USING DISTRACTION TO REDUCE VENEPUNCTURE PAIN AND DISTRESS IN SCHOOL AGED CHILDREN: THE ROLE OF THE PARENTS', NURSES' AND THE CHILD'S VOICE: A REVIEW OF THE LITERATURE

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Abstract

Venepuncture is reported by children as the most feared aspect of attending hospital. A minor, yet painful, procedure that has been associated with increased levels of distress in children. Distraction, a cognitive-behavioural approach is used as an adjunct to pharmacological methods of pain management in attempt to lower levels of venepuncture pain and distress. This literature review examines the efficacy of distraction strategies and also examines the role of parents' and nurses' in distraction. In addition, factors that influence and hinder the use of distraction will be examined. A significant gap that emerged from the literature was in relation to the child's voice. Nurses should view patient choice as an integral part of decision making for choosing appropriate distraction techniques.

Dedication

This dissertation is dedicated to the memory of my Gran, Frances Hix 1936-2014.

Acknowledgements

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Chapter One

This literature review is a critical examination of contemporary research literature that examines the use of distraction for venepuncture pain and distress in school aged children. A broad range of research articles will be reviewed in order to assess the current evidence and efficacy for particular distraction techniques. An examination of the parents' and nurses' role in distraction will also be included. Focusing from a nursing perspective, the factors that influence and hinder the use of distraction will be explored. In addition, a significant gap that emerged from the literature was the lack of child's voice in relation to distraction. This will be examined in the last chapter by exploring the importance of children's participation in decision-making when they are given choices for which distractor they prefer.

This chapter begins by explaining the researcher's personal interest in children's nursing. Following this, the purpose of the literature review will be provided, and to conclude, the research strategy that was used to obtain appropriate research articles will be discussed.

Personal Interest

Nursing children and young people has been of particular interest to me since beginning my nursing studies. I have always been passionate about spending time with children, including my nephew and younger cousins, and I have gained experience through spending time babysitting while I was at high school. Coming into this programme, I had a particular curiosity about nursing children and their families, and thought it would be the most challenging, yet rewarding career for me. My interest was further sparked when Kirsten Gunn gave her lecture on Child Health Assessment: it was then I started to delve into the literature.

My experience in children's nursing at present is limited to the research articles I have read, but from these alone, I have found an interest in the management of procedural pain in children and young people, particularly through the use of non-pharmacological techniques.

The notions of ‘play’ and ‘distraction’ resonated with me as they have the possibility of bringing humour, fun, normality, and a degree of control to the child’s very unfamiliar hospital experience. I have found that minimising the suffering of the child, while facilitating the success of medical interventions through distraction, requires a great deal of cooperation and patience from the nurse. Also, the simplicity of these strategies allows parents to be coached, and thus play a role in implementing such measures, giving them a sense of involvement in their child’s care. Lastly, distraction has a strong psychological aspect to it which appealed to me as I have a previous degree in Psychology.

Purpose of this Literature Review

This review aims to critically examine current research literature on distraction techniques, in order to investigate the efficacy of these in leading to lowered reported levels of venepuncture pain and distress for school aged children. The specific age group was selected as distraction techniques can differ depending on different ages; this is discussed further later in the chapter. Moreover, the examination of the child’s voice in relation to distraction reminds nurses to consider children’s choices over which distraction method they prefer, rather than relying solely on research literature that provides evidence for the efficacy of particular techniques.

Research Strategy

The initial literature search involved an extensive examination of the following databases: PubMed, CINAHL (Cumulative Index of Nursing and Allied Health Literature), PsycINFO and Google Scholar. A variety of key terms including ‘distraction’, ‘distraction techniques’, ‘venepuncture’, ‘venipuncture’, ‘ procedural pain’, ‘medical procedures’, ‘paediatrics’, ‘needle-related pain’ were used to retrieve relevant articles. ‘Distraction’, ‘distractibility’, and ‘selective attention’ were among subject headings, which were then

searched in combination with terms in the abstracts of the literature. This search revealed over 16,000 studies.

A second search of the terms ‘venepuncture’, ‘venipuncture’, ‘blood draw’ and ‘phlebotomy’ were then searched in combination with each other which resulted in 18 studies. Lastly, an age limit of six to 12 years was introduced to narrow the search down to school-aged children. The rationale for the selection of school aged children was due to evidence that suggests variations in cognitive abilities affect how children perceive, understand, remember and report pain and distress (Duff, 2003). Piaget’s theory of cognitive development describes four main stages that children progress through as they get older (Thompson & Gustagson, 1996). In relation to school-aged children, Piaget suggests they are at the ‘concrete operational’ stage, where children begin to think logically and are ‘able to conceptualise the reversal of processes – for example, becoming sick and getting well again’ (Thompson & Gustagson, 1996, p.183). Furthermore, research by Gaffney and Dunne (1987) demonstrated that the acquisition of a concept of pain, as measured by children’s definitions, followed a developmental sequence consistent with Piaget’s theory of cognitive development (Gaffney & Dunne, 1986). Moreover, the cognitive abilities of the child will affect how they respond to particular distraction techniques, and thus distraction techniques must be tailored to match the developmental level of the child (Dahlquist, Pendley, Landthrip, Jones & Steuber, 2002).

In terms of looking at the efficacy of distraction techniques, the following inclusion criteria ensured the appropriate articles were retrieved. Studies of inclusion were those published in English; and those with children aged between six and 12 years who had planned venepuncture procedures. Therefore, excluded studies were those that included children who required emergency venepuncture; those which included children with chronic illnesses; and/or those which included children who had been exposed to recurrent venepunctures in the

past (e.g. more than three times in the past year). Eight studies met the inclusion criteria, and were examined and organised into two main categories: active and passive forms of distraction. Chapter three provides a critical analysis of these studies.

Additional searches were conducted using a combination of the following key words ‘parents’, ‘role’, ‘nurses’, ‘perspectives’, ‘distraction use’ to ensure relevant literature regarding the parents’ and nurses’ roles was identified. And lastly, in order to examine the child’s voice in relation to distraction, a search was conducted using a combination of the following key words ‘children’s voice’, ‘participation’, ‘decision making’, ‘children’s rights’.

There was no date range set on the searches to ensure all theoretical and seminal pieces were included. After sorting through titles and abstracts, reference lists were then scanned to identify any additional studies of relevance.

Chapter Two

This chapter begins by providing relevant background to the topic of pain and distress in children. It then progresses to discuss factors that influence children's responses to painful procedures, pain assessment in children, and current pain management practices for venepuncture. In addition, the short- and long- term effects of under managed pain in children will be discussed. The second half of the chapter explores the notion of distraction by defining the concept, and exploring some history of its use in the paediatric healthcare context. Different types of distractors are explained and developmental considerations outlined.

Background

Medical procedures, particularly needle insertions, are among the most common experienced procedures, and are reported by children as being the most feared aspect of attending hospital (Carlson, Broome & Vessey, 2000; Gilboy & Hollywood, 2009; James, Ghai, Rao & Sharma, 2012; Mahoney, Ayers & Seddon, 2010; Murphy, 2009; Uman et al., 2013). Venepuncture, also written as venipuncture, is defined as the puncture of a vein typically for withdrawing a blood sample or the administration of intravenous medication (Uman et al., 2013).Illness and hospitalisation are difficult encounters for children, with the presence of unfamiliar sounds, increased number of strangers, a fear of pain and procedures, and being cut off from their natural surroundings can trigger further fear and anxiety (Burns-Nader & Hernandez-Reif, 2014; Haiat, Bar-Mor, & Shochat, 2003). Increased fear and anxiety among children and their families can further intensify the painful experience, which may be associated with negative emotional and psychological implications (Curtis, Wingert, & Ali, 2012; James et al., 2012).

Painful procedures are a major source of distress (Weisman, Bernsetein & Schechter, 1998) and some researchers use distressing behaviours (e.g. crying, moaning and fighting) as a proxy for pain (Kleiber & Harper, 1999). While this suggestion may not be true, as distressing behaviours can be influenced by things other than pain (e.g. temperament, anxiety and fear) (Kleiber & Harper, 1999), both terms will be taken into consideration as some of the reviewed studies have included outcome measures for both pain and distress.

