

# Awareness Of Postoperative Pain Management Among Hospital Staff At A Tertiary Care University Hospital

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## Abstract

**Background and Objectives:** The Acute Pain Management Service at Aga Khan University Hospital, endeavors to disseminate knowledge and education among hospital staff in this increasingly recognized area of postoperative patient care.

The objective of this survey was to assess knowledge and attitude about postoperative pain management among hospital staff, directly involved in the care of surgical patients.

**Method:** This was a Cross Sectional Survey. Seventy questionnaires were distributed by a member of acute pain management service; 19 nurses and 36 surgeons filled the questionnaire giving a response rate of 78.5%. The questionnaire contained 21 closed ended questions with either Yes/No/ Don't Know or True/ False response.

**Results:** The Correct responses to most of the questions testing the knowledge about pain management were in the range between 40-50% for both nursing staff and surgeons. The Correct responses to questions testing the knowledge about pain management service were 60-65%. These areas included delayed recovery and side effects with inadequate pain relief, concept of pain management as a team responsibility, effective techniques for post-operative pain management, multi-modal analgesia, treating pain with medications that act by different mechanisms, correct use of patient controlled analgesia , mobilization of patient , complication and use of anticoagulation with epidural.

**Conclusion:** There is significant lack of knowledge in certain areas of post operative pain management among surgeons and nursing staff involved in the care of post operative patients.

## INTRODUCTION

Postoperative pain has been associated with a number of adverse outcomes. It causes increased circulating catecholamines, which result in tachycardia, hypertension and increased cardiac work.<sup>1</sup> Upper abdominal and thoracic surgeries are associated with severe pain leading to depressed diaphragmatic activity.<sup>1</sup> Post operative pain can cause ileus, nausea and vomiting due to autonomic reflex response.<sup>2</sup> Pain can delay mobility<sup>3</sup> in patients after major surgery predisposing them to deep venous thrombosis and pulmonary embolism.<sup>4</sup> Postoperative pain is often undertreated<sup>5</sup> and major factor of fear for surgery.

The Acute Pain Service is a relatively recent innovation, developed to improve the management of postoperative pain.<sup>6</sup> Among the earliest services were those in Seattle<sup>7</sup> and in Kiel.<sup>4</sup> The concept was given impetus in the early 1990s

in the UK by the publication of a joint report by the Royal College of Surgeons and Anaesthetists<sup>8</sup> and in USA by the publication of protocol for the Investment in Health Gain<sup>9</sup> such that 73% of US hospitals had a pain service by 1994<sup>10</sup>.

In recent years, there has been a growing awareness among health care providers, regarding the importance of guaranteeing effective pain management for patients. Lack of knowledge and understanding the mechanism of pain and proper selection of modality of analgesia may affect patient outcome. A Report by the American Society of Anesthesiologists Task Force on Pain Management says that training and experience of hospital personnel like nurses, house-officers, pharmacists, psychologists may be helpful in reduction of risk.[xi] There is strong agreement among the panel of consultants and the Task Force members that such education, training, and experience also contribute to

improved quality of care. This report recommends that anesthesiologists offering peri-operative analgesia services should provide, in collaboration with others as appropriate, ongoing education and training to ensure that hospital personnel are knowledgeable and skilled with regard to the effective and safe use of the available treatment options within the institution. The scope of education should include topics ranging from basic bedside skills for evaluation of acute pain to an understanding of sophisticated pharmacologic techniques e.g., patient controlled analgesia, epidural analgesia, and various regional analgesia techniques and non pharmacologic techniques e.g., relaxation, imagery, hypnotic methods.<sup>7</sup>

Aga Khan University Hospital is pioneer in starting Acute Pain Management Service (APMS) in Pakistan. This Division of Department of Anaesthesiology not only provides coordinated, organized pain management in the peri-operative setting but also endeavors to disseminate knowledge and education among hospital staff in this increasingly recognized area of postoperative patient care. The reason for doing the survey should be added here.

