

UNSW MEDICINE
INDEPENDENT LEARNING PROJECT

Enhancing the Procedural Experiences of Children, Parents and Staff at Sydney Children's Hospital

A study of staff perspectives

Paridhi Garg
2010

Supervisor: Associate Professor David. Champion
Director Pain Research
Department of Anaesthesia and Pain Medicine
Sydney Children's Hospital

CONTENTS

ABSTRACT	3
INTRODUCTION	4
BACKGROUND	5
AIMS	8
METHOD.....	9
RESULTS.....	12
DISCUSSION.....	50
FUTURE DIRECTIONS.....	57
CONCLUSION	58
REFERENCES.....	59
APPENDIX 1: SURVEY.....	65
APPENDIX 2: PROMOTIONAL MATERIAL	71
APPENDIX 3: CONFERENCE POSTER	72

ABSTRACT

Procedural pain and distress in children is a unique area of healthcare that is still not managed effectively despite available guidelines and the promotion of pain management as a right for children in healthcare. Barriers to optimal comfort during procedures vary between and within health care institutions. This study employed a mixed-method approach to assess staff perspectives on current practices, their beliefs and attitudes and barriers to change in order to develop recommendations for quality improvement at Sydney Children's Hospital (SCH). 257 staff completed a short survey and 27 staff members attended 3 focus groups. Staff identified knowledge and training in the use of sedation (particularly nitrous oxide) and the need for more non-pharmacological resources (play therapists and distraction boxes) as areas for improvement. Major barriers to optimal pain and distress management included variability in clinical practice throughout the hospital and the difficulty of co-ordinating procedures largely due to time constraints. Recommendations are that procedural pain and distress management needs to become a priority for individuals, departments and the hospital overall, which may be aided through the development of hospital-based guidelines on procedural pain and distress management and sedation. Regular skills-based training updates should be offered to all staff but particularly targeting novices. This study has initiated staff reflection in this area and enabled the development of future projects, including capturing perspectives of children and parents around procedural experiences through a child and parent survey and observational audits of procedures occurring throughout the hospital.

INTRODUCTION

Pain management is a relatively new and emerging area of healthcare. The International Association for the Study of Pain (IASP) raises awareness of a different aspect of pain each year, and 2010 is the Global Year Against Acute Pain, including procedures. Pain and distress management for children having procedures is essential, as procedures are one of the most common occurrences in healthcare institutions and are relevant to almost all children, parents and staff in any given hospital.

Procedural pain and distress is a unique area of health care not only because pain signals are redundant in this setting, since they serve no diagnostic or self-preservation function (Mackenzie, 2006), but also because the pain and distress are directly inflicted by health care professionals. Children vary from adults in this setting because they cannot always advocate for their pain and also because pain management strategies vary according to the age of the child. Adults are still considered to receive better pain relief despite evidence that children also need, often more than adults, and have a right to, adequate pain and distress relief.

It is essential to gather information about adequacy of pain and distress management to prevent against “clinical inertia”, or ‘slowness to update individual practice in light of evolving evidence’ (Phillips et al, 2001 & Bernhardt et al, 2007 in International Association for the Study of Pain (IASP), 2010). This project aims to evaluate staff views of the current quality of pain and distress management for children having procedures at Sydney Children’s Hospital (SCH).

For this project, a procedure is defined as any clinical intervention that may be potentially painful, or cause distress, fear or anxiety including medical imaging, physiotherapy, invasive and diagnostic procedures. (Adapted from Royal Children’s Hospital (RCH), 2008).

BACKGROUND

CHILDREN'S RIGHTS

Pain and distress management in children has been described as a moral, ethical and clinical obligation (Royal Australian College of Physicians (RACP), 2006). However, a recent shift in perspective from pain and distress management as an obligation of health care professionals to a right of patients (Table 1) will more effectively facilitate change in this area by increasing accountability of health care workers and hospitals.

Table 1: Excerpts on children's rights for pain and distress management

Excerpt	Source
'The relief of pain should be a human right'	2004-2005 Global Year Against Pain Declaration (IASP 2004)
'The failure to ensure access to controlled medicines for the relief of pain and suffering threatens fundamental rights to health and to protection against cruel, inhuman and degrading treatment.'	Human Rights and Drug Policy: Controlled Essential Medicines Anand Grover & Manfred Nowak, UN Special Rapporteurs on health and torture, 2008
'Taking steps to minimise distress to children and young people in healthcare services is critical. All children and young people, including newborns, are entitled to adequate pain relief.'	Charter on the Rights of Children and Young People in Healthcare Services in Australia (Children's Hospitals Australasia (CHA) & Association for the Well-being of Children in Healthcare (AWCH), 2010)
'Appropriate pain relief should be provided for children before, during and after medical procedures. Methods of pain management should be negotiated between parents/carers, the child, and health professionals. Specific child pain management staff should be available at all times.'	Association for the Well-being of Children in Healthcare: Health Care Policy Relating to Children and Their Families (1999)
Patient right 2.5: 'To have access to best practice care, including appropriate assessment and effective pain management strategies and access to suitably qualified interdisciplinary pain management teams or individuals who should be able to address physical and psychological aspects of management. These must be supported by appropriate policies and procedures'	Statement on patient's rights to pain management and associated responsibilities Australian and New Zealand College of Anaesthetists (ANZCA, 2010)

CONSEQUENCES

Inadequately managed pain and distress have a significant impact on patients and families, health care workers and hospitals. Children may experience fear, helplessness and anxiety, which need to be managed from the earliest possible experience to minimise these in future procedures (Weisman, Bernstein & Schechter, 1998; WHO, 1998; Chen, Zeltzer, Craske & Katz, 2000). Long term effects include longer recovery, increased sensitivity to pain, post traumatic stress and increased morbidity and mortality (Young, 2005; RACP 2006; Dowden, McCarthy & Chalkiadis, 2008).

Health care workers also suffer the effects of inflicting pain and distress on children. Burns nurses have been found to use distancing as a coping strategy, which may lead to nurses inadvertently ignoring patient pain and distress (Nagy, 1999). Mackenzie (2006) commented:

When our work requires us to possibly hurt a child whom we cannot comfort, then we need to confront our own emotional responses. We may feel defensive and guilty, or helpless, because we do not know how to bear someone else's pain. We may deny a child's pain altogether, telling ourselves it does not really hurt, or misinterpret a child's suffering as 'manipulative' behaviour.

Although there is a lack of literature on the effect of inadequately managed pain on institutions, Davies (2008) has emphasised that effective procedural pain and distress management (in the form of a paediatric sedation team) increases the success rate of procedures and satisfaction of all individuals concerned. This in turn reduces costs associated with repeated procedures, use of general anaesthetic (GA) and improves parent trust in and loyalty to the staff and hospital.

EVIDENCE & CURRENT PRACTICE

Numerous guidelines, recommendations and reviews are available in the literature (American Academy of Pediatrics, 2001; RCH, 2005; RACP, 2006; Macintyre, Scott, Schug, Visser, & Walker, 2010)

however, without better efforts at quality improvement, they serve only to increase the gap between current practice and evidence-based health care.

Documents such as RACP Guidelines (2006) detail the correct use of pharmacological strategies including analgesia, sedation and general anaesthetic, as well as non-pharmacological strategies and preparation of the child, parent and environment.

Guideline implementation remains a barrier to successful evidence-based practice. Compliance with guidelines can be increased through better 'resource availability, particularly staff with pain management expertise, and the existence of formal quality assurance programs' (Macintyre et al, 2010).

BARRIERS

Lack of knowledge and skill are considered a significant barrier, and may be associated with false perceptions regarding pain management (RACP, 2006; Brockopp et al, 1998). However Twycross (2010) suggests that despite possessing theoretical knowledge, nurses fail to apply it in practice, potentially due to under-assessment of pain.

Lack of a pain management community directly contributes to the under-treatment of pain and distress. There is a lack of leadership, lack of communication and collaboration between health care professionals, and particularly professions. The lower priority placed on pain management (Brockopp et al, 1998; Twycross, 2010) also means that there may be a lack of resources and support available in this area. Twycross (2010) experienced difficulty in recruiting institutions and individuals to her study because 'administrators did not perceive benefits accruing to their institution because they managed pain 'better' and professionals could not envision rewards for managing pain more effectively'.

AIMS

To evaluate hospital staff views of the current quality of pain and distress management for children having procedures at SCH through a mixed-method study.

To identify current practice, knowledge and perspectives of staff who perform or assist with procedures on children and barriers to evidence-based practice in order to make recommendations for improvement.

METHOD

SCH is a teaching hospital and one of three tertiary centres for child health in New South Wales, with over 14,000 admissions each year. The SCH Mission Statement is: ‘Sydney Children’s Hospital aims to improve the health and wellbeing of children and families through promoting wellness and caring for illness effectively, efficiently, compassionately and equitably (SCH, 2010).

All staff at SCH who perform or assist with procedures were invited to participate in a staff survey and staff focus groups. This was a mixed-method study; the majority of the survey data made up the quantitative analysis, with open-ended comments from surveys and data from focus groups forming the qualitative part of the study.

Ethical approval was obtained for this study from the Human Research Ethics Committee at the South Eastern Sydney and Illawarra Area Health Service – Northern Hospital Network as a low/negligible risk quality assurance project.

STAFF SURVEY

The staff survey was adapted from the survey developed by Dr Jane Munro, Lisa Takacs and Jamie Betts (RCH Melbourne 2007 staff survey) based on relevance to SCH and after feedback from heads of departments at SCH (See Appendix 1: Survey). Staff were asked to detail their demographic information as well as assess their own practices, education and training, competence in certain areas (using Benner, 1984 competence scale) and current practice in their area.

Hard copies of the survey were distributed manually to staff and the electronic link to online surveys (created using Survey Monkey™) was disseminated through staff global email, the SCH staff website and on posters and flyers placed around the hospital (see Appendix 2: Promotional Material)

Online surveys were collected and stored electronically on Survey Monkey™. Hard copies were collected from envelopes placed on wards every 2-3 days and subsequently entered into Survey Monkey™.

Data from Survey Monkey™ was then exported to Predictive Analytics SoftWare (PASW) version 18.0 where the data was cleaned. Excluded surveys included those with more than two pages missing, surveys completed in the draft send-out phase of the project and surveys where staff said they didn't perform or assist with procedures on children. PASW 18.0 was used to produce summary statistics such as frequencies and cross-tabulations, which were analysed using chi-squared tests.

Comments from the survey were analysed with focus group data.

STAFF FOCUS GROUPS

Staff focus groups were modelled on the 'Claims Concerns Issues' (CCI) process developed by Guba & Lincoln (1989). The CCI process was adapted for this study, and the questions asked at each focus group are shown in Figure 1.

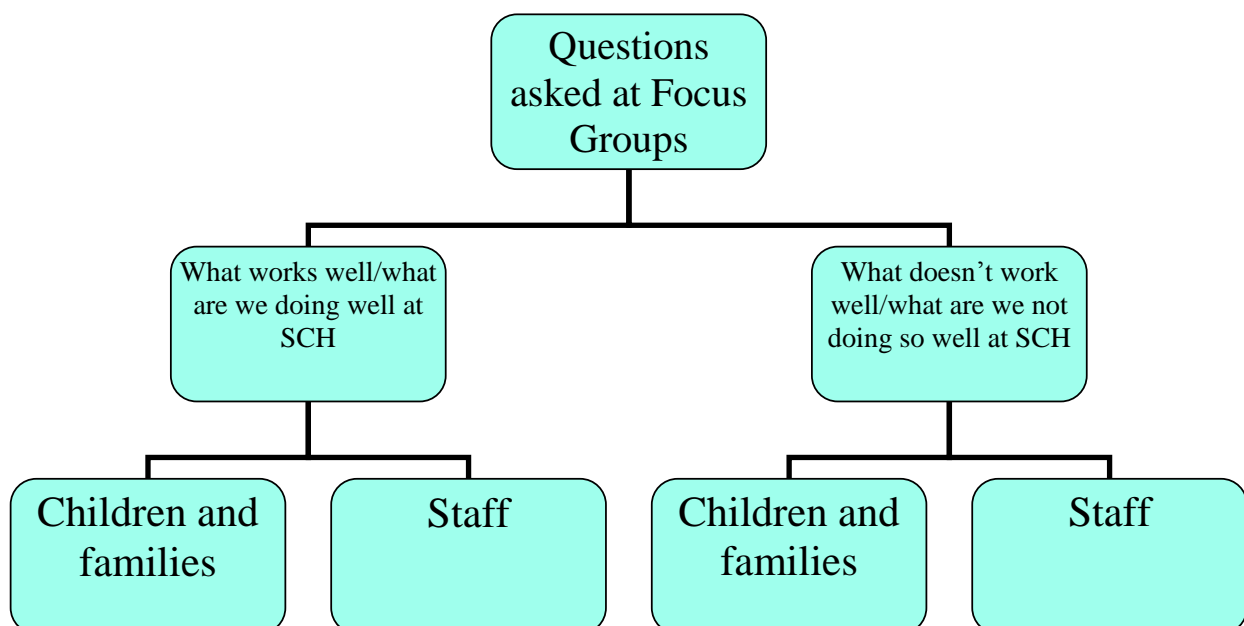


Figure 1: Questions asked in focus groups

Staff were also asked to nominate words to describe their procedural experiences at SCH at present and if SCH were 'utopia'.

Three focus groups of at least six staff each were planned to be run over two weeks. The duration of each focus group was no more than an hour. Staff focus groups were also promoted through the flyers and posters.

The focus groups were facilitated by at least two people, who had inter-changeable roles of mediating, discussion and scribing. Staff responses to the questions were discussed and the consensus opinion recorded. This data was analysed with comments from the surveys using thematic analysis as described by Pope, Ziebland & Mays (2000) and Braun & Clarke (2006).

RESULTS

A total of 257 surveys were received from staff, with a total of 50 comments. Twenty-nine staff members attended at least one of three focus groups (4, 10 and 13 people respectively).

DEMOGRAPHICS

The average age of survey respondents was 35.10 (SD=10.04) and the majority of respondents were female (88.3%). Average number of years working with children was 10.62 years (SD=9.01) (distribution presented in Table 2). The majority of respondents were nurses (Figure 2).

