Introduction

Despite the ready availability of evidence to guide practice, the management of pain in children is often suboptimal. This chapter will start by providing a definition of pain and pain management and will highlight the consequences of unrelieved pain. Children’s views about the effectiveness of their pain management will be discussed, and the commonly held misconceptions about pain in children identified. The factors thought to influence nurses’ pain management practices will be outlined. Information about pain management standards published in several countries will be provided and how well nurses currently manage children’s pain will be considered alongside the issue of professional accountability. Finally the ethical imperative for managing children’s pain effectively will be identified.

1.1 What is Pain?

Pain is whatever the experiencing person says it is, existing wherever they say it does (McCaffery 1972).

‘Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. Pain is always subjective. Each individual learns the application of the word through experiences related to injury in early life’ (International Association for the Study of Pain [IASP] 1979, p. 249).

These two well-known definitions of pain illustrate that the experience of pain is both a subjective and an individual phenomenon. This is particularly clear in the IASP definition, which explains how the many facets of pain interrelate and affect pain perception. Although supporting the concept of pain as a subjective phenomenon, the original IASP definition fell short in relation to those unable to communicate verbally, including neonates, young children and disabled children. This was addressed in 2001 when the following amendment was made:

‘The inability to communicate in no way negates the possibility that an individual is experiencing pain and is in need of appropriate pain relieving treatment.’ (IASP 2001, p. 2)

Pain management means applying the stages of the nursing process – assessment, planning, implementation and evaluation – to the treatment of pain.
Pain management therefore involves:

- assessing the child’s pain;
- selecting appropriate pain relieving interventions;
- implementing these interventions;
- evaluating the effectiveness of these interventions.

1.2 Consequences of Unrelieved Pain

Painful experiences are part of life for every child (Fearon et al. 1996; Van Cleve et al. 1996; Perquin et al. 2000; McGrath and Hillier 2003). Pain has an important purpose, serving as a warning or protective mechanism, and people who are unable to feel pain often suffer extensive tissue damage (Melzack and Wall 1996). However, unrelieved pain has a number of undesirable physical and psychological consequences (Box 1.1). When these are considered, the need to manage children’s pain effectively is clear.

**BOX 1.1**

Consequences of unrelieved pain

**Physical effects**

- Rapid, shallow, splinted breathing, which can lead to hypoxaemia and alkalosis
- Inadequate expansion of lungs and poor cough, which can lead to retention of secretions and atelectasis
- Increased heart rate, blood pressure and myocardial oxygen requirements, which can lead to cardiac morbidity and ischaemia
- Increased stress hormones (e.g. cortisol, adrenaline, catecholamines), which in turn increase the metabolic rate, impede healing and decrease immune function
- Slowing or stasis of gut and urinary systems, which leads to nausea, vomiting, ileus and urinary retention
- Muscle tension, spasm and fatigue, which lead to reluctance to move spontaneously and refusal to ambulate, further delaying recovery

**Psychological effects**

- Behavioural disturbances – fear, anxiety, distress, sleep disturbance, reduced coping, developmental regression

Poor pain management in early life can affect children when older. The results of studies demonstrating this are outlined in Box 1.2.

1.3 Children’s Views about the Effectiveness of Pain Management

Pain is a bio-psycho-social experience (see Chapter 3). One individual cannot predict what another person will feel during a painful episode. When considering children’s painful experiences it is, therefore, essential to explore children’s views. Indeed the United Nations Convention of the Rights of the Child states that:

‘Children’s views must be taken into account in all matters affecting them, subject to children’s age and maturity.’
Why Managing Pain in Children Matters

Further information about the long-term consequences of pain in neonates can be found in Grunau (2000) and Goldschneider and Anand (2003). The effects of poorly managed pain on older children are discussed in McGrath and Hillier (2003).