## **METHODOLOGY**

It was a cross sectional survey conducted at the Aga Khan University Hospital, Karachi, which is a tertiary care teaching hospital. Seventy questionnaires were distributed by an APMS member; 19 nurses involved in management of post operative patients and 36 surgeons filled the questionnaire giving a response rate of 78.5%. Nursing staff were either registered nurses (3 years diploma in nursing or 4 years Bachelors in nursing degree) or nursing assistant. Surgeons included surgery consultants, fellows and senior surgical residents. The questionnaire contained 21 closed ended questions with multiple responses. The responder was given written instructions to put a tick in the box in front of the response if they thought the response was correct. A responder could select more than one choice in response to a particular question. All the questions had either one or more correct responses. The responders' knowledge was assessed on the basis of percentages of the correct responses to each question. Questionnaire is given in appendix.

After completion of the study, data was analyzed using SPSS 16. Multi response analysis was used to calculate frequency for each response. Since a responder could select more than one response as correct, the total number of responses was more than the sample size.

## **RESULTS**

Out of 55 respondents, 19 (34.5%) were nursing staff and 36(65.5%) were surgeons. Questions were categorized as those, assessing knowledge about the pain management or pain service and those assessing attitude towards a particular pain medicine or technique. Correct responses are highlighted in the tables for knowledge based questions.

Forty two percent responders believed that inadequate pain relief always delays recovery. Tachycardia, high blood pressure and myocardial infarction were the correct responses to the question on side effects of inadequate pain relief that were selected by 52.7% of the respondents. Only forty percent of the respondents agreed that pain management should be a team responsibility. Important determinants that influence the requirement for pain medicine (type of surgery, weight of patient and inter individual variation) were selected by 92.3% of respondents. Fifty percent respondents were for patient controlled analgesia and epidural as the most satisfactory method of pain relief. Correct pager number for acute pain management service was known to 64.3% of the responders. In response to a question assessing attitude of the respondents regarding mode of administration for pain medicine in the post operative period, only 3.9% responses were, in favour of intramuscular route. The rest preferred intravenous route like boluses, infusion, or PCA; (48.2%) while 21.4% chose the epidural route.

Most (81.6%) respondents selected full agonists (Pethidine, Morphine, Tramadol) and ketorolac as the most effective analgesics in the immediate post operative period. Sedation, respiratory depression, nausea and vomiting were correctly identified as the most common side effects of narcotic medications in the postoperative period by 61.2% of the respondents. Seventy two percent respondents correctly identified sedation, nausea and vomiting as the side effects with patient controlled analgesia (PCA) technique for narcotic administration. Ninety percent of the respondents selected morphine, pethidine and tramadol as the drugs commonly given in PCA while 33.3% of the respondents wrongly chose ketorolac as the drug of choice for PCA. PCA as the one of the most suitable modality for post thoracotomy pain,<sup>12,13</sup> which was selected by 78.2% of the responses. Fifty seven percent of the respondents correctly identified that PCA should be left as it is if patient is not pressing it. Bupivacaine was chosen as the drug most commonly given through epidural catheter by 62.5% of the

## Awareness Of Postoperative Pain Management Among Hospital Staff At A Tertiary Care University Hospital

responses while Xylocain was identified by only 27.8 % . Almost 55% of the responders were of the opinion that patients with epidural should be mobilized if they have no motor block in the lower extremities. Hypotension selected by 49.5% was the correct response among the other responses for possible problems with epidural. Ephedrine was chosen as the drug to treat this complication by 49.1% of the respondents. Alerts to inform the anesthesiologist if systolic blood pressure is less than 90mmHg and/or respiratory rate is less than 10 per minute were correct in 72.4% of the responses. Minimum safe time interval for administration of subcutaneous unfractionated heparin is 2 hours which was the response only 12.7% of the time.

In order to compare the responses from the two groups (Nursing staff and Surgeons), a tabular format was generated as shown in Table 1.