Pain in children. Blount, Piira, Cohen and Cheng (2006) propose that needle pain is the most common type of procedural pain in children and causes considerable distress. The International Association for the Study of Pain (IASP) (as cited in Young, 2005, p.160) defines pain as 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage'. IASP further proposes that 'pain is always subjective, and that each individual learns the application of the word through experiences related to injury in early life' (as cited in Young, 2005, p.160). These definitions not only highlight the individuality of pain responses but also that painful procedures, particularly early in life, might shape future responses to pain (Young, 2005). Children endure an array of painful experiences starting at birth and continuing through adolescence (Blount et al., 2006); routine or emergency medical procedures such as immunisations or venepuncture, along with every day minor injuries encompass the majority of a child's painful experiences (Blount et al., 2006; Young, 2005). Therefore, it is likely that a child's experience of a painful medical procedure can play a significant role in shaping their pain response to future events (Young, 2005).

Distress. Pain has both sensory and emotional components and manifestations of distress can sometimes be difficult to distinguish from those of pain, especially in young children (Curtis et al., 2012). Tak and van Bon (2006) suggest that while pain is contingent upon a physical stimulus, distress may occur without any actual pain. As distress usually

accompanies pain, it is important that both these aspects receive appropriate attention and are well managed (Curtis et al., 2012).

Factors that influence children's responses to pain. Weisman et al. (1998) propose that pain perception results from a number of different factors that affect how a noxious stimulus is interpreted. These factors include age, sex, ethnicity, temperament, developmental stage and previous experience (McCarthy & Kleiber, 2006).

Age. Several researchers have reported that younger children typically report greater levels of pain intensity and unpleasantness from needles, and manifest more distressing behaviours than older children (Goodenough et al., 1999; Duff, 2003; Young, 2005; Blount et al., 2006; McCarthy & Kleiber, 2006).

Sex. Female children have been found to display more expressive responses such as crying, and may over estimate their reports of pain (McCarthy & Kleiber, 2006). In contrast, male children use behaviours such as bargaining and tend to underestimate their pain (McCarthy & Kleiber, 2006). Goodenough et al. (1999) also suggests that girls and boys report different pain sensations.

Ethnicity. According to Young (2005), adult studies have suggested interethnic differences in pain ratings; however research describing ethnic and cultural differences among children is limited (McCarthy & Kleiber, 2006). McCarthy and Kleiber (2006) propose that children of different cultural backgrounds might respond differently in response to acute procedural pain. In addition, children's parents' behavioural expectations might differ from parents of another culture (McCarthy & Kleiber, 2006). Therefore, culture and ethnicity should be considered as a factor that might influence children's responses.

Temperament. Children who were rated by their parents as being more active, intense, or negative in mood, displayed higher levels of distress during venepuncture than children

who were rated less active, intense, or negative in mood by their parents (Lee & White-Traut. 1996).

Developmental stage. Variations in cognitive abilities affect the child's ability to understand, perceive, remember, and report pain and distress from a painful experience (Duff, 2003; Young, 2005). Although age is a correlate of developmental stage, correlation is not perfect, therefore it is important to take into consideration the developmental level of the child (Young, 2005).

Previous experience. Previous experience is another factor that might influence the pain experience for the child. According to Duff (2003) the more negative the previous experience, the greater the subsequent anxiety, distress and non-cooperation. Accordingly, the higher level of anxiety a child exhibits results in a greater pain response (Goodenough et al., 1999; Young, 2005). Moreover, McCarthy and Kleiber (2006) suggest that it is the quality, not quantity of past medical procedures that is a predictor of pain.

Pain assessment. Blount et al. (2006) suggests that the assessment of children's procedural pain and distress may be carried out by the use of self-report, physiological monitoring, and observational methods. In addition, observer reports by adults who are present (e.g. parents, nurses etc) are also used to provide extra valuable information (Uman et al., 2013). Finley and McGrath (1998) (as cited in Blount et al., 2006) suggest that because pain and distress are subjective and personal events, self-report measures have been referred to as the gold standard of assessment. Self-report pain scales typically involve a pictorial scale of cartoon faces that range from a positive expression to a negative expression (Blount et al., 2006). Physiological monitoring is another measure of children's pain that is used throughout the literature. Blount et al. (2006) proposes that no single physiological index has been shown to be ideal at explaining pain, however, the measurement of vital signs can be of benefit. This

is because acute pain is accompanied by neurohumoral responses that can lead to significant increases in heart rate, blood pressure and respiratory rate (Dunwoody, Krenzischek, Pasero, Rathmell & Polomano, 2008). And lastly, observational methods are predominantly used to assess children's distress via observation of their overt behaviours (Blount et al., 2006).

Pain management. The use of local anaesthetics, such as eutectic mixture of local anaesthetics (EMLA), can significantly reduce needle-related pain and distress, and the use of EMLA has become standard practice in many paediatric establishments (Rogers & Ostrow, 2004; Blount et al., 2006; McCarthy & Kleiber, 2006). Blount et al. (2006, p.38) describe that 'when applied to the skin, EMLA inhibits the ionic fluxes that initiate and conduct pain impulses, thus resulting in local anaesthesia'. It is recommended to apply EMLA to the skin up to 60 minutes before the procedure, to allow time for inhibition of the nerve impulses (Rogers & Ostrow, 2004). Despite its use, EMLA alone is not always effective and a significant proportion of children will still be distressed (Lal, McClelland, Phillips, Taub & Beattie, 2001). Cognitive-behavioural approaches, such as distraction, have been found useful as an adjunct to EMLA/topical analgesics and are one of the most successful methods to alleviate procedural pain and distress in children (Stinson, Yamada, Dickson, Lamba, & Stevens, 2008; Taddio et al., 2010; Wang, Sun & Chen, 2008). Little is known about the physiological mechanism through which distraction works, however it is thought to divert attention away from the medical procedure at hand.

Inadequate pain management. Given that children report high levels of distress during venepuncture, the development and evaluation of interventions in this area is of importance (Humphrey, Boon & van de Wiel, 1992; MacLaren & Cohen, 2005). Young et al (1996) (as cited in Rogers & Ostrown, 2004) claim that unnecessary pain can erode the nurse-patient relationship. Moreover, inadequately managed pain in children can also have negative psychological implications, which can in turn lead to higher levels of pain during medical

procedures (Manne et al., 1990; Blount et al., 2006; Curtis et al., 2012). In addition, reports of fear and pain experienced during medical procedures in childhood has been associated with subsequent fear and pain during medical procedures, as well as avoidance of medical care as an adult (Blount et al., 2006; Koller & Goldman, 2012).

Distraction

As a whole, psychological interventions aim to help individuals develop coping skills to manage their pain and distress during painful procedures; such techniques include distraction, hypnosis, preparation and positive reinforcement (Uman et al., 2013). For the purpose of this review, the primary focus is on the use of distraction. Often considered a psychological or 'non-pharmacological' adjunct to pain management, distraction can be described as a mixture of both cognitive and behavioural approaches (Kleiber & Harper, 1999; Uman et al., 2013). Cognitive approaches include techniques that target negative ideation and attitudes to help replace them with more positive beliefs and thoughts (Uman et al., 2013). In contrast, behavioural approaches target negative behaviours to help replace them with more positive behaviours (e.g. watching a funny movie, instead of talking about how much the needle will hurt) (Uman et al., 2013).

Distraction is a cognitive-behavioural approach that can be effective in reducing pain and distress for children undergoing medical procedures (Kleiber & Harper, 1999; Uman et al., 2013). Despite its use, there is no universally accepted theory to explain its mechanism; however, researchers suggest its efficacy lies in its ability to use up cognitive capacity, leaving fewer resources to attend to painful stimuli (Koller & Goldman, 2012; McCaul & Malott, 1984). Wang et al. (2008) suggest that for a distractor to be effective, the distraction strategy must be age appropriate and it must be appealing to the child. Duff (2003) also suggests that age and developmental level of the child will determine how well they respond to the appropriate distraction strategies.

