

A Course on Acute Pain Management for Nurses: An Endeavour to Improve Acute Pain Relief in a Developing Country

Aliya Ahmed[1], Robyna Khan[2], Muhammad Yasir[3], Sarfraz Siddiqui[4], Shemila Abbasi[5], Vaiz Asad[6], Rozina Kerai[7], Riffat Aamir[8], Gauhar Afshan[9]

Corresponding author: Dr Aliya Ahmed aliya.ahmed@aku.edu

Institution: 1. Aga Khan University, 2. Aga Khan University, 3. Aga Khan University, 4. Aga Khan University, 5. Aga Khan University, 6. Aga Khan University, 7. Aga Khan University, 8. Aga Khan University, 9. Aga Khan University

Categories: Medical Education (General)

Received: 10/06/2016

Published: 14/06/2016

Abstract

Introduction: Inadequate acute pain relief is a significant healthcare problem. In developing countries acute pain services are still few in number, mainly due to insufficient resources. Adequately trained nurses can play a pivotal role in provision of pain management services.

Method: A 5-day course was conducted for 30 nurses involved in care of surgical patients at six tertiary care hospitals as a first step towards development of anaesthesia-supervised nurse-based acute pain services in the participating hospitals. Teaching methodologies included lectures, problem-based discussions, workshops, and practicums. Pre and post-tests were conducted. A telephonic interview of the participants was conducted one year after the course.

Results: The overall rating given to the course was 4.35 on the scale of 5. All nurses affirmed that they experienced a change in their practice after attending the course. Pain assessment is now performed routinely by them while recording vital signs and they are able to assess and manage side effects of pain medication in a more effective manner. All participants are involved in informal teaching of their peers.

Conclusion: Similar courses need to be conducted on a regular basis to strengthen the workforce and improve the effectiveness of acute pain management in developing countries.

Keywords: Acute pain management, pain education, Pain service, Nurse education

Introduction

Inadequate acute pain relief is a well-documented healthcare problem despite extensive research on pain management in recent years (Haller, Agoritsas, Luthy, Piguët, Griesser, & Perneger, 2011). Commonly cited reasons include, besides many others, inadequate staff training, knowledge deficits, poor pain assessment, fear of analgesic side effects, and lack of accountability (Sinatra, 2011; White & Kehlet, 2010).

Importance of effective pain relief has long been realized and acute pain services (APS) have been established in most major healthcare facilities. However, in developing countries such services are still few in number, mainly due to insufficient resources. The authors' institution is one of the pioneers in setting up formal APS in the country. During a recent national anaesthesiology conference, the APS team conducted a survey to assess the availability of formal APS in teaching / tertiary care hospitals of the country and found that such services are yet to be established in many major tertiary care hospitals. Moreover, there is a marked scarcity of qualified anaesthesiologists in the country. The authors believe that, in the current situation, registered nurses can play a pivotal role in provision of effective acute pain services. Nurses are important members of APS at our University Hospital. They perform daily rounds with an anaesthesiology resident and a consultant and are the first responders to acute pain management related issues on the wards. There are five designated pain nurses who are trained in assessment and management of acute pain and regular refresher courses are organized for upgrading their knowledge. Furthermore, they are routinely involved in formal and informal education of nursing staff from surgical wards of our tertiary care hospital.

During the four-year training of registered nurses at local nursing schools, 'pain' has traditionally constituted a very small fraction of the curriculum, comprising of two one-hour sessions on 'introduction to pain' during the first year of training, which include description of pain pathways and methods of pain assessment and management. The authors believe that education plays a vital role in improving the quality of health care delivery with a positive impact on policies, practices and procedures. Therefore a course was designed to train registered nurses currently working in surgical wards of tertiary care centers / teaching hospitals of three major cities of Pakistan. This educational endeavor was undertaken in the hope of seeing a discernible improvement in the assessment and management of acute pain following surgery and trauma in these centers and was meant to be the first step towards the development of anaesthesia-supervised nurse-based acute pain services in the participating hospitals. Nurses are now recognized as integral members of APS worldwide, with many centres running nurse-led APS (Shapiro, Zohar, Kantor, Memrod, & Fredman, 2004). A review of literature by Courtenay & Carey (2008) has shown that acute pain teams led by nurses are cost effective and can reduce the intensity of pain. A nurse-led pain service has been recommended as a more appropriate model in resource-limited countries (Shapiro et al., 2004). Stadler, Schlander, Braeckman, Nguyen, & Boogaerts (2004) have reported that a nurse-led pain management model is overall cost effective as it improves pain and decreases morbidity. Such a model would therefore be suitable for our resource limited setting.

