

## Attitudes on Pain Change When Acute Pain Services are Introduced

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### Abstract

**Context:** Acute Pain Services (APS) are becoming available in many hospitals worldwide because of the numerous advantages for patients and healthcare systems. Whereas data show that patients benefit from APS in terms of pain relief and satisfaction, little is still known about the attitudes of healthcare professionals and how they may change when APS are introduced in their clinical work.

**Objective:** This survey evaluates attitudes on pain and highlights the main differences amongst staff working in wards with and without a pain service within the same hospital.

**Design:** Questionnaire survey.

**Setting:** A provincial Italian hospital.

**Results:** Of the 122 questionnaires sent, 95 (78%) were returned. The majority of respondents (81%) agreed that effective pain control improves patient outcome and 78% believed anaesthetists should decide over postoperative pain management and be involved in pain issues even when patients are discharged to the surgical wards (88%). A large number of respondents (68%) thought patients should expect some pain after surgery. A good knowledge of the APS was reported and personnel working with the APS showed to know more about it. Pain measurement and recording is still not well addressed in the clinical practice (only 42% record pain scores) especially in the group of those not working with the APS.

**Conclusion:** Small hospitals still need to implement APS in their clinical settings, and develop more concern on pain issues for healthcare professionals who may change their attitudes, increase their knowledge and improve their practice when APS are introduced.

**Keywords:** Postoperative pain; Acute pain service; Healthcare professionals; Survey

**Abbreviations:** APS: Acute Pain Services; COSD: Comitato Ospedale Senza Dolore; EA: Epidural Analgesia; ICU: Intensive Care Unit; IQR: Inter-Quartile Range; NRS: Numeric Rating Scale; NSAIDs: Non-Steroidal Anti-Inflammatory Drugs; PACU: Post-Anaesthetic Care Unit; PCA: Patient-Controlled Analgesia; POPSI: Post-Operative Pain Survey in Italy; SD: Standard Deviation

### Introduction

Acute pain services (APS) have recently become available worldwide as important parts of anaesthetic services. Surveys conducted around the mid '90s in the United States [1,2], Canada [3], Australia [4], New Zealand [5] and Europe [6] showed that 14% [5] to 53% [3] of hospitals were running APS programmes. Nowadays these numbers are constantly increasing, with the majority of hospitals in the Anglo-Saxon countries having established different types of APS, whereas hospitals in Europe are making an effort to reach the standard and small institutions experience significant difficulties for financial and organizational reasons [7]. In a recent Postoperative Pain Survey in Italy (POPSI) the APS prevalence was estimated to be 46% [8] and the authors conclude that pain services and analgesic techniques chosen by Italian anaesthesiologists were well below the European standards [8]. Many reports and data collections have shown that implementing APS improves postoperative pain relief [9,10] and patient satisfaction [10-12] influencing many aspects of the management and postoperative recovery of patients. Furthermore, postoperative pain management does not only involve anaesthetists and pain specialists but surgeons and nurses within their surgical wards as well, increasing the number of healthcare workers interested in pain issues. However, little is still known about the attitudes of healthcare professionals (medical and nursing staff) to-

wards pain and APS and how they may change when the latter are introduced in their clinical work. Pain is still reported to be undertreated in most of the international literature [13-15] but the situation is not going to improve unless healthcare providers will gradually change their attitudes and misbeliefs. The aim of this survey is to examine healthcare professionals' perceptions and attitudes towards postoperative pain in a small Italian institution where an APS has recently been established as a pilot programme in some surgical wards, but not all. The various opinions on pain, the knowledge of APS and the main differences in clinical practice of wards with or without a functioning APS are underlined. Specific considerations on subgroups of this surveyed population are made trying to highlight the differences when healthcare professionals start working with an APS.

