Original Article

ASSIST - Patient satisfaction survey in postoperative pain management from Indian subcontinent

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Abstract

Introduction: To compare pain scores at rest and ambulation and to assess patient satisfaction between the different modalities of pain management at different time points after surgery.
Settings and Design: The ASSIST (Patient Satisfaction Survey: Pain Management) was an investigator-initiated, prospective, multicenter survey conducted among 1046 postoperative patients from India.
Material and Methods: Pain scores, patient's and caregiver's satisfaction toward postoperative pain treatment, and overall pain management at the hospital were captured at three different time points through a specially designed questionnaire. The survey assessed if the presence of acute pain services (APSs) leads to better pain scores and patient satisfaction scores.
Statistical Analysis: One-way ANOVA was used to evaluate the statistical significance between different modalities of pain management, and paired *t*-test was used to compare pain and patient satisfaction scores between the APS and non-APS groups.
Results: The results indicated that about 88.4% of patients reported postoperative pain during the first 24 h after surgery. The mean pain score at rest on a scale of 1–10 was 2.3 ± 1.8 during the first 24 h after surgery and 1.1 ± 1.5 at 72 h; the patient satisfaction was 7.9/10. Significant pain relief from all pain treatment was reported by patients in the non-APS group (81.6%) compared with those in the APS (77.8%) group ($P < 0.0016$).
Conclusion: This investigator-initiated survey from the Indian subcontinent demonstrates that current standards of care in postoperative pain management remain suboptimal and that APS service, wherever it exists, is yet to reach its full potential.

Key words: Acute pain services, epidural, intravenous, pain scores, patient-controlled analgesia, patient satisfaction

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Introduction

Pain is a predictable response to surgical intervention; it can influence the overall duration of hospital stay.[1] The conventional (non-patient-controlled analgesia [PCA]) method of postoperative pain management which involves administration of drugs "as and when needed" basis results in inadequate analgesia in at least 50% of patients.[2] PCA is a more recent method for the management of postoperative pain.[3] It enables patients to self-regulate the application of preprogramed doses of analgesics.[2] Despite recent advances in pain management, pain continues to be inadequately treated.[4] In the Indian subcontinent, adequate management of postoperative pain continues to be a major challenge, and patient satisfaction toward pain management remains suboptimal, despite the establishment of acute pain services (APSs) in some hospitals.[5] Therefore, there is a need for the regular auditing and assessment of postoperative outcomes of pain management and patient satisfaction with different pain control modalities in India.

We report the results from a postoperative patient satisfaction survey called ASSIST (Patient Satisfaction Survey: Pain Management). The survey was conducted in the Indian subcontinent to assess the quality of postoperative pain management among adults. The primary objectives of the survey were to compare pain scores at rest and at ambulation between the different modalities of pain management postsurgery and to assess patient satisfaction with different modalities of postoperative pain management.

Methods

This was an investigator-initiated, prospective, multicenter survey that enrolled 1046 patients. The survey protocol and consent forms were approved by the respective Institutional Review Boards and/or Institutional Ethics Committees. The ethical committee approval was obtained from all centers. The survey was conducted between May 2014 and December 2014 at 11 sites across India and at one site each in Sri Lanka and Bangladesh. The sites were a mix of well-known teaching and private sector hospitals in the region. Patients undergoing elective surgical procedures for cardiovascular (CV) such as coronary artery bypass grafting, aortic valve replacement surgery, mitral valve repair, atrial septal defect closure, pneumonectomy, gastrointestinal (GI) such as cholecystectomy, or orthopedic ailments were enrolled after taking informed consent. Patients received postoperative analgesia through the epidural (Epi) or intravenous (IV) routes, as decided by the treating anesthesiologist. For either route, patients received analgesia through PCA or the conventional mode of pain management (non-PCA mode) at the discretion of the treating physician. The survey was conducted in accordance with the International Conference on Harmonisation-Good Clinical Practice, an ethical code of conduct that was laid out by the Declaration of Helsinki, and guidelines of Indian Council of Medical Research.