The main responsibilities of nurses associated with acute pain teams include assessment, monitoring and evaluation of pain (Musclow, Sawhney, & Watt-Watson, 2002; Pellino, Willens, Polomano, & Heye, 2002). Education of patients and staff is another activity in which these nurses are involved (Courtenay & Carey 2008). Both Musclow et al. (2002) and Pellino et al. (2002) reported that interdisciplinary collaboration and communication were important responsibilities of nurses working in acute and chronic pain teams. Other roles of nurses working in pain management that have been identified include influence on medical decision making regarding pain management and acting as advocates for patients (Holley, Mcmillan, Hagan, Palacios, & Rosenberg, 2005; Soderhamn & Idvall,

2003). Education has been identified as one of the major roles of pain resource nurses (Courtenay & Carey, 2008). Thus, our aim was to train five nurses from each of the six participating hospitals, who would then take an active part in educating their peers.

Methods

A 5-day educational course was designed for nurses involved in the care of post-operative surgical patients from six major tertiary care hospitals of Sindh, the southern province of Pakistan. The course was designed and facilitated by pain specialists and pain nurses.

Design of the Course

A course organizing committee was formulated comprising of six pain consultants and two pain nurses, all belonging to the anaesthesiology department. This committee delineated the specific objectives of the course and, after detailed discussion, deliberation and thorough literature review, planned the course curriculum to achieve these objectives. All the participating faculty members had vast experience of teaching undergraduate and postgraduate medical and nursing students within the university.

Objectives of the course were that by the end of the course, the participants would be able to:

- Demonstrate an understanding of the anatomy, physiology, pathophysiology and pharmacology of acute pain
- Describe methods of pain assessment in patients of different age groups
- Display common methods of pain assessment in role-play
- Describe various pain management modalities
- Describe various interventions for postoperative pain management
- Describe the care of patients receiving epidural analgesia
- Describe the care of patients receiving intravenous patient controlled analgesia
- Enumerate the complications of the interventions for postoperative pain management
- Describe the management of these complications
- Define the hurdles in setting up acute pain management services at their respective centers and devise a plan to overcome these hurdles

Course Curriculum

The curricular content was sub-divided into 4 modules and was delivered over five days. Each module consisted of 10 contact hours and was coordinated and supervised by one of the co-authors, while all authors were involved in delivery of the curriculum during each of the four modules. The topics covered in the modules are provided in table 1.

Teaching methodologies included didactic lectures, small-group tutorials, problem based interactive sessions using case scenarios, hands-on workshops using manikins and simulated patients, videos and a daily 2 hour practicum. Pre and post-tests comprising of multiple choice questions (MCQ) were developed for the course. For course evaluation, a structured form was developed to obtain formal written feedback from the participants. At the end of the course, an informal session was arranged with the participants to seek verbal feedback. The module coordinators were responsible for making detailed programme for their respective module, allocating topics to the faculty, ensuring the delivery of the curriculum according to course objectives and compiling a detailed report of their module. The

course was approved by the Department of Continuing Professional Education (DCPE) for certification for 30 credit hours.

Conduct of the Course

The targeted population included nurses from six leading teaching hospitals of the province. The chairs of anaesthesiology / medical directors of the selected hospitals were requested to nominate five nurses working in surgical wards and having at least two years of postgraduate experience.

A pretest comprising of 30 true / false multiple choice questions was administered at the beginning of the course. It was meant for self-assessment of the participants' baseline knowledge. The didactic component of the course was conducted in a lecture hall setting. For the practicums students were divided into groups of four, which were supervised by a nurse from the acute pain service. These were two-hour sessions spread over four days involving various group activities. During practicums, nurses learned the daily work routines of acute pain nurses including patient hand-over process in post-anaesthesia care units (PACU), conducting ward rounds, reporting critical incidents, responding to APS calls from different locations in the hospital and providing prescribed pain relief measures. Participants were also taught methods of acute pain assessment, recognition of opioid side effects and trouble shooting of interventional procedures. The course also included a workshop on care of patients receiving acute pain management by various modalities, such as epidural infusions, intravenous patient controlled analgesia (IV-PCA), peripheral nerve blocks, etc. A session on critical incident reporting emphasized the need for vigilance to identify medical errors and formal reporting of incidents for quality assurance to prevent their repeated occurrence. Another session was held on documentation and collection of data for audits and satisfaction surveys.

