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Owens, D., **Smith, J.**, Jonas, J. (2014) Evaluating student nurses' knowledge of child pain and its management after attending a bespoke course. *Nursing Children and Young People*, 26 (2): 34-40;

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## **Abstract**

### *Aim*

To evaluate the impact of a structured pain education programme on pre-registration children's nursing students' knowledge and attitudes of the management of pain in children.

### *Method*

One hundred and twenty seven pre-registration children's nursing students participated in the project. A pre and post intervention design compared student nurses knowledge of pain and pain management in children before and after a pain education programme. Data were analysed using descriptive statistics.

### *Findings*

Student nurses' knowledge in relation to the management of pain improved slightly when comparing questionnaire answers before and after the programme for the intervention group. Although, the number of students achieving correct answers in the intervention group was overall better than the control group the percentage of correct answers group was disappointing and for some question less than 50%.

### *Conclusion*

A bespoke pain management programme has the potential to develop a positive student attitude towards the management of pain in children. However, knowledge of the physiology and pharmacology of pain needs to be revisited throughout the undergraduate nursing programme as students struggle with these concepts.

**Key words:** student nurses, pain, children, education

## **Introduction**

Assessing and managing pain in children is a key role of the children's nurse. This article outlines a study that evaluated a pain education programme delivered to pre-registration children's nursing students. Children often experience pain as a result of common childhood illnesses or minor accidents as a consequence of everyday play and activities. In hospital, the common reasons children experience acute pain are following surgery and during investigative and therapeutic procedures. In these situations it is recommended by the Association of Paediatric Anaesthetists (2008) that pain management be planned taking into account the age and developmental stage of the child, and differences in the response to pain and analgesia across childhood. Despite advances in understanding about the safe and effective use of analgesia in children, there are ongoing inconsistencies and inadequate pain management in children (Shrestha-Ranjit and Manias 2010, Czarnecki *et al* 2011). The reasons for poor pain management practices are multi-faceted and include knowledge deficits, misconceptions about pain and pain management in children, professional socialisation and deep-rooted organisational cultures (Franck and Bruce 2009, Twycross and Dowden 2009)

## **Background and rationale to the study**

Over the past decade policy directives and guidance, for example The Royal College of Nursing (RCN) (RCN 1999), Department of Health (DH) (DH 2004), Health Care Commission (2007), have recommended that health professionals working with children must be able to recognise and meet the needs of children experiencing pain. The National Service Framework for Children, Young People and Maternity Services (DH 2004) highlighted that effective pain management is central to the quality of care for children, and that the education and training of staff are key to ensuring best practice. In addition, health professionals have an ethical duty to ensure pain in children is recognised and managed effectively (Olmstead *et al* 2010). Although effective pain management is dependent on collaboration across the multi-professional team (The Royal College of Paediatrics and Child Health 1997, Coulling 2005, RCN, 2009), nurses have 24 hour contact with hospitalised children and often assume the overall responsibility for the management of children's pain.

Pain is a multifaceted and complex phenomenon. In the child health setting maximising the effectiveness of interventions aimed at alleviating pain requires health professionals to have knowledge and understanding of the physiological, cognitive, affective and psychosocial development of the child. Research findings suggest children's nurses (qualified nurses and students) have a poor theoretical understanding of pain. For example Vincent (2005), Chiang *et al* (2006), and Twycross and Roderique (2011) have identified that the

pathophysiology of pain, psychosocial aspects of pain, pain assessment and the pharmacology of analgesics as areas for development. It has been suggested that improvements in children's nurses' knowledge of pain and pain management through educational input does not necessarily inform and influence practice (Vincent and Denyes 2004, Twycross 2007). However, nurses who perceived that knowledge of pain management is a priority when caring for children are more likely to recognise and respond to a child's pain (Byrne *et al* 2001, Twycross 2008).