Patients aged 18 years and older receiving postoperative pain medication after elective surgeries for CV, GI, and orthopedic indications and requiring the administration of analgesics either by IV or Epi routes for the management of postoperative pain were included in the study. Those excluded were patients younger than 18 years of age, those with a history of allergy to analgesics, or classified as Grade IV American Society of Anesthesiologists physical status. Patients undergoing minimally invasive surgeries, emergency surgeries, or psychiatric treatment, and those on antiepileptic medications were also excluded from the survey. The patients were assessed at various time points during their postoperative period in the survey. The assessment of pain was carried out by designated personnel not directly involved in administering treatment to the patient during the course of the survey so as to eliminate any form of bias.

Severity of pain, patient's satisfaction toward postoperative pain treatment (POPT), and overall pain management at the hospital were captured at three different time points through a specially designed questionnaire [Appendix 1]. The questionnaire is a modified form of the Revised American Pain Society Patient Outcome Questionnaire designed to assess the quality of pain management among hospitalized adults.[6] Using the questionnaire, the administrator captured the following: Pain scores (at rest, while moving, least pain, worst pain, and percentage of time that was in severe pain) and pain scores while doing activities in bed and out of bed. In addition, the questionnaire also captured pain which caused the patient to feel anxious, depressed, frightened, helpless, sleepless, and led to side effects (nausea, drowsiness, itching, and dizziness) and use of rescue medication (24, 48, and 72 h [±2 h] postsurgery). At the end of survey, the administrator captured the caregiver's satisfaction scores, patient satisfaction toward overall approach to pain management, and the duration of POPT, and hospital stay. All scores were captured on a scale of 1–10, with 1 being the least score and 10 being the highest. APS facilities were not available in all the hospitals where the survey was conducted. To analyze whether the presence of an APS leads to better pain scores and patient satisfaction scores, two groups were formed – institutes that have APS facilities (APS group) and those that do not have these facilities (non-APS group).

Quantitative demographic data were described by summary statistics (number of patients, mean, and standard

deviation [SD]). The frequency and percentage of subjects were presented for categorical variables. The one-way ANOVA test was used to evaluate the statistical significance between different modalities of pain management, based on the parameters of pain scores, patient satisfaction scores, hospital stay, and duration of postoperative treatment. The paired *t*-test was used to compare pain and patient satisfaction scores between the APS and non-APS groups. A statistical significance between the two groups was confirmed when $P < 0.05$.

Results

A total of 1046 patients were enrolled in the survey. The patient demographics and split by types of surgery are indicated in Table 1. The mean age (±SD) of the study participants was 55.6 ± 13.9 years and the male:female ratio was 60:40. A total of 874 patients from 11 sites participated from India, 100 patients from a single site from Bangladesh, and 72 patients from a single site from Sri Lanka. About 622 patients were managed in the APS setting and 424 in the non-APS setting.

For the management of postoperative pain, patients were administered analgesics in PCA or non-PCA setting through either IV or Epi routes at the physician's discretion. Of all the subjects, 20.3% were received drugs through IV-PCA, 38.2% received IV non-PCA regimen, 13.4% received Epi PCA, and 28.1% received Epi non-PCA regimen for pain management. The split by route and mode of pain management are indicated in Figure 1.

For the majority of patients in all three groups, i.e., CV, GI, and orthopedic groups, analgesics were administered through the non-PCA mode. The proportion of patients who received analgesics through the IV route included 79.3% in the CV group and 35.7% in the orthopedic (35.7%) group. However, in the GI group, 46.8% of patients received analgesics through the Epi route.