### Methods

#### The Institution

The Istituti Ospedalieri Bergamaschi Hospital in Zingonia, Bergamo (with 318 beds) is a private hospital which provides a range of

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surgical specialty services (general surgery, vascular surgery, urology, orthopaedics and trauma) and is supported by a general Intensive Care Unit (ICU) also serving as Post-Anaesthetic Care Unit (PACU). More than 6400 inpatient operations are performed annually. The APS of the hospital's Department of Anaesthesia and Intensive Care was established in January 2010 being the first in the local area. Pain relief modalities include intravenous patient-controlled analgesia (PCA), epidural analgesia (EA) with continuous infusion of local anaesthetics and opioids, multimodal analgesia and occasionally peripheral nerve blocks with continuous local anaesthetic infusion. Patients served by the APS are followed up from the immediate postoperative period for three days. The APS staff consists of 12 specialist anaesthesiologists, an acute pain nurse and all the in-charge nurses of the surgical wards. Patient observations include pain score (NRS), haemodynamic parameters (blood pressure and heart rate), respiratory rate and pulseoxymetry. The Ramsey scale is recorded for patients receiving opioids and the Bromage scale is also recorded in patients given EA. The occurrence of complications (postoperative nausea and vomiting, hypotension, bradycardia, desaturation, etc.) is also monitored. These measurements are carried out by ward nursing staff at regular intervals as decided by the APS (hourly or every 2-4-6 hours). Staff of the APS conduct daily ward rounds to assess pain treatment efficacy and side-effects. When needed the specialist anaesthesiologist is available to deal with problems related to pain management on a 24-hour basis.

### The Questionnaire

A 38-item questionnaire was developed to assess the attitudes of healthcare professionals towards postoperative pain, the knowledge of the APS, and the implications in their clinical work. Questions were answered by filling in a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree", ticking True/False/Undecided or Yes/No options. The questionnaire was piloted for content validity on two anaesthetists outside the survey institution. They were also interviewed to identify problematic questions and wording. Typical time to complete the questionnaire ranged from 5 to 10 minutes. After the pilot study, the questionnaire was revised and edited. The questionnaire was sent to all medical staff and nurses of the Departments of Anaesthesia and Intensive Care, General Surgery, Vascular Surgery, Urology, Orthopaedics and Trauma. A second reminder questionnaire was sent to those who had not returned the initial questionnaire after 4 weeks. Anonymity was guaranteed through the use of a coding system. A research assistant blinded to the coding system entered the collected data for subsequent analysis.

### Data analysis

Collected data was entered into a spreadsheet (Numbers '09, Mac OS X 10.6.4, Apple Inc.) and each questionnaire was coded with an identification number. Results were analysed using descriptive statistics through the Statistical Package for the Social Sciences (IBM SPSS Version 19; SPSS Inc, Chicago [IL], US). They are represented as mean values with standard deviation (SD) or median with interquartile range (IQR) as appropriate and calculated on the basis of total answers. The 5-point Likert scale used for opinions on postoperative pain (Q4-Q12) was further dichotomised to *Agree* ("Agree" and "Strongly Agree") and *Disagree* ("Undecided", "Disagree", and "Strongly Disagree"). To determine the relative value of who should decide the primary mode of analgesia (patients, surgeons or anaesthesiologists) the sum score for *Agree* of each individual question was divided by the total sum score of the three questions. Questions related to the knowledge of the APS (Q13-Q28) were analysed with True/False/Undecided categories

resulting in *Correct*, *Incorrect* or *Undecided* statements. A scoring system was applied to the 16 items (1, -1 or 0 points for correct, incorrect or undecided answer respectively). The maximum score for all correct answers was 16 (100% correct answers). The clinical practice and pain management (Q29-Q38) were assessed using Yes/No categories.

Results were also analysed and compared by dividing the study population into different subgroups, such as professional position (medical or nursing staff), specialty (anaesthetics and PACU, general surgery, vascular surgery, urology and orthopaedics and trauma) and whether respondents were working in wards with the hospital APS (APS+ group) or not (APS- group). Where appropriate, the Student t test and Chi squared test were used to determine statistical significance, which was indicated by a P value of less than 0.05.

## Results

### Demographics

Of the 122 questionnaires sent, 95 were completed and returned. The overall response rate was 78%. Healthcare professionals working in wards with a functioning APS returned more questionnaires compared to those without (APS+ group 87% versus APS- group 67% respectively; p=0.0427). Table 1 summarizes the demographic data (Q1-Q3) of the respondents and their surgical specialties.