History of distraction use. Fowler-Kerry and Lander (1987) were among the first researchers to assess the value of cognitive strategies in reducing reported pain in children. Their study evaluated the effectiveness of distraction; in the form of (1) music, and (2) suggestion, as strategies to reduce short-term injection pain in children (n =200) aged between four and a half and seven years old. Findings supported the use of distraction, particularly music distraction, as an effective cognitive approach that could have the potential to reduce pain. A variety of different distractors have since been used in the context of children's pain management, these include: watching cartoon videos (Bellieni et al., 2006; Wang et al., 2008), looking through a kaleidoscope (Tüfekci et al., 2009; Karakaya & Gozen, 2015), blowing bubbles (Caprilli, Vagnoli, Bastiani & Messeri, 2012), interacting with distraction cards (Inal & Kelleci, 2012; Canbulat, Inal & Sonmezer, 2014), virtual reality (Wiederhold & Wiederhold, 2007; Malloy & Milling, 2010) and listening to music (Caprilli, Anastasi, Grotto, Abeti & Messeri, 2007; Balan, Bavdekar & Jadhav, 2009). Such techniques are implemented by nurses and hospital play therapists (Piira, Hayes & Goodenough, 2002; McCarthy et al., 2010). However, given that parents want to be present and take part in their children's care, they are well suited to implementing and encouraging such strategies (Piira et al., 2002).

Different forms of distraction. The reviewed literature reveals that distraction has two forms: active and passive (Koller & Goldman, 2012). Active forms of distraction require the child's attention and engagement in an action during the medical procedure (for example, playing with an interactive toy, or a video game). In contrast, passive forms of distraction require the child to observe stimuli (for example, by watching television, or listening to music) (Koller & Goldman, 2012). Theoretically, distractors that require more of a child's attention should be more effective in reducing pain and distress than distractors that do not involve an interactive component (MacLaren & Cohen, 2005; McCaul & Malott, 1984). However, two studies have proved otherwise, finding that the use of passive distraction lead

to lowered reported levels of pain and distress, more so than active distraction strategies (Bellieni et al., 2006; MacLaren & Cohen, 2005).

Chapter Three

This chapter will focus on the eight research articles that met the inclusion criteria outlined previously. The literature will be examined in order to analyse the efficacy of different distraction techniques. As there are a number of factors that can influence a child's response to pain, these will also be taken into consideration. The articles have been organised into 'passive' and 'active' distraction techniques and will be discussed in that order.

Passive Distraction

During passive distraction techniques, children are required to observe a stimulus by listening or watching something. Watching age appropriate cartoons during painful procedures is an example of passive type of distraction (Bellieni et al., 2006; Wang et al., 2008).

Bellieni et al. (2006). Differences in children's pain responses and thus, the efficacy of active and passive distraction was explored by Bellieni et al. (2006). The study sample was comprised of children (n=69) aged between seven and 12 years who were scheduled for venepuncture for clinical purposes, at an Italian hospital. Using a computer generated sequence, children were randomly assigned into one of three groups: (1) venepuncture without distraction, *control (C)*; (2) venepuncture performed while the child's mother interacted with them in order to distract them, *active distraction (M)*; and (3) venepuncture performed while the child was watching an age appropriate cartoon on the television, *passive distraction (TV)* (Bellieni et al., 2006). Mothers of the children were present in all groups, however were asked not to do anything to distract the children for groups C and TV. Following the procedure, children used the Oucher Scale, a validated visual pain scale (Beyer, Denyes, & Villarruel, 1992) scoring from 0 (no pain) to 100 (maximum pain), to rate the pain

they experienced (Bellieni et al., 2006). Mothers rated their perception of their child's pain using the same scale.

Findings revealed that both mothers' and children's mean pain scores were significantly lower in the TV group than in the control group ($p = 0.045$, $p = 0.037$, respectively). Mothers' and children's mean pain scores (23.04 and 17.39 respectively) of the active distraction (M) group were not statistically different from mother's and children's mean pain scores (21.30 and 23.04 respectively) of the control group, indicating that the passive distraction (TV group) was more effective at providing an analgesic effect compared to the active distraction (M group) (Bellieni et al., 2006).

A potential explanation as to why the M group pain scores were not significantly lower than the other groups might be explained by the way in which the mothers were interacting with their child. Mothers were instructed to actively distract their children by speaking, caressing and soothing them during the venepuncture procedure (Bellieni et al., 2006). However McMurtry, Chambers, McGrath and Asp (2010) suggest that reassurance serves as a signal of parental anxiety, which is then thought to impact on the child's coping of a painful experience. It could therefore, be suggested that if mothers were providing distracting behaviours by reassuring their child, they night have passed their own anxieties and fears onto their child as they struggled to act in a positive way at such a difficult moment. Additionally, the behaviours the mothers were instructed to exhibit might not have been perceived as active distraction from the child's perspective as they were not actively engaging in an activity themselves.

While these findings suggest that distraction, in the form of watching age appropriate cartoons, was effective in reducing reported levels of pain, there can be question as to whether or not this research was conducted in an ethical manner. As explained in the previous chapter,

distraction is used as an adjunct to topical analgesics such as EMLA. In the study by Bellieni et al, (2006) it was not stated if any topical anaesthetics were applied prior to the procedure. This has potential to place children, especially in the control group, at risk for the short- and long-term effects of undermanaged pain discussed in the previous chapter. While the use of topical analgesics may not be standard practice in Italian hospitals, it needs to be taken into consideration. Moreover, it was unclear as to exactly why children required venepuncture. Also, the children's previous experience of venepuncture was not outlined. Both of these factors have potential to affect the children's pain responses and should be taken into consideration. In addition, a critique of Bellieni et al.'s (2006) study is that mothers used the Oucher scale to rate their child's pain. The Oucher scale was developed for children to report their self-reported pain, and therefore not appropriate as an observer report scale (Blount et al., 2006).

Wang et al. (2008). A later randomised controlled trial by Wang et al. (2008) conducted in the paediatric department of a hospital in China, assessed the efficacy of two different methods of pain management for venepuncture. The intervention groups included: (a) an audio-visual distraction, where children were given a choice of ten age appropriate cartoon videos; and (b) a routine psychological intervention, which involved a research nurse who provided explanations as to why the venepuncture was necessary; and also used guided imagery, therapeutic touch and encouragement during the venepuncture procedure (Wang et al., 2008). The psychological intervention was carried out by the same nurse who performed the venepuncture procedure. Although the authors failed to state whether or not the children's parents were present during the procedure, parents were asked to rate their child's pain distress, and therefore it can be assumed they were present during the procedure. Wang et al. (2008) studied children (n=300) who were aged between eight and nine years, and required initial venepuncture for intravenous treatment. Children were randomly assigned to one of

three groups: (1) control; (2) audio-visual distraction; and (3) psychological intervention. Following the procedure, children and their parents rated their pain distress using the Visual Analogue Scale (VAS), a 10cm horizontal line, comprised of a scale from 0 (no pain) to 10 (most pain). The VAS has been validated in measuring pain and can also be used accurately and reliably to reflect changes in pain (Ismail et al., 2015). Wang et al. (2008) used a horizontal line that was marked at each end, one end with a smiling face (no pain) and the other end with a crying face (most pain).

The venepuncture procedure was performed by two registered nurses with 17-25 years' experience. If the first venepuncture attempt was unsuccessful, a second attempt took place, a full five minutes after the first attempt. Quantitative measures of pain were obtained using the observational visual analogue scale, rated by parents during the procedure and children after the procedure. Cooperative behaviour was a secondary outcome measure and a cooperative behaviour scale of children in venepuncture (CBSCV) was created for this study (Wang et al., 2008). The CBSCV tool assesses child's behaviour and rates it on a scale from 0-2. Prior to the study, research nurses were trained in assigning CBSCV grades.

In terms of the children's cooperation, findings revealed no significant differences between the two pain management groups. However there was a significant difference in child's cooperation between the control group and the psychological intervention group ($p = 0.004$), but not the control and audio-visual group. This indicates that psychological interventions were more effective in enhancing the cooperation of children during venepuncture.

