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Review

Educating nurses about pain management: the way forward

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Summary

- Nurse education does not appear to be preparing nurses to manage pain in the clinical area.
- A number of studies have demonstrated that nurses continue to have educational deficits in this context.
- Several studies have found no change in knowledge or behaviours following education about pain management.
- Others have found that changes in behaviour do occur.
- It is possible that innovative teaching strategies need to be used.
- The literature in this area is reviewed and recommendations made.

Keywords: educational strategies, knowledge deficits, nurses, pain management.

Introduction

Pain is a complex, multidimensional phenomenon. A patient's pain experience is influenced and modified by a number of factors including, experiential, behavioural, emotional, physical and contextual components (Carter, 1994). To manage pain appropriately nurses need to have an understanding of each of these components, and nurse education should equip them with this knowledge. Recent research suggests that UK nurse education may be falling short in this regard. The physical and psychological implications of mismanaging pain have an impact in both human and economic terms (Eland, 1990; Morton, 1998). From a human point of view the unnecessary pain endured by patients results in increased suffering and misery, and in the case of chronic pain can affect lifestyle and personality (Beales *et al*., 1983). Future medical interventions will be anticipated with greater anxiety if pain has not been managed effectively in the past. In economic terms the mismanagement of pain results in slower rates of recovery from illness with subsequent impact on days spent in hospital, an increased level of support from community services and a greater number of days away from work (Howell *et al*., 2000; Rich, 2000). Managing pain appropriately is, therefore, important in both human and economic terms. The best possible management of pain is a moral and ethical obligation for caregivers, yet patients are still suffering unnecessary pain during hospitalization (Kachoyeanos & Zollo, 1995; Franck, 1998;

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Rich, 2000). Until nurses become accountable for pain management this will continue to be a problem.

Nurses are patients' advocates and should act at all times in such a manner as to promote and safeguard their interests and well-being (UKCC, 1992). This includes ensuring that patients have their pain managed appropriately. To assess and relieve pain effectively, nurses need to be competent in this area. The World Health Organization (WHO) states that competence requires knowledge, appropriate attitudes and observational, mechanical or intellectual skills, which together account for the ability to deliver a specified professional service (WHO, 1988). Confidence is also an important aspect of providing effective nursing care (Copeland, 1990). Confident nurses should be able to act as patients' advocates and ensure that their pain is managed appropriately. To develop confidence, nurses need a theoretical knowledge base. Nurse educators have a responsibility to provide student nurses with the knowledge they require and give nurses 'permission' to deliver this as part of their legitimate role. Nurses can then become both competent and confident and, therefore, be equipped to manage pain effectively in clinical areas.

Nurses and pain management

Despite the proliferation of research in pain management in the past 20 years, patients are still suffering unnecessary pain (Choiniere *et al*., 1990; Ferrell *et al*., 1991; Paice *et al*., 1991; Donovan & Watt-Watson, 1992; Field, 1996; Yates *et al*., 1998). This can be attributed to a number of factors. Nurses, for example, appear to feel:

1 Happier with aspects of care which are easily quantifiable;
2 That, as pain is an expected outcome of many medical procedures, pain relief does not need to be prioritized;
3 That pain management is not really their responsibility, because it is doctors who prescribe analgesic drugs.

Pain assessment tools, however, provide an easy and effective way of quantifying pain (Champion *et al*., 1998; Johnston, 1998; Franck *et al*., 2000). Work undertaken in the past 20 years relating to pain management demonstrates that it is not an inevitable consequence of medical interventions and can be controlled with, for example, the right drugs and better assessment (Twycross, 1994; Day, 1997). There is no reason why nurses should not be assessing and managing pain effectively. Another reason that patients continue to suffer unnecessary pain is that complete pain relief after surgery is not nurses' major goal (Watt-Watson, 1987; Gadish *et al*., 1988; Caty *et al*., 1995; Twycross, 1999). These findings suggest that nurses do not aim to relieve pain but simply to make it tolerable, which is surprising in view of the findings discussed earlier which indicate that it is possible to manage pain effectively.