Despite the emphasis placed on the importance of ongoing education, deficits in nursing knowledge continue to be problematic. Lack of education is a contributing factor in maintaining the myths and misconceptions about children's pain management (Simons and Macdonald 2004, Twycross 2007, Twycross and Dowden 2009). The study presented in this article was undertaken within a large School of Nursing in the North West of England, where 100 child field of practice nursing student places are commissioned per year. The teaching of pain management had traditionally been variable both in terms of the number of sessions included across the programme and the content. The appointment of a lecturer-practitioner who was a specialist children's pain nurse enabled a review of the teaching of pain within the children's nursing programme.

## **Aim**

The aim of the study was to evaluate the impact of a structured pain management programme on pre-registration children's nursing students' knowledge and attitudes of the management of pain in children.

## **Methods**

A pre-post intervention design was undertaken to assess student nurses knowledge of pain and pain management in children. The evaluation of the intervention (a structured pain management programme) was adapted from Ferrell and McCaffery (1995) Nurses' Knowledge and Attitudes Regarding Pain Survey questionnaire. A total of 127 undergraduate pre-registration child branch nursing students, across two cohorts of a children's nursing programme participated in the study. All students completed a questionnaire relating to pain and pain management in children at the beginning of year two of their programme of study. The intervention group (64 students) received the structured pain management programme (Figure 1) in year two of their studies. The comparison group (63 students) received the pain management programme in year three of their studies. The questionnaire was repeated by both groups at the end of year two after the intervention group had completed the pain management programme. A total of 82 (65%) completed sets of questionnaires were analysed. Data analysis consisted of descriptive statistics, primarily percentages and frequencies.

**Figure 1: Summary of pain management programme**

<b>Teaching and learning activity</b>	<b>Aim</b>	<b>Content</b>
Workbook 1	To develop knowledge of pathophysiology of pain and pain assessment in children	Theoretical perspectives relating to the concept of pain Pain physiology Pain pathways and Gate Control Theory Assessment tools Guidelines Self assessment (questions and answers)
Workbook 2	To develop knowledge of pain management strategies for children	Pharmacological and non pharmacological interventions Self assessment (questions and answers)
Workshop1	To critically evaluate pain assessment and pain assessment tools use in child health settings	Pain physiology Pain pathways and Gate Control Theory Assessment tools Guidelines Self assessment Reflection of practice experiences and identifying best practice
Workshop 2	To outline range of pain management strategies and their applicability to children	Pharmacological and non pharmacological interventions, rational for choices and clinical decision making Reflection of practice experiences and identifying best practice
Workshop 3	To provide an overview of the management of chronic pain in children	Types, and causes of chronic pain Chronic pain theory Differences between acute and chronic pain Assessment and management of chronic pain
Clinical experience with pain team	To explore the practicalities of managing children's pain in practice and understand the role of the children's pain team and consider	Half day placement with the Children's Pain Management team at the Royal Manchester Children's Hospital
Personal Development Planning	To identify ongoing learning needs	Reflect on learning and identify needs Personal development and action planning

Ethical approval was obtained by the University research ethics committee and issues of consent, confidentiality and anonymity were addressed. All students understood that they could withdraw from the project at any time.

## **Findings**

Data for the 82 completed sets of questionnaires are presented in Tables 1-3. Students were between 18 and 49 years of age with a mean of 33.5 years, 70% of students were between 18 and 25 years of age, with the majority, 95% female. Overall both the intervention and comparison groups (Tables 1 and 2) rated their knowledge of pain management in children as having improved in the twelve months following completion of the first and second questionnaire. In addition there had been an increase in the percentage of correct answers (Tables 1 and 2). There were slightly higher scores for certain questions in the intervention group, for example those relating to child development and the impact of pain, are scored much higher with a slightly improved score for pain pathology and pharmacology (Table 4).