BOX 1.2
Examples of research demonstrating the effects of poor pain management

Taddio et al. 1997
- Data from a clinical trial studying the use of EMLA® during routine vaccinations at 4 or 6 months was used to ascertain whether the effect of having a circumcision impacted on boys’ pain response.
- Boys, who had been circumcised without anaesthesia as neonates, were observed to react significantly more intensely to vaccinations than uncircumcised boys ($p > 0.001$).
- Supported findings from a previous study (Taddio et al. 1995).

Grunau et al. 1998
- Examined the pain-related attitudes in two groups of children, aged 8–10 years: extremely low birthweight children ($n = 47$) and full birthweight children ($n = 37$).
- The very low birthweight group of children had been exposed to painful procedures as neonates, the other group had not.
- Children were shown the Pediatric Pain Inventory, which comprises 24 line drawings, each depicting a potentially painful event (Lollar et al. 1982).
- The two groups of children did not differ in their overall perceptions of pain intensity. However, the very low birthweight children rated medical pain intensity significantly higher ($p < 0.004$) than psychosocial pain, suggesting that their early experiences affected their later perceptions of pain.

Saxe et al. 2001
- Investigated the relationship between the dose of morphine administered during a child’s hospitalisation for an acute burn and the course of post-traumatic stress disorder (PTSD) symptoms over the 6-month period following discharge.
- Children ($n = 24$) admitted to the hospital for an acute burn were assessed twice with the Child PTSD Reaction Index: while in the hospital and 6 months after discharge. The Colored Analogue Pain Scale was also administered during the hospitalisation. All patients received morphine while in the hospital. The mean dose of morphine (mg/kg/day) was calculated for each subject.
- There was a significant association between the dose of morphine received while in the hospital and a 6-month reduction in PTSD symptoms. Children receiving higher doses of morphine had a greater reduction in PTSD symptoms.

Rennick et al. 2002
- A prospective cohort study of patients ($n = 120$) in paediatric intensive care units and medical-surgical wards.
- 17.5% of patients expressed significant medical fears 6 weeks after discharge.
- 14% continue to express these fears 6 months later.

Taddio et al. 2002
- A prospective cohort study of babies ($n = 21$) born to mothers with diabetes and babies ($n = 21$) born to mothers with an uneventful pregnancy. Infants of diabetic mothers had repeated heel sticks in the first 24–36 hours of life.
- Babies of diabetic mothers demonstrated significantly greater pain behaviours at venepuncture for newborn blood screening ($p = 0.04$).
This is supported by current policy (for example, Department of Health [DH] 2004). Children’s views about how well their pain has been managed have been explored in three studies (Box 1.3). Despite the limited number of studies in this area it is evident that from the child’s perspective there is need to evaluate practices. (Further discussion about undertaking research with children can be found in Chapter 11.)

**BOX 1.3**  
**Studies exploring children’s views about pain management**

**Alex and Ritchie (1992)**
- Children \( (n = 24) \), aged 7–11 years, were asked about their pain postoperatively following orthopaedic, abdominal or neurological surgery.
- Children rated their pain three times a day for the first three postoperative days using a vertical visual analogue scale and were then interviewed about their pain.
- Children felt that nurses needed to take a more active role in pain management. They suggested, for example, that nurses need to communicate with children about their pain.

**Doorbar and McClarey (1999)**
- Data collected from several sources to obtain a picture of children’s perceptions and experiences of pain – all participants had had recent experience of acute pain.
- Children \( (n = 61) \) gave in-depth interviews; children \( (n = 45) \) drew pictures or completed sentence and/or picture sheets; and children \( (n = 67) \), took part in a pain conference. The pain conference used several data collection methods including drama, art and video workshops, graffiti wall, post boxes and a short questionnaire.
- The children indicated that they felt that pain was poorly managed in hospital and that healthcare professionals needed to listen to what children were saying about their pain. Children, again, felt that nurses needed to communicate with children about their pain and felt that better explanations about what to expect were needed. Some children found it difficult to convince others that they were in pain.