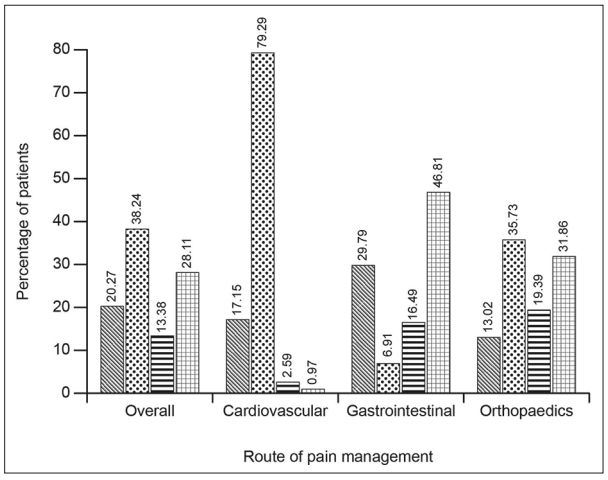

Figure 1: Mode of pain management patients receiving (▨) IV PCA, (▩) IV non-PCA, (▤) Epi PCA, and (▥) Epi non-PCA. Epi: Epidural, PCA: Patient-controlled analgesia

Overall, 88.4% patients reported that they experienced postoperative pain within the first 24 h after surgery. However, the number of patients who experienced pain reduced at every subsequent 24 h interval (80.8% at 48 h and 65.3% at 72 h). Mean pain score at rest was reported as 2.3 ± 1.8 during the first 24 h after surgery, followed by 1.6 ± 1.6 and 1.1 ± 1.5 at 48 h and 72 h, respectively. Mean pain score at ambulation was reported as 4.5 ± 2.6 during the first 24 h after surgery, followed by 3.5 ± 2.8 and 2.3 ± 1.8 at 48 and 72 h, respectively [Table 2]. Patients also reported pain when performing activities in bed (mean pain score of 3.2 ± 2.1) and out of bed (mean pain score of 4.5 ± 2.5) during the first 24 h after surgery.

Table 1: Characteristics of patients who participated in the survey

Characteristics	Frequency (%)
Number patients enrolled	1046
Age (n=1019; mean±SD), years	55.6±13.9
Gender (n=1031; male: female)	60:40
ASA physical status classification system, n (%)	
Grade I	265 (28.5)
Grade II	386 (41.5)
Grade III	280 (30.1)
Therapeutic area, n (%)	
Cardiovascular	309 (29.5)
Gastrointestinal	376 (36.0)
Orthopedics	361 (34.5)

SD = Standard deviation, ASA = American Society of Anesthesiologist

Table 2: Overall pain and patient satisfaction scores

Characteristics	24 h	48 h	72 h
Any pain in last 24 h (%)	88.4	80.8	65.3
Pain score (mean±SD)			
Pain at rest	2.3±1.8	1.6±1.6	1.1±1.5
Pain at movement	4.5±2.6	3.5±2.8	2.3±1.8
Least pain in last 24 h	2.3±1.7	1.7±1.5	1.2±1.4
Worst pain in last 24 h	5.1±2.3	4.0±2.0	3±1.7
Severe pain in last 24 h (%)	27.6±23.9	20.6±22.1	15.4±21.2
Patient satisfaction score (mean±SD)			
Pain while doing activities in bed	3.2±2.1	2.3±1.7	1.5±1.5
Pain while doing activities out of the bed	4.5±2.5	3.4±2.1	2.3±18.5
Falling asleep	1.1±1.8	0.7±1.4	0.5±1.1
Staying asleep	1.1±1.7	0.6±1.3	0.4±1.0
Pain relief using pain treatment (%)	66.4±20.0	72.8±18.5	79.4±1.8

SD = Standard deviation

A higher number of patients who underwent surgeries for GI-related (92.2%) indications reported pain in the first 24 h than those who underwent surgeries for CV (87.5%) and orthopedic (85.5%) indications. No significant difference was found among the therapy areas in the least pain score experienced at 24 h, whereas at 48 and 72 h, CV patients reported significantly lower least pain scores compared to GI and orthopedic patients ($P < 0.0001$). The "worst pain" score was also lowest in patients who underwent CV surgeries at all time points. Patients with CV disease experienced pain for the least period (17.5%, $P < 0.0001$) during the first 24 h compared with GI patients (34.1%) and orthopedic patients (28.9%). Pain score at rest on the bed was the least ($P < 0.05$) in CV patients at all time points [Table 3].