### Attitudes on postoperative pain management

Items Q4 to Q12 assessed the opinions and attitudes towards postoperative pain. The majority of responders agreed or strongly agreed that effective pain control improves patient outcome (81%; median 4, IQR 4.0-4.0) and that whenever a patient says to be in pain they should be believed and treated (91%; median 4, IQR 4.0-4.0). However, 68% (median 4, IQR 2.0-4.0) believed that after an operation, patients should expect some sort of pain and up to one third (31%) believed that pain killers are dangerous drugs with plenty of side effects. In the subgroup of professionals working in wards without the APS (APS- group) these percentages rose to 81% and 44% respectively. Only a small percentage of all responders would have patients (4%; median 1, IQR 1.0-2.0) or surgeons (20%; median 2, IQR 2.0-3.0) decide over postoperative pain management as the majority would leave this decision to anaesthesiologists (76%; median 5, IQR 4.0-5.0) who should also be involved in pain management when patients are discharged to their surgical wards (88%; median 5, IQR 4.0-5.0). Almost all (91%;

		n	%
Q1. Gender			
	<i>Males</i>	44	46.3%
	<i>Females</i>	51	53.7%
Q2. Occupation			
	<i>Doctors</i>	32	33.7%
	<i>Nurses</i>	63	66.3%
Q3. Specialty			
	<i>Anaesthetics and PACU</i>	35	36.5%
APS-	<i>General Surgery</i>	16	16.8%
APS-	<i>Urology</i>	11	11.5%
APS+	<i>Vascular Surgery</i>	17	17.7%
APS+	<i>Orthopaedics and Trauma</i>	16	16.7%
<i>APS+ Wards with a functioning APS</i>			
<i>APS- Wards without APS</i>			

Table 1: Demographic data of the surveyed healthcare workers (n=95).

median 5, IQR 5.0-5.0) agreed that hospitals should provide an APS for all surgical patients. Table 2 shows all the data collected.

### Knowledge of the acute pain service

The general knowledge of APS and their functions was assessed by items Q13 to Q28. Figure 1 shows correct, incorrect and undecided answers. Most responders knew that APS work throughout all the perioperative phases (82%), record pain scores at regular intervals (79%), use protocols and guidelines (84%), study pain in all its aspects (80%) and perform audits (68%). There seemed to be agreement in acknowledging that APS improve patients satisfaction and decrease pain (79%). Unexpectedly, quite a large number (43%) thought that when an EA or a PCA were given an APS was necessarily present.

Only 21% believed that APS contribute to the reduction of costs (54% undecided) and 34% thought that only anaesthesiologists and pain specialists could manage APS. Interestingly, 40% of respondents thought that APS do not treat pain but aim at its prevention. APS should have dedicated 24-hour staff for 64% and also manages postoperative complications for 63% of responders. Only 8% of the studied population could make the difference between the APS and a "Pain-free Hospital Board" (COSD - Comitato Ospedale Senza Dolore, an Italian governmental suggested policy to promote pain treatment in hospitals) and 44% could not distinguish the APS from other chronic pain services. All the answers given were summed up in a score for each questionnaire and Table 3 shows the scores for the different subgroups

