PROFILING THE 'PAIN-AWARE' NURSE: ACUTE CARE NURSES' ATTITUDES AND KNOWLEDGE CONCERNING ADULT PAIN MANAGEMENT

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ABSTRACT

Research about nurses' knowledge and attitudes regarding pain management shows both inadequate knowledge and inappropriate attitudes. The authors sought to explore this subject by surveying registered nurses (n=272) in a metropolitan teaching hospital about pain-related knowledge and attitudes/beliefs related to pain management.

Nurse knowledge was found to be of moderate standard only, with the best knowledge scores generated by the 'nursing assessment and management' section of the questionnaire. Associations between nurses' characteristics, attitudes and knowledge were assessed statistically.

Univariate and multivariate statistical procedures yielded a model predicting the profile of a 'knowledgeable nurse' as of younger age, less experienced, working in critical care, confident in knowledge of pain, holding views which accept that improvement in patient pain relief is needed and holding beliefs which value non-pharmacological nursing interventions. Potential explanations for this finding are discussed in light of the literature.

INTRODUCTION

Research into nurses' knowledge and attitudes regarding pain management continues to show inadequate levels of knowledge and inappropriate attitudes (Brown et al 1999; Brunier et al 1995). Most of the published research comes from North America and Great Britain. However, published Australian work demonstrates similar knowledge deficits and attitudinal concerns (Van Niekerk and Martin 2001; Heath 1998). Prominently reported knowledge deficit areas include issues related to pain physiology, pharmacology of analgesic drugs and risks associated with opioid drugs (Brown et al 1999; Cason et al 1999; Brunier et al 1995; McCaffery and Ferrel 1995).

Prominently reported negative attitudes and misconceptions are: patient pain assessment related; and, opioid related, ie inaccurate beliefs about tolerance and addiction (Heath 1998; McCaffery and Ferrel 1995). Specific attitudinal issues of concern which have been reported are: nurses' belief that patients over-report/under-report pain; that health professionals' estimation of pain is more valid than patients' self-report; and, that some patient behaviours (eg watching TV or reading) indicate absence of pain (Brown et al 1999; Brunier et al 1995; McCaffery and Ferrel 1995; Vortherms et al 1992).

Lack of knowledge and non-facilitative attitudes of health care professionals have been identified as major barriers to effective management of pain in hospitalised patients (Brockopp et al 1998). Ineffective pain therapy leads to needless suffering and may have serious consequences in terms of increased morbidity and financial cost. Nurses, as patients' primary carers, play a key role in the process of pain assessment and

management. The available literature is consistent in recommending that nurses' sensitivity and skills in caring for patients experiencing pain need to be enhanced (Cason et al 1999; Heath 1998). It is interesting to note that there is little consistent research based information about why nurse knowledge and attitude is inadequate.

The authors' experience in a metropolitan teaching hospital pain management service confirmed existing findings regarding inadequate knowledge and inappropriate attitudes. We sought to explore this phenomenon by conducting this cross-sectional survey of nurse characteristics, knowledge and attitude. Specifically, the study sought to: i) examine nurses' knowledge and attitudes related to pain management; and, ii) explore any existing associations between characteristics, knowledge and attitudes; among a sample of Australian acute care nurses, in order to inform knowledge and practice improvement strategies.

METHOD

This study was part of a larger project investigating pain-related knowledge and attitudes/beliefs among nurses at two sites (one adult, one paediatric) in eastern Sydney, Australia. Only data from the adult hospital is presented and discussed here.

Participants

All registered nurses (RNs) employed at a large metropolitan teaching hospital in Sydney, were invited to participate. Participants were not excluded on the basis of employment status (ie full-time, part-time or casual). The demographic characteristics of the sample are listed in table 1.

Measurement

At the time of the study, there was no known standard survey for assessing pain-related knowledge and attitudes/beliefs among Australian RNs. Therefore, the authors developed a questionnaire relevant to the Australian context. The survey comprised three sections: demographic data, questions applicable to knowledge of pain and questions applicable to pain-related attitudes and beliefs.