At 24 h, orthopedic patients felt the least pain when performing activities in bed, whereas at 48 h and 72 h, CV patients reported significantly least pain scores for the same. At 24 h, GI patients experienced significantly high pain (mean pain score of 4.9 ± 4.9) when performing activities out of bed. At 48 ($P < 0.0004$) h and 72 h ($P < 0.0001$), patients who underwent CV surgeries reported significantly least pain scores when performing out of bed activities compared with orthopedic patients.

Patients receiving treatment through the IV route reported lowest pain scores at rest compared with those in the Epi group ($P < 0.0001$) at all time points. Mean pain scores, on movement in bed at 24 and 48 h, were significantly higher in the Epi non-PCA group (mean pain score 5.4 ± 3.3; $P < 0.0001$). Lowest pain scores were reported by the Epi PCA group while doing activities out of bed at 24 h and 48 h, IV PCA group reported lowest pain scores at 72 h ($P < 0.05$) [Table 4].

No significant difference was noted between the APS (2.4 ± 1.6) and non-APS (2.2 ± 1.7) groups in pain scores at rest at 24 h. However, at 48 h and 72 h, the non-APS group reported significantly less pain when lying down in the bed ($P < 0.0001$). Significant pain relief from all pain treatment was reported by patients in the non-APS group (81.6%) as compared with those in the APS (77.8%) group ($P < 0.0016$).

Overall, patients have rated their satisfaction levels with pain management in the hospital as 7.9 ± 1.8 of 10. Patients receiving pain medication through IV routes (IV PCA [mean score of 8.3± 2.0] and IV non-PCA [mean score of 8.1 ± 1.2]) were found to be more satisfied with pain management compared with those receiving it through the Epi route (Epi PCA [mean score of 7.3 ± 2.8] and Epi non-PCA [mean score of 7.7 ± 1.6]).

Overall, the caregiver-reported mean satisfaction score was 7.9 ± 1.8 out of 10 for the patient's pain relief and recovery in the hospital [Figure 2]. Physicians also reported better satisfaction levels in pain relief and recovery in patients receiving pain medication through IV routes (IV PCA [mean score of 8.5 ± 1.7] and IV non-PCA [mean score of 8.1 ± 1.2]) compared to those receiving it through the Epi route (Epi PCA [mean score of 7.1 ± 2.9] and Epi non-PCA [mean score of 7.6 ± 1.6]).

Patients were administered rescue drugs on a regular or "as and when need" basis to manage acute exacerbation of pain. Patients who received postoperative pain management through the IV PCA mode received the highest percentage of rescue medication at all time points; the Epi-PCA group received the lowest among all modes. Similar trends were observed on day 2 and 3.

Table 3: Pain score and patient satisfaction score among therapeutic areas (mean±standard deviation)

Characteristics	Cardiovascular (h)			Gastrointestinal (h)			Orthopaedics (h)		
	24	48	72	24	48	72	24	48	72
Any pain in last 24 h (patients %)	87.5	72.6	56.8	92.2	86.6	69.1	85.5	82.5	69.1
Pain score (mean±SD)									
Pain during lying down in bed (pain score)	2±1.3	1.1±1.1	0.4±1	2.4±2	1.6±1.7	1.1±1.6	2.4±1.9	2.1±1.7	1.7±1.6
Pain during moving in bed (pain score)	4±1.8	2.7±1.5	1.5±1.2	4.8±2.4	3.7±2.2	2.4±1.9	4.4±3.1	3.9±3.9	3±1.9
Least pain in last 24 h (pain score)	2.2±1.7	1.4±1.0	0.5±1.1	2.4±1.9	1.7±1.6	1.2±1.5	2.2±1.7	1.9±1.5	1.8±1.4
Worst pain in last 24 h (pain score)	4.9±2.3	3.7±1.7	2.5±1.1	5.2±2.5	3.9±2.1	2.7±1.7	5.1±2.2	4.3±2.1	3.5±1.9
Duration of severe pain in last 24 h (%)	17.5±17.5	9.1±13.5	3.4±12.2	34.1±25.7	26.0±22.9	20.4±22.8	28.9±23.9	23.3±23.1	18.1±21.2
Patient satisfaction scores (mean±SD)									
Pain during activities in bed (pain score)	3.2±1.7	2.1±1.3	1.2±1	3.4±2.4	2.4±2	1.6±1.8	2.9±2	2.3±1.7	1.7±1.5
Pain during activities out of the bed (pain score)	4.2±1.7	3.0±1.4	1.7±1.1	4.9±4.9	3.5±2.4	2.3±1.9	4.3±2.5	3.5±2.2	2.7±1.9
Pain relief using pain treatment	67.7±16.6	76.8±14.5	84.9±11.8	62.2±21	70.1±20.6	76.2±22.3	69.4±21.1	72.2±18.8	77.8±17.9