Table 2: Staff distribution by years working with children

Years working with children	Number (%)
0-10	151 (60.9)
11-20	63 (25.4)
21-30	27 (10.9)
31-40	7 (2.8)

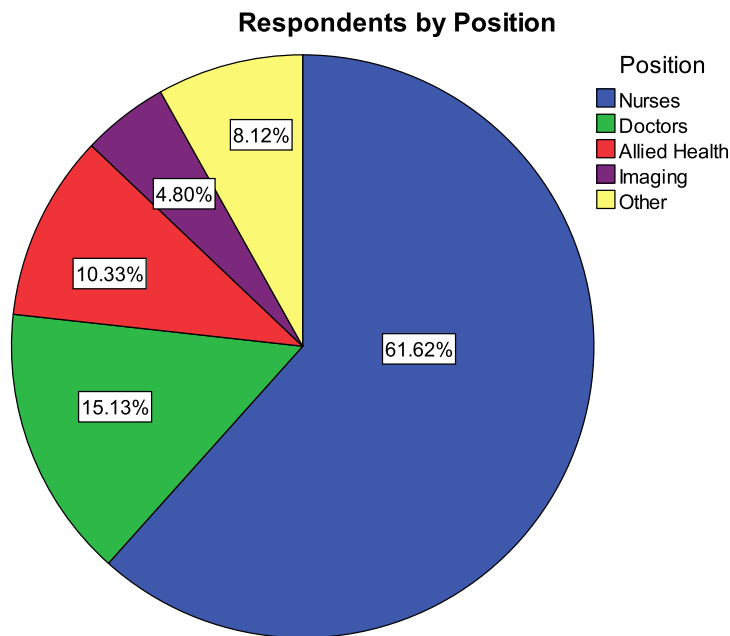


Figure 2: Respondents by Position

PHARMACOLOGICAL STRATEGIES

Quantitative

Staff use of pharmacological strategies over the past 3 months is shown in Figure 3.

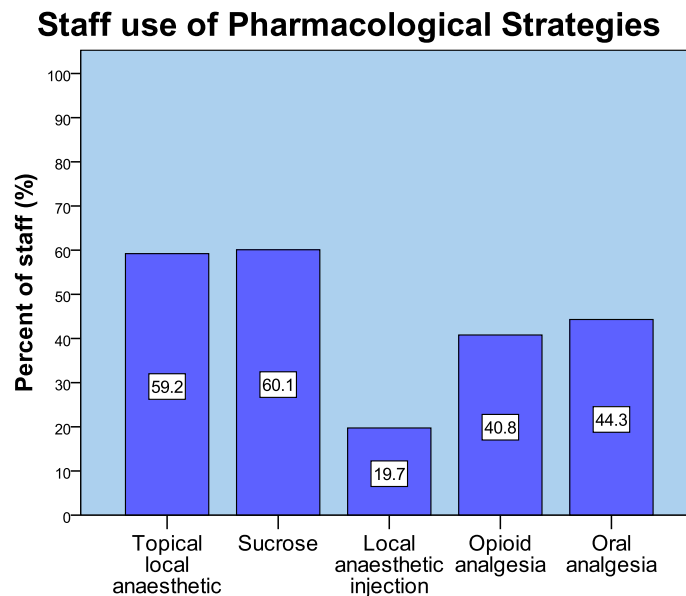


Figure 3: Staff use of pharmacological strategies over the past 3 months

While 43.3% of respondents believed they had received no or not enough education and training in the use of pharmacological strategies at SCH, 65.3% of respondents thought it was important or very important to receive more, however there was no association between education/training received and priority to receive more (Table 3).

Table 3: Association between self-assessed education/training in pharmacological strategies and priority to receive more education/training in pharmacological strategies

Priority to receive more E&T: pharmacological strategies	E&T: pharmacological strategies (%)		χ^2 (1 df)	P
	None/ not enough	Enough/ more than enough		
Not important/somewhat important	26.0	31.8	0.55	0.46
Important/very important	74.0	68.2		

E&T: education and training

Education and training in pharmacological strategies was associated with staff use of midazolam, nitrous oxide and oral analgesia (Table 4) as well as with staff perception of competence in managing children's pain and distress and managing children's anxiety (Table 5).

Table 4: Association between self-assessed education/training in pharmacology and staff use of strategies

Strategies	E&T: pharmacological strategies (%)		χ^2 (1 df)	P
	None/ not enough	Enough/ more than enough		
Cuddling/touch/ massage	73.5	77.2	0.20	0.65
Heat or cold	9.2	14.9	1.02	0.31
Distraction/play	96.9	97.0	0.00	1.00
Dummy/swaddling	68.4	78.2	1.99	0.16
Music/DVD/TV	61.2	72.3	2.27	0.13
Relaxation/breathing/ bubbles	54.1	67.3	3.13	0.08
Topical local anaesthetic	58.2	70.3	2.68	0.10
Sucrose	60.2	67.3	0.81	0.37
Local anaesthetic injection	16.3	25.7	2.11	0.15
Midazolam	21.4	37.6	5.50	0.02*
Chloral hydrate	11.2	17.8	1.25	0.26
Nitrous oxide	18.4	33.7	5.26	0.02*
Opioid analgesia	32.7	58.4	12.28	0.000**
Ketamine	9.2	30.7	13.02	0.000**
Oral analgesia	32.7	58.4	9.32	0.002**
General anaesthetic	11.2	10.9	0.00	1.00

E&T: education and training

* <0.05; ** < 0.01

Table 5: Association between self-assessed education/training in pharmacological strategies and self-assessed competence

Competence	E&T: pharmacological strategies (%)		χ^2 (2 df)	P
	None/ not enough	Enough/ more than enough		
Managing children's pain and distress				
Not competent/novice	13.1	7.5	22.83	0.000**
Competent	56.6	29.0		
Proficient/expert	30.3	63.6		
Managing children's anxiety				
Not competent/novice	21.0	9.3	13.34	0.001**
Competent	51.0	39.3		
Proficient/expert	28.0	51.4		

E&T: education and training

* <0.05; ** < 0.01

Priority to receive more education and training in pharmacological strategies was associated with how often staff believe they were concerned/distressed by children’s responses during procedures and how often staff found performing or assisting with procedures on children stressful/distressing (Table 6).

Table 6: Association between priority to receive more education/training in pharmacological strategies and behaviour

Frequency	E&T: pharmacological strategies (%)		χ^2 (2 df)	P
	None/ not enough	Enough/ more than enough		
I get concerned/distressed by children’s responses during procedures				
Never/not often	28.7	19.2	4.69	0.10
Sometimes	46.8	43.3		
Often/always	24.5	37.5		
I find performing/assisting with procedures on children stressful/distressing				
Never/not often	67.4	72.8	2.04	0.36
Sometimes	23.9	23.3		
Often/always	8.7	3.9		

E&T: education and training

Qualitative

Discussion about pharmacological strategies was limited, with the exception of emergency department (ED) staff mentioning recent changes and efficacy of intranasal fentanyl.

“In ED, the move to intranasal fentanyl has been invaluable as, prior to this, most kids required IV morphine on arrival (i.e. fractures).”

PROCEDURAL SEDATION

Quantitative

Figure 4 shows staff use of sedation agents.

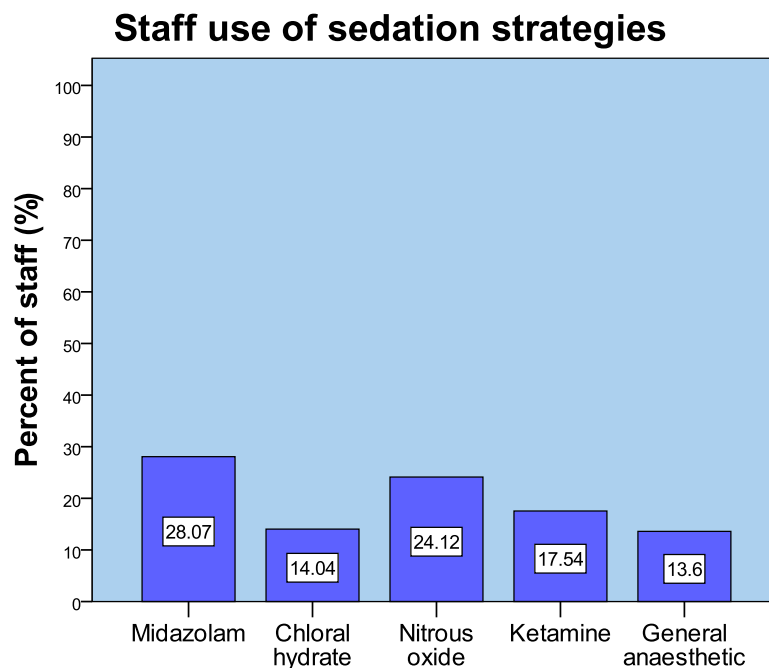


Figure 4: Staff use of sedation in the past 3 months

More than half of respondents (54.0%) believed they had had no or not enough education and training in sedation at SCH, and 59.7% believed it was important or very important to receive more. However, there was no association between education and training received and priority to receive more in this area (Table 7).

Table 7: Association between self-assessed education/training in sedation and priority to receive more education/training in sedation

Priority to receive more E&T: sedation	E&T: sedation (%)		χ^2 (2 df)	P
	None/ not enough	Enough/ more than enough		
Not important/somewhat important	30.2	27.6	0.05	0.83
Important/very important	69.8	74.2		

E&T: education and training

24.1% of staff used nitrous oxide in the past 3 months, and only 27.5% of staff believed they were competent, proficient or expert with using nitrous oxide, as demonstrated in Figure 5.

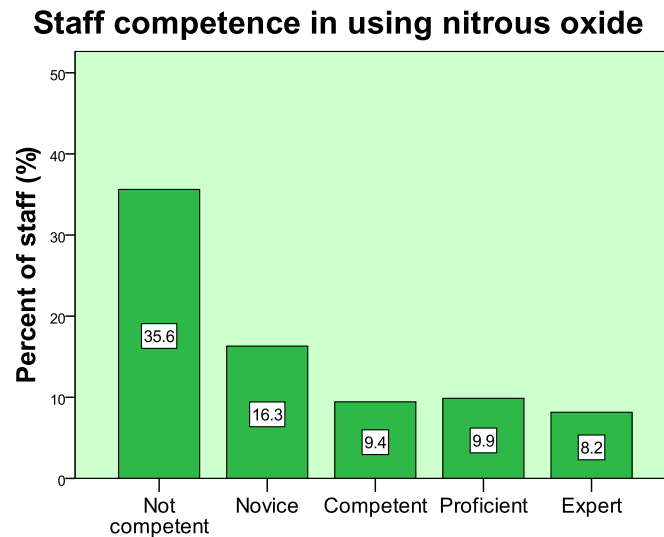


Figure 5: Staff self-assessed competence in use of nitrous oxide

Education and training received at SCH was associated with the use of nitrous oxide and ketamine (Table 8), self-assessed competence in managing children’s pain and distress (Table 9) and how often staff contacted play therapy (Table 10).

Table 8: Association between self-assessed education/training in sedation and staff use of strategies

Strategies	E&T: sedation (%)		χ^2 (1 df)	P
	None/ not enough	Enough/ more than enough		
Cuddling/touch/ massage	73.6	79.7	0.65	0.42
Heat or cold	9.1	17.6	2.32	0.13
Distraction/play	96.7	95.9	0.00	1.00
Dummy/swaddling	70.2	77.0	0.75	0.39
Music/DVD/TV	60.3	77.0	5.03	0.03*
Relaxation/breathing/ bubbles	52.1	71.6	6.50	0.01*
Topical local anaesthetic	62.0	66.2	0.20	0.66
Sucrose	61.2	67.6	0.56	0.45
Local anaesthetic injection	14.9	32.4	7.37	0.007**
Midazolam	26.4	35.1	1.27	0.26
Chloral hydrate	12.4	18.9	1.07	0.30
Nitrous oxide	17.4	43.2	14.27	0.000**
Opioid analgesia	38.8	55.4	4.44	0.04*
Ketamine	12.4	32.4	10.30	0.001**
Oral analgesia	43.0	59.5	4.35	0.04*
General anaesthetic	11.6	10.8	0.00	1.00

E&T: education and training

* <0.05; ** < 0.01

Table 9: Association between self-assessed education/training in sedation and self-assessed competence

Competence	E&T: sedation (%)		χ^2 (2 df)	P
	None/ not enough	Enough/ more than enough		
Managing children's pain and distress				
Not competent/novice	12.3	5.3	20.70	0.000**
Competent	52.5	26.3		
Proficient/expert	35.2	68.4		
Using sedation agents				
Not competent/novice	39.1	10.8	28.47	0.000**
Competent	42.7	37.8		
Proficient/expert	18.2	51.4		
Using nitrous oxide				
Not competent/novice	81.9	42.0	30.02	0.000**
Competent	7.6	18.8		
Proficient/expert	10.5	39.1		

E&T: education and training

* <0.05; ** < 0.01

Table 10: Association between self-assessed education/training in sedation and how often staff contact play therapy/consult the pain team

Frequency	E&T: sedation (%)		χ^2 (2 df)	P
	None/ not enough	Enough/ more than enough		
I contact a play therapist for assistance prior to a procedure				
Never/not often	33.9	8.3	17.78	0.000**
Sometimes	43.2	50.0		
Often/always	22.9	41.7		
I consult the pain team prior to a procedure				
Never/not often	70.4	73.6	2.05	0.36
Sometimes	21.7	23.6		
Often/always	7.8	2.8		

E&T: education and training

* <0.05; ** < 0.01

Priority to receive more education and training in procedural sedation was associated with how often staff found performing/assisting with procedures on children stressful/distressing (Table 11).