Section 1: Demographic data included items on level of education and training, clinical area and years of professional experience. In this section respondents also used a five point Likert scale (very good to very poor) to rate their perceived level knowledge for managing pain.

Section 2: Pain knowledge comprised 17 four-alternative multiple-choice items. The item breadth and content were guided by similar style pain knowledge surveys developed for use with nurses in other countries (eg McCaffery and Ferrell 1995; Brunier et al 1995; Ferrell et al 1993; Fothergill-Bourbonnais and Wilson-Barnett 1992) but it was adjusted for the Australian setting. The items reflected the fundamental recommendations of the Australian National Health and Medical Research Council (NHMRC 1997). The following knowledge domains were canvassed: i) pain physiology and addiction issues; ii) nursing assessment and management; and, iii), pharmacological management.

Section 3: Attitudes and beliefs. The content of this section was developed in a manner similar to the knowledge section described above. This section comprised nine items which required respondents to indicate the level to which they endorsed each statement using a five point Likert scale (from strongly agree to strongly disagree). Attitude/belief items canvassed confidence, belief in adequacy of hospital approach to pain management, attribution of 'blame' for inadequate pain relief outcome, beliefs about the value of nursing interventions, and belief about the value of non-pharmacological interventions.

An independent panel of hospital-based experts in pain management (composed of three senior nurses and three specialist doctors) reviewed the item content of sections 2 and 3. The questionnaire was presented to the institutional research and ethics committee and approved following slight changes in the format and style of the survey. In its final form the questionnaire required approximately 15 minutes for a respondent to complete.

Procedure

The survey was distributed to all RNs with a cover letter indicating the purpose of the study and inviting voluntary participation. Completed surveys were returned anonymously by mail. According to institutional ethical guidelines, the decision to complete and return the questionnaire constituted consent to participate.

RESULTS

Sample characteristics

A total of 272 questionnaires were completed, representing a return rate of 41% from 661 distributed. The characteristics of the predominantly female sample are listed in table 1.

Table 1: Sample characteristics

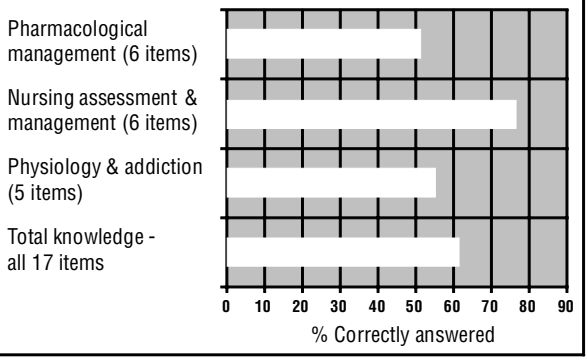
Descriptor	Result (n=272)
Survey distribution/return rate	272/661 (41%)
Gender ratio - Female: Male	89:11
Age: Range, Mean (sd)	21-65; 34.2 (sd=9.4)
Years nursing: Range, Mean (sd)	0.2-40; 11.9 (sd=9.1)
Highest RN qualification	
Certificate	32%
Diploma	15%
Degree	41%
Grad Diploma	9%
Masters/PHD	2%

Pain-related knowledge

The 17-item knowledge test was collapsed to three knowledge domains (pharmacological management, nursing assessment and management; pain physiology; and, addiction issues). Results on the knowledge test are illustrated in figure 1.

Generally, performance on the knowledge test was of a moderate standard, with a mean sample score of 61% for the whole test. Highest scores were achieved on issues related to nursing assessment and management of pain while knowledge of pharmacological issues attained lowest scores.

Figure 1: Pain related nurse knowledge (n=272)



Knowledge test results and self-assessed knowledge ratings (very poor, poor, fair, good, very good) were cross sectionally analysed. Results from an analysis of variance indicated that there was no significant relationship (F= -1.15; p=0.33), although, those who rated their knowledge as poor or very poor (n=8), did score somewhat lower (10%) than all others (n=264).