SD = Standard deviation

Table 4: Pain score by treatment regimen (mean±standard deviation)

Characteristics	Intravenous		Epidural		*P*
	PCA	Non-PCA	PCA	Non-PCA	
Pain at rest (h)					
24	2±1.6*	2.1±1.3	2.7±2.5*	2.6±2*	<0.0001
48	1.3±1.6*	1.4±1.2	2.2±2.2*	1.9±1.7*	<0.0001
72	1±1.5	0.7±1.1*	2.1±2.3*	1.2±1.4*	<0.0001
Pain during moving in bed (h)					
24	4.1±2.2	4.1±1.8	4±2.6*	5.4±3.3*	<0.0001
48	2.9±1.9*	3.2±1.7	3.2±2.4	4.4±4.2*	<0.0001
72	1.9±1.7*	2±1.5	2.6±2.4*	2.9±1.9*	<0.0001
Pain while doing activities in bed (h)					
24	3±2	3±1.7*	2.7±2.2	3.6±2.5*	<0.0001
48	1.9±1.6*	2.2±1.3	2.1±1.9	2.8±2.0*	<0.0001
72	1.3±1.4*	1.4±1.2	1.6±1.8*	1.7±1.6*	<0.0033
Pain during activities out of bed (h)					
24	4.1±2.3*	4.3±1.8*	3.5±2.7*	5.5±3.1*	<0.0001
48	2.5±1.8*	3.3±1.6*	2.7±2.4	4.3±2.4*	<0.0001
72	1.7±1.5*	2.2±1.5*	2±2.2*	2.9±1.9*	<0.0001
Falling asleep (h)					
24	1.2±1.6	1.0±1.4*	1.6±2*	1.6±2.2*	<0.0004
48	0.5±0.9*	0.5±1.1	1.1±1.5*	1.0±1.7*	<0.0001
72	0.4±1.0	0.3±0.9*	0.9±1.4*	0.5±1.4*	<0.0001
Staying asleep (h)					
24	0.9±1.4	0.9±1.3*	1.3±1.7*	1.4±2.1*	<0.0001
48	0.3±0.8*	0.4±1.1	0.9±1.4*	0.8±1.7*	<0.0001
72	0.3±0.9	0.3±0.8*	0.7±1.2*	0.4±1.3*	<0.0001

**P<0.05. PCA = Patient-controlled analgesia*

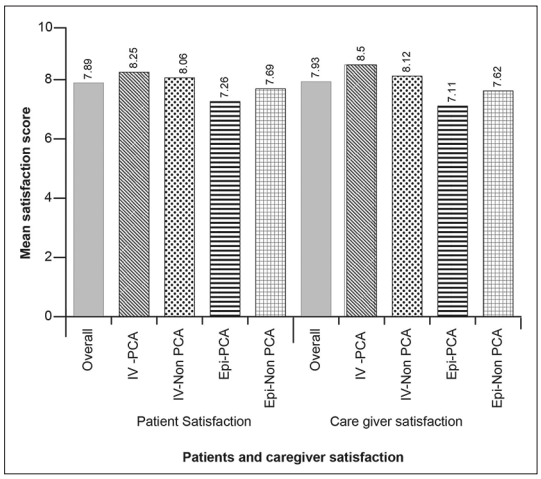

Figure 2: Patient and caregiver satisfaction score (▒) Overall, (▒) IV PCA, (▒) IV non-PCA, and (▒) Epi PCA, (▒) Epi non-PCA. Epi: Epidural, PCA: Patient-controlled analgesia