Table 11: Association between priority to receive more education/training in sedation and how often staff find performing/assisting with procedures on children stressful/distressing

Frequency	E&T: sedation (%)		χ^2 (2 df)	P
	None/not enough	Enough/more than enough		
I find performing/assisting with procedures in children stressful/distressing				
Never/not often	38.0	45.3	10.10	0.006**
Sometimes	50.4	43.3		
Often/always	11.7	11.4		

E&T: education and training

* <0.05; ** < 0.01

Qualitative

Staff felt sedation, nitrous oxide in particular, was under-utilised due to time constraints and lack of planning since use of sedation requires co-ordination and is lengthier due to fasting and post-sedation monitoring. Staff also believed there was a lack of awareness of the process of sedation, including knowledge of booking sedation and interactions of sedative agents with other drugs.

Staff emphasised that increased accreditation of health care professionals in the use of nitrous oxide would be beneficial, particularly as access is currently limited to the emergency department, pain team and imaging department. After-hours availability was also described as very poor.

“I have just come back from a rotation in a country hospital where nitrous oxide is readily available and used for nearly all painful procedures... I find access to nitrous extremely difficult especially after hours”

NON-PHARMACOLOGICAL STRATEGIES

Quantitative

Staff use of non-pharmacological strategies is presented in Figure 6.

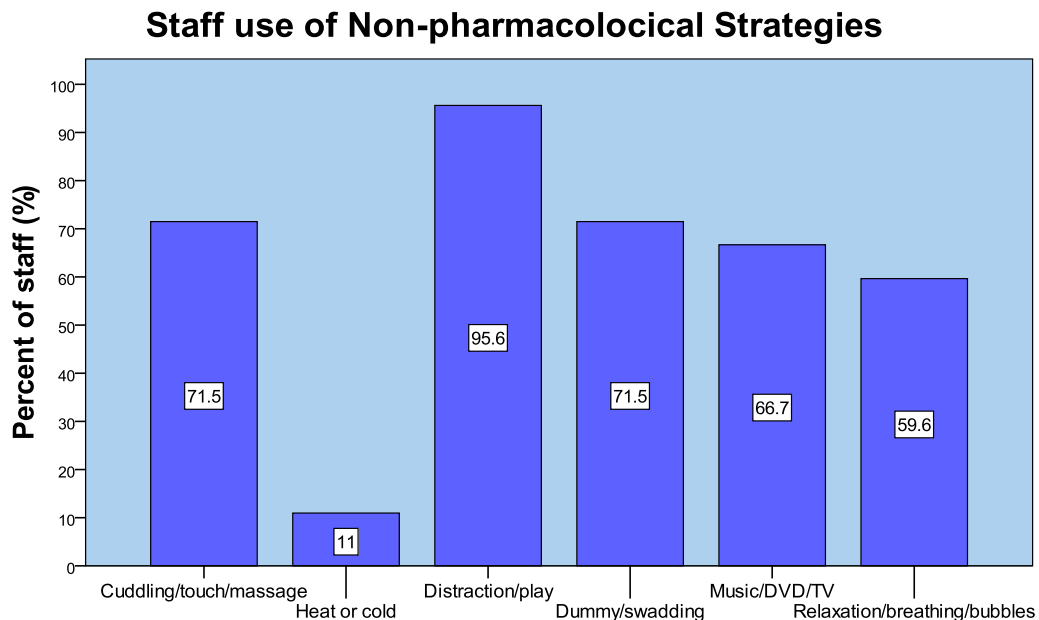


Figure 6: Staff use of non-pharmacological strategies in the past 3 months

Despite 56.5% of staff believing they had had enough or more than enough education and training in non-pharmacological strategies at SCH, and 93.2% of staff believing they were competent, proficient or expert in using distraction techniques and non-pharmacological measures, 62.7% said that it was important or very important to them to receive more education and training in non-pharmacological strategies.

Staff education and training in non-pharmacological techniques was associated with the use of a number of non-pharmacological as well as pharmacological strategies (Table 12). It was also associated with self-assessed competence in managing children's pain and anxiety, using distraction techniques and non-pharmacological methods and preparing both children and parents (Table 13). It was negatively associated with how often staff consulted the pain team (Table 14).

Table 12: Association between self-assessed education/training in non-pharmacological strategies and staff use of strategies

Strategies	E&T: non-pharmacological strategies (%)		χ^2 (1 df)	P
	None/ not enough	Enough/ more than enough		
Cuddling/touch/ massage	65.5	79.4	4.40	0.04*
Heat or cold	9.2	13.5	0.55	0.46
Distraction/play	94.3	98.4	1.65	0.20
Dummy/swaddling	60.9	79.4	7.77	0.005**
Music/DVD/TV	57.5	73.0	4.92	0.03*
Relaxation/breathing/ bubbles	47.1	69.8	10.19	0.001**
Topical local anaesthetic	54.0	65.9	2.56	0.11
Sucrose	50.6	68.3	6.04	0.01*
Local anaesthetic injection	14.9	23.8	1.99	0.16
Midazolam	20.7	33.3	3.47	0.06
Chloral hydrate	8.0	18.3	3.63	0.06
Nitrous oxide	18.4	29.4	2.76	0.10
Opioid analgesia	32.2	50.0	5.97	0.02*
Ketamine	10.3	24.6	5.96	0.02*
Oral analgesia	37.9	51.6	3.33	0.07
General anaesthetic	17.2	7.9	3.45	0.06

E&T: education and training

* <0.05; ** < 0.01

Table 13: Association between self-assessed education/training in non-pharmacological strategies and self-assessed competence

Competence	E&T: non-pharmacological strategies (%)		χ^2 (2 df)	P
	None/ not enough	Enough/ more than enough		
Managing children's pain and distress				
Not competent/novice	11.4	9.1	9.04	0.01*
Competent	54.5	36.4		
Proficient/expert	34.1	54.5		
Managing children's anxiety				
Not competent/novice	20.0	11.5	7.67	0.02*
Competent	50.0	40.8		
Proficient/expert	30.0	47.7		
Using distraction techniques and non-pharmacological methods				
Not competent/novice	11.1	4.5	15.05	0.001**
Competent	57.8	38.6		
Proficient/expert	31.1	56.8		
Preparing children				
Not competent/novice	12.4	4.6	6.89	0.03*
Competent	42.7	35.9		
Proficient/expert	44.9	59.5		
Preparing parents				
Not competent/novice	8.9	2.3	6.50	0.04*
Competent	40.0	34.4		
Proficient/expert	51.1	63.4		

E&T: education and training

* <0.05; ** < 0.01

Table 14: Association between self-assessed education/training in non-pharmacological strategies and self-assessed competence

Frequency	E&T: non-pharmacological strategies (%)		χ^2 (2 df)	P
	None/ not enough	Enough/ more than enough		
I contact a play therapist for assistance prior to a procedures				
Never/not often	29.1	24.0	5.00	0.08
Sometimes	50.0	40.8		
Often/always	20.9	35.2		
I consult the pain team prior to a procedure				
Never/not often	60.5	76.0	7.03	0.03*
Sometimes	29.6	20.8		
Often/always	9.9	3.2		

E&T: education and training

* <0.05; ** < 0.01

There was a negative association between competence in using distraction techniques and non-pharmacological measures and getting concerned by children's and parent's responses during procedures (Table 15).

Table 15: Association between self-assessed competence in using distraction techniques and non-pharmacological measures and how often staff believe they are concerned/distressed by parent and child responses

Frequency	Competence: Using distraction techniques and non-pharmacological measures (%)			χ^2 (4 df)	P
	Not competent/ novice	Competent	Proficient/ expert		
I get concerned/distressed by children's responses during procedures					
Never/not often	13.3	17.6	37.3	16.80	0.001**
Sometimes	40.0	52.8	47.1		
Often/always	46.7	29.6	15.7		
I get concerned/distressed by parent responses during procedures					
Never/not often	26.7	22.4	35.0	13.08	0.08
Sometimes	20.0	52.3	47.6		
Often/always	53.3	25.2	17.5		

* <0.05; ** < 0.01

Qualitative

Staff are aware of the importance and usefulness of non-pharmacological strategies, distraction in particular, but cite that there is limited availability of and access to resources and training. Staff commented that more distraction resources would be beneficial as well as education in non-pharmacological strategies, particularly due to lack of play therapist availability.

“I use techniques that I have seen others use that may work, but have not had formal teaching in this area. I would benefit from this as it would help me on a day-to-day basis for procedures/examinations”

“It would be great to have a box with bubbles and distraction equipment and appropriate music for use during procedures that is easy to locate on the ward/treatment room. An inservice to remind staff about distraction techniques would also be a good idea.”

PLAY THERAPY

Quantitative

69.8% of respondents said they sometimes, often or always contacted a play therapist for assistance prior to a procedure.

74.7% of staff agreed or strongly agreed that play therapists are available to assist with procedures. A positive association was found between how often staff contacted play therapists and their perceptions of the availability of play therapists (Table 16).

Table 16: Association between how often staff contact play therapists and staff perception of availability of play therapists

Play therapists are available to assist with procedures	I contact a play therapist for assistance prior to a procedure (%)			χ^2 (4 df)	P
	Never/ not often	Sometimes	Often/ always		
Strongly disagree/ disagree	25.5	7.5	3.2	18.55	0.001**
Neither	16.4	11.8	15.9		
Agree/ strongly agree	58.2	80.6	81.0		

* <0.05; ** < 0.01

Qualitative

Staff believed play therapy was very effective and appreciated the role of play therapists in procedural pain and distress management. However, staff emphasised the lack of access to play therapists due to a shortage of play therapy staff and poor after-hours availability. Staff also mentioned that the need to book play therapy ahead of time meant that play therapists could not be accessed immediately to assist with a procedure.

“Play therapists are brilliant, but not always available, thus the staff routinely doing procedures should have more education”

“Play therapists have taught me everything I know about non-pharmacological management of procedural distress, and are excellent. While they are often available and always happy to go the extra mile, there are plenty of times I have performed procedures when the help of a play therapist would have been invaluable but they were not able to come.”

VARIABILITY: NUMBER OF PROCEDURES PER WEEK

Quantitative

62.2% of respondents performed or assisted with 1-10 procedures per week on average, while 37.8% performed or assisted with 11 or more.

The number of procedures performed on average per week affected staff use of certain strategies (Table 17).

Table 17: Association between average number of procedures per week and staff use of strategies

Strategies	Number of procedures/week (%)		χ^2 (1 df)	P
	1-10	11 or more		
Cuddling/touch/ massage	73.0	71.4	0.01	0.92
Heat or cold	5.8	19.0	8.07	0.005**
Distraction/play	93.4	98.8	3.49	0.13
Dummy/swaddling	66.4	81.0	4.75	0.03*
Music/DVD/TV	62.8	76.2	3.71	0.05
Relaxation/breathing/ bubbles	55.5	67.9	2.84	0.09
Topical local anaesthetic	53.3	72.6	7.37	0.007**
Sucrose	55.5	70.2	4.17	0.04*
Local anaesthetic injection	13.1	32.1	10.46	0.001**
Midazolam	27.7	31.0	0.13	0.72
Chloral hydrate	12.4	17.9	0.85	0.36
Nitrous oxide	19.0	34.5	5.93	0.02*
Opioid analgesia	31.4	56.0	12.02	0.001**
Ketamine	9.5	32.1	16.53	0.000**
Oral analgesia	35.8	58.3	9.85	0.002**
General anaesthetic	12.4	16.7	0.47	0.49

* <0.05; ** < 0.01

Number of procedures per week only had a positive association with competence in using nitrous oxide (Table 18), and was not associated with priority to receive more education and training (Table 19). It was also associated with frequency of staff behaviour in terms of how often staff taught parents to help, how often staff contacted a play therapist, and how often staff consulted the pain team (Table 20).

Table 18: Association between average number of procedures per week and self-assessed competence

Competence	Number of procedures/week (%)		χ^2 (2 df)	P
	1-10	11 or more		
Managing children's pain and distress				
Not competent/novice	10.0	9.5	0.02	0.99
Competent	43.1	42.9		
Proficient/expert	46.9	47.6		
Using distraction techniques and non-pharmacological measures				
Not competent/novice	7.6	4.8	0.75	0.69
Competent	47.0	46.4		
Proficient/expert	45.5	48.8		
Managing needle phobia				
Not competent/novice	29.8	20.7	5.13	0.08
Competent	49.6	45.1		
Proficient/expert	20.7	34.1		
Managing children's anxiety				
Not competent/novice	16.0	12.0	1.43	0.49
Competent	40.5	48.2		
Proficient/expert	43.5	39.8		
Preparing children				
Not competent/novice	7.6	6.1	0.18	0.91
Competent	37.4	37.8		
Proficient/expert	55.0	56.1		
Preparing parents				
Not competent/novice	6.1	2.4	2.17	0.34
Competent	32.1	38.6		
Proficient/expert	61.8	59.0		
Your technical skills				
Not competent/novice	5.4	2.4	1.32	0.52
Competent	32.6	30.5		
Proficient/expert	62.0	67.1		
Using sedation agents				
Not competent/novice	30.4	25.4	0.63	0.73
Competent	37.5	42.3		
Proficient/expert	32.1	32.4		
Using nitrous oxide				
Not competent/novice	75.2	52.9	9.23	0.01*
Competent	8.9	15.7		
Proficient/expert	15.8	31.4		

* <0.05; ** < 0.01

Table 19: Association between average number of procedures per week and priority to receive more education/training

Priority to receive more education/training	Number of procedures/week (%)		χ^2 (1 df)	P
	1-10	11 or more		
Pharmacological strategies				
Not important/somewhat important	24.4	37.7	3.35	0.07
Important/very important	75.6	62.3		
Procedural sedation				
Not important/somewhat important	27.0	38.2	2.17	0.14
Important/very important	73.0	61.8		
Non-pharmacological strategies				
Not important/somewhat important	29.2	38.8	1.63	0.20
Important/very important	70.8	61.3		

* <0.05; ** < 0.01

Table 20: Association between average number of procedures per week and self-assessed frequency of behaviours

Frequency	Number of procedures/week (%)		χ^2 (2 df)	P
	1-10	11 or more		
I teach parents how to play an active and helpful role during procedures				
Never/not often	3.9	0.0	7.20	0.03*
Sometimes	18.8	9.5		
Often/always	77.3	90.5		
I get concerned/distressed by children's responses during procedures				
Never/not often	23.0	27.4	0.72	0.70
Sometimes	53.2	47.6		
Often/always	23.8	25.0		
I get concerned/distressed by parent responses during procedures				
Never/not often	26.8	30.1	0.53	0.77
Sometimes	49.6	44.6		
Often/always	23.6	25.3		
I find performing or assisting with procedures on children stressful/distressing				
Never/not often	42.2	51.2	2.28	0.32
Sometimes	46.1	35.7		
Often/always	11.7	13.1		
I contact a play therapist for assistance prior to a procedure				
Never/not often	26.8	32.1	10.37	0.006**
Sometimes	51.2	29.5		
Often/always	22.0	38.5		
I consult the pain team prior to a procedure				
Never/not often	65.3	78.2	9.04	0.011*
Sometimes	24.8	21.8		
Often/always	9.9	0.0		

* <0.05; ** < 0.01

VARIABILITY: PROFESSION

Quantitative

Figure 2 shows distribution of respondents by profession. Profession was associated with average number of procedures per week (Table 21) and staff use of most strategies (Table 22).