The fact that nurses continue to hold these beliefs can perhaps be explained by examining theories about health beliefs. A basic element in the shaping of beliefs is the acquisition of information (Downie *et al*., 1990). Thus education, and imparting knowledge, is an important element in shaping beliefs. This indicates that educational strategies need to address both the affective and cognitive domains of learning (Reece & Walker, 1997; Quinn, 2000). It is also possible that the key to improving pain management among nurses is to improve educational input, although the link between knowledge and the acquisition of skills needs considering. Nurses may have theoretical knowledge about pain management but this does not necessarily mean that they are able to use this knowledge in practice. However, if they do not have the theoretical knowledge which underpins the skill of pain management, they will be unlikely to be competent practically in this area (Sloboda, 1993; Reece & Walker, 1997). Competence requires knowledge, appropriate attitudes and observational, mechanical or intellectual skills, which together account for the ability to deliver a specified professional service (WHO, 1988). It is apparent that, if nurses are to be competent with regard to pain management, nurse education needs to provide them with a theoretical underpinning and opportunities to *practise* these skills in a safe environment (Rogers, 1983). It may also be necessary to evaluate the teaching strategies used to ensure that students adopt deep approaches to learning and that pain management appears relevant to them.

SEARCH STRATEGY

This paper aims to establish through a review of the literature the effectiveness of current strategies for educating nurses about pain. A computerized literature search was carried out using CINAHL, Medline and the British Nursing Index. The search terms used were: pain, pain assessment, pain management, nurse education and nurses. These search terms were used individually and in combination to derive a list of pertinent articles. Further relevant articles were identified from the reference lists of papers detected by this literature search. Articles published in the last 10 years were included in the review.

General knowledge about pain

Educating health care professionals about pain has been identified as important. The International Association for

the Study of Pain (IASP) highlights the need for better education about pain among all health care professionals (IASP, 1993, 1995) as do the UK Royal College of Nursing's clinical guidelines on the recognition and assessment of pain in children (RCN, 1999). However, the results of several studies indicate that teaching about pain management remains inadequate. A questionnaire used to assess the pain management knowledge of senior nursing students ($n = 164$) in Canada found a knowledge deficit with regard to opioid analgesics (Romyn, 1992). Seventy-five percent of the students in the study were unaware of the beneficial and harmful interactions of opioids with other drugs nor did they know the duration of action of a number of common opioid analgesics. In another study clinical vignettes were used to examine nurses' ($n = 53$) beliefs about suffering as a potential barrier to effective pain management and it was found that they held a neutral view of suffering and ineffectively managed the pain of patients described within the vignettes (Warden *et al*., 1998). Nurses in this study had fears about over-medicating patients, appeared unable to discriminate between mild, moderate and severe pain, failed to recognize the inappropriateness of medical prescriptions, and had an apparent lack of knowledge about titrating analgesic drugs. This was a small study and so care needs to be taken in generalizing the results, which appear to indicate a need for more effective education about pain management. However, the use of vignettes may give a more realistic picture of what happens in practice than studies using only a questionnaire. These results concur with other studies which suggest that nurses feel a need for continuing education about pain management (Fothergill-Bourbannais & Wilson-Barrett, 1992; Francke *et al*., 1996; Lebovits *et al*., 1997), indicating that education regarding pain management may be inadequate and may not equip nurses to manage pain within clinical practice.

Pedagogy vs. andragogy

To carry out an evaluation of the way pain management is taught it is necessary to understand how people learn. Learning is about change: the change brought about by developing a new skill, understanding a scientific law or changing an attitude (Reece & Walker, 1997). Adults learn in a different way than children (Knowles, 1990). Knowles (1990) has identified a number of assumptions which describe how adults learn (see Table 1). He describes this way of learning as an andragogical approach that places more emphasis on what the learner is doing, whereas a pedagogical approach is a teacher-dominated learning situation.

Knowles (1990) argues that pedagogy (traditional education) conditions the learner to react to teacher stimuli, and that this does not equip the learner for life-long learning. Andragogy, however, encourages a pro-active approach to learning in which enquiry and autonomy feature predominantly. Quinn (2000) suggests that, rather than seeing pedagogy and andragogy as opposing models, they should be seen as parallel approaches. In nurse education it may be appropriate to adopt a pedagogical approach to introduce a new concept, while the norm should be an andragogical approach. The use of a predominantly andragogical approach is advocated by Brown & Atkins (1988) who suggest that effective teaching requires the teacher:

1 To consider what the students know;
2 To communicate clearly to students;
3 To stimulate students to learn, think and communicate.