The average duration for POPT was 4.3 days for all patients enrolled in the survey. Overall, patients who underwent surgeries for CV indications received POPT for 4.3 days, and a significant difference was noted between Epi non-PCA (3.7 days) and IV PCA group (5.3 days). A significant difference has been noted in the duration of POPT between the IV PCA (3.7 days) and IV non-PCA (5.6 days) groups in patients for GI indications. No significant difference was noted in the duration of POPT in patients for orthopedic indications except between Epi PCA (4.0 days) and IV non-PCA (5.6 days).

No significant difference has been noted in terms of duration of hospital stay between different modalities of pain management in the CV and orthopedic groups, whereas in the GI group, patients who received treatment through the IV PCA mode spent significantly lesser time in hospital compared to the other three groups.

Discussion

This was an investigator-initiated, prospective, multicenter survey from the Indian subcontinent designed to capture the extent of postoperative pain relief and patient and caregiver satisfactions with postoperative pain management. In this survey, the Revised American Pain Society Patient Outcome Questionnaire (APS-POQ-R) was found to be a valid measure for the assessment of severity of pain and patient's satisfaction toward postoperative pain management. A recent study reported the robustness of the use of the APS-POQ-R for assessing postoperative pain experience in Danish and Australian patients, and the findings reflected cross-cultural differences in ratings of treatment satisfaction.[7] In a similar

study conducted among 299 adult medical-surgical inpatients from two hospitals from different parts of the United States, the support for internal consistencies of APS-POQ-R for quality improvement of pain management in hospitalized adults was emphasized.[6]

In this survey, about 88.4% of patients reported postoperative pain during the first 24 h after surgery. Even at 72 h, more than 65% patients reported pain. A prospective hospital-based survey also reported similar results: 85% of 294 patients experienced varying degrees of pain during the 24 h period.[8] In a study conducted among 288 patients undergoing general or orthopedic surgery, severe pain was reported at 7 days postoperatively, even after minor surgery. Furthermore, health-related quality of life parameter was found to be strongly associated with the level of pain indicating a clear indication of the impact of postsurgical pain on patient's function and well-being.[9]

In our study, pain was found to be consistently lower at rest when compared to pain on movement in bed at 24, 48, and 72 h after surgery. This is in contrast to a study that reported postoperative pain following ambulation to be greater when compared to pain at rest after 48 h.[10]

These survey results indicate that IV non-PCA (38%), followed by Epi non-PCA (28%) was the most common regimens for POPT. Postoperative GI patients experienced more pain than CV, and orthopedic patients did at 24, 48, and 72 h. Mean pain scores were lower at rest than during ambulation at all time points, yet they both decreased over successive 24 h periods. This may be explained by progressive recuperation from operative stress, which leads to a reduction in analgesia requirement.

Our study also showed that the mean postoperative pain scores when moving in bed at 24 h and 48 h were significantly lower with the IV PCA, IV non-PCA, and Epi PCA groups compared with the Epi non-PCA group. Similarly, significantly lower pain scores were reported following treatment through the IV (PCA and non-PCA) route compared to the Epi (PCA and non-PCA) groups at 72 h.

In a study which assessed postoperative analgesia after major abdominal surgery, significantly lesser pain was reported in the Epi PCA group compared to the IV PCA group at 2, 8, and 12 h after surgery.[11] In the present survey, no significant difference in pain scores was noted between the IV PCA, IV non-PCA, and Epi PCA groups while doing activities in bed with respect to patient satisfaction. However, significantly lower pain scores ($P < 0.0001$) were reported by the Epi PCA group compared with the Epi non-PCA groups at 24 h and 48 h.