**Table 1a**

Percentages Of Correct Response Of Both Paramedical Staff And Doctors

Questions	Correct responses	Percentage of correct responses		
		Paramedical Staff	Doctors	Combined
Q1 Management of post operative pain should be responsibility of	Team Effort	54.8%	34.7%	40.6%
Q2 Following are the side effects of inadequate pain relief	Tachycardia	30.2%	18.3%	21.2%
	Myocardial Infarction	6.3%	14.2%	12.3%
	High blood pressure	25.4%	17.3%	19.2%
	Nausea and Vomiting	9.5%	10.7%	10.4%
Q3. Patients are more satisfied with which of following method of pain relief	Intramuscular boluses on PRN basis	7.1%	2.6%	4.2%
	Intravenous boluses on Regular boluses	14.3%	19.2%	17.5%
	Intravenous infusion	31.0%	26.9%	28.3%
	PCIA	23.8%	28.2%	26.7%
	Epidural	23.8%	23.1%	23.3%
Q4. Following is/are effective for postoperative pain management according to your assessment and observation	Pethidine	30.9%	34.6%	81.8%
	Tramadol	16.4%	6.2%	25.5%
	Ketorolac	14.5%	16.0%	38.2%
	Morphine	21.8%	23.5%	56.4%
	Nalbuphine	1.8%	4.9%	9.1%
	Distalgesic ( Dextropropoxyphene +Paracetamol )	5.5%	6.2%	14.5%
Q5. Regarding epidural infusion	Diclofenac Suppository	9.1%	8.6%	21.8%
	Respiratory. depression is not a recognized complication	14.3%	32.0%	36.4%
Q6. Common side effects of pain medications is/are	Sedation	24.2%	20.1%	21.5%
	Nausea and Vomiting	25.8%	22.2%	23.4%
	Respiratory Depression	16.7%	16.0%	16.3%
	Constipation	7.6%	9.7%	9.1%
Q7. Inadequate pain control delays post op recovery from surgery	Dependency/Addiction	12.1%	12.5%	12.0%
	Always	31.6%	47.5%	42.4%

**Table 1b**

CONTINUED Percentages Of Correct Response Of Both Paramedical Staff And Doctors

Q8. Which method would you choose for yourself for post operative pain control if you ever undergo surgery	Intramuscular Boluses	3.6%	1.8%	2.4%
	Intravenous Boluses	25.0%	17.9%	20.2%
	Infusion	32.1%	23.2%	26.2%
	PCIA	25.0%	32.1%	29.8%
	Epidural	14.3%	25.0%	21.4%
Q9. Correct pager for APMS	7419	68.4	63.9	64.3%
Q10. Drug requirement for pain control is influenced by following factors	Weight of Patient	33.3%	32.0%	32.4%
	Type Of Surgery	41.0%	32.0%	34.5%
	Inter Individual Variation	17.9%	28.2%	25.4%
Q11. Can patient be mobilized while epidural is in place	Yes	57.9	52.8	54.5
Q12. In case patient is not pressing PCIA button then	It should be left as it is		53.5%	57.8%
	Patient should be encouraged to press		20.9%	25.0%
Q13. Possible problems with Epidurals	Hypotension	49%	50.0%	49.5%
Q14. Possible problems with PCIA	Nausea/Vomiting	25.0%	31.1%	28.7%
Q15. For patients having epidural analgesia, anesthesiologist should be called immediately if	Blood pressure less than 90	34.3%	42.9%	40.0%
	Respiratory rate less than 10	42.9%	27.1%	32.4%
	Motor Score 1/3 (Modified Bromage scale)	22.9%	30.0%	27.6%
Q16. Following drug/s is/are usually given in PCIA	Morphine	34.8%	34.5%	34.6%
	Pethidine	37.0%	36.9%	36.9%
	Tramadol	19.6%	17.9%	18.5%
Q17. Avoid following IV drugs if pain is managed by PCIA	Nalbuphine	1.4%	6.8%	4.9%
	Naloxone	8.6%	12.5%	11.4%
Q18. Which drug/s available at our hospital may be given through epidural catheter	Lidocaine	15.8	34.0%	27.8%
	Bupivacaine	73.7	56.0%	62.5%
Q19. Which patients are suitable for PCIA	Post thoracotomy pain	78.9	77.8	1.8
Q20. What is the safe time interval for administration of s/c Heparin after removal of epidural catheter	2Hours	21.6	19.4	12.7
Q21. Following drug/s should be available to treat complication related to epidurals	Ephedrine	36.8	55.6	49.1