**Table 1: Pre and post questionnaire results intervention group (n= 45)**

<b>Section A: Students evaluation of knowledge</b>									
		Good (%)		Fairly good (%)		Limited (%)		Weak (%)	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	Child development	8.1	21.6	45.9	67.6	37.8	10.8	8.1	0.0
2	Pain transmission	10.8	16.2	27.0	48.6	48.6	24.3	13.5	10.8
3	Impact of pain on recovery	10.8	19.0	37.8	62.1	37.8	10.8	13.5	8.1
4	Pharmacological interventions	10.8	24.3	35.1	48.6	45.9	21.6	8.1	5.4
5	Non-pharmacological interventions	13.5	21.6	37.8	45.9	35.1	27.0	13.5	5.4
6	Chronic pain	0	13.5	13.5	45.9	73.0	24.3	13.5	10.8
7	Opioid side-effects	0	21.6	16.2	51.3	59.4	29.8	24.3	2.2
8	NSAID's side effects	13.5	13.5	13.5	51.3	45.9	29.8	27.0	5.4
<b>Section B: Knowledge and attitudes (true, false, unsure)</b>									
						Pre-intervention correct (%)		Post-intervention correct (%)	
9	Neuropathic pain is a result of nerve damage					40.5		54.1	
10	Immaturity of neonates nervous system results in decreased pain sensitivity					54.1		67.8	
11	Children should be encouraged to cope with pain					43.2		62.1	
12	If heart rate within normal limits child is not in pain					59.9		73.0	
13	If child can be distracted cannot be in pain					59.5		75.7	
14	Sport is associated with reflex sympathetic dystrophy					35.1		51.4	
15	It is acceptable to undertake small procedures, such as obtaining blood, without pain relief					43.2		59.9	
16	In pain transmission C fibres conduct pain quickly					8.1		37.8	
17	Children over 10 years should only be given pain relief when they ask					43.9		62.2	
18	Infants under 6/12 should not be given opioids					19.0		54.1	
19	Parents always know when their child is in pain					54.1		59.9	
20	Change in behaviour is a reliable indicator of pain					47.6		67.8	
21	Infants under 6/12 have no lasting memory of pain					46.3		65.9	
22	Based on religious beliefs a child may think pain is necessary					37.8		43.9	
23	It is difficult to distinguish between fear and pain					54.1		75.7	
24	Giving a placebo tablet is a good way of determining if pain is real					43.3		58.5	
25	It is better to give a combination of drugs rather than just one					37.8		59.9	
26	Children should be encouraged to use non-pharmacological methods alone rather than in combination with pain medication					37.8		67.6	
<b>Section C: Knowledge and attitudes (4 options were provided for each statement)</b>									
						Pre-intervention correct (%)		Post-intervention correct (%)	
27	Medication for pain in the first 48hours post surgery should be given...					51.4		73.2	
28	Children would most likely request an increase in pain medication because...					46.6		85.6	
29	Most accurate judge of child's pain over 4 years of age is...					59.5		67.6	
30	One of the chemicals involved in pain transmission is...					32.4		47.6	
31	A pain assessment should be undertaken...					64.9		73.0	
32	Faces pain assessment tool is suitable in assessing pain in...					46.6		67.6	
33	Purpose of myelin sheet that surrounds the nerves is to...					35.1		51.2	
34	Recommended route of administration of an opioid in severe pain is...					56.8		73.2	
35	Entonox is suitable if the child...					43.2		64.7	
36	Paracetamol is a pain relieving drug and...					54.1		67.6	
37	Ibuprofen is a pain relieving drug than can...					56.8		73.2	
38	Morphine is likely to cause...					51.2		73.4	
39	The effects of withdrawal of morphine are:					32.4		54.1	
40	Aim of managing chronic pain is...					46.3		75.7	