Table 21: Association between profession and average number of procedures per week

Number of procedures	Profession (%)					χ^2 (4 df)	P
	Nurses	Doctors	Allied Health	Imaging	Other		
0-10	65.7	55.6	69.6	30.8	61.5	7.38	0.12
11 or more	34.3	44.4	30.4	69.2	38.5		

Table 22: Association between profession and staff use of strategies

Strategies	Profession (%)					χ^2 (4 df)	P
	Nurses	Doctors	Allied Health	Imaging	Other		
Cuddling/ touch/ massage	79.4	63.9	72.0	30.8	46.2	20.06	0.000**
Heat or cold	14.9	0.0	8.0	0.0	15.4	8.75	0.06
Distraction/ play	96.5	94.4	96.0	100.0	84.6	4.71	0.32
Dummy/ swaddling	75.9	66.7	64.0	76.9	46.2	6.72	0.15
Music/DVD/ TV	70.2	58.3	68.0	76.9	38.5	7.21	0.13
Relaxation/ breathing/ bubbles	64.5	55.6	64.0	7.7	61.5	16.45	0.002**
Topical local anaesthetic	64.5	86.1	28.0	7.7	38.5	39.13	0.000**
Sucrose	61.7	80.6	24.0	61.5	53.8	20.24	0.000**
Local anaesthetic injection	18.4	38.9	16.0	0.0	7.7	13.09	0.011*
Midazolam	32.6	36.1	12.0	7.7	7.7	11.15	0.025*
Chloral hydrate	15.6	16.7	8.0	15.4	0.0	3.39	0.51
Nitrous oxide	20.6	55.6	16.0	0.0	15.4	25.98	0.000**
Opioid analgesia	49.6	41.7	12.0	15.4	23.1	18.33	0.001**
Ketamine	19.9	25.0	0.0	0.0	23.1	10.27	0.04*
Oral analgesia	55.3	41.7	16.0	7.7	23.1	24.59	0.000**
General anaesthetic	6.4	41.7	16.0	15.4	7.7	30.94	0.000**

* <0.05; ** < 0.01

Education and training received at SCH in non-pharmacological strategies and pharmacological strategies and priority to receive further education and training in non-pharmacological strategies were also associated with profession (Table 23 & 24).

Table 23: Association between profession and self-assessed education/training

Education/ training	Profession (%)					χ^2 (4 df)	P
	Nurses	Doctors	Allied Health	Imaging	Other		
Pharmacological strategies							
None/not enough	42.8	40.6	100.0	83.3	58.3	20.96	0.000*
Enough/more than enough	57.2	59.4	0.0	16.7	41.7		
Sedation							
None/not enough	57.6	56.3	100.0	83.3	72.7	11.24	0.02*
Enough/more than enough	42.4	43.8	0.0	16.7	27.3		
Non-pharmacological strategies							
None/not enough	35.9	34.4	66.7	55.6	58.3	9.64	0.047*
Enough/more than enough	64.1	65.6	33.3	44.4	41.7		

* <0.05; ** < 0.01

Table 24: Association between profession and priority to receive more education/training

Priority to receive more E&T	Profession (%)					χ^2 (4 df)	P
	Nurses	Doctors	Allied Health	Imaging	Other		
Pharmacological strategies							
Not important/ somewhat important	22.4	50.0	42.9	66.7	41.7	16.01	0.003**
Important/ very important	77.6	50.0	57.1	33.3	58.3		
Sedation							
Not important/ somewhat important	27.8	38.2	50.0	66.7	27.3	7.01	0.14
Important/ very important	72.2	61.8	50.0	33.3	72.7		
Non-pharmacological strategies							
Not important/ somewhat important	26.0	58.8	25.0	60.0	33.3	17.52	0.002**
Important/ very important	74.0	41.2	75.0	40.0	66.7		

E&T: education and training

* <0.05; ** < 0.01

Profession was also associated with self-assessed competence in managing children’s pain and distress, managing needle phobia, using sedation agents and using nitrous oxide (Table 25). There was no association between profession and how often staff found performing procedures on children stressful/distressing (Table 26).

Table 25: Association between profession and self-assessed competence

Competence	Profession (%)					χ^2 (8 df)	P
	Nurses	Doctors	Allied Health	Imaging	Other		
Managing children’s pain and distress							
Not competent/ Novice	7.5	12.1	12.0	30.8	6.3	24.22	0.003**
Competent	36.7	51.5	72.0	46.2	37.5		
Proficient/ expert	55.8	36.4	16.0	23.1	56.3		
Managing needle phobia							
Not competent/ Novice	19.9	27.3	71.4	46.2	12.5	26.13	0.001**
Competent	51.4	57.6	14.3	23.1	62.5		
Proficient/ expert	28.8	15.2	14.3	30.8	25.0		
Using sedation agents							
Not competent/ Novice	22.7	26.5	100.0	100.0	50.0	34.07	0.000**
Competent	42.6	41.2	0	0	30.0		
Proficient/ expert	34.8	32.4	0	0	20.0		
Using nitrous oxide							
Not competent/ Novice	69.8	35.3	100.0	100.0	70.0	23.97	0.005**
Competent	8.5	29.4	0	0	10.0		
Proficient/ expert	21.7	35.3	0	0	20.0		

* <0.05; ** < 0.01

Table 26: Association between profession and self-assessed behaviour

Frequency	Profession (%)					χ^2 (8 df)	P
	Nurses	Doctors	Allied Health	Imaging	Other		
I find performing or assisting with procedures on children stressful/distressing							
Never/ not often	42.8	54.5	45.8	61.5	58.3	4.29	0.83
Sometimes	45.5	36.4	37.5	30.8	33.3		
Often/ always	11.7	9.1	16.7	7.7	8.3		
I feel comfortable asking for help to manage a child’s pain and distress during procedures							
Strongly disagree/ disagree	1.4	3.3	4.3	0.0	6.7	16.34	0.05
Neither	2.8	6.7	21.7	7.7	6.7		
Agree/strongly agree	95.8	90.0	73.9	92.3	86.7		

There was no association between profession and staff evaluation of improvement in their area and SCH (Table 27), and overall quality (Table 28).

Table 27: Association between profession and staff evaluation of improvement in their area and SCH

Evaluation of improvement	Profession (%)					χ^2 (8 df)	P
	Nurses	Doctors	Allied Health	Imaging	Other		
Compared with 3 years ago, my area is better at managing procedural pain and distress in children							
Strongly disagree/disagree	9.8	4.8	0.0	0.0	7.1	10.30	0.25
Neither	39.2	14.3	53.3	45.5	35.7		
Agree/strongly agree	51.0	81.0	46.7	54.5	57.1		
Compared with 3 years ago, SCH is better at managing pain and distress in children							
Strongly disagree/disagree	6.8	0.0	0.0	0.0	9.1	7.25	0.51
Neither	41.7	41.2	62.5	58.3	27.3		
Agree/strongly agree	51.5	58.8	37.5	41.7	63.6		

Table 28: Association between profession and staff overall evaluation

Overall how well procedural pain and distress is managed in your area?	Profession (%)					χ^2 (4 df)	P
	Nurses	Doctors	Allied Health	Imaging	Other		
Very poorly/poorly	5.4	3.2	19.0	0.0	7.1	7.24	0.12
Well/ Very well	94.6	96.8	81.0	100.0	92.9		

VARIABILITY: EXPERIENCE

Quantitative

Staff were divided into two groups by years of experience working with children: 0-1 years (9.3% of respondents) and more than 2 years (90.7%).

Experience only affected the use of one strategy: cuddling/touch/massage, which was used by a larger proportion of experienced staff (Table 29).

Table 29: Association between years of experience working with children and staff use of strategies

Strategies	Years of experience (%)		χ^2 (1 df)	P
	0-1	2 or more		
Cuddling/touch/ massage	45.0	74.6	6.51	0.01*
Heat or cold	0.0	11.9	1.59	0.21
Distraction/play	95.0	95.5	0.00	1.00
Dummy/swaddling	75.0	71.1	0.01	0.92
Music/DVD/TV	50.0	69.2	2.23	0.14
Relaxation/breathing/ bubbles	40.0	61.7	2.71	0.10
Topical local anaesthetic	55.0	60.2	0.05	0.83
Sucrose	50.0	61.2	0.54	0.46
Local anaesthetic injection	5.0	20.9	2.01	0.16
Midazolam	25.0	27.9	0.00	0.99
Chloral hydrate	25.0	12.9	1.31	0.25
Nitrous oxide	10.0	25.9	1.70	0.19
Opioid analgesia	50.0	40.3	0.36	0.55
Ketamine	25.0	16.9	0.36	0.55
Oral analgesia	35.0	45.3	0.42	0.52
General anaesthetic	5.0	13.4	0.53	0.47

* <0.05; ** < 0.01

There was no association between experience and education and training received (Table 30) or priority to receive more education and training (Table 31). More experienced staff felt more competent in all areas assessed in the survey by a significant margin (Table 32).

Table 30: Association between years of experience working with children and self-assessed education/training

Education/training	Years of experience (%)		χ^2 (1 df)	P
	0-1	2 or more		
Pharmacological strategies				
None/not enough	45.0	48.6	0.01	0.94
Enough/more than enough	55.0	51.4		
Procedural sedation				
None/not enough	72.2	60.5	0.52	0.47
Enough/more than enough	27.8	39.5		
Non-pharmacological strategies				
None/not enough	38.1	40.3	0.00	1.00
Enough/more than enough	61.9	59.7		

Table 31: Association between years of experience working with children and priority to receive more education/training

Priority to receive more education/training	Years of experience (%)		χ^2 (1 df)	P
	0-1	2 or more		
Pharmacological strategies				
Not important/somewhat important	21.1	31.4	0.45	0.50
Important/very important	78.9	68.6		
Procedural sedation				
Not important/somewhat important	31.6	31.9	0.00	1.00
Important/very important	68.4	68.1		
Non-pharmacological strategies				
Not important/somewhat important	19.0	34.7	1.45	0.23
Important/very important	81.0	65.3		

Table 32: Association between years of experience and self-assessed competence

Competence	Years of experience (%)		χ^2 (2 df)	P
	0-1	2 or more		
Managing children's pain and distress				
Not competent/novice	45.5	5.8	38.30	0.000**
Competent	40.9	44.0		
Proficient/expert	13.6	50.2		
Using distraction techniques and non-pharmacological measures				
Not competent/novice	40.9	3.4	43.81	0.000**
Competent	36.4	47.6		
Proficient/expert	22.7	49.0		
Managing needle phobia				
Not competent/novice	52.4	21.5	13.30	0.001**
Competent	47.6	50.3		
Proficient/expert	.0	28.2		
Managing children's anxiety				
Not competent/novice	50.0	9.2	30.03	0.000**
Competent	36.4	46.6		
Proficient/expert	13.6	44.2		
Preparing children				
Not competent/novice	28.6	4.4	21.38	0.000**
Competent	47.6	37.9		
Proficient/expert	23.8	57.8		
Preparing parents				
Not competent/novice	28.6	1.9	34.90	0.000**
Competent	42.9	35.3		
Proficient/expert	28.6	62.8		
Technical skills				
Not competent/novice	28.6	1.9	25.57	0.000**
Competent	42.9	35.3		
Proficient/expert	28.6	62.8		
Using sedation agents				
Not competent/novice	66.7	26.0	13.83	0.000**
Competent	27.8	40.5		
Proficient/expert	5.6	33.5		
Using nitrous oxide				
Not competent/novice	94.4	61.7	7.95	0.02*
Competent	5.6	13.0		
Proficient/expert	0.0	25.3		

* <0.05; ** < 0.01

Experience was also associated with how often staff taught children coping skills, with 19.0% of less experienced staff 'never' or 'not often' teaching children coping skills as compared to 4.0% of more experienced staff. There was no association with staff distress.(Table 33)

Table 33: Association between years of experience working with children and self-assessed behaviour

Frequency	Years of experience (%)		χ^2 (2 df)	P
	0-1	2 or more		
I ensure parents understand their child's procedure prior to commencing				
Never/not often	0.0	0.0	0.52	0.47
Sometimes	4.5	0.5		
Often/always	95.5	99.5		
I routinely teach parents how to play an active and helpful role during procedures				
Never/not often	4.5	2.0	9.83	0.01*
Sometimes	36.4	12.5		
Often/always	59.1	85.5		
I teach children coping skills for procedures				
Never/not often	19.0	4.0	9.40	0.009**
Sometimes	33.3	27.5		
Often/always	47.6	68.5		
I get concerned/distressed by children's responses during procedures				
Never/not often	22.7	27.4	0.35	0.84
Sometimes	54.5	48.2		
Often/always	22.7	24.4		
I get concerned/distressed by parent responses during procedures				
Never/not often	31.8	28.9	0.42	0.81
Sometimes	50.0	46.7		
Often/always	18.2	24.4		
I find performing or assisting with procedures on children stressful/distressing				
Never/not often	45.5	47.7	0.24	0.89
Sometimes	45.5	40.7		
Often/always	9.1	11.6		

* <0.05; ** < 0.01

Qualitative

Staff commented that new staff lacked confidence and consequently needed more support. Staff suggested that issues such as number of failed attempts and lack of education probably arise as a result of the transfer from adult medicine to paediatric medicine.