Knowledge test results were also analysed cross sectionally against major demographic descriptors. Results are summarised in table 2.

Pain-related attitudes and beliefs

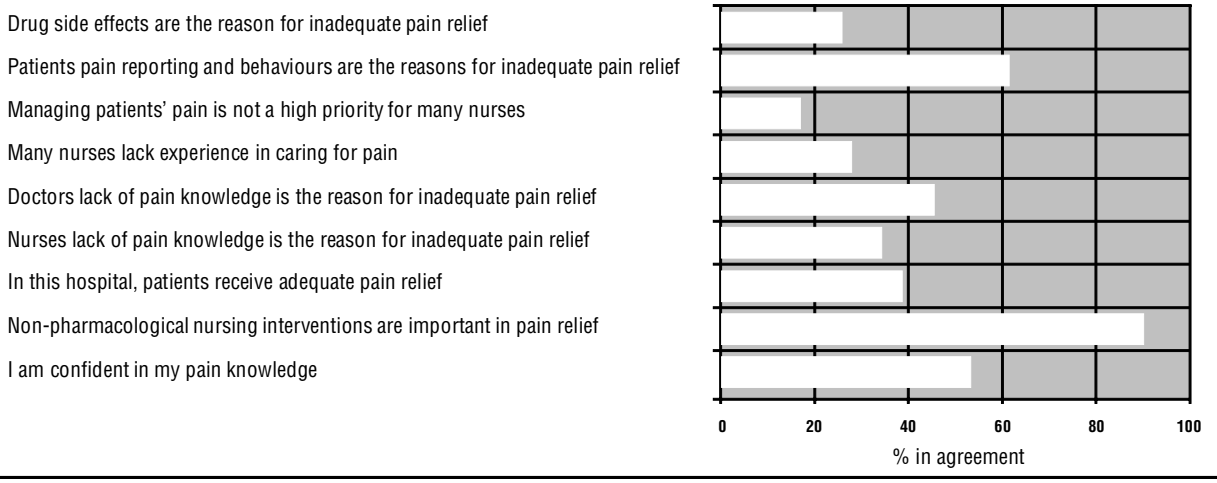
A series of attitude/belief statements (n=9) was included with the survey. These were assessed for prominence and were cross sectionally analysed against knowledge results, to test whether there were perceptual or attitudinal barriers to knowledge. Figure 2 illustrates the relative prominence of the attitudes canvassed.

Table 2: Pain related knowledge by personal and workplace demographics

Descriptor	Test	Direction of difference
Age (categories: 20-29; 30-39; 40-49; 50+)	Pearson correlation r=-0.26; P<0.0001 Four age categories ANOVA: F=7.9; p<0.0001*	Younger nurses scored significantly higher than older nurses
Gender	ANOVA: F=0.9; p=0.33	No differences
Highest nursing qualification	ANOVA F=0.48; p=0.79	No differences
Experienced in nursing adults in pain	ANOVA: F=2.08; p=0.15	Very modest positive difference in favour of nurses reporting pain management experience
Clinical area (medical, surgical, critical care or other)	ANOVA: F=3.02; p=0.018*	No differences between 'medical' and 'surgical' codes, 'critical care' code scored highest and 'other' code lowest
Years of experience in the profession	Pearson Correlation r=-0.24; p<0.0001*	Significantly decreased scores among those with more years of experience

* P<0.05

Figure 2: Prominence of commonly held attitudes and beliefs



The two most prominently held beliefs were that: i) non-pharmacological nursing interventions are important in relieving patients' pain; and, ii) that patients' pain reporting (under or over) and associated behaviours are related to inadequate relief being given.

Association between attitudes/beliefs and knowledge test result

To establish whether these nine attitudes/beliefs mediated pain related knowledge, cross sectional analyses were conducted. Results are summarised in table 3.