**Table 2: Pre and post questionnaire results control group (n= 37)**

<b>Section A: Students evaluation of knowledge</b>									
		Good (%)		Fairly good (%)		Limited (%)		Weak (%)	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	Child development	11.1	15.6	49.3	55.6	42.2	27.0	4.4	4.4
2	Pain transmission	8.9	6.7	31.1	46.6	27.0	35.6	11.1	11.1
3	Impact of pain on recovery	6.7	11.1	27.0	51.1	42.2	35.6	8.9	2.2
4	Pharmacological interventions	8.9	17.8	31.1	49.3	33.3	28.9	11.1	4.4
5	Non-pharmacological interventions	4.4	8.9	27.0	42.2	46.6	51.1	11.1	6.7
6	Chronic pain	0	2.2	11.1	33.3	51.1	55.6	17.8	4.4
7	Opioid side-effects	2.2	6.7	17.8	46.6	46.6	51.1	8.9	8.9
8	NSAID's side effects	0	8.9	11.1	17.8	49.3	55.6	8.9	6.7
<b>Section B: Knowledge and attitudes (true, false, unsure)</b>									
						Pre correct (%)		Post correct (%)	
9	Neuropathic pain is a result of nerve damage					44.4		48.9	
10	Immaturity of neonates nervous system results in decreased pain sensitivity					48.9		57.8	
11	Children should be encouraged to cope with pain					40.0		51.1	
12	If heart rate within normal limits child is not in pain					62.2		64.4	
13	If child can be distracted cannot be in pain					64.4		68.9	
14	Sport is associated with reflex sympathetic dystrophy					35.6		44.4	
15	It is acceptable to undertake small procedures, such as obtaining blood, without pain relief					31.1		48.9	
16	In pain transmission C fibres conduct pain quickly					22.2		28.9	
17	Children over 10 years should only be given pain relief when they ask					42.2		53.3	
18	Infants under 6/12 should not be given opioids					26.7		44.4	
19	Parents always know when their child is in pain					48.9		57.8	
20	Change in behaviour is a reliable indicator of pain					48.9		62.2	
21	Infants under 6/12 have no lasting memory of pain					40.0		53.3	
22	Religious beliefs may result in a child perceived pain is necessary					31.1		40.0	
23	It is difficult to distinguish between fear and pain					48.9		60.0	
24	Giving a placebo tablet is a good way of determining if pain is real					40.5		51.1	
25	It is better to give a combination of drugs rather than just one					40.0		53.3	
26	Children should be encouraged to use non-pharmacological methods alone rather than in combination with pain medication					40.5		51.1	
<b>Section C: Knowledge and attitudes (4 options were provided for each statement)</b>									
						Pre correct (%)		Post correct (%)	
27	Medication for pain in the first 48hours post surgery should be given...					48.9		68.9	
28	Children would most likely request an increase in pain medication because...					53.3		60.0	
29	Most accurate judge of child's pain over 4 years of age is...					57.8		64.4	
30	One of the chemicals involved in pain transmission is...					35.6		42.2	
31	A pain assessment should be undertaken...					57.8		71.1	
32	Faces pain assessment tool is suitable in assessing pain in...					37.8		51.1	
33	Purpose of myelin sheath that surrounds the nerves is to...					35.6		48.9	
34	Recommended route of administration of an opioid in severe pain is...					57.8		68.9	
35	Entonox is suitable if the child...					44.4		51.1	
36	Paracetamol is a pain relieving drug and...					53.3		64.4	
37	Ibuprofen is a pain relieving drug than can...					51.1		62.2	
38	Morphine is likely to cause...					48.9		60.0	
39	The effects of withdrawal of morphine are:					40.5		51.1	
40	Aim of managing chronic pain is...					44.4		57.8	

**Table 3: Comparison of results between intervention group (I) (n=45) and control group (C) (n=37) before intervention group undertook pain management programme**