"I have only been here one year and so am not yet very confident managing pain in children but others in my department are very competent and confident in the area, they are always willing to help if asked"

VARIABILITY: DEPARTMENT

Quantitative

Staff were divided into those that are attached to the wards and those that are attached to ED. Of this group, 99 (36.5%) were attached to a ward, and 35 (12.9%) were attached to ED. ED staff were found to perform more procedures on average per week than ward staff (Table 34) and staff use of certain strategies varied between the wards and ED (Table 35).

Table 34: Association between department (wards or ED) and average number of procedures per week

Number of procedures/ week	Department (%)		χ^2 (1 df)	P
	Wards	ED		
1-10	68.2	33.3	9.05	0.003**
11 or more	31.8	66.7		

ED: emergency department

* <0.05; ** < 0.01

Table 35: Association between department (wards or ED) and staff use of strategies

Strategies	Department (%)		χ^2 (1 df)	P
	Wards	ED		
Cuddling/touch/ massage	75.6	92.6	2.73	0.10
Heat or cold	14.4	22.2	0.44	0.51
Distraction/play	95.6	100.0	0.26	0.70
Dummy/swaddling	75.6	92.6	2.73	0.10
Music/DVD/TV	66.7	100.0	10.42	0.001**
Relaxation/breathing/ bubbles	61.1	96.3	10.48	0.001**
Topical local anaesthetic	67.8	92.6	5.35	0.02*
Sucrose	64.4	100.0	11.49	0.001**
Local anaesthetic injection	11.1	63.0	28.60	0.000**
Midazolam	36.7	29.6	0.20	0.67
Chloral hydrate	20.0	0.0	4.94	0.03*
Nitrous oxide	11.1	88.9	57.23	0.000**
Opioid analgesia	45.6	81.5	9.39	0.002**
Ketamine	15.6	70.4	28.17	0.000**
Oral analgesia	54.4	81.5	5.28	0.02*
General anaesthetic	8.9	3.7	0.23	0.64

ED: emergency department

* <0.05; ** < 0.01

Education and training received at SCH was greater in ED staff across all areas assessed (Table 36). However, only education and training in non-pharmacological strategies was associated with priority to learn more in that area (Table 37).

Table 36: Association between department (wards or ED) and self-assessed education/training

Education & training	Department (%)		χ^2 (1 df)	P
	Ward	ED		
Pharmacological strategies				
None/not enough	46.6	23.5	4.51	0.03*
Enough/more than enough	53.4	76.5		
Procedural sedation				
None/not enough	65.5	22.6	15.09	0.000**
Enough/more than enough	34.5	77.4		
Non-pharmacological strategies				
None/not enough	37.5	11.8	6.52	0.01*
Enough/more than enough	62.5	88.2		

ED: emergency department

* <0.05; ** < 0.01

Table 37: Association between department (wards or ED) and priority to receive more education/training

Priority to receive more education/training	Department (%)		χ^2 (1 df)	P
	Ward	ED		
Pharmacological strategies				
Not important/ somewhat important	16.9	29.4	1.68	0.20
Important/ very important	83.1	70.6		
Procedural sedation				
Not important/ somewhat important	21.6	23.5	0.00	1.00
Important/ very important	78.4	76.5		
Non-pharmacological strategies				
Not important/ somewhat important	22.5	44.1	4.65	0.03*
Important/ very important	77.5	55.9		

ED: emergency department

* <0.05; ** < 0.01

No aspect of staff perception of competence was associated with department, except use of nitrous oxide (Table 38).

Table 38: Association between department (wards or ED) and self-assessed competence

Competence	Department (%)		χ^2 (2 df)	P
	Wards	ED		
Managing children's pain and distress				
Not competent/novice	9.0	8.8	1.97	0.37
Competent	42.7	29.4		
Proficient/expert	48.3	61.8		
Using distraction techniques and non-pharmacological measures				
Not competent/novice	9.0	2.9	4.44	0.11
Competent	49.4	35.3		
Proficient/expert	41.6	61.8		
Managing needle phobia				
Not competent/novice	22.5	11.8	1.91	0.39
Competent	51.7	55.9		
Proficient/expert	25.8	32.4		
Managing children's anxiety				
Not competent/novice	13.6	14.7	2.53	0.28
Competent	47.7	32.4		
Proficient/expert	38.6	52.9		
Preparing children				
Not competent/novice	5.6	5.9	0.09	0.96
Competent	38.2	35.3		
Proficient/expert	56.2	58.58		
Preparing parents				
Not competent/novice	5.6	2.9	0.94	0.63
Competent	30.3	38.2		
Proficient/expert	64.0	58.8		
Technical skills				
Not competent/novice	4.5	3.0	0.23	0.90
Competent	38.6	36.4		
Proficient/expert	56.8	60.6		
Using sedation agents				
Not competent/novice	27.9	12.1	5.21	0.07
Competent	43.0	39.4		
Proficient/expert	29.1	48.5		
Using nitrous oxide				
Not competent/novice	89.6	15.2	63.26	0.000**
Competent	6.5	15.2		
Proficient/expert	3.9	69.7		

ED: emergency department

* <0.05; ** < 0.01

The department of staff members was also associated with how often they were concerned/distressed by parent responses and how often they consulted the pain team (Table 39).

Table 39: Association between department (wards or ED) and self-assessed behaviour

Frequency	Department (%)		χ^2 (2 df)	P
	Wards	ED		
I get concerned/distressed by children's responses				
Never/not often	21.6	33.3	5.17	0.08
Sometimes	46.6	54.5		
Often/always	31.8	12.1		
I get concerned/distressed by parent responses				
Never/not often	26.1	30.3	12.14	0.002**
Sometimes	40.9	66.7		
Often/always	33.0	3.0		
I find performing or assisting with procedures on children stressful/distressing				
Never/not often	37.5	54.5	3.31	0.19
Sometimes	48.9	39.4		
Often/always	13.6	6.1		
I contact a play therapist for assistance prior to a procedure				
Never/not often	25.0	3.0	22.55	0.000**
Sometimes	48.8	24.2		
Often/always	26.2	72.7		
I consult the pain team prior to a procedure				
Never/not often	62.8	96.9	13.48	0.002**
Sometimes	30.2	3.1		
Often/always	7.0	0.0		

ED: emergency department

* <0.05; ** < 0.01

There was no association between department and current practice (Table 40) or staff perceptions of how well they believed they were doing overall in their area (Table 41).

Table 40: Association between department (wards or ED) and self-assessed behaviour

Frequency	Department (%)		χ^2 (2 df)	P
	Wards	ED		
Time constraints prevent me from managing procedural pain and distress optimally				
Strongly disagree/disagree	35.7	50.0	1.89	0.39
Neither	21.4	16.7		
Agree/strongly agree	42.9	33.3		
Parents should be encouraged to attend their child's procedures				
Strongly disagree/disagree	6.0	6.7	1.28	0.53
Neither	34.5	23.3		
Agree/strongly agree	59.5	70.0		
Play therapists are available to assist with procedures				
Strongly disagree/disagree	14.1	0.0	5.06	0.08
Neither	15.3	13.3		
Agree/strongly agree	70.6	86.7		
In my area procedures are routinely performed in the treatment room				
Strongly disagree/disagree	10.7	3.3	4.98	0.08
Neither	9.5	0.0		
Agree/strongly agree	79.8	96.7		
Compared with 3 years ago, my area is better at managing procedural pain and distress in children				
Strongly disagree/disagree	11.7	8.7	5.35	0.07
Neither	46.7	21.7		
Agree/strongly agree	41.7	69.6		
Compared with 3 years ago, SCH is better at managing pain and distress in children				
Strongly disagree/disagree	8.3	9.1	0.32	0.85
Neither	43.3	36.4		
Agree/strongly agree	48.3	54.5		

ED: emergency department

Table 41: Association between department (wards or ED) and staff overall evaluation

Overall evaluation	Department (%)		χ^2 (1 df)	P
	Wards	ED		
Overall, how well do you think procedural pain and distress are managed in your area?				
Very poorly/poorly	6.4	3.3	0.02	0.88
Well/very well	93.6	96.7		

ED: emergency department

Qualitative

ED staff believed there was better support pre-, post- and during procedures, and that nitrous oxide, in particular, was more readily available. Parental explanation and encouragement to be present for procedures were also considered greater in ED.

There were also more discussions of change in practice associated with ED, for example with reference to the introduction of intranasal fentanyl.

“Considering we are an emergency department – I believe we always ensure that there are enough nursing and medical staff involved with procedures to ensure a smooth procedure. Staff are good at explaining procedures to patients and parents alike. We always encourage parents to stay and become involved in procedures to comfort their child. We utilise a variety of tools – movies, music, books etc – where possible. We try to get play therapy involvement when available.”

STAFF DISTRESS

Quantitative

The figures below show staff distress from children's responses, parent's responses and distress due to performing or assisting with procedures.

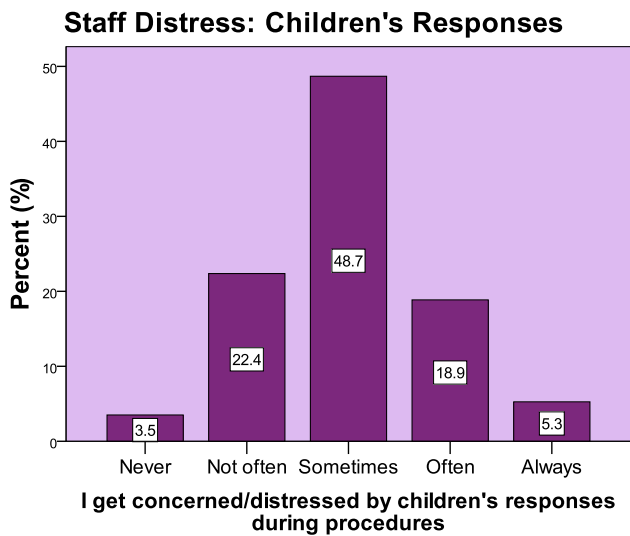


Figure 7: Staff concern/distress by children's responses

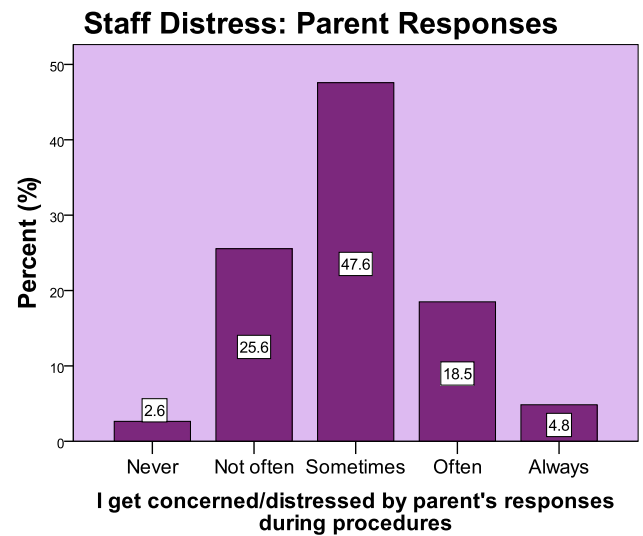


Figure 8: Staff concern/distress by parent's responses

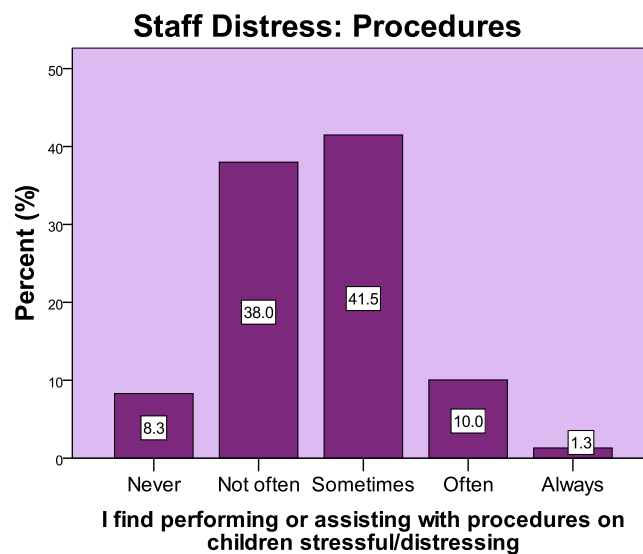


Figure 9: Staff distress from procedures

How often staff were concerned/distressed by children’s responses was associated with how often they were concerned/distressed by parent’s responses during procedures (Table 42).

Table 42: Association between how often staff are concerned/distressed by children’s responses and how often staff are concerned/distressed by parent responses

Frequency	I get concerned/distressed by children’s responses (%)			χ^2 (4 df)	P
	Never/not often	Sometimes	Often/always		
	I get concerned/distressed by parent responses				
Never/not often	88.1	9.1	1.8	283.56	0.000**
Sometimes	11.9	85.5	12.7		
Often/always	0.0	5.5	85.5		

* <0.05; ** < 0.01

How often staff found performing or assisting with procedures on children was positively associated with how often they were concerned/distressed by children’s responses and parent responses (Table 43).

Table 43: Association between how often staff find performing procedures on children stressful/distressing and how often staff are concerned/distressed by children’s and parent responses

Frequency	I find performing procedures on children stressful/distressing (%)			χ^2 (4 df)	P
	Never/not often	Sometimes	Often/always		
	I get concerned/distressed by children’s responses				
Never/not often	51.0	5.3	3.8	91.17	0.000**
Sometimes	39.4	67.0	23.1		
Often/always	9.6	27.7	73.1		
	I get concerned/distressed by parent responses				
Never/not often	52.4	8.5	3.8	96.20	0.000**
Sometimes	41.7	63.8	19.2		
Often/always	5.8	27.7	76.9		

* <0.05; ** < 0.01

Qualitative

Staff believe they are significantly affected by their workload and the environment, and commented that anxiety was ‘contagious’, with staff distress often caused by distressed children and child distress often caused by parental anxiety. Staff also felt that there was a need to debrief and reflect on practice.