In terms of pain, mean VAS scores were significantly higher in the control group compared to the audio-visual distraction and psychological intervention groups ($p = 0.0047$, $p = 0.0013$ respectively). Moreover, children of the audio-visual distraction group were more

likely to report higher VAS scores when compared to children of the psychological intervention group but these differences failed to reach statistical significance. Consequently, it provides some evidence that psychological interventions might be effective at reducing pain during venepuncture. Again, valuable information regarding the children's previous experiences of venepuncture was omitted from the study. In addition, there was no explanation as to why these children required intravenous treatment. Moreover, there was no mention of the use of topical analgesic. Some implications of this research include: relying on self-reported measures for pain. Even though pain is subjective, objective physiological markers such as change in pulse rate or neuro-hormonal mediators could be investigated to provide further evidence of the pain response (Wang et al., 2008).

After reviewing these two articles, the use of passive distraction techniques during venepuncture has revealed some mixed results. While Bellieni et al. (2006) found that passive distraction, in the form of watching cartoons on TV, provided more of an analgesic effect than active distraction by the child's mother, Wang et al. (2008) failed to find any significant reduction in reported levels of pain for children.

Active Distraction

Active distraction strategies typically require some interaction and engagement from the child, often facilitated by parents and nurses. The reviewed literature revealed the following interactive toys that are used including: kaleidoscopes, distraction cards, the inflation of a balloon, and cough trick methods (Gupta et al., 2006; Tüfekci et al., 2009; Inal & Kelleci, 2012; Canbulat et al., 2014; Karakaya & Gözen, 2015; Mutlu & Balcı, 2015).

Kaleidoscopes

Tüfekci et al. (2009). In a study by Tüfekci et al. (2009),Turkish children (n = 206) who were aged between seven and 11 years and were scheduled for venepuncture, were

assigned to one of two groups depending on which day of the week they came into hospital. The two groups were an intervention group, which involved the use of a kaleidoscope; and a control group, which involved standard care. At the time this article was published, parental presence was the only well-addressed non-pharmacological method for procedural pain, and thus, parents remained present in both groups (Tüfekci et al., 2009).

Prior to the procedure, interviews were conducted to obtain general characteristics of the child; for example, age, gender, number of previous venepunctures, and level of fear related to the upcoming procedure. Self- reported pain ratings were obtained after the procedure by use of visual analogue scales and the Wong Baker-Faces Pain rating scale (Tüfekci et al., 2009). The Wong-Baker Faces pain scale is a horizontal scale of six hand-drawn faces, that range from a smiling face (no hurting) through to a crying face (hurts worst) (Tomlinson, von Baeyer, Stinson and Sung, 2010) and can be translated into over 10 different languages .

Findings revealed that self-reported pain levels of the intervention group were significantly lower than self-reported pain levels of the control group ($p < 0.01$), indicating that the use of kaleidoscopes revealed lower levels of pain reported by children. Moreover, female children reported significantly less pain than males (4.61 and 5.78, respectively, $p < 0.05$), contrary to the suggestions made by McCarthy and Kleiber (2006) that female children generally overestimate their pain compared to male children. Another finding was that, children who had four or more previous venepuncture experiences reported less pain than children who had fewer experiences. As McCarthy and Kleiber (2006) suggests that the quality of earlier procedures predict pain and distress for subsequent ones, it could be suggested that these children had a positive experience in the past. Moreover, McGrath (as cited in Tufekci et al., 2009, p.2184) reported that children who had experienced routine

injections reported less pain than children who had only been exposed to a few, possibly indicating they had become desensitised or developed coping strategies.

Again failure to provide valuable information is a limitation of this study. The authors stated that children were 'healthy school aged children', however, it is not stated why these children required venepuncture (Tüfekci et al., 2009, p.2183). Moreover, there was no mention of topical analgesics used and it appears unethical to deny children use of topical analgesia. Lastly, while 60% of children had four or more previous experiences of venepuncture, the authors did not state why they required venepuncture in the past. As diagnosis is considered a predictor of how children respond to painful procedures, it should have been taken into consideration.

Karakaya and Gozen (2015). In a randomised controlled trial by Karakaya and Gozen (2015), Turkish children (n = 144) aged between seven and 12 years, who required blood tests were randomised into one of two groups: (1) the intervention, which involved looking through a kaleidoscope, and (2) the control, which involved standard care, where parent's held their child's hand during the procedure. Parents were also present in the experimental group however were asked not to hold their children's hands. Pre- and post-pain scores were obtained using the Faces Pain Scale-Revised (FPS-R). The FPS-R is similar to the Wong-Baker faces rating scale. It also consists of a series of six faces that range from a neutral expression of "no pain" to the "most pain possible" expression (Tomlinson et al., 2010). The scale also corresponds to a range between 0 and 10 as the child's pain level: scores between 1 and 3 indicate mild pain, scores between 4 and 6 indicate moderate pain, and scores between 7 and 10 indicate severe pain'. In order to prepare children for the procedure and teach them how to fill out the pain scale, an information session was conducted ten minutes prior to the procedure. The venepuncture procedure was conducted by the same nurse for each child in all conditions.

During the procedure, children in the intervention group were asked by the researcher what they saw when looking through the kaleidoscope, helping to keep the children focused on the shapes and colours in the glass rather than on the venepuncture procedure. Findings revealed a significant mean pain score difference between the experimental and control groups (1.80 and 3.27 respectively, $p = 0.001$) with mean pain scores being significantly lower in the experimental group, consistent with the research by Tüfekci et al. (2009) previously discussed. While these findings were positive, it is possible to argue that having the child's parents hold their hand in control group, and not in the intervention group, introduces another variable that should be considered or investigated. Again, information regarding why children required venepuncture was missing, and also there was no mention of use of topical analgesics. Lastly, Karakaya and Gozen (2015) used convenience sampling to recruit participants, which does not necessarily represent all children of that age group.

Distraction Cards

Inal and Kelleci (2012). Another type of distraction that has been researched among Turkish children is the use of distraction cards, also known as Flippits ®. In their study, Inal and Kelleci (2012) aimed to investigate the effects of Flippits to reduce procedural pain and anxiety during venous blood draw. The sample consisted of children (n =123) aged between six and 12 years, who were randomly assigned into one of two groups: (1) control, no intervention; and (2) distraction in the form of looking through Flippits®. Parents were present in both groups. Flippits are cards that consist of various shapes and pictures, and children were encouraged to study the cards, and were then asked questions by the nurse during the procedure, prompting the child to become more focused and thus distracted. Questioning ensured that the child was engaging with the cards, as the children needed to study them in order to answer the questions (Inal & Kelleci, 2012).

The study was conducted with three nurses, all who had different roles; one to conduct the venepuncture, one to provide distraction, and one to evaluate pain and anxiety. The nurses assumed the same roles for each group. Relevant data was obtained by interviewing the child, their parents and the observer nurse. Pre-procedural and procedural anxiety was assessed by parent and observer nurse using the Children's Anxiety and Pain Scales (CAPS). Although CAPS is the only faces measure the separately assess anxiety and pain through self-report, it has become a validated tool (de Castro Gonçalves et al., 2014) Following the procedure, children's pain levels were assessed with self-report, and observer (parent and nurses) ratings using the Faces Pain Scale-Revised (FPS-R). Before children were randomised, background information about demographics, medical history, BMI and recent analgesia were collected via a form.

Findings revealed that children among the intervention group had significantly lower pain and anxiety scores than the children in the control group ($p < 0.001$, $p < 0.001$ respectively), indicating that distraction cards were an effective technique that lead to lower reported levels venepuncture pain and anxiety. An implication of the study was the content of the distraction cards. If for example the cards had to be used for a second time (e.g. if venepuncture was unsuccessful on the first attempt), children might be able to learn the content of the cards and not be fully immersed in the distraction strategy when exposed to them a second time. Inal and Kelleci (2012) suggested that a larger set of cards should be developed with different interactive prompts for each card, and also that the same set of cards should not be used repeatedly. Moreover, data was taken to assess recent use of analgesia, however these findings were not published anywhere. This information would have been useful as the use of analgesics may reduce the pain experience, and potentially distort findings.