	1 Strongly disagree	2 Disagree	3 Undecided	4 Agree	5 Strongly agree	1+2+3 Disagree	4+5 Agree	Median (IQR)
Q4. Pain-free patients have better outcomes compared to patients in pain	10 (11.0%)	3 (3.3%)	4 (4.4%)	56 (61.5%)	18 (18.8%)	17 (18.7%)	74 (81.3%)	4 (4.0-4.0)
Q5. Whenever a patient says to be in pain it is true and needs to be treated	1 (1.1%)	0	7 (7.5%)	62 (66.7%)	23 (24.7%)	8 (8.6%)	85 (91.4%)	4 (4.0-4.0)
Q6. Patients should expect to have some sort of pain after surgery	9 (9.7%)	15 (16.1%)	6 (6.5%)	43 (46.2%)	20 (21.5%)	30 (32.3%)	63 (67.7%)	4 (2.0-4.0)
Q7. Pain-killers are often risky with plenty of side effects	10 (10.5%)	40 (42.1%)	16 (16.8%)	26 (27.4%)	3 (3.2%)	66 (69.5%)	29 (30.5%)	2 (2.0-4.0)
Q8. Postoperative analgesia should be decided by the patient	53 (57.0%)	26 (28.0%)	9 (9.7%)	4 (4.3%)	1 (1.1%)	5/118 (4.2%)		1 (1.0-2.0)
Q9. Postoperative analgesia should be decided by the surgeon	20 (21.5%)	38 (40.9%)	12 (12.9%)	15 (16.1%)	8 (8.6%)	23/118 (19.5%)		2 (2.0-3.0)
Q10. Postoperative analgesia should be decided by the anaesthesiologist	1 (1.1%)	1 (1.1%)	3 (3.2%)	31 (32.6%)	59 (62.1%)	90/118 (76.3%)		5 (4.0-5.0)
Q11. Anaesthesiologists should be involved in pain management in wards	2 (2.1%)	3 (3.2%)	6 (6.3%)	34 (35.8%)	50 (52.6%)	11 (11.6%)	84 (88.4%)	5 (4.0-5.0)
Q12. All hospitals should provide or have access to an APS	1 (1.1%)	0	8 (8.4%)	6 (6.3%)	80 (84.2%)	9 (9.5%)	86 (90.5%)	5 (5.0-5.0)

Out of 855 items 12 (1.4%) were not answered

Table 2: Attitudes on postoperative pain.