Below are the words that staff who attended the focus groups used to describe procedures at SCH currently and if SCH were utopia.

Table 44: Staff experiences and perspectives from focus groups

Focus group	Words to describe current procedural experiences at SCH	Words to describe procedural experiences if SCH was utopia
1	Traumatic Parent as coach Distressed Planned Traumatising	Safe Copic Stress-free Empowered Less distressing
2	Stressful for everyone involved Anxious & nervous Explanation Very chilled Anxious Needs improvement Inadequate Calm	Relaxed No anxiety Consistent Very chilled Calmer Seamless Calm pain-free environment Relaxed & easy Less painful, less stressful and calmer
3	Prepared Positive Escalation of anxiety Frustrating & sympathetic Quick & distressing for parents Distracted & aware Horrorifying Upset & Distressing Distressing & scary Crying	Easy Normal & enjoyable Contained distress Painless & unnecessary Painless Peaceful Painless Peaceful Anxiety/pain-free Better No screaming Well distracted & less painful Happy Easy

Note: not all staff consented to the collection of their words

PLANNING AND PREPARATION: STAFF AND EQUIPMENT

Quantitative

53.9% of staff believed equipment was always prepared before the child enters the room, and 79.0% of staff believed that, in their area, procedures were routinely performed in the treatment room.

41.2% of staff disagreed or strongly disagreed that time constraints prevented them from managing procedural pain and distress optimally while 32.9% agreed or strongly agreed.

Qualitative

Staff believed both the preparation of equipment and use of the treatment room varied by clinical area.

Time was identified as a significant issue for staff, with poor pain and distress management linked to poor availability of staff, especially on weekends, resulting in procedures performed without adequate preparation or with long delays.

'Time and resources are my major concerns/barriers to providing appropriate and adequate procedural pain relief'

'On the weekend medical staff are busy and things get done on the ward when they are available which does not leave much time for preparing the child or family or for considering other options'

'Our procedures are often stressful in relation to waiting for beds to be available and busy teams to get sedation etc written up on time'

'Sometimes when procedures need to be done – we can get the child/equipment/family ready but waiting for the doctor is the dilemma'

PREPARATION: PARENT AND CHILD

Quantitative

Table 46 and 47 below show self-assessed competence and behaviour related to children and parents.

Table 46: Staff competence in preparing children and parents

Competence	Not competent	Novice	Competent	Proficient	Expert	N/A
Preparing children	0.4	6.8	38.0	42.7	11.5	0.4
Preparing parents	0.4	4.3	35.7	44.3	14.9	0.4

Table 47: Staff behaviours related to children and parents

Behaviour	Never	Not often	Some-times	Often	Always	N/A
I ensure parent's understand their child's procedure prior to commencing	0.0	0.0	0.7	13.3	70.5	0.0
I routinely teach parents how to play an active and helpful role during procedures	0.0	2.2	14.8	37.6	44.5	0.9
I teach children coping skills for procedures	0.0	5.2	27.5	38.4	27.5	1.3
Children are well prepared before procedures	0.0	0.4	27.2	47.4	24.1	0.9
I get concerned/distressed by children's responses during procedures	3.5	22.4	48.7	18.9	5.3	1.3
I get concerned/distressed by parent responses during procedures	2.6	25.6	47.6	18.5	4.8	0.9

Competence in preparing children and parents was associated with how often staff believe they are concerned/distressed by children's and parent's responses (respectively) during procedures (Table 48 and 49).

Table 48: Association between self-assessed competence in preparing children and frequency of staff behaviour

Frequency	Competence: Preparing children			χ^2 (4 df)	P
	Not competent/ novice	Competent	Proficient/ Expert		
I get concerned/distressed by children's responses during procedures					
Never/not often	0.0	14.9	38.7	21.75	0.000**
Sometimes	68.8	54.0	43.7		
Often/always	31.3	31.0	17.6		
I get concerned/distressed by parent's responses during procedures					
Never/not often	6.3	17.2	40.0	17.99	0.001**
Sometimes	56.3	54.0	42.5		
Often/always	37.5	28.7	17.5		
I find performing or assisting with procedures on children stressful/distressing					
Never/not often	5.9	43.0	53.8	17.39	0.002**
Sometimes	82.4	40.7	37.8		
Often/always	11.8	16.3	8.4		

* <0.05; ** < 0.01

Table 49: Association between self-assessed competence in preparing parents and frequency of staff behaviour

Frequency	Competence: Preparing parents			χ^2 (4 df)	P
	Not competent/ novice	Competent	Proficient/ Expert		
I get concerned/distressed by children's responses during procedures					
Never/ not often	0.0	17.3	34.1	11.16	0.03*
Sometimes	70.0	56.8	43.9		
Often/ always	30.0	25.9	22.0		
I get concerned/distressed by parent's responses during procedures					
Never/ not often	10.0	16.3	37.6	13.01	0.01*
Sometimes	60.0	57.5	41.4		
Often/ always	30.0	26.3	21.1		
I find performing or assisting with procedures on children stressful/distressing					
Never/ not often	9.1	42.5	51.5	8.30	0.08
Sometimes	72.7	46.3	37.1		
Often/ always	18.2	11.3	11.4		

* <0.05; ** < 0.01

Qualitative

Staff placed great importance on parent education, including coaching around model behaviours, language and punishment/rewards as well as the need to empower parents. Staff also emphasised the need to provide explanations to parents, and commented that this was good in ED but variable throughout the rest of the hospital. Staff believed that it was important to empower children by teaching them coping strategies such as guided imagery and relaxation.

Staff said that parental presence is strongly encouraged in the ED but believed parental presence should be flexible and tailored to the procedure, parental preference, and parental anxiety.

Parental support was considered important, including the need to debrief with parents and provide them with reassurance and ensure that their anxiety minimally affects their child's distress.

Staff believed familiarity and relationships with parent and child play a role in procedural pain and distress management. Staff mentioned the need for a therapeutic relationship, and familiarity with the child's coping styles, and also noted that the preparation process itself can sometimes induce distress in children and heighten anticipatory anxiety.

'I believe explanation to patient and parents is most important'

'Parents should be encouraged to attend their child's procedure but it depends if they want to, can cope, be helpful etc'

DISCUSSION

This study received an excellent response from staff at SCH, despite being a sensitive issue since it involved assessing their practice and beliefs. The main findings of this study are discussed below, and have parallels to a study conducted in the Royal Children's Hospital (RCH) Melbourne (Dowden, McCarthy & Chalkiadis, 2008), including variability in clinical practice and inadequate education, time and resources.

STAFF USE OF STRATEGIES

Nitrous oxide and Sedation

Not only have staff identified that sedation, particularly nitrous oxide, is under-utilised by staff SCH, but a limited number of staff said they have had education and training in this area and even fewer believe they are competent in their use of nitrous oxide. The majority of nitrous oxide used by staff at SCH is in ED, where there has been more education and training in sedation as well. Elsewhere in the hospital, including in imaging, not only is there limited accreditation of staff use of nitrous oxide, staff are also unaware of how to go about using sedation for procedures and who to contact/what protocol to follow/which drugs to use.

Despite the RACP (2006) guidelines identifying 'ongoing debate regarding the use of certain sedatives and analgesics by non-anaesthetists' as a barrier to optimal pain management, the literature suggests that certain quantities of nitrous oxide can be used safely and effectively outside the operating room and ICU when guidelines regarding assessment, monitoring, personnel and equipment are followed (Meyer, Grundmann, Gottschling, Kleinschmidt & Gortner, 2007). There has been a recent push to allow nurse administered nitrous oxide in emergency departments (Frampton, Browne, Lam, Cooper & Lane, 2003) which should gradually be expanded to ultimately provide all wards with better access.

The availability of guidelines to promote staff understanding of sedation and sedation practices is necessary, as is the need to provide opportunities for more non-anaesthetists to be accredited for the use of nitrous oxide for procedures to increase availability. The formation of a paediatric sedation team may be relevant to SCH, and may be an effective way to rectify poor access to sedation (Davis, 2008).

Non-pharmacological strategies and play therapy

Despite most staff using some form of non-pharmacological strategies, and recording a high level of competence, only 56.5% said they had enough or more than enough education and training in this area, and a large proportion (62.7%) were receptive to more. More education and training in this area was also associated with better staff-assessed preparation of parents and children and managing children's distress and anxiety, suggesting that the use of non-pharmacological strategies may help build rapport and encourage better co-operation from patients and families.

Play therapists play a significant role in paediatric pain management (Bandstra et al, 2010) and the perceived lack of play therapy availability at SCH can be rectified by increasing numbers of play therapists available throughout the week, including evenings and weekends, however this may not be financially or logistically possible. Training volunteers to assist with distraction during procedures is one potential avenue for investigation.

Staff should regularly be offered skills training in non-pharmacological strategies, if possible through workshops run by play therapists, since 'all health care professionals should know how to prevent the pain-anxiety spiral, and to use psychological techniques consciously to improve the management of procedure-related pain, whether or not medications are used' (RACP, 2006). Studies have found that teaching nurses non-pharmacological strategies effectively increases their use (He et al, 2010) and

strategies taught by play therapists can improve clinician behaviours and improve child and parent coping (Lawes et al, 2008).

Resources such as distraction boxes should be available in all wards and especially treatment rooms and replenished and serviced regularly, under the management of a specific team, most logically play therapists.

VARIABILITY & CULTURE

Inconsistency within the hospital due to differences in experience, profession and department are significant barriers to the optimisation of procedural pain and distress management at SCH.

Education and training and support to staff at SCH should be delivered with consideration for the needs and wants of each profession and department individually, for example, targeting regular non-pharmacological training programs at allied health staff in particular.

Less experienced staff have poor self-assessed competence and may need more support in the area of procedural pain management. A study by Hinds, Quargnenti, Hickey & Mangum (1994) found that new paediatric oncology nurses had 'few coping reactions, and their most common reaction was resignation'. However, there was no difference in the levels of distress between less experienced and more experienced staff, suggesting that the entire hospital has yet to foster a sufficiently supportive and reflective environment.

Nurse competence has been linked to nurse satisfaction and hence well-being in the paediatric setting (Ernst, Messmer, Franco & Gonzalez, 2004). This suggests training programs should be targeted at new staff or staff who believe they are novices, however, Pontin & Jones (2007) suggest training should

target more experienced/specialist nurses to ‘develop a critical mass to change organisational culture’. Training programs as such should be open and available to all staff.

The ED at SCH appears to have a very different culture to the rest of the hospital, in which staff seem more motivated towards change in practice, and have (more) effectively adopted evidence-based practice into their everyday work. ED staff at SCH feel more supported, and use most strategies more often, perhaps because they have had more training than ward staff and access to better resources, such as play therapists (which are separate from ward play therapists) and medical staff, who are present at all times. Surprisingly, the literature mostly describes the inadequacy of procedural pain and distress management in the ED mostly due to staff being too busy (Bhargava & Young, 2007; MacLean, Obispo & Young, 2007). Further investigation of ED culture and practices would be beneficial, through observational studies and interviews with staff to enable the application of positive aspects of this area to the rest of the hospital.

Not only do staff practices vary throughout the hospital, but so too do staff perspectives of how well they are doing overall. Allied health staff had the least positive view of how much SCH has improved overall and how well procedural pain and distress are managed in their area. Imaging staff comparatively are positive about improvements and overall quality. Surprisingly, despite ED staff adopting evidence-based practice more effectively and having higher satisfaction at SCH in this study, there was no difference in perceived quality of procedural pain and distress management or improvements in their area/SCH between the wards and ED, suggesting that wards are satisfied with a lower quality or have not known a better environment, or that, perhaps, the stagnating nature of practice leads to a magnification of the value of small improvements as compared to ED.

Dissemination of over-arching guidelines on procedural pain and distress management to all departments and areas of the hospital would help with keeping all staff up-to-date with best practice, if

these are easily accessible, such as through the staff intranet. It would however require a change in perspective of the whole hospital towards better reflective and integrated practice in order for practice to change throughout.

STAFF PLANNING AND DISTRESS

Staff were significantly affected by procedures on children, and some feel unsupported, without the time, space and skills to reflect on practice and allow improvements. Staff were distressed by their workload, busy teams and directly by child and parent reactions to procedures. Both quantitative and qualitative results have shown that current practice in planning and preparation of equipment, staff and the environment is not optimal. Staff identified planning and time constraints as major barriers and a significant proportion of staff believing that equipment is not always prepared beforehand (46.1%) or that the treatment room is not routinely used in their area (21.0%).

Although staff believed time is a barrier to preparing parents and children it is particularly important because it minimises the ‘likelihood of an unsuccessful procedure, thereby reducing the risk of the nurse being emotionally affected by a distressed child’ (Lloyd, Urquhart, Heard & Kroese, 2008).

Staff believing other teams are ‘too busy’ to prepare children and parents, or provide adequate pain relief serves only to emphasise the lack of priority placed on procedural pain and distress management at SCH. Easily accessible guidelines on procedural pain and distress management may increase importance placed on procedural pain and distress management at an individual, departmental and institutional level as well as raising awareness of best practice.

PREPARATION OF PARENT AND CHILD

Although parental support and coaching was considered important by staff, there was a lack of parent education, either due to staff not knowing what to tell parents or lack of resources for parents. Parental

presence can be distressing to children and staff if parents model unhelpful behaviours, and there is much literature on the detrimental effects of doing the wrong thing as compared to doing nothing (RACP, 2006; Schenk, 2008). However parents are often a useful, though unused, resource, once educated and trained (RACP, 2006).

Staff preparation of children, including teaching coping strategies, could be improved by better education and training (such as in guided imagery or relaxation), better time management and prioritisation of the needs of the child, and accessible guidelines and education/training on how to teach children coping strategies.

LIMITATIONS

The staff sample obtained for this study, although significant in numbers, was not representative in terms of profession and lacked input from certain wards, despite considerable efforts made to recruit more staff from these areas. Doctors were especially under-represented. The Intensive Care Unit (ICU) and Outpatients Department (OPD) were also under-represented, despite ICU being recognised as an area that needs to be assessed in terms of procedural pain and distress in children (Siffleet, Young, Nikoletti & Shaw, 2007), and despite OPD being mentioned as an area associated with significant pain and distress at SCH by staff in survey comments. Further investigation in these areas is warranted, potentially through other means such as observational audits and child/parent surveys.