Canbulat et al. (2014). Another Turkish study investigated two distraction methods, both of which have been discussed above in previous work: the use of distraction cards, and a kaleidoscope; in attempt to reduce procedural pain and anxiety during phlebotomy. Children (n = 188) aged between seven and 11 years were randomised into one of three groups: a distraction card group, a kaleidoscope group, and a control group. Relevant data was collected by interviewing children and the parents prior to and after the procedure. The Wong Baker FACES pain rating scale was used by children, their parents and the observer nurse after the procedure. The Children Fear Scale (CFS) is a validated tool used to assess anxiety, and was rated by parents and observers. According to McMurtry, Noel, Chambers and McGrath (2011) (as cited in Canbulat et al. 2014), the CFS is a 0-4 scale showing five cartoon facesthat range from a neutral expression (no anxiety = 0) to a frightened face (severe anxiety = 4). Again, children in the distraction group were coached to attend to the task at hand. Questions such as "how many lady bugs are there in the picture" were asked. Children in the kaleidoscope group were not asked questions by the observer nurse. Prior to the procedure, background demographic information, medical history and use of recent analgesia was collected via self-report forms filled out by parents.

Findings revealed self-reported pain was significantly lower among children in the intervention groups when compared to the control ($p = 0.05$). In terms of observer- and parent-reported pain levels, ratings of the distraction card group were significantly lower than that of the kaleidoscope group ($p = 0.001$). Procedural anxiety levels were also significantly lower in the distraction card group than the kaleidoscope and control groups ($p = 0.04$; $p < 0.001$ respectively) (Canbulat et al., 2014). Overall, both techniques were effective at reducing procedural pain and anxiety.

A critique of this study is that while the authors claimed to have taken information regarding recent use of analgesics, they did not report if any of the participants had or not. By

omitting this information from the article, it could be suggested that the lower pain scores were due to recent use of analgesics, and therefore, the distraction techniques may not be as effective findings show.

Balloon Inflation

Gupta et al. (2006). A prospective randomised study in India by Gupta et al. (2006) evaluated the efficacy of balloon inflation on venous cannulation pain in pre-surgical school aged children (n = 75). Children were randomised into one of three groups: group 1, *control (n=25)*; group 2, *rubber ball distraction (n=25)*; and group 3, *balloon inflation (n=25)*. All children were accompanied by a parent during the procedure. Children of group 2 were given a rubber ball that squeaked when it was pressed. They were asked to alternately compress and release the ball: this was to try and distract them from the procedure. Children in group 3 were asked to inflate a balloon by blowing it up through their mouth and the cannula was inserted during forceful expiration. Children of group 1 were not asked to do either.

Self-reported pain ratings were obtained using VAS scores, which were divided into three groups. 'VAS scores of 1-3 were rated as mild, 4-6 as moderate, and > 6 as severe' (Gupta et al., 2006, p.1372). Anxiety of each child was also rated at arrival into the pre-operative area, using the Yale preoperative anxiety scale, an observational anxiety scale. Kain et al. (1997) describes the scale as a structured instrument that consists of five domains of anxiety. Depending on the age of the child, they were either sitting on their mother's lap or asked to sit on the preoperative bed for the duration of the procedure. The same nurse and anaesthesia registrar were present for all procedures, and the anaesthesia registrar performed venous cannulation in all children. Following the procedure, children rated their pain.

There were no significant differences in reported preoperative anxiety between groups. All children in the control (n = 25) and distraction (n =25) groups reported pain following the

procedure, however only some children (n=14) of the balloon inflation group reported they had experienced any pain. Of these reports, a significant reduction in pain severity was evident in children among distraction and balloon groups when compared to children in the control group ($p < 0.05$). All children in the balloon group who reported pain (n= 14) rated their pain as mild (e.g. VAS 1-3). Children in the distraction group reported mild pain (n=20) and the remaining five reported moderate pain. Children in the control group reported mild pain (n=16), and the remaining nine reported moderate pain. These findings indicate that both distraction methods; squeezing a rubber ball, and balloon inflation, were effective in reducing the severity of pain. This study showed that balloon inflation can reduce the incidence of pain, implying that it might be more effective than squeezing a rubber ball.

A rationale as to how the balloon inflation reduces pain was provided. Gupta et al. (2006) based their study on a prior study that showed how the Valsalva manoeuvre reduced incidence and severity of venepuncture pain in adults. Accordingly, balloon inflation is thought to achieve the same movement as the Valsalva manoeuvre. Gupta et al. (2006) proposed that when a balloon is inflated, the increase in intrathoracic pressure results in the activation of baroreceptors. ‘Activation of either the cardiopulmonary baroreceptor reflex arc or the sino-aortic baroreceptor reflex arc induces antinociception (Gupta et al., 2006, p.1374). ‘Moreover, the increase in intrathoracic pressure results in a decrease in venous return, making veins more prominent and easier to cannulate’ (Gupta et al., 2006, p.1374).

Patients were pre-medicated with promethazine hydrochloride two hours before the procedure for sedation purposes, and this might affect how the children perceive pain and how they rate pain. Furthermore, due to the fact these patients were awaiting surgery, self-reported anxiety, and fear could be assessed too as these might impact their pain perceptions. And lastly, there was no mention of the use of topical analgesics.

Mutlu and Balcı (2015). A Turkish study carried out by Mutlu and Balci (2015) also investigated the efficacy of balloon inflation and cough trick methods in reducing pain during venous blood draw. A prospective randomised controlled trial was conducted with children (n = 132) aged between nine and 12, who were scheduled for venous blood samples. The children were randomly assigned into one of three groups: (1) control (n=44), (2) balloon inflation (n=44), and (3) cough trick (n=44). Children of the balloon group were asked to pick a colour balloon of their choice and inflate the balloon, and children in the cough group were asked to take a deep breath and cough during the procedure. It has been speculated that coughing creates a higher level of pressure in the subarachnoid space, activating segmental pain inhibiting pathways, and thus reducing the perception of pain (Mutlu & Balci, 2015). Relevant data was collected through a demographic questionnaire and the Facial Pain Scale-Revised (FPS-R), a scale which consists of six facial expressions that evaluate the level of pain. The scale ranges from 0-10 (Mutlu & Balci, 2015).

Prior to the procedure, the parents of all the children completed the demographic questionnaire. Questions asked the number of blood samples taken in the past year, how long it had been since the last blood sample, and whether or not the child had any fear of needles. The same nurse completed all procedures, and children's parents were present in all groups.

Findings revealed that mean pain scores in children of the balloon and cough trick groups (1.68 and 1.82 respectively) were significantly lower than the scores of the control (mean pain score: 4.95) groups ($p < 0.001$). There were no significant differences in the pain experienced between the two groups (balloon and cough trick), indicating that while they have some analgesic effect, neither technique were more effective than the other in reducing pain.

Valuable information such as the reason as to why children needed blood drawn, and also the use of topical analgesics was not reported. A limitation of this study identified by the researchers is that the same researcher was with the child during the procedure, encouraged them to cough, or inflate the balloon, and then later evaluated their self-reported pain. Having one person undertake both of these roles may have caused bias in the children's answers (Mutlu & Balci, 2015).

This chapter has examined passive and active distraction techniques that aimed to reduce reported venepuncture pain and distress for school aged children. While there is strong support for the use of active forms of distraction, the majority of the reviewed research was conducted in Turkey, and therefore it has failed to take into consideration children from other countries. Finley, Kristjánsdóttir and Forgeron (2009) suggest that children's expressions of pain might be influenced or over shadowed by cultural effects. For example, older children might appear stoic as they do not want to express distress and worry their parents, and also it may be regarded as inappropriate for boys to cry (Finley et al., 2009)., It is therefore important to take this into consideration. Each study that was analysed did not identify use of topical analgesics before the procedure, and this warrants attention. Young et al. (1996) (as cited in Rogers & Ostrow, 2004) claims that unnecessary pain can erode the nurse-patient relationship. In addition, knowledge of alternative techniques to pain management can improve patient care and patient satisfaction (Jacobson, 1999 – as cited in Rogers & Ostrow. 2004). The reviewed literature revealed that the use of active distraction techniques often require another person to coach or encourage the child to engage with the distraction. In order to explore these roles in depth, the following chapter will examine the role of parents' and nurses' in distraction.

Chapter Four

This chapter begins by exploring parent's wishes to be present while their child is undergoing painful medical procedures. Following this, the parents' role in distraction is discussed by looking at a number of studies where parents have acted as distraction coaches. The second half of the chapter explores the role of the nurse in distraction. In addition, looking from a nursing perspective, particular factors that influence and hinder the use of distraction will be discussed.