**Polkki et al. (2003)**
- Children \( (n = 52) \), aged 8–12 years, were asked about their postoperative pain experiences and to suggest what nurses could do to improve postoperative pain management.
- Children indicated that they wished the nurses had given them more or stronger analgesic drugs, as soon as they asked for them, and that they would like nurses to ask them about their pain on an hourly basis. Children would also like nurses to provide them with meaningful things to do to distract them from their pain.

Further insight into children’s experiences of pain in hospital can be found in Kortesluoma and Nikkonen (2004).

### 1.4 Misconceptions About Pain

Children’s pain is clearly not being managed adequately; one reason for this could be the perceptions of the nurses caring for the child. A number of misconceptions about children’s pain have been identified. A comprehensive summary of these is provided by Twycross (1998). The key misconceptions and a summary of the evidence demonstrating their mythological status can be seen in Table 1.1. (Other misconceptions are discussed in Chapters 2, 4 and 9.) These misconceptions have all been shown to have no scientific basis.
1.5 Factors Affecting Nurses’ Perceptions of Pain

The results of several studies provide an indicator of the factors, relating to both the child and the nurse, which may affect pain management practices (Table 1.2). This research has been conducted over the past two decades and the results are contradictory. Other suggestions as to why pain management practices remain poor include:

- nurses distancing themselves from their patients because of the stressful nature of caring for people in pain (Atchison et al. 1986; Choiniere et al. 1990; Glass and Knight 1996; Nagy 1999);
- nurses managing patients’ pain behaviours rather than managing their pain (Burokas 1985; Gadish et al. 1988; Ross et al. 1991; Woodgate and Kristjanson 1996; Byrne et al. 2001);
- nurses becoming desensitised to patients’ pain over time (Davitz and Davitz 1981; Allcock and Standen 1999, 2001).

Table 1.1 Key misconceptions about pain in children

<table>
<thead>
<tr>
<th>Misconception</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants do not feel as much pain as adults</td>
<td>Pain pathways (although immature) are present at birth and pain impulses are able to travel to and from the pain centres in the brain (Wolf 1999; Coskun and Anand 2000; Fitzgerald 2000) Neonates exhibit behavioural, physiological and hormonal responses to pain (Franck 1986; Hogan and Choonara 1996; Carter 1997; Abu-Saad et al. 1998; Stevens 1999).</td>
</tr>
<tr>
<td>Infants cannot feel pain because of an immature nervous system</td>
<td>Complete myelination is not necessary for pain to be felt (Volpe 1981) Painful stimuli are transmitted by both myelinated and unmyelinated fibres (Volpe 1981; Craig and Grunau 1993) Incomplete myelination implies only a slower conduction speed in the nerves, which is offset by the shorter distances the impulse has to travel (Volpe 1981; Anand and Hickey 1987) Noxious stimuli have been shown to produce a cortical pain response in preterm babies (Bartocci et al. 2006; Slater et al. 2006).</td>
</tr>
<tr>
<td>Young children cannot indicate where pain is located</td>
<td>Children as young as 4 years old can demonstrate on a body chart where they hurt without knowing the names of body parts (Van Cleve and Savedra 1993) Children are able to report the intensity of pain by the age of 3–4 years (Harbeck and Peterson 1992)</td>
</tr>
<tr>
<td>Active children are not in pain A child engaged in playing activities cannot be in pain</td>
<td>Increased activity is often a sign of pain (Eland 1985) Children are particularly gifted in the use of distraction and use play as a diversion and as a coping mechanism (Eland 1985; McCaffery and Beebe 1989)</td>
</tr>
<tr>
<td>Sleeping children cannot be in pain</td>
<td>Sleep may be the result of exhaustion because of persistent pain (Fawley 1984)</td>
</tr>
</tbody>
</table>
Managing Pain in Children

1.6 Pain Management Standards

Pain management standards have been published in several countries to promote best practice. In England, the National Service Framework for Children, Young People and Maternity Services (NSF) (DH 2004) includes six pain standards (Box 1.4), making it clear that pain management is an essential component of quality care for children in hospital.