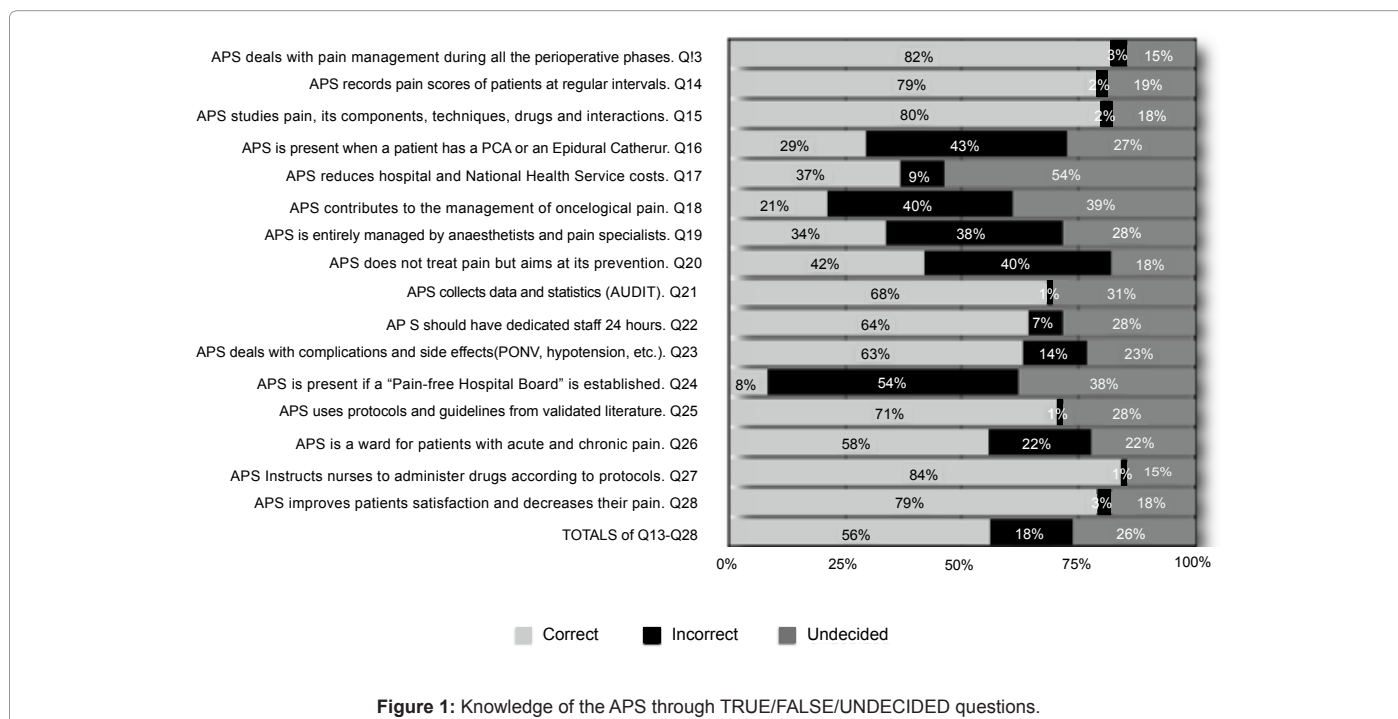


Figure 1: Knowledge of the APS through TRUE/FALSE/UNDECIDED questions.

	Subgroups	N.	MEAN (SD)
Occupation	Doctors	32	7.4 (3.4)
	Anesthesiologists only	12	10.1 (5.2)
	Nurses	63	5.7 (3.1)
Specialty	Anaesthetics and PACU	35	7.2 (3.3)
	Orthopaedics and Trauma	16	7.3 (2.3)
	Vascular Surgery	17	6.4 (1.8)
	Urology	11	5.0 (3.8)
	General Surgery	16	3.8 (3.7)
Group	APS+	33	6.9 (2.2)
	APS-	27	4.3 (3.8)
	All responders	95	6.2 (3.3)

Table 3: Knowledge of the APS (n=95).

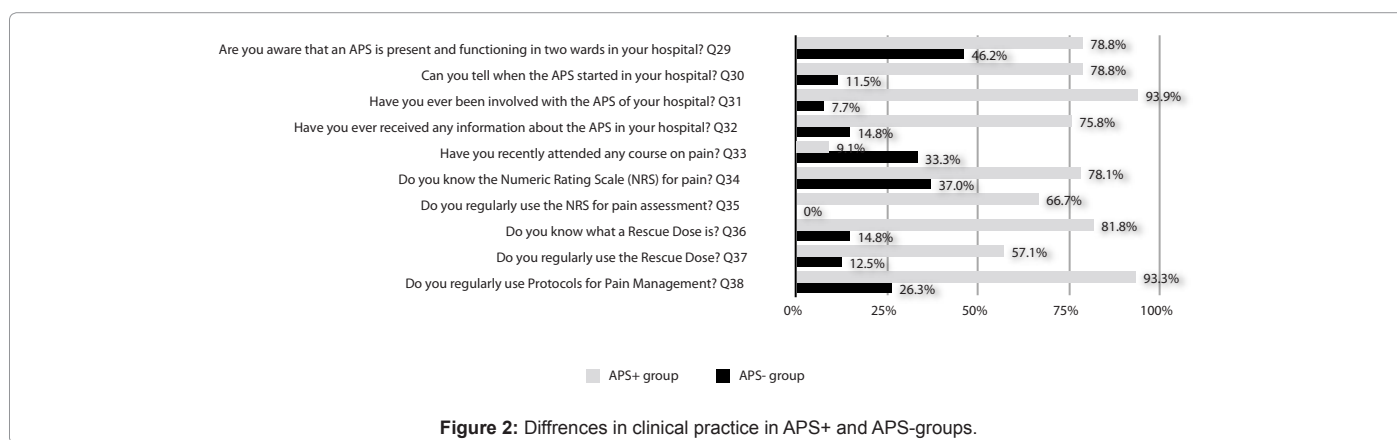


Figure 2: Differences in clinical practice in APS+ and APS-groups.

of the surveyed population. The average score was 6.2 SD 3.3. When subgroups were compared, doctors scored better than nurses (7.4 SD 3.4 versus 5.7 SD 3.1;  $p=0.0164$ ) with anaesthesiologists having the highest scores (10.1 SD 5.2). Professionals working in wards with the APS scored better than the others (APS+ group 6.9 SD 2.2 versus APS- group 4.3 SD 3.8  $p=0.0018$ ).