Parent's Wishes

Lam, Chang and Morrissey (2006) suggested that an unconditional aspect of being a parent is the need and desire to stay with their children during painful medical procedures. Parents are crucial members of the team in working together to manage pain. Parents know their child's past experiences and how they have coped in the past, and therefore parents have a unique role in pain management (Piira, Sugiura, Champion, Donnelly, & Cole, 2005). Moreover, parental presence during procedures not only reduces separation anxiety for the child but also increases parental satisfaction with care, as they are given a sense of duty and are able to play a useful role in their child's care (Piira et al., 2005). While it is believed that parental presence acts as a support system for the child, there are some conflicting views as to whether or not parents should be present at all times (Matziou, Chrysostomou, Vlahioti, & Perdikaris, 2013; Piira et al., 2005). These views might be related to findings that suggest certain parental behaviours (e.g. reassurance, apologies and criticism) have been associated with increases in children's distress (Cavender, Goff, Hollon & Guzzetta, 2004; Chambers, Craig & Bennett, 2002; Cohen, Blount & Panopoulos, 1997). Research by Khan and Weisman (2007) found that parents with heightened worry or anxiety, reinforced their child's lack of emotional control, and thus increased their child's levels of distress. It is therefore important for nurses and medical staff to ensure parents or caregivers are involved in their

child's care, and also well informed of procedures and treatment options in order to mitigate any extra anxiety and fear.

Research suggests that children rarely engage in spontaneous coping promoting behaviours, and therefore repeated prompting or coaching in the use of distraction is often required by parents and nurses (Cohen et al., 1997; McCarthy et al., 2010). Parents generally want to play an active role in their child's health care, and training them to be distraction coaches enables them to do so while also increasing parental satisfaction (Cavender et al., 2004). Furthermore, the reviewed literature in the previous chapter explained how active distraction techniques often required another person to coach or encourage the child, and where appropriate, parents can take on this role. In order to explore the parents' role in distraction, literature involving parents as distraction coaches will be examined.

The Parents' Role

Distraction that is facilitated by the parent is referred to as parent-led distraction, and typically involves prior training (Taddio et al., 2010). Kleiber, Creft-Rosenberg and Harper (2001) investigated the efficacy of a brief distraction education intervention for parents prior to their children's venepuncture. The sample was made up of children, aged between four and seven years (n = 44), and their parents, who were randomised into experimental and control groups. Parent-child dyads in the experimental group (n = 22) were shown a seven minute educational videotape on distraction techniques. In contrast, parent-child dyads of the control group (n =22) received usual care of the clinic (Kleiber et al. 2001). Videotapes recorded parents use of distraction which was defined as any 'parent verbalisation or action directed toward the child that was meant to focus the child's attention away from the procedure' (Kleiber et al., 2001 p.854). As hypothesised, parents of the experimental group used significantly more distraction than did parents in the control group ($p < 0.001$). However,

distraction did not have the expected effects of reducing procedural pain and distress in the children (Kleiber at al., 2001). Several limitations might explain these unexpected findings.

Firstly, the study had a small sample size, which might have biased results. Moreover, parents in the control group were using distraction behaviours as part of their normal care, and this might have 'contaminated' the control group. Another limitation is that children were allowed to watch the educational video with their parents and this might have influenced how the children behaved (Kleiber et al., 2001). And lastly, over the course of the study, there were nine nurses and one physician completing the procedures. This might have resulted in inconsistencies during the procedure – as some engaged the child and parent in conversation, and others preferred to be silent (Kleiber et al., 2001).

A randomised clinical trial by McCarthy et al. (2010) evaluated the impact of parent-led distraction on children's responses during an intravenous insertion. Children (n =542) aged between four and 10 years and their parents from three Midwestern children's hospitals' in America were invited over a three year period to take part in the study. Parents who were randomised into the experimental group received a fifteen minute intervention on how to provide distraction; this included educational materials, a video and a discussion with a research assistant (McCarthy et al., 2010). Parents in the control group were encouraged to care for the child as they normally would during painful procedures. Prior to the procedure, a topical lidocaine analgesic was applied to two potential IV sites on all children involved in the study. Children's responses to the procedure were measured using behavioural, physiological, self-reported and observer-reported measures of child pain and distress (McCarthy et al., 2010). The quality and quantity of parent distraction was measured using the Distraction Coaching Index (DCI) 'a behavioural observation scale that measures the frequency and quality of distraction coaching.' (McCarthy et al., 2010, p.128). Child behaviour was assessed using the Pediatric Behaviour Scale-30 (PBS-30), and behavioural distress was measured

with the OSBD-R, which consists of eight categories indicative of pain and anxiety in children. The physiological responses were measured by obtaining salivary cortisol as cortisol is released when an individual becomes stressed and levels also tend to be elevated when someone is in pain (Uman et al., 2013). Salivary cortisol was obtained twice during the clinic visit (once before the procedure and once 20-30 minutes after) and twice on a normal baseline day. Self-reported pain was measured with the Oucher scale, and Parents report of child distress (PRCD) was measured with one item from the Perception of Procedures Questionnaire (PPQ), a questionnaire that consists of nine questions anchored with “not at all” to “extremely”. This study used the one question “How distressed was your child today during the IV procedure?”

In terms of child responses (OSBD-R, Oucher scale, PRCD and cortisol), the only significant differences were evident for cortisol responsivity. The experimental group, on average, had a significantly lower cortisol level ($p = 0.026$) relative to the control group, indicating that the stress response was lower in children whose parents had distraction training. One explanation for only one difference in child responses is control group contamination. Parents in the control group were observed to perform distracting behaviours even without training intervention.

These two studies provide evidence that supports distraction training for parents. Parents who were trained tended to initiate more distraction than parents who were not, however, parents in the control groups were also observed to initiate distraction as part of their usual care. Although parent-led distraction had limited impact on lowering levels of children’s pain and distress it appears that children might still benefit from it. The second half of this chapter looks at the role of the nurse in distraction, and then from a nursing perspective, particular factors that influence and hinder the use of distraction will be discussed.

The Nurses' Role

In a study by Denyes, Neuman and Villarruel (1991), registered nurses (n =13) from the Children's hospital of Michigan were interviewed to determine what actions they took to alleviate pain in hospitalised children. Thematic analysis revealed six actions, these included: nurse does for child, nurse modifies the environment, nurse actively engages child, nurse actively engage parents in care, nurse teaches child, and nurse teaches parent. While these actions focus particularly on pain management, they could potentially be translated in to what a nurse's role in distraction is. Nurses act as an educator for the child and parent, teaching them how to use distraction techniques, and encouraging the child to stay focused throughout the procedure.

Factors that Influence or Hinder Nurses' Use of Distraction

In order to examine nurses' perspectives on the use of distraction, a broad range of literature has been reviewed to identify particular factors that influence or hinder nurses' use of distraction. The following themes emerged from the literature: nursing knowledge, clinical experience, and time (Denyes, Neuman & Villarruel, 1991; Karlsson, Rydström, Enskär & Englund, 2014; Olmstead, Scott, Mayan, Koop & Reid, 2014; Pederson & Harbaugh, 1995).

Nursing knowledge. Olmstead et al. (2014) used semi-structured interviews to explore what nurses identified as influencing their choice to use distraction techniques to manage children's procedural pain. The participants of the study were registered nurses (n = 7) with a minimum of six months experience in paediatric oncology units. Although the speciality of oncology was not identified in the inclusion criteria, Olmstead et al's (2014) study looked at attitudes towards the use of distraction rather than particular oncology related procedures, and therefore has been included in the review. Nurses described different forms of knowing, such as formal, technical nursing knowledge as well as experiential knowledge and perceptiveness in their practice choices for distraction use (Olmstead et al., 2014). All

nurses identified that distraction was effective in reducing pain and distress during particular medical procedures. However, nurses also identified that each child is individual in how they will respond to distraction. Distraction methods that were successful with one child on one day, did not predict successful outcomes even an hour later (Olmstead et al., 2014). This finding is also supported by Karlsson et al. (2014) who reveals that nurses have to see each child individually and decide on supportive actions appropriate for that child, while also balancing their responsibility for the completion of the procedure. Karlsson et al. (2014) describes this as balancing on a tight rope in an unpredictable situation.