Table 1 A comparison of pedagogy and andragogy (Knowles, 1990)

Assumptions	Pedagogy	Andragogy
Learners' need to know	Students must learn what they are taught in order to pass their tests	Adults need to know why they must learn something
Learners' self-concept	Dependency: decisions about learning are controlled by the teacher	Self-direction: adults take responsibility for their own learning
Role of learners' experiences	It is the teachers' experience that is seen as important. The learners' experience is seen as of little use as a learning resource	Adults have greater, and more varied experience which serves as a rich resource for learning
Learners' readiness to learn	Learner readiness is dependent upon what the teacher wants them to learn	Adults' readiness relates to the things he or she needs to know and do for real life
Students' orientation to learning	Learning equates with the subject matter content of the curriculum	Adults have a life-centred orientation to learning involving problem-solving and task-centred approaches
Students' motivation	Students' motivation is from external sources such as teacher approval, grades and parental pressures	Adults' motivation is largely internal such as self-esteem, quality of life and job satisfaction

Nursing students are adult learners; it is important that these principles are incorporated into nurse education by the adoption of student-centred teaching strategies which encourage deep approaches to learning.

Why is it necessary to evaluate education about pain?

Teaching someone about a subject does not mean that they have learnt it. Definitions of learning encompass the development of new skills, understanding a new attitude or changing an attitude. However, individuals do not necessarily learn from an experience (Jarvis & Gibson, 1997; Rogers, 1998). Three types of non-learning have been identified:

- Presumption – relying uncritically on their past experiences as a basis for their behaviour.
- Non-consideration – failure to respond to potential learning situations.
- Rejection – the individual rejects the possibility of learning from experiences.

(Jarvis & Gibson, 1997).

It is also possible to engage in non-reflective learning. This includes memorizing facts, skills learning and preconscious learning. This is learning that does not involve reflection. Reflective learning involves contemplation, reflective skills learning, and experiential learning (Jarvis & Gibson, 1997). For learning to take place, reflection is needed. Experiential learning has been adopted by nurse education in the UK during the past 20 years (Quinn, 2000) and this is based on a reflective model of learning. It is therefore pertinent to evaluate whether education about pain results in learning.

This is particularly relevant in the light of the findings of *Making a Difference* (DoH, 1999) and *Fit for Practice* (UKCC, 1999) which highlight the need for pre-registration courses to prepare students adequately for practice. The need for nurses to stay up-to-date has been highlighted since the UKCC introduced Post-Registration Education and Practice (PREP). Nurses are now required to undertake 5 days of appropriate professional study every 3 years (UKCC, 1995, 2001). The NHS White Paper *The New NHS. Modern, Dependable* also expects nurses to provide evidence-based care, thus requiring them to integrate relevant research with their clinical practice (DoH, 1997). The focus on clinical governance in The NHS Plan also requires nurses to engage in 'life-long learning' (DoH, 2000). It has also been suggested that there is a need for a planned programme of continuing professional development to ensure that nursing can continue to meet the needs of society within a constantly changing health service (Beardshaw & Robinson, 1990; Audit Commission, 1991; Audit Commission, 2001). In relation to pain management, nurses should have knowledge of current innovations and these should be implemented in practice. It is, therefore, necessary to evaluate the effectiveness of education in this area. The need to do so is supported by the findings of a study carried out by Twycross (2000), who found that there was minimal input about pain management in pre-registration nursing curricula in the UK.

Do educational efforts improve knowledge about pain management?

An effective education programme should result in changes in behaviour as a consequence of what has been learnt (Reece & Walker, 1997; Quinn, 2000). However, several studies have shown that education about pain does not always result in a change of behaviour (Camp-Sorrell & O'Sullivan, 1991; Morse, 1993; Twycross, 2002). Other more recent studies have concluded that such education does have a positive effect on nurses' behaviour, and these are summarized in Table 2.

It appears that education about pain does impact on nurses' knowledge levels about pain management. However, this is an area that warrants further investigation, particularly as two of these studies were conducted by the same researchers. When the needs of adult learners are considered, and to maximize the impact of educational efforts, current courses need to be evaluated to ensure that they are relevant and accurate. It is possible that there were minimal changes in practice in some of the studies discussed because of the timescale. Change in practice takes time (Cervero, 1985; Francke *et al*., 1997) and future studies should look at change over a longer period. This is supported by the findings of Dalton *et al*. (1996), who designed an educational programme to increase knowledge about pain management in order to change practices and patient outcomes. Data were collected from nurses ($n = 29$) providing care to patients before the study, and 6 and 12 months after the programme was completed. Patient charts were examined before and 6 months (before $n = 209$, after $n = 163$) after the programme. Nurses' knowledge did increase but the change was not statistically significant. Changes in practice were only just becoming apparent 6 months after the programme and were more apparent after 12 months. The results of this study suggest that educational programmes may be an effective method of changing behaviours and thus improving pain management. This was a small study and further studies need to be undertaken before the findings can be considered generally applicable. A strength of this study

Table 2 Does education about pain affect nurses' knowledge level?