Only two of the nine attitudes/beliefs were significant mediators of knowledge test result. Confidence in knowledge of pain was positively associated to knowledge on testing. Interestingly, belief in the value of non-pharmacological nursing interventions was also positively associated with knowledge. None of the other attitudes/beliefs were found to significantly influence the knowledge test result.

Multivariate analysis – associations between demographics and attitudes on pain knowledge

Demographic and attitudinal factors that were found to be independently significantly associated with knowledge score were factored into a multiple regression analysis which sought to derive the best predictive model of total pain knowledge.

The resulting model accounted for 20% of the variation on the total knowledge score ($F=14.04$; $p<0.0001$, Adj $r2=0.204$). It retained five significant predictors and is summarised in table 4.

Table 3: Knowledge score by attitude/belief rating

Attitude/belief	One way analysis of variance	Direction of difference
I am confident in my knowledge of pain	F=4.2; p=0.003*	Knowledge significantly lower among those who express lack of confidence
Non-pharmacological nursing interventions are important in contributing to relief of a patient's pain	F=6.4; p<0.0001*	Knowledge significantly lower among those who didn't think that non-pharmacological interventions were important
In this hospital patients receive adequate pain relief	F=2.2; p=0.067**	Small knowledge decrease among those who believe their hospital provides adequate pain relief
If a patient does not receive adequate pain relief, it is because many of my nursing colleagues are lacking in pain knowledge	F=1.4; p=0.23	No difference by attitude/belief rating
If a patient does not receive adequate pain relief, it is because the medical staff lack pain knowledge	F=0.70; p=0.59	No difference by attitude/belief rating
Many nurses working in this hospital are not experienced enough in the nursing care of patients in pain	F=1.14; p=0.34	No difference by attitude/belief rating
Managing patients' pain is not a high priority for most nurses	F=0.61; p=0.66	No difference by attitude/belief rating
Two reasons for inadequate pain relief are that patients often don't report their pain or their associated behaviour is confusing	F=2.35; p=0.054**	Marginally significant increase in knowledge among those who don't believe that patient reporting behaviours are influencers of pain relief adequacy
Pain relieving drugs have many side effects and this is the main obstacle in managing patient's pain	F=1.0; p=0.41	No difference by attitude/belief

* statistically significant ($p<0.05$)
** marginally statistically significant ($0.05<p<0.10$)

Table 4: Predictors of total knowledge score following multiple regression

Factors	Beta	t	p
Decreasing age	-0.25	-4.14	<0.0001
Not holding the attitude: 'In this hospital, patients receive adequate pain relief'	-0.28	-4.87	<0.0001
Holding the attitude: 'I am confident in my knowledge of pain'	0.13	4.09	<0.0001
Holding the attitude: 'Non-pharmacological nursing interventions are important in relieving patients pain'	0.13	2.70	0.007
Clinical area of employment is critical care	0.13	2.32	0.021

Results of the multiple regression demonstrated that younger nurses, confident in knowledge of pain, nurses not holding 'fixed' or 'parochial' beliefs, nurses who believed in nursing interventions and critical care nurses were those most likely to score well on the knowledge test.

DISCUSSION

Australian nurses appear to have similar deficits in pain knowledge as nurses in other countries. The present study found that performance on the formal measure of pain-related knowledge was of a moderate standard with a correct rate of approximately 61%. Various literature reports mean scores of between 41%-72% (Brunier et al 1995, 41%; Glajchen and Bookbinder 2001, 56%; Brown 1999, 65%; Cason et al 1999, 68%; Van Niekerk and Martin 2001, 72%). 'Pharmacological management' was the domain of weakest pain knowledge performance with a correct rate of 51%. This domain encompassed questions related to usage, doses and side effects of drugs. Encouragingly the strongest knowledge domain was 'nursing assessment and management' with a correct rate of 77%.

