

## Commentary

### Status of pediatric nurses' knowledge about pain

Alison Twycross and Stephanie J. Dowden

#### Nurses' knowledge about pain in children

The evidence to guide nurses' pain management practices is readily available in the form of clinical guidelines. However, pediatric nurses' pain management practices continue to fall short of the ideal (Pölkki et al., 2003; Vincent & Denyes 2004; Twycross 2007) with children often experiencing moderate to severe unrelieved pain (Vincent & Denyes, 2004; Johnston et al., 2005; Taylor et al., 2008). Insufficient knowledge about managing pain in children has been suggested as one reason nurses do not manage pain effectively. Seven studies have examined pediatric nurses' knowledge about pain in children. A study carried out with pediatric oncology nurses ( $n=106$ ) in the USA found a lack of understanding of basic pharmacological principles in relation to analgesic drugs (Schmidt et al., 1994). Schmidt et al. (1994) do not provide any information about statistical testing, so these results should be treated with caution; however, as they concur with the results of similar studies (see below), they may provide an accurate insight into nurses' knowledge.

Salanterä et al. (1999) developed a pain management knowledge questionnaire based on a review of the research literature about pain. This questionnaire was completed by pediatric nurses ( $n=265$ ) in Finland. For questions relating to non-drug methods the mean score was 69%, while for the items about pharmacological pain management the mean score was 51%. These results indicate that there are gaps in nurses' knowledge (Salanterä et al., 1999). In another study, final year student nurses ( $n=73$ ) also completed the same questionnaire. The mean score for the questions

about non-drug methods was 68% and for items pertaining to the pharmacological management of pain the mean score was 54% (Salanterä & Lauri, 2000). The similarity between the scores of registered nurses and student nurses suggests that there is a need to evaluate both pre- and post-registration education in this area.

Twycross (2004) used a modified version of Salanterä's questionnaire (as part of a larger study). Nurses' ( $n=12$ ) mean score was 78% (range: 69-89%). Participants had gaps in their knowledge; these were particularly noticeable in relation to analgesic drugs, non-drug methods and the physiology of pain as well as the psychology and sociology of pain. Statistical testing was not carried out due to the small sample size. However, a comparison of the scores of participants with less than 5 years experience in pediatric nursing to scores of participants with more experience suggested that years of experience had no effect on participants' scores. It also appeared that being educated to graduate level may increase the likelihood of a nurse having greater knowledge about pain management.

The *Pediatric Nurses' Knowledge and Attitudes Regarding Pain Survey* was completed by nurses ( $n=274$ ) in Manworren's (2000) study. The mean score for the questionnaire was 66% (range: 31-98%). Knowledge deficits were apparent in many areas including: pain assessment, the pharmacology of analgesic drugs, the use of analgesic drugs, and non-drug methods. Nurses with a masters degree scored significantly higher than other participants ( $p<0.05$ ). Nurses ( $n=67$ ) completed an adapted version of the *Nurses'*

*Knowledge and Attitudes Regarding Pain Survey* in Vincent's (2005) study. The mean score was 76% (range: 48-97%) with participants having knowledge deficits about non-drug methods of pain-relief, analgesic drugs and the incidence of respiratory depression.

Rieman and Gordon (2007) surveyed pediatric nurses ( $n=295$ ) working in Shriner's Hospitals in the USA using a revised version of the *Pediatric Nurses' Knowledge and Attitudes Regarding Pain Survey*. The questionnaire was modified to ensure that items related to the children being cared for by participants. One item relating to the application of heat/cold was removed as it was not considered applicable to the management of pain resulting from burn injuries, and the wording for 39 questions was altered to ensure they applied to the child being cared for (Rieman et al., 2007). The mean survey score was 74% (range: 37-100%). The 10 questions answered incorrectly by most participants related to pharmacology and the incidence of respiratory depression. Significant differences were found between the scores of nurses with 2 years or less experience in nursing compared to more experienced nurses ( $p<0.05$ ). Nurses who were active in professional nursing organizations also had significantly higher scores than other nurses ( $p<0.05$ ).

Ellis et al. (2007) also found limited knowledge about analgesic drugs. Gaps appear to remain in nurses' knowledge about pain in children, and in particular in relation to pain assessment, analgesic drugs and non-drug methods. This needs further exploration. More research is also needed into factors such as years of experience and level of academic attainment that may affect nurses' knowledge about pain.

### **Is knowledge applied in practice?**

Looking at nurses' theoretical knowledge alone does not provide information about the impact of knowledge deficits on practice. Two studies have examined the impact of deficits in pediatric nurses' knowledge on the quality of pain management practices. Vincent and Denyes (2004) examined the relationship between knowledge and attitudes about children's pain relief and nurses' analgesic administration practices. They observed the care of

children ( $n=132$ ), aged 3½ to 17 years, by nurses ( $n=67$ ) and found that nurses with enhanced knowledge about pain were no more likely to administer analgesia. In the second study, nurses ( $n=13$ ) on a children's surgical ward were observed for 5-hour periods during two to four shifts in Twycross' (2007) study. Data about postoperative pain management practices were collected using a pain management checklist and field notes. Nurses ( $n=12$ ) also completed the revised pain management knowledge test (as described by Twycross, 2004). Questionnaire scores were compared to the observational data. No positive relationship was found between individual nurses' level of knowledge and how well they actually managed pain. Even when the nurses had a good level of knowledge, this was not reflected in their pain management practices.