<b>Section A: Students evaluation of knowledge</b>									
		Good (%)		Fairly good (%)		Limited (%)		Weak (%)	
		I	C	I	C	I	C	I	C
1	Child development	8.1	11.1	45.9	49.3	37.8	42.2	8.1	4.4
2	Pain transmission	10.8	8.9	27.0	31.1	48.6	27.0	13.5	11.1
3	Impact of pain on recovery	10.8	6.7	37.8	27.0	37.8	42.2	13.5	8.9
4	Pharmacological interventions	10.8	8.9	35.1	31.1	45.9	33.3	8.1	11.1
5	Non-pharmacological interventions	13.5	4.4	37.8	27.0	35.1	46.6	13.5	11.1
6	Chronic pain	0	0	13.5	11.1	73.0	51.1	13.5	17.8
7	Opioid side-effects	0	2.2	16.2	17.8	59.4	46.6	24.3	8.9
8	NSAID's side effects	13.5	0	13.5	11.1	45.9	49.3	27.0	8.9
<b>Section B: Knowledge and attitudes (true, false, unsure)</b>									
				Intervention group correct (%)		Control group correct (%)			
9	Neuropathic pain is a result of nerve damage			46.3		44.4			
10	Immaturity of neonates nervous system results in decreased pain sensitivity			50.0		46.7			
11	Children should be encouraged to cope with pain			41.5		40.0			
12	If heart rate within normal limits child is not in pain			63.4		62.2			
13	If child can be distracted cannot be in pain			62.2		64.4			
14	Sport is associated with reflex sympathetic dystrophy			32.9		35.6			
15	It is acceptable to undertake small procedures, such as obtaining blood, without pain relief			36.6		31.1			
16	In pain transmission C fibres conduct pain quickly			15.9		22.2			
17	Children over 10 years should only be given pain relief when they ask			37.8		42.2			
18	Infants under 6/12 should not be given opioids			23.2		26.7			
19	Parents always know when their child is in pain			51.2		48.9			
20	Change in behaviour is a reliable indicator of pain			52.4		48.9			
21	Infants under 6/12 have no lasting memory of pain			46.3		40.0			
22	Religious beliefs may result in a child perceived pain is necessary			34.1		31.1			
23	It is difficult to distinguish between fear and pain			56.1		48.9			
24	Giving a placebo tablet is a good way of determining if pain is real			36.6		31.1			
25	It is better to give a combination of drugs rather than just one			39.0		40.0			
26	Children should be encouraged to use non-pharmacological methods alone rather than in combination with pain medication			35.4		40.5			
<b>Section C: Knowledge and attitudes (4 options were provided for each statement)</b>									
				Intervention group correct (%)		Control group correct (%)			
27	Medication for pain in the first 48hours post surgery should be given...			70.0		66.7			
28	Children would most likely request an increase in pain medication because...			80.5		93.3			
29	Most accurate judge of child's pain over 4 years of age is...			65.9		77.8			
30	One of the chemicals involved in pain transmission is...			34.1		62.2			
31	A pain assessment should be undertaken...			65.9		84.4			
32	Faces pain assessment tool is suitable in assessing pain in...			32.9		37.8			
33	Purpose of myelin sheath that surrounds the nerves is to...			45.1		53.3			
34	Recommended route of administration of an opioid in severe pain is...			61.0		57.8			
35	Entonox is suitable if the child...			59.8		73.3			
36	Paracetamol is a pain relieving drug and...			62.2		66.7			
37	Ibuprofen is a pain relieving drug than can...			69.5		44.4			
38	Morphine is likely to cause...			61.0		80.0			
39	The effects of withdrawal of morphine are:			39.0		44.4			
40	Aim of managing chronic pain is...			69.5		44.4			

**Table 4: Comparison of results between intervention group (I) (n=45) and control group (C) (n=37) after intervention group undertook pain management programme**