Post-test was conducted at the end of the course and consisted of the same questions that were asked in the pre-test so that participants could judge the improvement in their knowledge. The participants were requested to provide formal course feedback on a structured form (Table 2). They were further asked to give anonymous written comments on the major strengths and weaknesses of the course. After completion of the course, hard copies of 10-point numeric rating scale and faces pain scale were provided to all participants and they were requested to initiate regular pain assessment of all patients at the time of recording other vital signs. Consent was obtained for a telephonic survey one year after the course. The chairmen of anaesthesiology departments of the respective hospitals were requested through emails and telephonic conversations to encourage these nurses to carry out pain assessment routinely for postoperative patients and to formulate a system for supervision of the process.

One of the authors conducted a short telephonic interview of the course participants one year after the course. Following questions were asked:

- What work are the participating nurses currently involved in?
- Have their acute pain assessment / management practices changed? (If the answer was yes, they were asked to describe the change)
- Have they been involved in any educational activity for teaching their peers in acute pain assessment and management?

Table 1: Nurse based acute pain management: course curriculum and teaching modalities employed. A 2-hour practicum was included in all four modules

S No.	Topics	Teaching Modalities
-------	--------	---------------------

	Module I	
1	Anatomy of Pain	Interactive lecture
2	Physiology of Pain	Interactive lecture
3	Pain theory: Basic understanding	Tutorial
4	Pain definitions and IASP* taxonomy	Tutorial & Group work
5	Prevalence of acute unrelieved pain	Tutorial
6	Pathophysiology of acute pain	Tutorial
7	Unrelieved pain; what may happen?	Problem based discussion
8	History of acute pain science	Tutorial
	Module II	
1	Assessment of pain in adults	Interactive lecture
2	Assessment of pain in children	Interactive lecture
3	Diagnosis and evaluation of pain	Group work
4	Interventions to alleviate pain	Hands on workshop
5	Documentation	Tutorial
6	Pain and clinical care	Group Discussion
7	Research ethics in pain research	Tutorial
8	<ul style="list-style-type: none"> • IASP ethics guidelines • Medical error 	Group Discussion
9	Legal issues in pain management in Pakistan	Tutorial

	Module III	
1	Need for acute pain management	Interactive session
2	Pharmacological treatment of acute pain	Tutorial
3	Multimodal Analgesia for Postoperative Pain	Tutorial
4	Epidural Analgesia	Video based discussion
5	Intravenous Analgesia: PCA [†] and infusion	Tutorial
6	Care of patients with nerve blocks	Tutorial
7	Pain management with limited resources	Clinical scenarios
	Module IV	

1	Managing acute on Chronic pain	Scenario-based session
2	Setup of Nurse-based clinical pain service	Workshop
3	Setup of pain service in your own hospital	Group Activity
4	Hurdles in establishing pain management services	Lecture
5	How to overcome the hurdles?	Interactive session
6	Wrap up session / Feedback (written and oral)	

* IASP: International Association for the Study of Pain

† PCA: Patient controlled analgesia

<p>Table 2: Course Evaluation Form Course on Acute Pain Management Instructions: Please encircle one option for each statement. 1-Unsatisfactory 2-Fair 3-Good 4-Excellent 5-Outstanding</p>		
•	The course met its stated objectives	1 2 3 4 5
•	The course content was relevant to role of nurses in pain management practice	1 2 3 4 5
•	Content was at my level of understanding	1 2 3 4 5

•	Important points were emphasized	1 2 3 4 5
•	The course content extended/refreshed my knowledge	1 2 3 4 5
•	The audiovisual and other course materials were appropriate	1 2 3 4 5
•	interactive discussions were useful in enhancing my knowledge	1 2 3 4 5
•	Workshops were useful in enhancing my skills and knowledge	1 2 3 4 5
•	The facilitators were helpful, knowledgeable and encouraged participation	1 2 3 4 5
•	I would like to attend such courses in future	Yes No
•	Would this course change my practice?	Yes No
•	Timing of the Course was Too Short Appropriate Too Long	