In a study by Pederson and Harbaugh (1995), nurses' lack of knowledge and lack of comfort with using non-pharmacologic techniques, were described as hindrances for the use of them, among these was the use of distraction. In Pederson and Harbaugh's (1995) study, registered nurses (n =54) were asked about their use of different non-pharmacological techniques with children in hospital. The following two questions were asked 'What helps or hinders your use of this technique?' and 'What experiences have you had in using this technique?' Selected responses included 'I don't know what it is or if it works…where do these techniques come from?' 'I need to learn more about this technique…I'm not comfortable and feel silly when I run out of things to say' (Pederson & Harbaugh, 1995, p.104). This issue needs attention, nurses may benefit from some sort of training or education on the different techniques. This finding was later backed up by a study by Polkki, Laukkala, Vehviläinen-Julkunen & Pietilä (2003). In their study, over half of their nurses (55%) indicated lack of education as a hindrance to the use of distraction.

Karlsson et al. (2014) also emphasised that it was essential for nurses to have knowledge about children's experiences of hospital-related distress. If the nurse could determine when the child is exhibiting pain or distress, this will help them to choose the appropriate action to support the child during the procedure. Nurses in Kalsson et al. (2014)

study, described “small talk” as a means for distraction. Nurses described how they supported children through small talk, and adjusting the amount of information they receive. The amount of information the child received depended on their age, illness, experience, and fear. Nurses claimed to provide more information for those who have more experience. Moreover, in order to support children through small talk, it was important to convey the conversation in a developmentally appropriate manner (Kalrsson et al., 2014).

Clinical experience. In Olmstead et al.’s (2014) study, nurses identified clinical experience as both a facilitator and a potential barrier to the use of distraction. Newer, less experienced nurses described themselves as more creative in their distraction practices, however, described the need to master the technical skills before focusing on the use of distraction methods. Newer, less experienced nurses reported that they were unable to incorporate distraction into their practice right away and that their use of distraction evolved into a habit or routine over time (Olmstead et al., 2014). In contrast, more experienced nurses were depicted as “experts” in their technical skills, and were also described as a source of mentorship on distraction. More experienced nurses did however, have a unique perspective on procedural pain management. Previous experiences of caring for children when more painful procedures, such as lumbar punctures and bone marrow aspirations that were completed with no analgesia, contextualised their view of current procedural pain, and these nurses were less likely to use distraction methods (Olmstead et al., 2014). They described the desire to “get the job done” by “causing the least amount of anxiety and the least amount of trauma to these kids” (Olmstead et al., 2014, p.166).

Time. Fifty one percent of nurses in Pederson and Harbaugh’s study (1995) identified time as a hindrance for the use of non-pharmacologic techniques, such as distraction. Nurses reported they did not use non-pharmacologic techniques when they have larger workloads and were ‘too busy to spend lots of time with the child’ (Pederson & Harbaugh, 1995, p.104).

However, the majority of these comments came from nurses on the paediatric intensive care unit (22% of the sample), implying that these findings cannot be generalised to all children's nurses. This finding was also evident in research by Polkki et al. (2003) where 55% of nurses reported lack of time as a hindrance to their use of non-pharmacologic methods.

Nurses in Olmstead et al. (2014) study also talked about the specific window of time where distraction would be effective and result in the most positive outcomes for the child. Outside of this window, nurses described having to make decisions to complete the procedure as expertly and quickly as possible (Olmstead et al., 2014). The medical regime often superseded optimal management of the painful procedure, and sometimes resulted in no time to prepare or distract the child (Olmstead et al., 2014).

Given that nurses have reported a lack of time as hindering the use of distraction, involving parents in the use of distraction is one way to mitigate the issue of time and ensure the child is still receiving some sort of distraction. This chapter has examined the role of parents' and nurses' role in distraction. Due to the paucity in research literature examining the role of the nurse – six actions identified in an older study that focused on pain management, can be translated into the nurses' role in distraction. Furthermore, research reinforced that distraction was not always effective at lowering pain and distress in children. Each child is an individual and a technique that was effective did not necessarily mean it would be the next day (Karlsson et al., 2014; Olmstead et al., 2014). Clinical experience was viewed as both a facilitator and hindrance for the use of distraction. Lack of knowledge about the distraction techniques, and also lack of comfort were also identified as hindrances. Lastly, time was another factor that often hindered nurses' use of distraction.

Chapter Five

This review has examined the use of distraction methods that attempt to lower levels of venepuncture pain and distress in school aged children. Early on, the review acknowledged venepuncture as the most feared aspect of attending hospital, and the implications of pain and distress in children were discussed (Carlson et al., 2000; Gilboy & Hollywood, 2009; Murphy, 2009; Mahoney et al., 2010; James et al., 2012; Uman et al., 2013). Following this, factors that influence children's responses to pain, and current pain management practices for venepuncture were discussed (Goodenough et al., 1999; Lal et al., 2001; Duff, 2003; Young, 2005; McCarthy & Kleiber, 2006; Stinson et al., 2007; Wang et al., 2008; Taddio et al., 2010). Rogers and Ostrow (2004) suggest that the use of EMLA is standard practice for venepuncture in most paediatric institutions. However, this has not been reflected in the studies analysed in chapter three, as all studies failed to report the use of any topical analgesic prior to the procedure. Also, the majority of the reviewed research was conducted in Turkey, with the exceptions of one study in India, and one in Italy. The use of topical analgesics might not yet be standard practice in those countries, however needs to be investigated.

The studies conducted in Turkey were noted to not routinely use non-pharmacological interventions to reduce venepuncture pain and distress; parental presence was the only form of support offered to children. Press et al. (2003) suggests that this may result from insufficient training in techniques, organisational barriers for implementing them, and physician's belief that such techniques require extra time. Lack of time was reflected in research by Pederson and Harbaugh (1995), and Polkki et al. (2003), as nurses described it as a hindrance for their use of distraction. Moreover, insufficient training or knowledge of the techniques calls for the need to incorporate distraction into nursing education.

Despite the evidence illustrating that cartoons, kaleidoscopes, distraction cards, the inflation of balloons and cough trick methods were effective at lowering reported levels of

pain and distress, numerous limitations existed that may have distorted results. Two studies (Inal & Kelleci, 2012; Canbulat et al., 2014) reported to have obtained information regarding the recent use of analgesia; however, the authors had failed to publish this data in their studies. Withholding valuable information has the potential to distort results, and thus may lead to the possibility of misleading evidence that distraction cards and kaleidoscopes are effective distraction techniques. Another limitation that was identified was the failure to take into consideration other variables that might lower levels of pain and distress. For example, in research by Gupta et al. (2006) depending on the child's age, the child either sat on their mother's lap or were asked to sit on the preoperative bed for the venepuncture procedure. The positioning of the child is another variable that should have been taken into consideration when demonstrating a reduction in pain. Cavender et al. (2004) demonstrated that children who were positioned on the parent's laps during venepuncture demonstrated significantly less fear than children who were not sitting on their parents laps. Additionally, a reduction in self-reported pain and observed behavioural distress was also evident among the children who were positioned on their parent's laps (Cavender et al., 2004). Although these differences did not reach statistical significance, the findings suggest that positioning of the child on the parent has the potential to enhance patient outcomes (Cavender et al., 2004). Similarly, in Karakaya and Gozen's (2015) work, parents remained present in both groups (control and experimental) however, parents in the control group were asked to hold the child's hand. This was to support them during the procedure as they were not offered the kaleidoscope as a distraction; however, it could be argued that this adds another variable that should have been taken into consideration, and may have impacted on the results.

Child's Voice

Overall, the studies that have been reviewed support the use of distraction methods that lead to lower reported levels of pain and distress in school aged children. However,

clinical decision making in choosing which distraction method to use remains a difficult task. This is mainly because of the limited research that compares different methods of distraction, making it difficult to single out the best technique. Given the many forms of distraction, the choices are endless, and children may benefit if they have some choice in what distraction technique they would prefer to use. Kaminski, Pellino and Wish (2002) suggest that the control paediatric patients experience from having a choice in distraction activities might help compensate for the lack of control involved in other areas of hospitalisation and treatment. Therefore, nurses should consider patient choices rather than relying solely on the research that examines the efficacy of distraction techniques. In light of this, the focus of the remainder of this chapter will be on the child's voice in relation to distraction. This will involve examining the value of the child's participation in decision-making, the rights of the child in decision-making, perspectives on decision-making, and the barriers to decision-making. In addition, recommendations for enabling participation of children in health care related decision making will be explored.