<b>Section A: Students evaluation of knowledge</b>									
		Good (%)		Fairly good (%)		Limited (%)		Weak (%)	
		I	C	I	C	I	C	I	C
1	Child development	21.6	15.6	67.6	55.6	10.8	27.0	0.0	4.4
2	Pain transmission	16.2	6.7	48.6	46.6	24.3	35.6	10.8	11.1
3	Impact of pain on recovery	19.0	11.1	62.1	51.1	10.8	35.6	8.1	2.2
4	Pharmacological interventions	24.3	17.8	48.6	49.3	21.6	28.9	5.4	4.4
5	Non-pharmacological interventions	21.6	8.9	45.9	42.2	27.0	51.1	5.4	6.7
6	Chronic pain	13.5	2.2	45.9	33.3	24.3	55.6	10.8	4.4
7	Opioid side-effects	21.6	6.7	51.3	46.6	29.8	51.1	2.2	8.9
8	NSAID's side effects	13.5	8.9	51.3	17.8	29.8	55.6	5.4	6.7
<b>Section B: Knowledge and attitudes (true, false, unsure)</b>									
				Intervention group correct (%)		Control group correct (%)			
9	Neuropathic pain is a result of nerve damage			70.7		60.0			
10	Immaturity of neonates nervous system results in decreased pain sensitivity			65.9		57.8			
11	Children should be encouraged to cope with pain			68.3		51.1			
12	If heart rate within normal limits child is not in pain			76.8		87.5			
13	If child can be distracted cannot be in pain			69.5		68.9			
14	Sport is associated with reflex sympathetic dystrophy			46.3		44.4			
15	It is acceptable to undertake small procedures, such as obtaining blood, without pain relief			53.7		44.4			
16	In pain transmission C fibres conduct pain quickly			25.6		28.9			
17	Children over 10 years should only be given pain relief when they ask			39.0		37.8			
18	Infants under 6/12 should not be given opioids			34.1		35.6			
19	Parents always know when their child is in pain			56.1		64.4			
20	Change in behaviour is a reliable indicator of pain			53.1		62.2			
21	Infants under 6/12 have no lasting memory of pain			50.0		37.8			
22	Religious beliefs may result in a child perceived pain is necessary			43.9		37.8			
23	It is difficult to distinguish between fear and pain			69.5		51.1			
24	Giving a placebo tablet is a good way of determining if pain is real			58.5		51.1			
25	It is better to give a combination of drugs rather than just one			51.2		48.9			
26	Children should be encouraged to use non-pharmacological methods alone rather than in combination with pain medication			51.2		48.9			
<b>Section C: Knowledge and attitudes (4 options were provided for each statement)</b>									
				Intervention group correct (%)		Control group correct (%)			
27	Medication for pain in the first 48hours post surgery should be given...			72.0		71.1			
28	Children would most likely request an increase in pain medication because...			85.6		82.2			
29	Most accurate judge of child's pain over 4 years of age is...			69.5		73.3			
30	One of the chemicals involved in pain transmission is...			47.6		42.2			
31	A pain assessment should be undertaken...			65.9		60.0			
32	Faces pain assessment tool is suitable in assessing pain in...			36.6		37.8			
33	Purpose of myelin sheath that surrounds the nerves is to...			53.4		53.3			
34	Recommended route of administration of an opioid in severe pain is...			75.6		75.6			
35	Entonox is suitable if the child...			70.7		73.3			
36	Paracetamol is a pain relieving drug and...			74.4		75.6			
37	Ibuprofen is a pain relieving drug than can...			73.2		84.4			
38	Morphine is likely to cause...			82.9		86.7			
39	The effects of withdrawal of morphine are:			46.3		44.4			
40	Aim of managing chronic pain is...			79.3		73.3			

## Discussion

As early as the mid 1990's it was suggested that including pain management within nursing programmes could reduce the myths and misconceptions about pain management and assists practitioners to implement evidenced-based practice (Francke *et al* 1996). Yet, nurses' knowledge of pain and pain management remains variable; research findings suggest that although nurses are eager to increase their confidence and skills they lack knowledge of pharmacology and pain management strategies (Simons and Roberson 2002, Strong *et al* 2003, Shaw 2005, Plaisance and Logan 2006). Current evidence in relation to the impact of educational interventions on nurses' knowledge of pain and pain management is equivocal. Although focused education can improve nurses' knowledge and attitudes about of pain and pain management (McNamara *et al* 2012), other studies have found that essential knowledge about pain and pain management remains poor following education interventions and could perpetuate poor practice (Chiang *et al* 2006, Reiman and Gordon 2007). The development of a strong knowledge base in undergraduate nurse education is important in helping the student progress (Twycross 2010) but needs to be applied and implemented in clinical practice (Vincent and Denyes 2004, Twycross 2007).