Results

During the five days of the course, seven anaesthesiology faculty members and two pain nurses delivered the curricular content over 40 hours of contact sessions. The participants provided formal course feedback on a structured form (Table 2). The overall rating given to the course was 4.35 on a scale of 5. Twenty-nine of the 30 nurses stated that they would like to attend similar courses in future, 26 claimed that their practice would change as a result of the course and all participants agreed that the course content helped to increase their knowledge considerably. Major strengths of the course identified by the participants included the in-depth knowledge gained about anatomy and pathophysiology of acute pain and various pain management modalities, especially epidural, PCA and nerve blocks and the stress laid on the importance of effective pain relief. Only five participants wrote comments about weaknesses of the course. One of these five participants commented that more opportunity for interaction with actual patients should have been provided in the course, while four stated that the duration of the course was too long. All of these four nurses had travelled from other cities for the course and stayed at the hostel for four days. Although formal marking of the pre and post-tests was not performed and the papers were marked by the participants themselves, all nurses reported a marked increase in score in the post-test and were very pleased to see the evidence of increase in their knowledge and this aspect of the course evaluation received an average score of 4.48 on a scale of 5.

Practical Impact

A telephonic survey conducted one year after the course by one of the authors has shown that: turnover rate among the participating nurses has been approximately 40%, with an average of two nurses out of five from each hospital having left the job. The nurses who have left their jobs are all females. Reasons of leaving were either family related including getting married, having children etc., or because of migration abroad. All remaining nurses are working in surgical wards or PACU, except one who is assigned to an oncology ward. All nurses affirmed that they experienced a change in their practice after attending the course. Pain assessment has now become a priority and is as important in their day-to-day work as other vital signs of the patients. Nurses stated that the course helped them correlate side effects of pain medication and assess patients' sedation, nausea and vomiting in a better way. Although none of the nurses had been involved in formal teaching of their peers, most are involved in informal coaching of their peers during duty hours, mainly on request of the ward head nurses. In addition, informal feedback from anaesthesiology department chairmen of the six hospitals also revealed that participating nurses have taken up the responsibility of routine assessment of pain and analgesia related side effects in their respective wards and supervise and guide junior nurses in this task.

Discussion

Inadequate pain management has been a prevalent problem in our country. Nurses constitute an essential part of acute pain management teams worldwide. They need targeted education to develop the professional ability of safe and effective pain management. The current course was conducted for the training of nurses involved in the care of patients suffering from acute pain. It was hoped that these nurses would act as resource and support for other nurses, participate in the education of ward nurses and so improve pain management in their respective hospitals. Mac Lellan (2004) reported that education of ward staff by trained nurses resulted in an improved assessment, management and documentation of pain.

The high rating provided to the course by the participants is very encouraging. We foresee that the knowledge imparted during the course will be useful in improving pain relief in surgical patients, trauma victims and patients with acute pain related to other causes. Musclow et al. (2002) studied the role of advanced nursing practice in acute pain management in Canada. They report that the main clinical tasks of nurses with specific acute pain management responsibilities included daily rounds either independently or in collaboration with anaesthesiologists, to assess pain, monitor pain management and analgesic use, identify and manage adverse effects of analgesic modalities and modify management if required. Their work also included ensuring usage and accuracy of analgesic administration devices. Our curriculum covered all these aspects of acute pain management and our main aim in conducting this course was to train a selected number of nurses in all these areas, who would then train other staff nurses of their respective hospitals and be the resource persons in future establishment of APS in their hospitals. As stated by Musclow et al. (2002), registered nurses practicing in the specialty of acute pain management have mainly developed their expertise through short courses, experience and literature reviews, it is hoped that this cohort of nurses would progress in a similar manner.