Within the USA the Joint Commission for the Accreditation of Healthcare Organisations (JCAHO) published standards for pain management in 2001 (Box 1.5). These standards are not specific to children but mean that, to be accredited, each hospital in the USA needs to demonstrate that it is meeting these standards. The JCAHO standards reflect the standards from the English NSF. Whether the implementation of these standards improves pain management needs to be evaluated.

Pain management standards have also been produced in other countries. Some of those published in the last 10 years are listed in Box 1.6. These guidelines and standards provide us with the knowledge about how pain should be managed.

### Table 1.2 Factors that influence nurses’ perceptions of pain in children

<table>
<thead>
<tr>
<th>Factor</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of child</td>
<td>Burokas (1985)</td>
</tr>
<tr>
<td>Child’s temperament</td>
<td>Wallace (1989)</td>
</tr>
<tr>
<td>Child’s gender</td>
<td>Gadish et al. (1988)</td>
</tr>
<tr>
<td>Diagnosis/type of surgery</td>
<td>Ross et al. (1991)</td>
</tr>
<tr>
<td>Time since surgery</td>
<td>Hamers et al. (1994)</td>
</tr>
<tr>
<td>Type of unit</td>
<td>Hamers et al. (1996)</td>
</tr>
<tr>
<td>Priority nurse gives to pain relief/their attitude to analgesic drugs</td>
<td>Twycross (2004)</td>
</tr>
<tr>
<td>Nurse having a child of their own who has had a painful experience</td>
<td></td>
</tr>
<tr>
<td>Nurses’ educational level/knowledge of nurse</td>
<td></td>
</tr>
<tr>
<td>Nurses’ workload/lack of time</td>
<td></td>
</tr>
<tr>
<td>Nurses’ past experiences of pain management</td>
<td></td>
</tr>
</tbody>
</table>

√ = significant difference found; X = no significant difference found

Twycross_C001.indd   6  12/15/2008   3:31:28 PM
BOX 1.4
Pain standards from the English National Service Framework

Standard 4.28
- Pain is unpleasant, delays recovery, and adds to the trauma of illness, injury and clinical procedures
- Historically, pain has been underestimated and undertreated
- There is evidence that pain remains inadequately dealt with for children in hospital

Standard 4.29
- Where procedures are planned, children should be prepared through play and education, pain relief should be planned for use during the procedure
- The use of psychological therapies, including distraction, coping skills and cognitive-behavioural approaches should be used for procedural pain and for pain from illness or trauma

Standard 4.30
- To treat children’s pain effectively, a thorough pain assessment is necessary, and a number of guides are available to do this
- These guides offer different options for communication, and can be completed in different ways by the child, family or professionals
- Particular attention should be given to children who cannot express their pain because of their level of speech or understanding, communication difficulties, and those with altered consciousness or serious illness

Standard 4.31
- The treatment of children’s pain using medicines requires appropriate choice of drug, dose, frequency and route
- Research has found that some hospital staff may be reluctant to prescribe at all, and they tend to use a dose that is too small to address the child’s pain adequately
- Protocols, education and training can support staff in their management of children’s pain, which should be reviewed regularly through audit
- The involvement of pharmacists in the development of pain management guidelines is encouraged

Standard 4.32
- Children with long-term pain need a similar approach, spanning prevention, assessment and treatment
- Special consideration should be given to children recovering from trauma and burns, and children with cancers, joint conditions, sickle cell disease, and those needing palliative care

Standard 4.33
- Hospital policies for managing children’s pain should apply to all children in every hospital department, including newborns in neonatal units
- Special focus should be given to children in accident and emergency departments, postoperative pain, pain related to procedures, and long-term pain in cancer


An international consensus document relating to the assessment and management of pain in neonates was published by Anand and the International Evidence-Based Group for Neonatal Pain in 2001. This document identified general principles for the prevention and management of pain in newborns. These recommendations are outlined in Box 1.7.
BOX 1.5

**JCAHO Pain management standards**

**Standard**

RI.1.2.9 Patients have the right to appropriate assessment and management of pain.