Although student nurses knowledge in relation to the management of pain in this study identified some improvement in the intervention group, the number of students achieving correct answers or less than 50% was disappointing. Evidence from this study suggested that student nurses' lacked knowledge and confidence in relation to physiology, pharmacology of pain, child development and cultural practices which may need to be revisited throughout the undergraduate nursing programme. However, structured pain management programmes can be of benefit in the development of student nurses' attitudes towards the management of pain in children and could potentially impact on future pain management practices (Twycross (2010).

Students learn in many different ways, teaching about pain management does not necessarily result in students retaining information or using knowledge to inform practice. Student's responses to the questions from both groups could have been influenced through exposure to the management of children's pain whilst on placement. A possible explanation for the knowledge of pain management in children demonstrated in both groups in the six months following completion of the first and second questionnaire could be attributed to their observing, learning and participating in children's pain management in practice. Learning by observing practice, both good and poor practice is known to have a significant impact on student nurse knowledge and future behaviour (Perry 2009). The link between theoretical knowledge and pain management in practice are unclear with evidence suggesting that

nurses do not routinely apply theoretical knowledge to their pain management practices (Twycross 2007). Education alone may not be sufficient to change behaviour. Research has highlighted that nurses often lack the skills to cope with the emotions associated with managing a distressed child who is in pain, and manage these emotions by constructing pain or preventing children from displaying pain behaviours (Byrne et al 2001).

There are several limitations to the study. First, although the pre-post test design is widely used to measure changes in student knowledge, attitudes and behaviours, data collected is self-reported information and therefore subjective. Although, as in the study presented, the validity of results can be increased with the use of a control group. Second, participant numbers were small it was not possible to determine whether the differences between groups were statistically significant. Third, practice influences such as observing, learning and participating in children's pain management that could have impacted on knowledge, attitudes and behaviours between completing the first and second were not captured.

### **Conclusion**

Student nurses in the UK undertake 50% of their training in clinical practice. The impact of practice experiences on student nurses knowledge and attitudes towards pain assessment and management was not evaluated in this study. Further work needs to be undertaken to establish the influence exposure in clinical practice and role models may have on the acquisition of knowledge, values and attitudes of student nurses to children's pain management. The development of the pain management programme that integrated theory and practice is a potential way forward.