FUTURE DIRECTIONS

Potential future projects include capturing perspectives of children and parents around procedural experiences through a child and parent survey and observational audits of procedures occurring throughout the hospital. These projects, combined with ongoing evaluation through staff meetings and establishment of working groups will aid quality improvement in the area of procedural pain and distress management for children at SCH.

It is vital that staff engagement is maintained for these projects to be successful and for improvements to occur, by allowing staff to drive the practice improvements through staff-run focus groups and working parties.

CONCLUSION

This study has given staff from all areas of SCH opportunities to reflect on practice, attitudes and beliefs, raised awareness of barriers to quality care and engaged staff in improving procedural pain and distress management.

With implementation of recommendations, it is hoped that improvements in procedural pain and distress management will lead to tangible changes in the experiences of children, parents and staff alike.

REFERENCES

- American Academy of Pediatrics [AAP]. (2001). Committee on Psychosocial Aspects of Child Health: Task Force on Pain in Infants, Children and Adolescents: The assessment and management of acute pain in infants, children and adolescents. *Pediatrics*, 108, 793-797.
- Australian and New Zealand College of Anaesthetists [ANZCA]. (2010). PS45 – Statement on patient’s rights to pain management and associated responsibilities.
- Association for the Wellbeing of Children in Healthcare (AWCH). (1999). Health Care Policy Relating to Children and Their Families. Retrieved 14 November, 2010, from http://www.awch.org.au/pdfs/AWCH_Health_Care_Policy.pdf
- Bandstra, N.F., Skinner, L., Leblanc, C., Chambers, C.T., Hollon, E.C., Brennan, D. & Beaver, C. (2008). The role of child life in pediatric pain management: a survey of child life specialists. *Journal of Pain*, 9(4), 320-329.
- Benner, P. (1984). From novice to expert: Excellence and power in clinical nursing practice. Menlo Park: Addison-Wesley, pp.13-34.
- Bhargava, R. & Young, K.D. (2007). Procedural Pain Management Patterns in Academic Pediatric Departments. *Academic Emergency Medicine*, 14(5), 479-482.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101.

- Breiner, S.M. (2009). Preparation of the Pediatric Patient for Invasive Procedures. *Journal of Infusion Nursing*, 32(5), 252-256.
- Brockopp, D.Y., Brockopp, G., Warden, S., Wilson, J., Carpenter, J.S. & Vandevveer, B. (1998). Barriers to change: a pain management project. *International Journal of Nursing Studies*, 35(4), 226-232.
- Children's Hospitals Australasia (CHA) & Association for the Well-being of Children in Healthcare (AWCH). (2010). *Charter of the Rights of Children and Young People in Healthcare Services in Australia*.
- Chen, E., Zeltzer, L.K., Craske, M.G., Katz, E.R. (2000). Children's memories for painful cancer treatment procedures: implications for distress. *Child Development*, 71(4), 933-947.
- Davis, C.L. (2008). Does your facility have a pediatric sedation team? If not, why not? *Pediatric Nursing*, 34(4), 308-309.
- Dowden, S., McCarthy, M. & Chalkiadis, G. (2008). Achieving organizational change in pediatric pain management. *Pain Research & Management: The Journal of the Canadian Pain Society*, 13(4), 321-326.
- Ernst, M.E., Messmer, P.R., Franco, M. & Gonzalez, J.L. (2004). Nurses' job satisfaction, stress, and recognition in a pediatric setting. *Pediatric Nursing*, 30(3), 219-227.
- Frampton, A., Browne, G.J., Lam, L.T., Cooper, M.G. & Lane, L.G. (2003). Nurse administered relative analgesia using high concentration nitrous oxide to facilitate minor procedures in children in an emergency department. *Emergency Medicine Journal*, 20, 410-413.

Grover, A. & Nowak, M. (2008). Human Rights and Drug Policy: Controlled Essential Medicines. Report of the UN Special Rapporteurs on health and torture.

Guba, E.G. & Lincoln, Y.S. (1989). Fourth generation evaluation. *Newbury Park*: Sage.

He, H.G., Jahja, R., Lee, T.L., Ang, E.N., Sinnappan, R., Vehvillainen-Julkunen, K. & Chan, M.F. (2010). *Journal of Advanced Nursing*, 66(11), 2398-2409.

Hinds, P.S., Quargnenti, A.G., Hickey S.S. & Mangum, G.H. (1994). A comparison of the stress-response sequence in new and experienced pediatric oncology nurses. *Cancer nursing*, 17(1), 61-71.

International Association for the Study of Pain [IASP]. (2004). IASP & EFIC's Declaration Supporting "The Relief of Pain Should be a Human Right". Retrieved 14 November, 2010, from http://www.iasp-pain.org/AM/Template.cfm?Section=Press_Release&Template=/CM/ContentDisplay.cfm&ContentID=2899

International Association for the Study of Pain [IASP]. (2010). Global Year Against Acute Pain Fact Sheet: Why the Gaps between Evidence and Practice? Retrieved 14 November, 2010, from <http://www.anzca.edu.au/news/announcements/media-releases-2010/gyap-october-18-2010/5-Gaps.pdf>

Lawes, C., Sawyer, L., Amos, S., Kandiah, M., Pearce, L. & Symons, J. (2008). *Paediatric Nursing*, 20(2), 33-37.

- Lloyd, M., Urquhart, G., Heard, A. & Kroese, B. (2008). When a child says 'no': experiences of nurses working with children having invasive procedures. *Paediatric Nursing*, 20(4), 29-34.
- MacLean, S., Obispo, J. & Young, K.D. (2007). The Gap Between Pediatric Emergency Department Procedural Pain Management Treatments Available and Actual Practice. *Pediatric Emergency Care*, 23(2), 87-93.
- Macintyre, P.E., Scott, D.A., Schug, S.A., Visser, E.J. & Walker, S.M. (Eds.) (2010). *Acute Pain Management: Scientific Evidence* (3rd ed.). Melbourne: Australian and New Zealand College of Anaesthetists.
- Mackenzie, A. (2006). Guideline statements on the management of procedure-related pain in neonates, children and adolescents. *Journal of paediatrics and child health*, 42(1-2), 14-15.
- Meyer, S., Grundmann, U., Gottschling, S., Kleinschmidt, S. & Gortner, L. (2007). Sedation and analgesia for brief diagnostic and therapeutic procedures in children. *European Journal of Pediatrics*, 166(4), 291-302.
- Nagy, S. (1999). Strategies used by burns nurses to cope with the infliction of pain on patients. *Journal of Advanced Nursing*, 29(6), 1427-1433.
- Pontin, D. & Jones, S. (2007). Children's nurses and nurse prescribing: a case study identifying issues for developing training programs in the UK. *Journal of Clinical Nursing*, 16(3), 540-548.

Pope, C., Ziebland, S. & Mays, N. (2000). Qualitative research in health care: Analysing qualitative data. *British Medical Journal*, 320(7227), 114-116.

Royal Australian College of Physicians [RACP]. (2006). Guideline statement: Management of procedure-related pain in children and adolescents. *Journal of Paediatrics and Child Health*, 42, S1-S29.

Royal Children's Hospital Melbourne [RCH]. (2008). Clinical Guidelines (Hospital): Procedural pain management. Retrieved June 30, 2010, from http://www.rch.org.au/rhcpg/index.cfm?doc_id=10245

Schenk, P.W. (2008). 'Just Breathe Normally': Word Choices that Trigger Nocebo Responses in Patients. *American Journal of Nursing*, 108(3), 52-57.

Siffleet, J., Young, J., Nikoletti, S. & Shaw, T. (2007). Patients' self-report of procedural pain in the intensive care unit. *Journal of Clinical Nursing*, 16(11), 2142-2148.

Sydney Children's Hospital [SCH]. (2010). *About Us*. Retrieved November 20, 2010, from <http://www.sch.edu.au/general/about/#introduction>

Twycross, A. (2010). Managing pain in children: where to from here? *Journal of Clinical Nursing*, 19(15-16), 2090-2099.

Weisman, S.J., Bernstein, B. & Schechter, N.L. (1998). Consequences of inadequate analgesia during painful procedures. *Archives of Pediatrics and Adolescent Medicine*, 152(2), 147-9.

World Health Organization. (1998). *Cancer pain relief and palliative care in children*. Geneva: World Health Organization.

Young, K.D. (2005). Pediatric Procedural Pain. *Annals of Emergency Medicine*, 45(2), 160-171.

APPENDIX 1: SURVEY



CHILDREN'S PROCEDURES STAFF SURVEY

Procedures can often be distressing not only for children but parents and staff as well. We are currently doing a project to find out how we can improve the procedural experiences for children, parents and staff. Your participation will help us identify where you believe the needs lie with regards to this challenging area.

Please take the time to fill out this survey to help us get a picture of what we currently do at SCH so we can help children though their procedures in the best way possible. This survey should not take more than 10 minutes of your time.

Note: A "procedure" here is defined as "any clinical intervention that may be potentially painful, or cause distress or anxiety" (Royal Children's Hospital Melbourne Procedural Pain Management Clinical Guidelines). This includes medical imaging, physiotherapy, invasive and diagnostic procedures.

We appreciate your time and input,

Pain Team

* Adapted with thanks from the Royal Children's Hospital Melbourne, 2007 staff survey, developed by Dr Jane Munro, Lisa Takacs, RN & Jamie Betts, RN.

Reference: Benner, P. (1984). From novice to expert: Excellence and power in clinical nursing practice. Menlo Park: Addison-Wesley, pp. 13-34.

1. Demographics

1. What is your age? 2. What is your gender? Male Female

3. How many years have you worked with children?

4. What is your current position at SCH?

- | | | |
|---|--|--|
| <input type="radio"/> Registered Nurse | <input type="radio"/> Pathology Staff | <input type="radio"/> Dietician |
| <input type="radio"/> Enrolled Nurse | <input type="radio"/> Physiotherapist | <input type="radio"/> Orthotist |
| <input type="radio"/> NUM | <input type="radio"/> Occupational Therapist | <input type="radio"/> Doctor: JRMO |
| <input type="radio"/> Nurse Educator | <input type="radio"/> Nuclear Medicine | <input type="radio"/> Doctor: SRMO |
| <input type="radio"/> CNS | <input type="radio"/> Radiology | <input type="radio"/> Doctor: Registrar |
| <input type="radio"/> CNC | <input type="radio"/> Play Therapist | <input type="radio"/> Doctor: Fellow |
| <input type="radio"/> Casual Pool | <input type="radio"/> Speech Therapist | <input type="radio"/> Doctor: Consultant |
| <input type="radio"/> Other (please specify): _____ | | |

5. If any, what ward(s) or team(s) are you currently attached to?

- | | | | |
|----------------------------------|--|---|---|
| <input type="checkbox"/> C1North | <input type="checkbox"/> C2West | <input type="checkbox"/> Outpatients Department | <input type="checkbox"/> Play Therapy |
| <input type="checkbox"/> C1East | <input type="checkbox"/> C3North | <input type="checkbox"/> Emergency Department | <input type="checkbox"/> Physiotherapy |
| <input type="checkbox"/> C1South | <input type="checkbox"/> C3South | <input type="checkbox"/> SEALS | <input type="checkbox"/> Dietetics |
| <input type="checkbox"/> C1West | <input type="checkbox"/> C3West | <input type="checkbox"/> Radiology | <input type="checkbox"/> Speech therapy |
| <input type="checkbox"/> C2North | <input type="checkbox"/> Recovery | <input type="checkbox"/> Nuclear Medicine | <input type="checkbox"/> Orthotics |
| <input type="checkbox"/> C2South | <input type="checkbox"/> Other (please specify): _____ | | |

6. Do you perform or assist with procedures on children?

- Yes If YES, please continue.
- No If NO, please finish the survey here, and return via internal mail (see last page for address).

2. Procedures you Perform or Assist With

1. Thinking of the past 3 months, on average how many procedures have you performed or assisted with PER WEEK?

- 1-5 per week
 6-10 per week
 11-20 per week
 > 20 per week

2. Over the past 3 months, what strategies have you used to help manage pain and distress during procedures? Choose all that apply.

- | | |
|--|--|
| <input type="checkbox"/> Cuddling/touch/massage | <input type="checkbox"/> Local anaesthetic injection |
| <input type="checkbox"/> Heat or cold | <input type="checkbox"/> Midazolam |
| <input type="checkbox"/> Distraction/play (e.g. talking, thinking of something else, reading or telling a story, counting) | <input type="checkbox"/> Chloral hydrate |
| <input type="checkbox"/> Dummy/swaddling | <input type="checkbox"/> Nitrous oxide |
| <input type="checkbox"/> Music/DVD/TV | <input type="checkbox"/> Opioid analgesia (e.g. morphine) |
| <input type="checkbox"/> Relaxation/breathing/bubbles | <input type="checkbox"/> Ketamine |
| <input type="checkbox"/> Topical local anaesthetic | <input type="checkbox"/> Oral analgesia (e.g. NSAIDs, paracetamol) |
| <input type="checkbox"/> Sucrose | <input type="checkbox"/> General anaesthetic |
| <input type="checkbox"/> Other (please specify): _____ | <input type="checkbox"/> None of the above |

3. Thinking of the past 3 months, which of the following procedures do you perform or assist with most often? Please rank from 1-3 where 1 is the procedure you perform or assist with most often. Please choose only three.

Procedure	Rank	Procedure	Rank
Intramuscular injections	_____	Fracture manipulation	_____
Central venous port access	_____	Foreign body removal	_____
Venepuncture	_____	Burns/other wound dressings	_____
Intravenous cannulation	_____	Lumbar puncture	_____
Nasogastric tube insertion	_____	Radiological imaging (X-ray/CT/MRI)	_____
Chest tube insertion/removal	_____	Respiratory therapy	_____
Urethral catheterisation/MCU	_____	Nuclear medicine scans (DMSA/MAGIII/Spec scan)	_____
Laceration repair	_____	Casting/splinting	_____
Rehabilitation	_____	Other: _____	_____

4. For the procedure that you perform/assist with most often (number 1 above), choose below the approaches that you would normally consider using. (Choose all that apply).