## DISCUSSION

To our knowledge there are few studies to assess knowledge of pain and attitude among medical staff specially among surgeons and very few based on comparison between doctors and paramedical staff.

Some degree of postoperative pain is an expected phenomenon. However, severe pain and side effects attributable to pain-relieving medication affect a substantial

number of patients after surgery. Both the above problems can be minimized by knowledge of available resources, pain medications and side effects associated with each.

Respondent's awareness of an acute pain service within the organization has been seen to be predictive of higher pain knowledge and attitudes score.<sup>14</sup>

Acute pain service was introduced in our hospital in 1999. One of the goals of it other than its prime responsibility to provide coordinated, organized pain management in the peri-operative setting, is to endeavor to disseminate knowledge and education among hospital staff. The purpose of this survey was to observe the level of knowledge and attitude towards pain and its management among hospital staff involved in postoperative patient managements broadly divided in paramedical staff and surgeons, therefore to find areas of weakness in basic understanding and management.

The overall percentage of correct answers was between 40-90 % for different questions (Average 65%). Previous studies have shown somewhat similar average for correct answers.<sup>15,16,17</sup> To be safe and effective, post-operative pain management should be a shared responsibility of patient, nursing staff, surgeon and anesthesiologist, as this reflects different levels of patient care cycle and efforts. In our survey only 40.6% agreed to team work for alleviating patient pain. This is important even with the involvement of acute pain service as primary physicians and nurses are the one who may first assess and encounter patients pain fluctuation with relation to its characteristics and progress in his or her disease. Allison points out importance of team response while discussing challenges for postoperative pain management. He stresses on surgical teams to fully and accurately assess the patient's pain to ensure that no complications have arisen in postoperatively and to ensure that pain is being treated adequately, while anesthetists have the responsibility of treating pain intra operatively and ensuring that adequate postoperative pain relief is prescribed for the initial postoperative period. Last but not the least acute pain services have the responsibility of ensuring that education, guidelines, support and advice are provided for patients and staff.<sup>18</sup>

PCA and epidural provide superior analgesia over other analgesic modalities<sup>19</sup>. In one study use of both PCA and epidural morphine resulted in high overall satisfaction among the postoperative patients<sup>9</sup>. In a survey conducted on anesthesiologists, majority preferred a narcotic analgesic with pethidine being used most frequently followed by

morphine while only a third preferred regional anaesthesia.<sup>20</sup> In our survey both nursing staff and surgeons preferred opioid intravenous infusions over PCA and epidural. This could be because of its simplicity and their authority over its usage and less reliance on other expertise. Patient PCA controlled analgesia has a well established role in post operative pain management [viii]. In a large survey conducted on orthopedic surgeons who used PCA with narcotics (e.g., morphine, hydromorphone ), 51% said they were “very satisfied.” Only 13% said they were not satisfied with PCA, main reason of dissatisfaction were , nausea, constipation , disorientation and addiction potential. In the same survey fewer than 10% of responding surgeons ever recommended an epidural anesthetic for postoperative pain management. The highest reported use was by joint replacement surgeons; 27% used epidurals early in the postoperative period. On the whole, surgeons were “somewhat satisfied” with epidural. Main reason for dissatisfaction were lack of efficiency, potential for urinary retention. In another survey 47% percent of the medical student and 68% of house officers felt that epidural analgesia provided superior analgesia compared to patient controlled analgesia.<sup>22</sup> Our survey showed slight preference of PCA over epidural. Almost 28-50 % correctly identified potential important complications of both modalities.

