statistical significance there was also clinical significance for allowing parental presence in the clinical setting (i.e. ED) in promoting child comfort, dignity, security and enhancing the bonds between and satisfaction of child patients, their parents and health care professionals.
professionals (Ferreira, Balbino, Balieiro, & Mandetta, 2014, Bice, & Wyatt, 2016).

In emergency department where children are often subjected to painful procedures, allowing parental presence during procedures had multiple benefits; it gave the child a choice to be with or without parent during the procedure, and parental presence is inexpensive and readily available, requiring minimal staff teaching and being generally accepted by both patients and families, with no risk to biomedical procedures or outcomes (Karlsson, et al., 2014). Parental presence has the potential to increase the child’s feeling of security, encourage their cooperation, and positively affect their coping in future experiences (Karlsson, et al., 2014). Parental presence during venipuncture helps to maintain integrity of the whole family (child and parents) during a painful procedure, and honors the importance of the family unit, promoting parental participation in care (Abdelkader, et al., 2015), increasing client choice and refocusing child patients’ cognitive attention away from the fear and pain (Karlsson, et al., 2014).

LIMITATIONS
This study has some limitations that may affect study results and generalizability of the findings. Most obviously, the children’s age range of 4-9 years spans two developmental stages (preschool and school age), and the children in each developmental stage have different ways of coping with stressful events (Kyle, 2012). The study should be replicated for children belonging to the same developmental stage. Another limitation was the use of non-probability purposive sampling method to obtain the sample, thus it is recommended to replicate the study using probability sampling methods. Finally, the only statistically significant results involved the WBS scores, thus it is recommended to use another tool to measure pain levels in future studies.

CONCLUSION
Recommendations for administrators that should develop policy regarding allowing parental presence during invasive procedures, which can provide structure and support to health care professionals involved in this practice. Nurses should consider allowing parental presence with their children during venipuncture procedures to enhance child security, dignity and comfort, and parent satisfaction. Future researches are recommended to examine the effect of parental presence on pain tolerance in children during different invasive procedure with imposing more control over the limitations through choosing only the same age group, or selecting a random sample instead of using non-probability purposive sample; and using another instrument to measure pain level during the procedure.

NURSING IMPLICATION
In light of the study findings:

1). Findings from this study offer evidence for enhancing procedure with less pain beginning with the emergency nurse. An easily administered, feasible, and cost effective way at emergency department can aid in a child’s comfort associated with procedures starts with early communication to the caregiver. When referring a child for an invasive procedure or making future appointments where procedures are anticipated, nurses should discuss the importance of being the child with a favorite accompany such as his/her mother, father or guardian any family members who is the most comforting to the child to ensure less pain and optimal holistic comfort.

2). Nurse practitioners should offer the option to the parents about being present or not present during intravenous insertion after giving them complete, unbiased information about the procedure and it should be based in written institutional policy

3). Nurse Educators should teach nurses and nursing students about the benefits of allowing parental presence during simple invasive procedure (i.e. venipuncture) in their nursing practice.

CONFLICT OF INTEREST
The authors report no actual or potential conflicts of interests.

ACKNOWLEDGMENT
No external or intramural funding was received

REFERENCES


International Association for the Study of Pain (1986). Classification of chronic pain. Pain, Suppl. 3 SI-5226