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## References

- Association of Paediatric Anaesthetists (2008) *Good practice in post-operative and procedural pain*. Association of Paediatric Anaesthetists, London.
- Byrne A, Morton J, Salmon P (2001) Defending against patients' pain: a qualitative analysis of nurse responses to children's postoperative pain. *Journal of Psychosomatic Research*, 50, 2, 69-76.
- Chiang LC, Chen HJ, Huang L (2006) Student nurses' knowledge, attitudes and self efficacy of children's pain management: evaluation of an education program in Taiwan. *Journal of Pain and Symptom Management*, 32, 1, 82-89.
- Coulling S (2005) Nursing and doctor's knowledge of pain after surgery. *Nursing Standard*, 9, 34, 41-49.
- Czarnecki, ML, Thompson JJ, Simon K, Armus CL, Hanson TC, Berg KA (2011) Barriers to Pediatric Pain Management: A Nursing Perspective. *Pain Management Nursing*, 12, 3, 154-162.
- Department of Health (2004) *National Service Framework for Children, Young People and Maternity Services*. DH, London.
- Ferrell BR, McCaffery M (1995) Knowledge and attitudes survey regarding pain. *Journal of the American Geriatric Society*, 33, 23-8.
- Finley GA, Franck LS, Grunau RE, von Baeyer CL (2005) Why children's pain matters. *Pain*, 13, 4, 1-6.
- Francke AL, Garseen B, Abu-Saad, Grypdonck M (1996) Qualitative needs assessment prior to a continuing education programme. *Journal of Continuing Education in Nursing*, 23, 24-41.
- Franck LS, Bruce EA (2009) Putting pain assessment into practice: why is it so painful? *Pain Research and Management*, 14, 13-20.
- Health Care Commission (2007) *Improving Services for Children in Hospital*. Health Care Commission, London.
- Perry B (2009) Role modelling excellence in clinical nursing practice. *Nurse Education in Practice*. 9, 36-44
- McNamara MC, Harmon D and Saunders J (2012) Effect of education on knowledge, skills and attitudes around pain. *British Journal of Nursing*, 2, 16, 958-964.
- Olmstead DL, Scott SD and Austin WJ (2010) Unresolved pain in children: A relational ethics perspective. *Nursing Ethics*, 17, 6, 695-704.
- Plaisance L, Logan C (2006) Nursing students' knowledge and attitudes regarding pain. *Pain Management Nursing*, 7, 4, 167-175.
- Reiman MT and Gordon M (2007) Pain management competency evidenced by a survey of pediatric nurses' knowledge and attitudes. *Pediatric Nursing*, 33, 307-312.
- Royal College of Nursing (2009) *Clinical practice guidelines; the recognition and assessment of acute pain in children*. RCN Publishing, London.
- Royal College of Nursing (1999) *Clinical guidelines for the recognition and assessment of acute pain in children: recommendations*. RCN Publishing, London.
- Royal College of Paediatrics and Child Health (1997) *Prevention and control of pain in children: a manual for health care professionals*. BMJ Publishing, London.
- Seers K, Watt-Watson J, Bucknall T (2006) Challenges of pain management for the 21st century. *Journal of Advanced Nursing*, 55, 1, 4-6.

- Shaw SM (2005) Nursing and supporting patients with chronic pain. *Nursing Standard*, 20, 19, 60-65.
- Shrestha-Ranjit JM, Manias E (2011) Pain assessment and management practices in children following surgery of the lower limb. *Journal of Clinical Nursing*, 3, 1-2, 118-128.
- Simmons J, Macdonald LM (2004) Pain assessment tools: children's nurses' views. *Journal of Child Health Care*, 8, 4, 264-278.
- Simmons J, Robertson E (2002) Poor communication and knowledge deficits: obstacles to effective management of children's postoperative pain. *Journal of Advanced Nursing*, 40, 1, 78-86.
- Strong J, Meredith P, Darnell R et al (2003) Does participation in a pain course based on the International Association for the Study of pain's curricula guidelines change student knowledge about pain?. *Pain Research Management*, 8, 3, 137-142.
- Twycross A (2007) What is the impact of theoretical knowledge on children's nurses' postoperative pain management practices? An exploratory study. *Nurse Education Today*, 27, 7, 697-707.
- Twycross A (2008) Children's nurses' pain management practices: theoretical knowledge and perceived importance. *Journal of Clinical Nursing*, 17, 3205-3216.
- Twycross A, Dowden SJ (2009) *Where to from here?* In Twycross A, Dowden SJ, Bruce E (eds) *Managing pain in children*. Wiley-Blackwell, Chichester.
- Twycross A (2010) Managing pain in children; where to from here? *Journal of Clinical Nursing*, 19, 2090-2099.
- Twycross A, Roderique L (2011) Review of Pain Content in Three-Year Preregistration Pediatric Nursing Courses in the United Kingdom. *Pain Management Nursing* - available online <http://dx.doi.org/10.1016/j.pmn.2011.05.002>.
- Vincent CVH and Denyes MJ (2004) Relieving children's pain: nurses' abilities and analgesic administration practices. *Journal of Pediatric Nursing*, 19, 40-50.
- Vincent CVN (2005) Nurses' knowledge, attitudes and practices regarding children's pain. *The American Journal of Maternal Child Nursing*, 30, 3, 177-183.