The Value of Participation

Runeson, Hallström, Elander and Hermerén (2002) suggest that when children are involved in the decision-making process, they feel a sense of control over the situation. Likewise, Coyne's (2006) study reported the need for children to be consulted and involved in general decisions in order to prepare themselves for procedures, and direct their energy towards getting well again. In contrast, children who are excluded from the decision-making process are reported to be left feeling scared and confused (Runeson et al., 2002).

Children's Rights to Participate

When exploring the child's voice, it is important to examine the rights of the child, predominantly their right to be heard. Since its establishment in 1989, the United Nations Convention on the Rights of the Child has become the most ratified human rights treaty, with

over 190 countries endorsing it (Coyne, 2008). Article 12 (respecting the views of the child) and article 13 (freedom of expression) are most relevant to this topic of the child's voice (United Nations, n.d.). Article 12 of the UN Convention on the Rights of the Child stipulates that every child has the right to express their own views, opinions and feelings freely in all matters affecting them. The Convention on the Rights of the Child identifies that the extent to which a child participates in decisions must be appropriate with the child's level of maturity (United Nations, n.d.). This can be related to the child's choice in which distraction activity they would prefer when undergoing painful medical procedures such as venepuncture. Article 13 is similar in that it states children have the right to freedom of expression, and also the right to receive all information. Freedom of expression includes the right to share information in any way the child chooses, for example verbally, or through drawings (United Nations, n.d.). Despite the importance of being heard, it appears that children's views have beenrarely sought nor acknowledged in the health care setting (Coyne, 2008). In order to explore this further, different perspectives of decision-making will be examined.

Decision-Making

Every health care situation with a child involves several individuals with different perspectives that need to be considered (Coyne & Harder, 2011). Soderback (2013) describes each individual (i.e. child, their parent, and nurse) as partners who work together to facilitate care and decisions. This could be described as shared-decision making, defined by Elwyn et al. (2012, p.1361) as 'an approach where clinicians and patients share the best available evidence when faced with the task of making decisions, and where patients are supported to consider options, to achieve informed preferences'. Coyne and Harder (2011) propose that children's participation in decision-making is complex because parents and health professionals tend to take a protective stance towards children to act in their best interest. Research by Coyne (2006) provides an example of this. Children in Coyne's (2006) study

reported to feel excluded when doctors would discuss decisions with other health professionals, or the child's parents, in front of them yet not involve them in the conversation at all. The children viewed this is an exertion of power, and emphasised that the doctor's opinion was the only one that mattered (Coyne, 2006). Moreover, during the times where children did feel like they were being included in decision-making, they did not feel their opinions were being valued when nurses and doctors would ask the same questions to the child's parents, and thus disregard the child's views. Further research by Coyne (2008) illustrated that children generally obtain a passive role in decision-making within the health care setting. In Coyne's (2008) study, factors that prevented participation of the child in decision making were identified, including fear of causing trouble, lack of time with health professionals, being ignored, health professionals not listening, and difficulty understanding medical terminology.

Coyne, Amory, Kiernan and Gibson (2014) explored children's participation in shared decision-making from multiple perspectives in an oncology unit in Ireland. Because cancer is a life threatening illness, treatment was considered essential and was in the best interest of the child, therefore health professionals believed no real decisions were to be made (Coyne et al., 2014). This was reflected in parents' perspectives as they remained confident and trusted health professionals' decisions based on their extensive medical background and knowledge (Coyne et al., 2014). Furthermore, due to the structured nature of caring for cancer patients, a lot of the time children did not have a say in treatment options (Coyne et al., 2014). In light of this, parents' and health professionals reported the importance of offering choices. Giving children choices about small 'everyday' decisions (e.g. blood tests, dressings, nutrition) allowed the children to feel involved, and gave them a little bit of control. Involvement in minor decisions was also seen as giving children autonomy and a degree of independence (Coyne et al., 2014). Additionally, Coyne et al. (2014) reported that involvement in minor

decisions was also believed to help build trusting relationships and make the procedures easier for everyone involved.

Barriers in Decision-Making

Coyne (2008) suggests that parents and health professionals play a crucial role in the facilitation of decision-making; however they have been shown to be the barriers that constrain children from actively participating. Children's perspectives in Coyne's (2006) study revealed that children felt excluded by doctors in the decision-making process. This finding was reinforced in Coyne's (2008) study which revealed the reasons why doctors did not always support children's participation in decision-making: including lack of time, chaotic environment, not agreeing with children's wishes and uncertainty about children's competence to make decisions and express their views. Coyne (2006) proposed that there are assumptions that children are unable to contribute reliably towards discussion regarding their views, needs and future. Runeson et al. (2002) also recognises that although judging children's competence is difficult, their right to participate in decisions affecting them, must be taken into consideration. Age and maturity could be viewed as barriers to the decision-making process (Coyne, 2008)

Given that children in hospital are sometimes restricted in participating in decision-making processes, giving children choices about what distraction strategy they might prefer might offer them a sense of control over the situation (Coyne et al., 2014). Coyne et al. (2014) found that involvement in minor decisions had many benefits such as increased cooperation, better child coping, and the formation of trusting relationships with parents and nurses.

Recommendations Going Forward

To date, there appears to be a lack of research that examines children's choice of distractors for venepuncture, or for any procedure for that matter, and this warrants further

attention. Findings that reveal children generally obtain a passive role in decision-making but want to participate, emphasises the need for qualitative research examining the child's perspective in relation to making choices about preferred distractors. Giving children choices has been shown to increase cooperation and child coping of procedures (Coyne et al., 2014) and a way this could be implemented is through the use of i-Pads (or tablets) as distractors. Given the evolving nature of technology, it was surprising to find that none of the studies analysed in chapter three involved the use of iPads or smartphone type devices as distraction techniques. Rideout (2013) suggests that children's access to smartphone devices and tablets, has increased from 52% in 2011 to 75% in 2013. In light of this, children that have access to devices at home might benefit from the use of them in the hospital environment. Anecdotal research provides support for iPad use as an effective distraction. According to the New York Presbyterian (2011), the use of iPads is a successful strategy proven to help children cope with painful procedures in the emergency department. With a myriad of entertainment for example, games and music, the child is offered many choices in deciding which distracting activity to choose on the iPad. In addition, Schmidt (2014) also suggests that an iPad is an amazing form of distraction and fun for children. At their hospital, iPads were used for minor procedures such as venepuncture and patients were able to watch or play a familiar game that they play on their iPad at home (Schmidt, 2014). Further empirical research could be done to explore the use of iPads as distractors for children during venepuncture.

Conclusion

This literature review has examined contemporary research literature on the use of distraction for school aged children in order to explore its efficacy at lowering reported levels of venepuncture pain and distress. To begin with, background information about pain and distress in children was discussed. Following this, the use of distraction was organised and examined separately as passive and active techniques. The majority of the reviewed literature

supported the use of distraction in lowering reported levels of venepuncture pain and distress however, a number of limitations were evident. Mostof the studies analysed in this review were conducted in Turkey which did not provide a representation of all children, and also failed to represent all nursing practice. Moreover, none of the studies that were analysed identified the use of topical analgesic which questions whether the research was conducted in an ethical manner.

A significant gap in the literature introduced the topic of the child's voice to the discussion. The relevance of the child's voice in relation to distraction was examined due to the lack of research that takes into consideration what children's preferences are for distraction strategies. After examining the rights of the child, the perspectives of children's participation in decision-making, and the barriers to decision-making, it was acknowledged that children's views are rarely sought nor acknowledged in the health care setting. Children generally obtained a passive role in decision-making, however, experienced a sense of control when they were given choices about what distraction activity they might prefer. The paucity of research that explored children's choice of distractor for venepuncture is an area that warrants attention. Furthermore, it was suggested that the use of iPads could be of benefit for allowing the child to make some choices over their distraction activity. Child preferences and their participation in decision-making must be acknowledged to ensure their voice is heard. Nurses should not rely solely on research that examines the efficacy of particular techniques, but ask for the patient's choice.

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