Author	Respondents	Findings
McCaffery & Ferrell (1995)	Nurses from Australia ($n = 188$), Canada ($n = 190$), Japan ($n = 805$), Spain ($n = 95$) and the United States ($n = 150$) during 1992 and 1993	Serious knowledge deficits which could adversely affect the care of patients with cancer pain. The longer a country has been educating health-care professionals about pain management and the longer palliative care programmes have been established the more likely it is that nurses possess correct information about cancer pain Suggests that education about cancer pain does have a positive effect on nurses' knowledge
McCaffery & Ferrell (1997)	Reviewed several studies carried out over a number of years on more than 5000 nurses	Education beneficial but educational deficits remain. Fewer than half the nurses surveyed, for example, understood that the patient's self-report of pain is the single most reliable indicator
Dahlman *et al.* (1999)	Nurses working in thoracic surgery – patient evaluation of pain management and administration of analgesic pre- and post-study day	After a study day, nurses in an intensive care unit gave larger doses of analgesics and the patients experienced less pain

is that chart audits were included, as well as a questionnaire providing an indication of the correlation between knowledge and practice. However, it is possible that changes occurred in practice because the nurses were aware that their pain management practices were being observed. This does not appear to have been considered by the authors. Future studies about the effectiveness of educational programmes should address how any changes in practice impact on the patient's experience of pain.

The effectiveness of 12 studies about educational programmes for nurses in relation to pain management was assessed by Francke *et al.* (1996). They concluded that it was often difficult to evaluate the effectiveness of the programmes in changing behaviour because any post-measurements were usually taken within some days or weeks of the programme being completed. Only four studies undertook measurements after months or years. It is, thus, difficult to assess the effectiveness of education in this area. Francke *et al.* also suggest that educational programmes need to consider a greater range of pain topics; many of the studies concentrate simply on pain assessment and the administration of analgesics. They conclude that, although evidence is not conclusive it does appear that continuing pain education for nursing staff can have an impact on both nurses and patients. It is important to ensure that the education provided is appropriate and effective; nursing curricula need regular re-evaluation to ensure that this is the case.

It has been suggested that participants are more likely to implement what they have learnt if the course philosophy is similar to their own. In a qualitative study Francke *et al.* (1997) interviewed nurses ($n = 12$) who had taken part in a continuing education programme in the Netherlands. The course covered pain assessment, psychosocial interventions and pharmacological interventions. Two types of pain management were identified – an *integrated* and a *one-sided pharmacological* view. Interviewees with an integrated view thought that, in addition to pharmacological interventions, psychosocial and other non-drug interventions might be valuable in pain management. Those with a one-sided view, however, saw the nurse's role in pain management as being synonymous with the administration of analgesic drugs. Those with an integrated view appeared to benefit more from the programme. These results can perhaps be explained by considering andragogical theories of education which suggest that in adult learning the relevance of a topic to a student impacts on their enthusiasm (Rogers, 1983; Knowles, 1990). Francke *et al.* suggest that it is, perhaps, necessary to start education about pain near the beginning of a nursing curriculum to ensure that an integrated view about pain management is developed as soon as possible.

Numerous studies have been undertaken to ascertain the effectiveness of education on nurses' theoretical knowledge levels about pain. However, many of these were undertaken in one hospital, and it is possible that this affects the generalizability of the results. Few studies examined whether increasing theoretical knowledge levels improve the quality of patients' pain management. This should be addressed in future studies. It is possible that the one-sided view of pain management identified by Francke *et al.* (1997) is perpetuated by the content of current courses about pain management, which appear to concentrate on the use of analgesic drugs and pain assessment. This is

reflected in the papers published relating to nurses' knowledge about pain management (McCaffery & Ferrell, 1992; Brunier *et al*., 1995; Clarke *et al*., 1996; Kubecka *et al*., 1996; Brown *et al*., 1999; Cason *et al*., 1999). An evaluation of the effectiveness of current courses should compare the content of courses to the available guidelines (IASP, 1993, 1995; Twycross, 2001).