James (2014) and Musclow et al. (2002) have identified education of staff and patients as an important responsibility of pain nurses. The authors stressed during the course that the participants should take up the responsibility of training their peers, thus increasing work force in the presently neglected area of formal acute pain management through cascade method of spreading education. Cooperation and assistance of relevant departments (anaesthesiology and surgery) and institutional administration are imperative in this regard and the authors plan to continue their efforts at other levels of hierarchy. Mackintosh & Bowles (1997) have reported a positive influence on pain management practice with the introduction of a nurse specialist in APS. Rawal (1999) has stated that specialized pain nurses bridge the gap between doctors and ward nurses, provide pain education to patients and staff

and help in improving and monitoring pain management. With our basic certificate course for nurses we have taken an initial step towards achieving these goals. The weaknesses identified by a small number of participants would easily be overcome by conducting the courses in participants' own city and hospital where they will be less bothered by the course-duration and will have a greater opportunity of interaction with actual patients.

We plan to continue following the progress of course attendees and conduct similar courses in future for other cohorts of nurses. Unfortunately, there is a high turnover of nurses in our country, mainly due to opportunities of lucrative jobs abroad. As such, 40% of participants of our course have already left their jobs. Furthermore, the overall number of available nursing staff is insufficient in local hospitals, with the usual nurse-to-patient ratio being 1:10 on surgical wards and 1:5 in special-care units with one allied health professional assisting each nurse. For this reason it is important that there is ongoing peer training to maintain safe and effective pain management practices. The APS team members must take an active role in ensuring ongoing training of ward nurses, especially in the surgical wards. In this regard the results of our telephonic survey conducted one year after the course are very encouraging, as all our attendees currently working are taking part in training of their colleagues.

A limitation of our study is that we did not compare the pre and post-test results, which would have provided an evidence of actual gain in knowledge regarding acute pain management after attending the course. However, 100% of the nurses provided feedback that their test scores were markedly improved in the post-test. The comprehensive and well thought out curriculum and its delivery by experts in the field to nurses involved in relevant areas of patient care are the major strengths of our project. Moreover, the practical experience provided to participants over the five days of the course in the practicum sessions is an additional strength of the course and was much appreciated by the participants. We recommend that similar courses should be conducted on a regular basis in our country and other developing countries in a sincere attempt to improve the quality of acute pain management. Future research should focus on the effectiveness of pain relief and improvement in patient satisfaction and outcome once nurse-led pain services have been initiated in developing countries. Surveys of nurses to evaluate the effect of focused education in pain management on their practices are also recommended.

Conclusion

Inadequate acute pain relief is a significant healthcare problem. Nurses constitute an essential part of acute pain management teams worldwide. Acute pain services are not well-established even in some large tertiary care hospitals of our country. This course was conducted to address this need. The participating nurses are all now routinely involved in assessment and management of acute pain. They are also involved in informal training of their peers. Similar courses need to be conducted on a regular basis to strengthen the workforce and improve the effectiveness of acute pain management in developing countries.

Take Home Messages

- Inadequate acute pain relief is a significant healthcare problem despite extensive research on pain management in recent years
- Nurses are now recognized as integral members of acute pain services worldwide
- This course was conducted to train registered nurses working in surgical wards of tertiary care centers in the hope of seeing a discernible improvement in the assessment and management of acute pain in a developing country
- The participating nurses are all now routinely involved in assessment and management of acute pain. They are

also involved in training of their peers

Notes On Contributors

Dr Aliya Ahmed is Associate Professor in Anaesthesiology at the Aga Khan University (AKU). She received her anaesthesiology training in London, and completed her Masters Degree in Health Professions Education (MHPE) in 2014. She is presently the programme director for anaesthesiology residency training at AKU.

Dr Robyna Khan is Associate Professor of Anaesthesiology at Aga Khan University, Karachi. She completed her Masters in Bioethics from University of Toronto and is presently the director of pain fellowship program at Aga Khan University.

Dr Muhammad Yasir completed his residency in anaesthesiology and fellowship in pain medicine from the Aga Khan University. He is presently working as Riyadh, Saudi Arabia.

Dr Sarfraz Siddiqui works as Assistant Professor in Anaesthesiology at the Aga Khan University, Karachi. His main area of interest is chronic pain and he is presently the coordinator of pain fellowship program at Aga Khan University.

Dr Shemila Abbasi obtained her residency training in anaesthesiology at the Aga Khan University, Karachi and is working here as Assistant Professor. Her area of interest is chronic pain.

Dr Vaiz Asad completed his residency in anaesthesiology and fellowship in pain medicine from the Aga Khan University. He is presently working in United Kingdom.