One of the prime responsibility of healthcare providers is not only to know benefits of any analgesic modality but also to recognize its possible adverse effect so that it is caught and treated early . In our survey more then 45 % of respondents correctly identified hypotension as an important adverse effect of epidural. Others also viewed respiratory depression and motor block as potential problems. Review of the literature reflects a low incidence of side effects and complications in the surgical wards where the nursing staff have been trained in the early recognition of potential complications and the treatment of side effects of epidural analgesia.<sup>23</sup> In a similar survey, nurses selected main advantages of epidural analgesia as improved pain relief and an alert patient.<sup>24</sup> The response given in the survey showed that the main disadvantages were immobility, increased nursing time and bulky pump/mechanical faults . A large number of respondents considered hypotension to be a disadvantage. Likewise they correctly identified sedation and nausea vomiting as important adverse effect’ with PCA as done in our audit.

The incidence of spinal hematoma after epidural analgesia is

approximately 1:150 000<sup>25</sup> In our survey only 12% answered correct timings of unfractionized heparin after removal of epidural catheter.

In our survey 64.3% of the respondents knew correct specific pager number of APS . This revealed their familiarity and frequent contact with it as it reflect more coordination and team work. An survey in New Zealand a total of 221 (77.4%) respondents were aware that an acute pain service was available in the hospital. Nurses and midwives who were unaware of an acute pain service in their organization had significantly lower scores on knowledge about pain management, particularly in relation to the analgesic choices.<sup>26</sup>

Narcotics remain main stay for management of postoperative pain as PCA and regional blocks may not be available in many centers. Therefore its correct usage and pharmacology is important to obtain its benefits. In our survey staff regard pethidine as most effective drug followed by morphine and tramadol this could be the familiarity and more often usage of these medicines. More teaching is needed to provide information to the effective use of other drugs as there availability might change and choice should be based on individual patients characteristics and drug properties. Most (62%) correctly identified nausea vomiting and sedation to be important problems with pain medicines. Addiction being quite rare is pointed out by large number of responders. This is important as literature often shows under usage of narcotics because of lack of knowledge and fear of their side effects like addiction.<sup>27,28,29</sup>

The overall percentage of correct answers was between 40-90 % for different questions (Average 65%). Previous studies have shown somewhat similar average for correct answer.<sup>30,31,32</sup> The reason for lack of difference in responses among surgeons and nursing staff might be that knowledge of one group is influenced by that of the other. It might also indicate that working environment has an influence on the development and use of knowledge about postoperative pain management.

A similar survey may reveal different results if we include medical staff working in non surgical areas or if conducted in public sector hospitals where the awareness may be different reflecting variations in facilities and expertise for pain management.

In our study we found that significant lack of knowledge and misperceptions exist regarding management of post

operative pain. Based on the above results, some particular aspects of pain management were identified, where there was significant lack of knowledge with correct responses of less than 60%. These areas were;

1. Delayed recovery and side effects with inadequate pain relief.
2. Concept of pain management as a team responsibility.
3. Effective techniques for post-operative pain management.
4. Multi-modal analgesia, treating pain with medications that act by different mechanisms.
5. Correct use of patient controlled analgesia.
6. Mobilization of patient with epidural.
7. Complications of epidural and their treatment.
8. Anticoagulation with epidural.

There was minimal difference in the responses of surgeons and the nursing staff working in areas where post operative patients are commonly managed.

## CONCLUSION

In our survey we found poor to moderate knowledge of postoperative pain management among both medical and paramedical staff. The results point out the importance of continuous education and educational programs on pain management to achieve improved knowledge and attitudes of the medical staff.<sup>33</sup> Our department's Acute Pain service therefore has taken multiple steps for achieving this goal. These include regular educational classes for nurses, workshops, educational leaflets and brochures. Constant efforts are needed at all levels both by medical and paramedical staff to equip themselves in this often neglected and underestimated area of pain management with updated knowledge for better patient care.

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