### Clinical Practice

Items Q29-Q38 assessed some aspects of the clinical practice in the surveyed institution. Not all the responders (75%) were aware that an APS was functioning in two wards of the hospital they were working in and only 59% could tell the exact time the programme started. Sixty five percent stated that they were involved with the APS in some ways, 59% received information about the APS and only 39% attended some educational courses on pain. Surprisingly those not involved with the APS stated to have attended more courses on pain (33% in the APS- group) compared to those involved (9% in the APS+ group). Of all responders, 65% was familiar with the numeric rating scale (NRS) for pain assessment but only 42% routinely used it, and only 54% declared to know what a rescue dose is.

When the respondents are subdivided in APS+ and APS- groups the percentages change dramatically and the differences become more evident as shown in Figure 2.

### Discussion

In the past two decades, anaesthesiologists in major hospitals all over the world have contributed to the establishment of APS to provide pain relief to patients in the postoperative period. APS have gained acceptance in most hospitals and are organized in different ways, from

the very expensive anaesthesiologist-based models in the United States to the well organized nurse-run schemes in Europe, through a number of different combinations in between. The organization of the service varies from institute to institute depending on many factors [16,17], and financial resources are not the least. In Italy, a large number of small hospitals still need to organize APS although providing EA or PCA with opioids to patients who require more intensive monitoring for potential complications, including respiratory depression and neurological complications [18].

Our institution is relatively small compared to larger centres in the local area (which provides healthcare facilities for more than a million people) but the only one at the moment having tried to implement an APS with a pilot programme and limited resources. As shown in this survey at our institution as well, most healthcare providers agreed that effective pain control could improve patient recovery and outcome and that hospitals should provide or have access to APS for all surgical patients. Almost all the hospitals in Northern Italy have recently introduced a "Pain-free Hospital Board" (COSD - Comitato Ospedale Senza Dolore) according to the national policies of the healthcare system, but only half of the institutions daily monitor pain scores, and although guidelines and protocols for pain management have been proposed there hardly is any recognized and organized staff to make sure they are effectively applied and moreover audit is rarely done. So the reality of this quite developed and wealthy area is still far from what is depicted in the literature. For social, economical and historical reasons Italy has always been reluctant in pain management and it is not surprising that it is the last European country for the usage of opioids and morphine [19], suggesting that healthcare professionals still think pain relief is not of primary concern. Our results also confirmed other reports that suggest surgeons expect patients to have

“some” pain after surgery [20] and that patients believe that pain is unavoidable after surgery [21]. These perceptions may contribute to widespread inadequate postoperative pain relief. Efforts to reduce such misbelief among patients, nurses and doctors as well as other attitudes could enhance postoperative pain management, hence the importance of further investigations and data collection.

In this survey, the decision over postoperative pain management was largely given to anaesthesiologists recognizing their expertise in pain management, while patients’ preferences were barely considered. This conception is still far from the patient-centered idea of healthcare. The respondents could not tell whether APS reduce costs or not. As a matter of fact data do not show relevant results at the moment in this respect.

The knowledge of the APS was quite satisfactory. The majority of respondents knew the functions and the organizational model of the APS although there was confusion between the APS organizational model and the techniques of epidural and patient-controlled analgesia or the wider definition of a Pain-free Hospital Board (COSD in Italian).

When the responders were divided into groups according to the wards it becomes clear that those working with the APS (APS+ group) had a more consistent knowledge and skills on pain compared to the others (APS- group). Perhaps this is also the reason for which healthcare professionals working with the hospital APS stated to have attended fewer courses on pain compared to the others. On the other hand those not working with the APS may feel they need more education on this topic and attend more courses on their own. This finding is not unexpected because it is well known that knowledge and experience do create concern and better practice but it seems as there are still a lot of misbeliefs amongst all healthcare professionals (unavoidable pain, dangerous drugs and techniques, non involvement of patients). As a matter of fact, there is still substantial need for education and improvement, both in the APS+ group and especially in the APS- group.

At present, it is considered unacceptable that pain is not measured or recorded in some wards and patients have no rescue dose prescribed if in pain but the results in this survey are encouraging because the APS presence stress on pain measurement and treatment and indicate that the ongoing path is correct.

The studied population in this survey has the characteristic of being homogeneous for practice and organization in all aspects except the presence of the APS in two out of the four surgical wards. Limitations of this survey include subject bias from the self-reporting questionnaire, as well as sampling bias on account of the fact that data were collected in a single centre only.