- | | | |
|---|--|--|
| <input type="checkbox"/> EMLA Cream | <input type="checkbox"/> General anaesthetic | <input type="checkbox"/> Guided imagery |
| <input type="checkbox"/> Sucrose in neonates | <input type="checkbox"/> Cuddling/touch/massage | <input type="checkbox"/> Play therapist |
| <input type="checkbox"/> Local anaesthetic | <input type="checkbox"/> Distraction | <input type="checkbox"/> Parent and child education prior to procedure |
| <input type="checkbox"/> Comfort positioning | <input type="checkbox"/> Music/DVDs/TV | <input type="checkbox"/> Dummy/swaddling in a baby/infant |
| <input type="checkbox"/> Sedation (e.g. midazolam, chloral hydrate) | <input type="checkbox"/> Pain medication (eg: intranasal fentanyl/paracetamol/oxycodone) | <input type="checkbox"/> None of the above |
| <input type="checkbox"/> Sedation (nitrous oxide) | <input type="checkbox"/> Relaxation/breathing/bubbles | |
| <input type="checkbox"/> Other (please specify): _____ | | |

3. Training

1. Please rate the education or training you have received at SCH

	None	Not enough	Enough	More than enough	N/A
Procedural sedation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pharmacological strategies for managing procedural pain and distress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-pharmacological strategies for managing procedural pain and distress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. How important do you think it is that you receive (more) education and training in managing pain and distress during procedures?

Not important
 Somewhat important
 Important
 Very Important
 N/A

3. During procedures, how competent do you feel in:

	Not competent	Novice	Competent	Proficient	Expert	N/A
Managing children's pain and distress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using distraction techniques and non-pharmacological measures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Managing needle phobia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Managing children's anxiety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preparing children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preparing parents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your technical skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using sedation agents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using nitrous oxide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. How much of a priority is it for you to receive more education and training in the following areas:

	Not important	Somewhat important	Important	Very important	N/A
Procedural sedation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pharmacological strategies for managing procedural pain and distress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-pharmacological strategies for managing procedural pain and distress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Current practice in your area

1. Regarding current practice in your area

	Never	Not often	Sometimes	Often	Always	N/A
I ensure parents understand their child's procedure prior to commencing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I routinely teach parents how to play an active and helpful role during procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I teach children coping skills for procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Equipment is prepared before the child enters the room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Children are well prepared before procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use pharmacological strategies to reduce children's pain/discomfort during procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use non-pharmacological strategies to reduce children's pain/discomfort during procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Children are routinely restrained for procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When a child has sedation I use a sedation score to record their sedation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use a written procedural pain management plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get concerned/distressed by children's responses during procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get concerned/distressed by parent responses during procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find performing or assisting with procedures on children stressful/distressing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I contact a play therapist for assistance prior to a procedure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consult the pain team prior to a procedure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Regarding current practice in your area

	Strongly disagree	Disagree	Neither	Agree	Strongly agree	N/A
Time constraints prevent me from managing procedural pain and distress optimally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parents should be encouraged to attend their child's procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play therapists are available to assist with procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is better for children to learn to cope with pain and distress during procedures rather than rely on drugs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-pharmacological strategies are used routinely for procedural pain and distress management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In my area procedures are routinely performed in the treatment room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable asking for help to manage a child's pain and distress during procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Written procedural pain management plans are useful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Compared with 3 years ago, my area is better at managing procedural pain and distress in children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Compared with 3 years ago, SCH is better at managing pain and distress in children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Overall, please rate how well you think procedural pain and distress is managed in your area?

- Very poorly
 Poorly
 Don't know
 Well
 Very well

4. Any other comments?

5. Thank you!

Your views and experiences with the management of procedural pain and distress in children are important and we would love to hear more about them.

As part of this project we will be also holding a small number of **Staff Focus Groups**. These will provide a great opportunity for you to share your perspectives and ideas on how we can improve our management of procedures, to benefit children, parents and you.

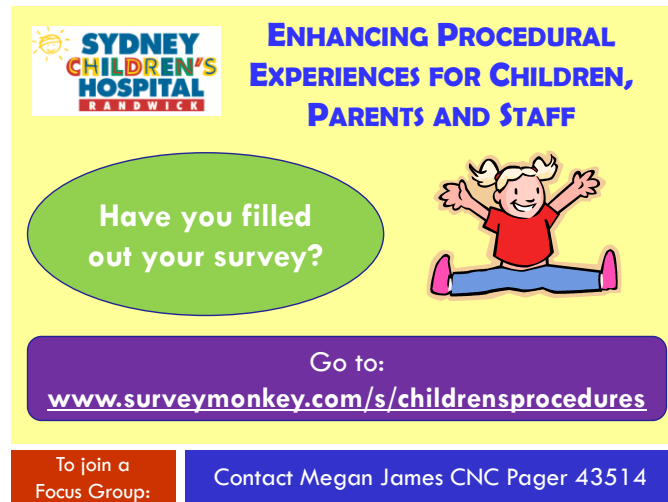
To register your interest, please contact Megan James at Megan.James@sesiahs.nsw.gov.au or Page #43514

Please return this survey via internal mail to:

**MEGAN JAMES – CNC Pain Management
Level 1 Campus Centre
Dept of Anaesthetics and Pain Medicine
Sydney Children’s Hospital**

Thank you for your time!


APPENDIX 2: PROMOTIONAL MATERIAL



SYDNEY CHILDREN'S HOSPITAL RANDWICK

ENHANCING PROCEDURAL EXPERIENCES FOR CHILDREN, PARENTS AND STAFF

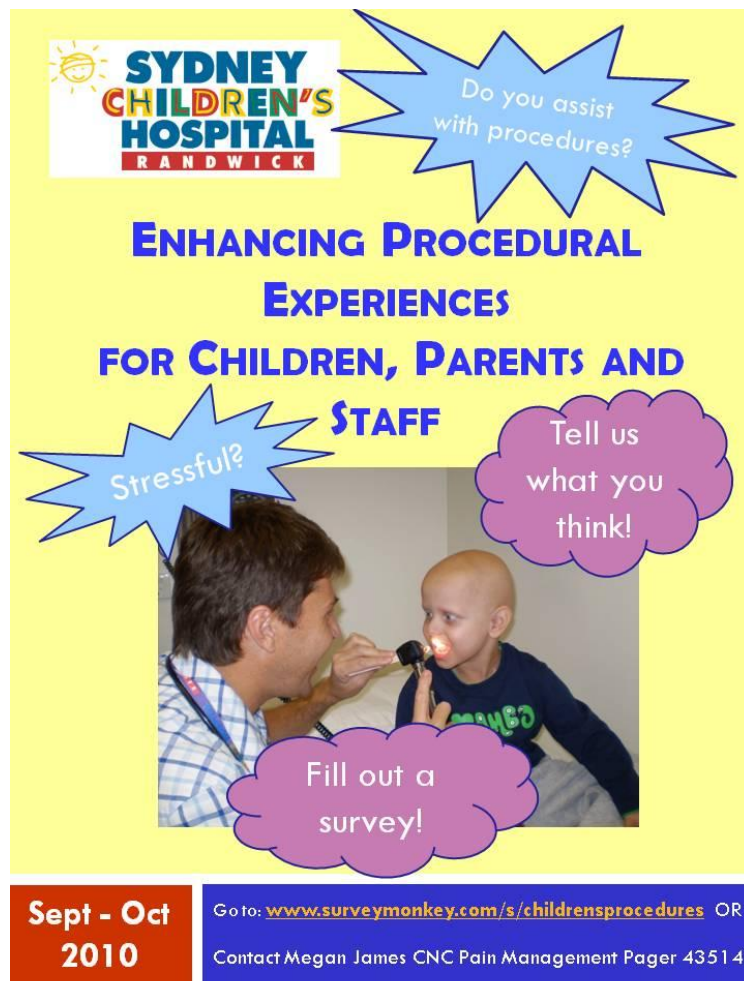
Have you filled out your survey?



Go to:
www.surveymonkey.com/s/childrensprocedures

To join a Focus Group: Contact Megan James CNC Pager 43514

Flyer distributed to staff and attached to ward computers




SYDNEY CHILDREN'S HOSPITAL RANDWICK

Do you assist with procedures?

ENHANCING PROCEDURAL EXPERIENCES FOR CHILDREN, PARENTS AND STAFF

Stressful?

Tell us what you think!



Fill out a survey!

Sept - Oct 2010

Go to: www.surveymonkey.com/s/childrensprocedures OR Contact Megan James CNC Pain Management Pager 43514

POSTER PLACED AROUND HOSPITAL AND IN WARDS

APPENDIX 3: CONFERENCE POSTER

ENHANCING PROCEDURAL EXPERIENCES FOR CHILDREN, PARENTS AND STAFF AT SCH



Background

- In this study a "procedure" is defined as: "any clinical intervention that may be potentially painful, or cause distress or anxiety". This includes medical imaging, physiotherapy, invasive and diagnostic procedures. (RCH Melbourne Procedural Pain Management Clinical Guidelines, 2008).
- Although procedures are the main-stay of paediatric clinical care in hospitals, procedural pain and distress remains under-treated in hospitalised children (Dowden, McCarthy and Chalkiadis, 2008).
- This can have detrimental effects on the child such as increased anxiety and pain perception in subsequent procedures; damaged relationships with health-care providers and diminished compliance with medical advice (WHO, 1998).
- Attitudes, values and beliefs of society, family members and health care professionals, along with current practices within hospitals create barriers to optimum procedural pain and distress management (RACP, 2005).

Learning Objectives

AIM

To evaluate the current quality of pain and distress management for children having procedures at Sydney Children's Hospital.

RESEARCH OBJECTIVES

- To identify current practices, knowledge and perspectives of staff members that perform or assist with procedures on children.
- To identify barriers to evidence-based best practice in pain and distress management.
- To develop recommendations to enhance the procedural experiences for children, parents and staff.
- To develop quality improvement projects for ongoing evaluation.

Materials & Methods

All staff at SCH who are directly involved with children having procedures were invited to participate in:

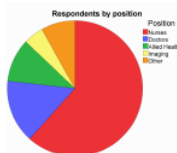
- A short online/hard-copy survey – developed using Survey Monkey™
- One of three 1-hour focus groups based on the "Claims Concerns Issues" process (Guba & Lincoln, 1989)

- Data were collected over a four-week period.
- Qualitative data were analysed using Pope's 5-stage thematic analysis (Pope, 2000).
- Quantitative data were analysed using PASW Statistics version 18.

Results

SURVEYS

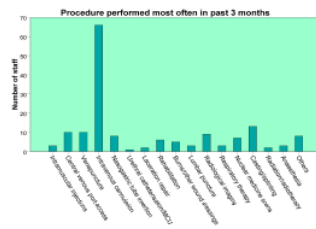
Demographics



- 271 surveys included in data analysis
- Average age = 35.31
- Average years working with children = 13.88
- 88.8% female and 11.1% male

Results

Types of procedures



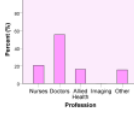
Strategies Used to Manage Distress



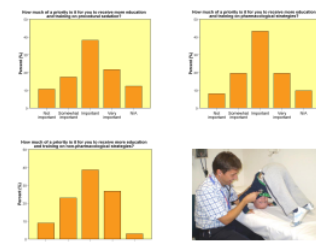
Staff use of counselling/psychology by profession



Staff use of nitrous oxide by profession



Education and Training



Results

FOCUS GROUPS

Major themes identified as areas for improvement:

- Access to play therapy & distraction resources
- Education in non-pharmacological approaches
- Nitrous oxide availability, education and training
- Time constraints
- Preparation for child, family and staff
- Variability in methods between wards



Recommendations

- Hospital-wide procedural pain and distress management workshops to empower staff in advocating for patients and families during procedures.
- Further engagement of staff in empowering parents and children during procedures through preparation and education.
- Age-appropriate distraction resources made available to all staff.
- Increase availability and use of nitrous oxide for procedural pain and distress management throughout the hospital.
- Engage staff in a cultural shift where preparation, planning and a family-centred approach are the "norm."

Future Directions

This study has given staff from all areas opportunities to reflect on practice, attitudes and beliefs, raised awareness of barriers to quality care and engaged staff in improving procedural pain and distress management.

Future Projects

- Perspectives of children and parents around procedural experiences will be captured through a child/parent survey to deepen our understanding of service needs and areas of improvement.
- Details of staff practices will be gathered through the use of observational audits of procedures occurring throughout the hospital.
- Strategies will be developed and implemented to meet identified needs.
- Ongoing evaluation service performance is necessary to ensure quality improvement.

References

Doerden, S., McCarthy, M. & Chalkiadis, G. 2008. Achieving organizational change in paediatric pain management. *Pain Research Management*, 13(4), 321-326.

Guba, E.G. & Lincoln, Y.S. 1989. *Fourth Generation Evaluation*. Newbury Park, Sage.

Guideline Statement: *Management of Procedure-related Pain in Children and Adolescents*. 2005. The Royal Australasian College of Physicians, Sydney.

Pope, C. 2000. "Qualitative research in healthcare: Analysing qualitative data." *British Medical Journal*, 320(7227), 114-116.

World Health Organization (WHO). 1998. *Cancer pain relief and palliative care in children*. Geneva.

Royal Children's Hospital Melbourne Procedural Pain Management Clinical Guidelines, 2008.

Acknowledgements

- Jacqui Crisp RN PhD Professor of Child and Adolescent Nursing, Practice Development Unit SCH
- Wen Qiu PhD, Pain Research Unit, SCH
- Lisa Treloar, RN, Dr Jane Munro & Jamie Betts, RN Royal Children's Hospital Melbourne, 2007
- Staff at Sydney Children's Hospital for their participation and support

Presented at Women's Hospitals Australasia & Children's Hospitals Australasia Annual Conference

2010, 8-10 November, Hilton on the Park, Melbourne, Australia