Ms Rozina Kerai received Diploma in Nursing and completed Bachelor of Science in Nursing (BScN) in 2011 from the Aga Khan University. She presently works as a pain nurse at the Aga Khan University.

Ms Riffat Amir works as a pain nurse at the Aga Khan University, Karachi since 2002. She is actively involved in teaching and training of ward nurses in acute pain management and maintaining data for pain management services.

Dr Gauhar Afshan is Professor of Anaesthesiology at Aga Khan University, Karachi. She is the pioneer in starting pain service at Aga Khan University Hospital and is actively involved in research and education in Pain Medicine.

Acknowledgements

The financial expenses for the conduct of this course were met through successful procurement of International Association for Study of Pain grant for pain education in developing countries.

Bibliography/References

Courtenay M, Carey N. 2008. The impact and effectiveness of nurse-led care in the management of acute and chronic pain: a review of the literature. *J Clin Nurs* 17:2001-2013.

<http://dx.doi.org/10.1111/j.1365-2702.2008.02361.x>

Haller G, Agoritsas T, Luthy C, Piguet V, Griesser AC, Perneger T. 2011. Collaborative quality improvement to manage pain in acute care hospitals. *Pain Med* 12:138-147.
<http://dx.doi.org/10.1111/j.1526-4637.2010.01020.x>

Holley S, Mcmillan SC, Hagan SJ, Palacios P, Rosenberg D. 2003. Pain resource nurses: believing the patients, and believing in themselves. *Oncol Nurs Forum*. 843-848.

James DN. 2014. Guidelines for the provision of anaesthetic services: Anaesthesia services for acute pain management. Retrieved April 13, 2015, from:
https://www.rcoa.ac.uk/system/files/GPAS-2014-11-ACUTEPAIN_0.pdf.

Mac Lellan K. 2004. Postoperative pain: strategy for improving patient experiences. *J Adv Nurs* 46:179-185.
<http://dx.doi.org/10.1111/j.1365-2648.2003.02977.x>

Mackintosh C, Bowles S. 1997. Evaluation of a nurse-led acute pain service. Can clinical nurse specialists make a difference? *J Adv Nurs* 25:30-37.
<http://dx.doi.org/10.1046/j.1365-2648.1997.1997025030.x>

Musclow SL, Sawhney M, Watt-Watson J. 2002. The emerging role of advanced nursing practice in acute pain management throughout Canada. *Clin Nurse Spec* 16:63-67.
<http://dx.doi.org/10.1097/00002800-200203000-00005>

Pellino TA, Willens J, Polomano RC, Heye M. 2002. The American Society of Pain Management Nurses practice analysis: role delineation study. *Pain Manag Nurs* 3:2-15.
<http://dx.doi.org/10.1053/jpmn.2002.29013>

Rawal N. 1999. 10 years of acute pain services—achievements and challenges. *Reg. Anesth Pain Med* 24:68-73.
[http://dx.doi.org/10.1016/S1098-7339\(99\)90168-2](http://dx.doi.org/10.1016/S1098-7339(99)90168-2)

Shapiro A, Zohar E, Kantor M, Memrod J, Fredman B. 2004. Establishing a nurse-based, anesthesiologist-supervised inpatient acute pain service: experience of 4,617 patients. *J Clin Anesth* 16:415-420.
<http://dx.doi.org/10.1016/j.jclinane.2003.11.002>

Sinatra R. 2010. Causes and consequences of inadequate management of acute pain. *Pain Med* 11:1859-1871.
<http://dx.doi.org/10.1111/j.1526-4637.2010.00983.x>

Soderhamn O, Idvall E. 2003. Nurses' influence on quality of care in postoperative pain management: a phenomenological study. *Int J Nurs Pract* 9:26-32.
<http://dx.doi.org/10.1046/j.1440-172X.2003.00399.x>

Stadler M, Schlander M, Braeckman M, Nguyen T, Boogaerts JG. 2004. A cost-utility and cost-effectiveness analysis of an acute pain service. *J Clin Anesth* 16:159-167.
<http://dx.doi.org/10.1016/j.jclinane.2003.06.002>

White PF, Kehlet H. 2010. Improving postoperative pain management: what are the unresolved issues? *Anesthesiology* 112:220-225.

Appendices

Declaration of Interest

The author has declared that there are no conflicts of interest.