## Conclusions

Establishing an APS in surgical wards not only increases the benefits for the patients and the institution but also changes the healthcare professionals’ attitudes, increases their interest and knowledge on pain issues and management. It improves the quality and standards of healthcare assistance and help create a better culture on pain.

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## References

1. Warfield CA, Kahn CH (1995) Acute pain management. Programs in U.S. hospitals and experiences and attitudes among U.S. adults. *Anesthesiology* 83: 1090-1094.
2. Jiang HJ, Lagasse RS, Ciccone K, Jakubowski MS, Kitain EM (2001) Factors influencing hospital implementation of acute pain management practice guidelines. *J Clin Anesth* 13: 268-276.
3. Zimmermann DL, Stewart J (1993) Postoperative pain management and acute pain service activity in Canada. *Can J Anaesth* 40: 568-575.
4. Goucke CR, Owen H (1995) Acute pain management in Australia and New Zealand. *Anaesth Intensive Care* 23: 715-717.
5. Merry A, Judge MA, Ready B (1997) Acute pain services in New Zealand hospitals; a survey. *NZ Med J* 110: 233-235.
6. Rawal N, Allvin R (1988) Acute pain services in Europe: a 17-nation survey of 105 hospitals. *The EuroPain Acute Pain Working Party. Eur J Anaesthesiol* 15: 354-363.
7. Powell AE, Davies HT, Bannister J, Macrae WA (2004) Rhetoric and reality on acute pain services in the UK: a national postal questionnaire survey. *Br J Anaesth* 92: 689-693.
8. Coluzzi F, Savoia G, Paoletti F, Constantini A, Mattia C (2009) Postoperative pain survey in Italy (POPSI): a snapshot of current national practices. *Minerva Anesthesiol* 75: 622-631.
9. Dolin SJ, Cashman JN, Bland JM (2002) Effectiveness of acute postoperative pain management: Evidence from published data. *Br J Anaesth* 89: 409-423.
10. Sartain JB, Barry JJ (1999) The impact of an acute pain service on postoperative pain management. *Anaesth Intensive Care* 27: 375-380.
11. Comley AL, DeMeyer E (2001) Assessing patient satisfaction with pain management through a continuous quality improvement effort. *J Pain Symptom Manage* 21: 27-40.
12. McNeill JA, Sherwood GD, Starck PL, Thompson CJ (1998) Assessing clinical outcomes: patient satisfaction with pain management. *J Pain Symptom Manage* 16: 29-40.
13. Sommer M, de Rijke JM, van Kleef M, Kessels AG, Peters ML, et al. (2008) The prevalence of postoperative pain in a sample of 1490 surgical inpatients. *Eur J Anaesthesiol* 25: 267-274.
14. Visentin M, Zanolin E, Trentin L, Sartori S, de Marco R (2005) Prevalence and treatment of pain in adults admitted to Italian hospitals. *Eur J Pain* 9: 61-67.
15. Rawal N (2002) Acute pain services revisited—good from far, far from good? *Reg Anesth Pain Med* 27: 117-121.
16. Rawal N (1999) 10 years of acute pain services—achievements and challenges. *Reg Anesth Pain Med* 24: 68-73.
17. Breivik H (2002) How to implement an acute pain service. *Best Pract Res Clin Anaesthesiol* 16: 527-547.
18. Cashman JN, Dolin SJ (2004) Respiratory and haemodynamic effects of acute postoperative pain management: evidence from published data. *Br J Anaesth* 93: 212-213.
19. De Conno F, Ripamonti C, Brunelli C (2005) Opioid purchases and expenditure in nine western European countries: ‘are we killing off morphine?’. *Palliat Med* 19: 179-184.
20. Hojsted J, Hellum KL (1999) Knowledge about and attitude to postoperative pain therapy of health personnel. A questionnaire survey [in Danish]. *Ugeskr Laeger* 161: 6770-6775.
21. Warfield CA, Kahn CH (1995) Acute pain management. Programs in U.S. hospitals and experiences and attitudes among U.S. adults. *Anesthesiology* 83: 1090-1094.

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