The results of two studies carried out with adult nurses provide further evidence of knowledge not being used in practice. Dihle et al. (2006) set out to explore how nurses ( $n=9$ ) contribute to postoperative pain management in two hospitals in Norway. Nurses were observed during two day shifts, two evening shifts and one night shift; the interview was conducted straight after a nurse's last shift of observation and focused on participants' reflections about what they did to manage postoperative pain. A gap was found between what nurses said they did and what they actually did. Reported practices adhered to current best practice guidelines but observed practices did not. In another study, Watt-Watson et al. (2001) collected data from 80 nurse-adult patient pairs. No relationship was found between nurses' knowledge and patients' ratings of pain and the amount of analgesia administered, even though the nurses had moderately good knowledge levels about pain management. These studies suggest nurses do not appear to apply their theoretical knowledge in practice.

### **The way forward for education about pain management**

There will always be a need to educate nurses about pain management. However, there is increasing evidence that children's nurses are not using their knowledge in practice (Vincent &

Denyes, 2004; Twycross, 2007). A review of literature in this context by Twycross (2002) found that:

- nurse education does not appear to be preparing nurses to manage pain in clinical settings
- nurses continue to have educational deficits about pain management
- not all educational interventions result in improvements in pain management practices

Several studies have identified evidence that gaps remain in nurses' knowledge (Schmidt et al., 1994; Salanterä et al., 1999; Manworren, 2000; Salanterä & Lauri, 2000; Twycross, 2004; Vincent, 2005; Rieman & Gordon, 2007). This may mean that nurses do not understand the rationale for pain-relieving interventions or that they do not know how to assess children's pain. A lack of knowledge about pain assessment may mean that nurses are unable to assess pain accurately and thus unable to apply their knowledge in practice. Further research is needed in this area; attributing suboptimal practices to a lack of knowledge appears too simplistic an explanation.

Pre- and post-registration nursing curricula content needs evaluation to ensure that nurses have a thorough knowledge of pain, understand the rationale for pain-relieving interventions and know how to assess children's pain. A review of pain content in pre-registration diploma courses in England found that most pre-registration children's nursing curricula included less than 10 hours education on pain, providing students with little more than a 'whistle-stop tour' of pain management (Twycross, 2000). This concurs with the findings of a study carried in the USA by Graffam (1990) which found that the amount of time devoted to pain in nursing curricula ranged from 2 hours to more than 15 hours. It is perhaps not surprising that knowledge deficits remain. Further research is needed to ascertain the optimum time required on pain management in pre-registration nursing curricula and the most effective teaching methods.

There is a need to develop educational initiatives that promote the use of theoretical knowledge in practice. Several educational strategies have been suggested in this context. Ochieng (1999) describes the use of reflective

practice as a method of changing pain management practices. Three months after the start of the project, practices did appear to have changed but there was no evaluation of whether this was sustained long-term. Other suggestions for improving the use of knowledge in practice, which have not yet been tested, include:

- the clinical discussion of individual patients and their care (Graffam, 1990)
- incorporating clinical scenarios and simulations into teaching (Lee & Ryan-Wenger, 1997; Cioffi, 1998; Jones & Sheridan, 1999; Cioffi, 2001)
- teaching rounds (Segal & Mason, 1998)
- journal clubs (Kessenich et al., 1997; Khalid & Gee, 1999)

Individual nurses' beliefs and perceptions may also affect their use of knowledge in practice. Vincent's (2005) study examined nurses' cognitive representations of pain. The results of this study suggest there may be a relationship between nurses' cognitive representations of pain and their choices about the administration of analgesic drugs. Further, Johnston et al. (2007) carried out a clustered randomized trial exploring the effectiveness of one-on-one coaching with audit feedback on improving pain management practices. The rate of pain assessment, nurses' knowledge and non-drug interventions increased in the coaching group. However, as there were significant differences in practices between the study sites not all the differences could be attributed to the coaching. There is a need to further explore the impact of nurses' beliefs about pain on their practice.

Other factors such as ward culture may also offer an explanation for why nurses do not use their knowledge in practice. Nurses' need to fit in might mean that they adopt the ward's (poor) pain management practices, despite having (at least some) knowledge about how children's pain should be managed and believing that pain management is important. This supposition is supported by the findings of Lauzon Clabo's (2008) ethnographic study on two adult wards in a hospital in the USA. Participants described a clear pattern of pain assessment on each ward; these patterns were different from each other. The social context

appeared to heavily influence nurses' pain assessment practices. Other studies have also explored the impact of organizational/ward culture on pain management practices (Manias et al., 2002; Manias et al., 2005). The impact of ward culture on pediatric nurses' pain management practices needs further exploration.

There will always be a need to educate nurses about managing pain in children. However, ensuring this knowledge is used in practice requires other factors, such as ward culture, to be taken into account. Further research is needed to explore the most effective way of educating nurses, and other health care professionals, to ensure that pain management knowledge is used in practice.

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