Educational strategies

It would appear that education about pain can be effective in changing nurses' behaviour. Further research is needed to identify the most effective methods of teaching pain management. The use of clinical discussion of individual patients and their care has been advocated as one method of teaching nurses about pain management (Graffam, 1990). Atkins & Murphy (1994) have also discussed using reflection in this way as a way of helping students link theory and practice, which is supported by the approach to changing paediatric pain management practices described by Ochieng (1999). It has been suggested that it does not matter how much knowledge a nurse has, if they do not reflect on their practice and learn from this, practice will not improve (Rolfe, 1998). Nurse educators should therefore consider using reflection in this manner to equip nurses to manage pain effectively in clinical areas.

The *Nurses' Knowledge and Attitude Survey* was used by Dols *et al*. (1995) to determine if an educational programme about pain assessment that included knowledge and attitude domains was more effective than didactic teaching. Twenty-nine nurses from a hospital in USA were systematically assigned to two groups. One group received a half-hour videotape presentation on the *Nursing Assessment of the Patient with Pain* and a half-hour lecture on how nurses' make decisions about patients' pain intensity. The second group received the same videotape presentation and lecture but were also asked to read four vignettes representing patients in pain who varied in age and lifestyle. Respondents were asked to rate the patient's pain, make medication choices and rank the factors that influenced their medication choice, in order of importance. They were then divided into small groups and asked to discuss their decisions. Group facilitators explored respondents' attitudes towards age and lifestyle. Respondents were both given the *Nurses' Knowledge and Attitude Survey* to complete during the week following the educational programme. Following the educational programme, the first group 83% ($n = 15$) reported that they would use the patient's self-report of pain in their pain assessment and 60% ($n = 9$) stated that it was the most influential factor in their assessment. All respondents ($n = 11$) in the second group stated that they would use the patient's self report in their pain assessment; for 63% ($n = 7$) of the respondents it was the most influential factor in pain assessment. These differences were not statistically significant. It is interesting that both groups said that the patient's self-report was the most influential factor in their assessment. It would perhaps be appropriate to investigate what happens in practice. This study did not assess nurses' knowledge before the study and so it is not possible to ascertain how the educational programme affected knowledge levels about pain. The videotape was shown to both groups, which could indicate that this is an effective way of challenging nurses' perceptions about pain. However, the lack of a pre- and post-test makes it difficult to draw any conclusion. It is possible that viewing a videotape could result in learning in the affective domain. However, the authors do not appear to have considered the Hawthorne effect; it is possible that changes in practice occurred simply because the study took place. The results of this study do, however, support those of McNaull *et al*. (1992), who found that nurses who had watched a pain management video during a training session were more likely to use a pain assessment tool after training than those who received other types of teaching. While McNaull *et al*.'s study does not consider what the participants were doing prior to the study, it adds weight to arguments for the use of videotapes in educating nurses about pain. Further research is needed in this area.

Thirteen nurses took part in a study by Francke *et al*. (1995) consisting of six weekly 4-hours sessions held in the classroom of one of the participating hospitals. Main content themes were: what is pain?, pain assessment, communication and pain, breathing and pain, massage and pain, pain medication, and working together in the interests of surgical cancer patients in pain. The *confluent education* method was used which emphasizes the importance of integrating *learning with the head* and *heart* (Brown, 1990; Francke & Erkens, 1994). This method of education also has an emphasis on creating readiness to learn and for the learner taking responsibility for applying what is learnt (Francke *et al*., 1995). This philosophy of education therefore encompasses many of the elements of adult learning identified by Knowles (1990). Each session starts with a group discussion where learners share their experiences of the past week with respect to what was learnt. They also share what they would like to learn in the current session. Respondents completed questionnaires at three points during the study: at the start of the programme (M1); at the end of the programme (M2); and 3 months after the programme had finished (M3). Nine participants completed all three questionnaires.

Analysis of the results showed that the majority of respondents in M2 and M3 showed an increase in reported frequencies of psychosocial pain-reducing interventions and that they were used for a longer period of time. These results suggest that using *confluent education* or other adult learning approaches may facilitate learning. However, there is a need to evaluate this over a longer period of time.