**Intent of RI.1.2.9**

Pain can be a common part of the patient experience; unrelieved pain has adverse physical and psychological effects. The patient's right to pain management is respected and supported. The healthcare organisation plans, supports, and coordinates activities and resources to assure the pain of all patients is recognised and addressed appropriately. This includes:

(a) initial assessment and regular assessment of pain;
(b) education of all relevant providers in pain assessment and management;
(c) education of patients, and families when appropriate, regarding their roles in managing pain as well as the potential limitations and side effects of pain treatments; and
(d) after taking into account personal, cultural, spiritual, and/or ethnic beliefs, communicating to patients and families that pain management is an important part of care.

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BOX 1.6

**Other pain standards and guidelines**

**Australia and New Zealand**


**United Kingdom**


1.7 How Effective are Current Pain Management Practices?

Few studies have focused on exactly how healthcare professionals manage children’s pain. The results of key studies examining nurses’ practices over the past 10 years are summarised in Box 1.8. The results of these studies indicate that nursing practice does not always conform to current best practice guidelines. There is very little information regarding the perceptions of other healthcare professionals about children’s pain. It is likely that suboptimal practices would also be evident among other professional groups.
1.8 Professional Accountability

Registered nurses are accountable for their actions. In the UK nurses’ professional conduct must conform to the Nursing and Midwifery Council’s (NMC) Code (2008). The code states that nurses must use the best available evidence and keep their knowledge and skills up to date (Box 1.9).

Current healthcare policy across the UK recognises the need for evidence-based practice (DH 1999, 2000; Scottish Executive Health Department (SEHD) 2000; SEHD 2001; DH 2004). Indeed, the (English) National Service Framework for Children, Young People and Maternity Services (DH 2004) states that children and young people should receive high quality evidence-based hospital care.

BOX 1.8
Studies examining nurses’ pain management practices

Jacob and Puntillo (1999)

- Nurses (n = 260) in the USA completed a questionnaire about their pain management practices.
- Nurses were not consistently assessing pain in children, and pain management practices were not based on systematic assessment.
- The most frequently reported tool for assessing pain was the numerical rating scale.
- Nurses reported that they were not consistently administering analgesics for painful procedures.
- Nurses rarely used distraction and relaxation techniques (these were the most frequently reported non-drug methods used).

Byrne et al. (2001)

- Observational data were collected of the verbal interaction of nurses (n = 13) with children (n = 16). Standardised open-ended interviews were also carried out with the nurses, children and parents. Data was analysed using discourse analysis.
- Children were required to conform to ward routines and schedules of recovery.
- Rather than asking the child how much pain they were in, nurses appeared to manage pain using a set of behavioural milestones.

Polkki et al. (2001)

- Nurses (n = 162) completed a questionnaire about their use of non-drug methods of pain relief in five Finnish hospitals.
- Distraction and preparatory information were reported as being used frequently and imagery was only used occasionally.
- Almost all nurses indicated that they used positioning. Massage and the application of heat/cold were used less frequently.
- TENS was hardly ever used when managing children’s postoperative pain.