The implications of inadequate knowledge and inappropriate attitudes/behaviours on managing patients in pain are likely to vary. Wrong beliefs about high side-effect profile (eg respiratory depression, tolerance and addiction) may result in nurses seeing the pain relieving drugs as difficult to manage and, therefore, better to be avoided.

Lack of knowledge of pain physiology and principles of pain assessment may lead to beliefs that patients who don't actively report pain, are not in pain. Similarly, some nurses may not know that patients try to distract themselves from pain by watching TV or reading.

Attitude regarding patient pain behaviour was shown by this study to be a knowledge mediator. Holding the attitude 'patients often don't report their pain or their behaviour is confusing' was significantly negatively associated with knowledge ($p=0.05$).

In this study, younger and less experienced nurses were more knowledgeable (both at $p<0.0001$). De Rond et al (2000a) also found both of these correlations in their study of 227 Dutch nurses. Why this is so, is not clear. One may expect knowledge to climb with experience. In the case of pain management, perhaps its relative newness as a specialty to some extent hampers its 'uptake' among experienced clinical nurses. Perhaps attitude is generational and cultural and therefore 'deeply held' thus becoming a significant intermediary of knowledge in this area.

Critical care nurses were somewhat more knowledgeable about pain and its management than medical or surgical nurses ($p=0.02$). This might be reflective of a focus on analgesia in their postgraduate educational preparation, their lower patient-nurse ratios, more 'controlled' clinical environment and a tendency towards the availability of more intensive educational infrastructure.

Wide variation was found among responses to the various attitude items canvassed. Some attitudes were more strongly held than others, though in each case attitudes did not attract a homogenous response. 'Non-pharmacological nursing interventions are important' was the most consistently held attitude - with 89.7% of respondents in agreement. This attitude was also positively associated with total knowledge score ($p<0.0001$). This is an interesting finding, as there is inconclusive scientific evidence for most of the non-pharmacological pain interventions, eg relaxation, breathing, distraction, music, visual imagery, biofeedback and transcutaneous electrical nerve stimulation (TENS) (NHMRC 1999; Sindhu 1996). Perhaps this attitude identifies nurses who feel positive about their profession and their practice. The other attitude which was shown to associate with better knowledge ($p=0.003$) was 'I am confident in my knowledge of pain' - this is a more straightforward relationship.

Multiple regression assisted in summarising the measurable characteristics of the 'knowledgeable nurse' from this study. The 'knowledgeable nurse' is: of a younger age; employed in critical care; confident in knowledge of pain; holding views which accept that improvement in patient pain relief is needed; and, beliefs which value non-pharmacological nursing interventions.

To address deficit of pain related knowledge most authors recommend a variety of education interventions. Many centres have implemented education programs for nursing staff (Brown et al 1999; Brunier et al 1995). Each had an underlying assumption that efforts to increase nurses' knowledge of pain may lead to improvements in pain management. A 1996 review by Francke et al suggested that continuing pain education for nursing staff can have an impact on both nurses and patients, however he admitted that the evidence was not conclusive. Howell et al 2000, demonstrated the effectiveness of an education intervention but the effect was not maintained over time. Some centres have reported little improvement in pain assessment and management by nursing staff (Dahlman et al 1999; Twycross 1997) following pain education programs. De Rond et al (2000b) demonstrated significant improvements post education in pain assessment but not in nurse-patient communication.

CONCLUSION

It seems likely that achieving the goal of adequate pain management as a norm for all patients may require more than education of nurses/health professionals. Attitude based interventions may also be potentially helpful. This study certainly indicates plenty of room for both

knowledge and attitude improvement, and hence the need for education. Increasingly we are promoting a more practical means of raising nurses' awareness of pain and its management by incorporating pain measurement into standard nursing observations. Today, we promote pain to nurses as 'the fifth vital sign'. As this axiom becomes embedded in everyday nursing practice and consciousness, optimal pain management for our patients may become a more accessible goal.

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