The use of teaching rounds as a method of devolving pain management skills among nursing staff is suggested by Segal & Mason (1998). An advanced nurse practitioner (ANP) or clinical nurse specialist (CNS) facilitates this ward-based teaching method. The nurse caring for a patient in pain presents colleagues with an overview of the patient's history in relation to pain. During the case presentation questions are raised regarding the patient's problems, contextual factors, the plan of care and the obstacles in delivering care. After the case has been presented the group establishes goals for the interview and patient education. Permission is obtained from the patient, who is then interviewed by the ANP/CNS as a form of role modelling. Following the interview the participants discuss the issues raised and revise the care plan. Teaching rounds appear to be a useful method to develop nurses' pain management skills. This is supported by the findings of Corder (1991) Studdy *et al.* (1994) and Melby *et al.* (1997) regarding the importance of practical demonstrations. Segal & Mason (1998) also suggest that practical demonstrations enable nurses to develop their critical thinking skills. To be successful, however, teaching rounds need to be supported by the ward manager and time needs to be allocated on a weekly basis.

The use of case studies has been suggested as a way of developing critical thinking skills among novice paediatric nurses. Jones & Sheridan (1999) maintain that case studies reinforce what is learnt in college and provide an opportunity to explore clinical situations in a safe situation. This educational approach thus supports the conjecture of Rogers (1983) that students need to feel safe in order to learn. Case studies allow nurses to learn from situations which reflect authentic patient situations and thus increase the relevance of the learning situation and increase motivation (Reece & Walker, 1997). Twycross (2000) also advocates the use of case studies to make teaching more relevant to students, and this could be seen as a way of facilitating reflection on practice with students who have minimal clinical experience.

The importance of reflection and clinical simulation are encompassed in the move towards problem-based learning in many nursing curricula. Problem-based learning is a conception of knowledge, understanding and education that encourages open-minded, reflective, critical and active learning (Margetson, 1997; Wilkie, 2000). It allows students to acquire the necessary knowledge and skills by working through clinical problem scenarios (Cooke & Donovan, 1998; Wilkie, 2000) and linking information from a number of topic areas to various clinical situations (Cooke, 1995). This embeds the concept of reflective practice within the learning process (Fraser, 1995; Lumby, 1998). It will be necessary to evaluate the impact and effectiveness of such courses.

In today's health care it is important that any training programme takes account of the limited resources and nurses' workloads. Removing staff from the clinical area may not be possible, although it may be possible to include pain management as part of a mandatory annual study day. Several authors describe ward-based teaching programmes that appear to have had an effect on nursing practice (Davies, 1988; Daufault *et al.*, 1995; Howell *et al.*, 1996). In Davies's (1988) study the evaluation of practice took place after 1-month, which is too soon to indicate whether practice has been altered long-term. Daufault *et al.*, 1995) and Howell *et al.* (1996) used research utilization programmes that focused on pain management as a strategy for change. A major part of the programmes was a round table discussion of current research in the area. Changes in practice were evaluated over several months and significant changes were found. Nurses also appeared better equipped to use research findings in practice. These studies involved a large time commitment for nurse educators/researchers and so may not always be practical; however, it is possible that journal clubs could be used as an alternative to round table discussions (Nolf, 1995). Further research is needed in this area.

Conclusion

There is a need to evaluate current educational strategies for pain management to ensure that nurses have the knowledge and skills to care for patients. Many of the studies which have evaluated educational strategies have done so over a short time period. Future research should evaluate changes in practice over a longer period. There is also a need for the effectiveness of different educational strategies to be evaluated. However, education alone may not be sufficient to change behaviour; nursing practice changes as an outcome of education are influenced by organizational, administration and environmental factors (Czurylo *et al.*, 1999). Several factors also need to be considered such as whether there are any organizational barriers which could hinder the change process (Ferrell *et al.*, 1995; Czurylo *et al.*, 1999). It is also necessary to

consider who has the power to bring about change (Hodnett *et al*., 1996) as well as considering strategies for changing attitudes (Zajonc, 1968; Downie *et al*., 1990; McGrath, 1996) and the appropriate management of change (Lancaster & Lancaster, 1982).

Recommendations

1 There is a need to ensure that nurses have the knowledge and skills to manage pain effectively;
2 Regular updates about pain management should be provided for all nurses;
3 Educational initiatives should be evaluated with relation to changes in practice over a prolonged period;
4 The teaching strategies which support adult learning and encourage deep approaches to learning should be used;
5 A variety of teaching strategies should be used to teach pain management including: teaching rounds, case studies, journal clubs, reflection and teaching rounds;
6 There is a need to carry out further research to ascertain:
   - Whether an increase in knowledge is reflected by changes in practice;
   - Which teaching methods are most effective in facilitating changes in practice.

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