Twycross (2007)

- Registered nurses (n = 13) on a children’s surgical ward in the English Midlands were each observed for a period of five hours per shift for two to four shifts. The role of the observer as participant was adopted, whereby the researcher could shadow the nurse and act primarily as an observer.
- Although nurses administered analgesic drugs when a child complained of pain, in most other areas practices did not conform to current recommendations and were in need of improvement. Nurses did not, for example, routinely assess a child’s pain, nor use non-drug methods of pain relief on a regular basis.
BOX 1.9
What the NMC Code (2008) says in relation to using evidence in practice and keeping knowledge and skills up to date

Use the best available evidence
- You must deliver care based on the best available evidence or best practice.
- You must ensure any advice you give is evidence based if you are suggesting healthcare products or services.
- You must ensure that the use of complementary or alternative therapies is safe and in the best interests of those in your care.

Keep your skills and knowledge up to date
- You must have the knowledge and skills for safe and effective practice when working without direct supervision.
- You must recognise and work within the limits of your competence.
- You must keep your knowledge and skills up to date throughout your working life.
- You must take part in appropriate learning and practice activities that maintain and develop your competence and performance.

Evidence-based practice is:
- the conscientious, explicit and judicious use of current best evidence in making decisions about the healthcare of patients (Sackett et al 1997);
- doing the right things right (Muir-Grey 1997).

Everyone is responsible for pain management. The bedside nurse is as responsible as the analgesia prescriber or the member of the specialist pain management team. If any of these clinicians do not fulfil their role, the patient suffers. Thus all healthcare professionals have a responsibility to:
- learn and be educated about pain;
- know about pain management strategies (pharmacological strategies and non-drug methods);
- assess and respond to patients in pain.

Pain management practices should be based on scientific facts or agreed best practice, not personal beliefs or opinions. The burden of proof lies with the healthcare professional, not the patient.

The aim of this book is to provide healthcare professionals with knowledge about current research and best practice guidelines in relation to managing children’s pain. Each practitioner is accountable and responsible for evaluating their practices to ensure they conform to current best practice guidelines.

1.9 Managing Pain in Children is an Ethical Imperative

The United Nations, in its Declaration on the Rights of the Child, states that:

‘children should in all circumstances be among the first to receive protection and relief, and should be protected from all forms of neglect, cruelty and exploitation.’ (United Nations 1989)
This principle can be applied to the management of pain, particularly as good practice guidelines are available (Box 1.6). Further, the UNICEF Child-Friendly Hospital Initiative highlights the importance of pain management, stating that:

‘A team will be established in the hospital whose remit is to establish standards and guidance in the control of pain and discomfort (psychological as well as physical) in children.’ (UNICEF 1999, p. 8)

Yet there is evidence that children still experience moderate to severe unrelieved pain (Polkki et al. 2003; Vincent and Denyes 2004; Johnston et al. 2005). Failing to provide children with satisfactory pain relief can be considered a violation of their human rights. Indeed, when the consequences of unrelieved pain are taken into account, managing children’s postoperative pain effectively is an ethical imperative (Kachoyeanos and Zollo 1995; Franck 1998; Rich 2000).

Summary

- Pain is an individual and subjective phenomenon.
- Unrelieved pain has a number of undesirable physical and psychological consequences.
- Children’s reports of how well their pain is managed indicate that practices are suboptimal.
- The continuing belief in misconceptions about children’s pain by some healthcare professionals may account, at least in part, for suboptimal practices.
- Other reasons for suboptimal practices include nurses distancing themselves from patients in pain; nurses managing patients’ pain behaviours rather than their pain; and nurses becoming desensitised to patients’ pain.
- Clinical guidelines and best practice standards have been produced in several countries to promote good pain management practices.
- Healthcare professionals’ practices in some areas need evaluating to ensure that they conform to current best practice guidelines.
- Every healthcare professional is responsible for managing pain.
- Pain management practices should be based on scientific facts, not personal beliefs or opinions.
- Managing children’s pain effectively is an ethical imperative.

Useful web resources

The IASP Special Interest Group on Pain in Childhood: http://childpain.org/
International Association for the Study of Pain (IASP): http://www.iasp-pain.org
Pain Resource Book: www.painsourcebook.ca/index.html provides information about standards and guidelines relating to pain management from across the world

References