The concept of APS is still in its fledgling stage in the Indian subcontinent, and its availability is limited only to a few hospitals. The use of APS was found to result in reduced pain scores in surgical patients as per the data procured from a recently published prospective audit during 2008–2011, which evaluated the efficacy of techniques on pain scores, muscle power, and adverse effects. Furthermore, the audit findings showed a steady increase in the number of patients using APS in the IV PCA, Epi analgesia, and continuous peripheral nerve block settings.[12] Recently, the findings of a 3-year initiative that assessed the impact of acute pain management services in the USA showed that such services may help in improving the quality of patient recovery after surgery, illness, or trauma. The goal of acute pain management services would be to prevent or decrease the conversion of acute pain into debilitating chronic pain.[13]

In this survey, a comparison of pain scores and patient's satisfaction was attempted between the APS and non-APS groups; the comparison showed no significant difference between the groups in pain scores at rest at 24 h. This survey perhaps indicates that APS in India is yet to reach its potential in better pain outcomes.

In this survey, overall patient satisfaction with pain management in the hospital was 7.9/10. Similarly, the mean caregiver satisfaction score was 7.9/10 for the patient's pain relief and recovery in the hospital. The patients and caregivers reported better satisfaction levels in pain relief and recovery when patients received medicines through IV PCA as compared with the Epi PCA. This finding is in contrast to the results derived from a randomized study which reported a higher rate of patient satisfaction with the PCA modality irrespective of Epi or IV mode of analgesia.[14] However, the study used a visual analog scale to assess pain perception unlike the pain scores used in our study. This also perhaps is an indication that adequate dosage is not being given to users of PCA and to those on epidural pain management, possibly because of the fear of adverse events among the nursing staff. Another possibility is the reluctance of the patients to self-administer the medication and the discomfort with the Epi catheter.

The results of this survey indicate that the duration of POPT was shorter in those who underwent surgeries for CV indications and received Epi non-PCA. Patients who received POPT through IV PCA mode needed the highest percentage of rescue medication at all time points. This

probably points to either inadequate dosage or reluctance of the patient to administer self-medication. Perhaps, a more focused study comparing the dosage administered by the nursing staff to patients on PCA with those on conventional "as and when" needed regimens needs to be undertaken to answer these questions.

The limitation of the survey is that tertiary hospitals included in this study may not be representative of the general hospitals within the Indian subcontinent; consequently, there may be differences in hospital practices.

Conclusion

This survey, which is the largest from the Indian subcontinent, demonstrates that in some of the best-known institutes of India, postoperative pain continues to be reported by most patients. The APS service, wherever it exists, is yet to reach its optimum potential. In addition, the newer standards of care such as PCA are yet to be adequately adopted by caregivers.

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Conflicts of interest

Author AK has received honorarium from Smith for rendering advisory services.

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Appendix

(Please ask the following questions to the patients)

Pain scales (Please circle '0' if no; if yes, please circle the one number that best shows the severity of each)

1.	**Have you experienced any pain in last 24 hours? If yes, please proceed. If no, please stop.**	Yes ☐ No ☐
2.	**On this scale, please indicate the least pain you had in the last 24 hours:**	0 1 2 3 4 5 6 7 8 9 10 No pain … Worst pain possible
3.	**On this scale, please indicate the worst pain you had in the last 24 hours:**	0 1 2 3 4 5 6 7 8 9 10 No pain … Worst pain possible
4.	**How often were you in severe pain in the last 24 hours?**	0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100% Never in severe pain … Always in severe pain

Patient satisfaction scores (Please circle '0' if no; if yes, please circle the one number that best shows the severity of each)

In the last 24 hours, how much did pain interfere or prevent you from:

1.	**Doing activities in bed such as turning, sitting up, repositioning.**	0 1 2 3 4 5 6 7 8 9 10 Does not interfere … Completely interferes
2.	**Doing activities out of bed such as walking, sitting in a chair, other activities**	0 1 2 3 4 5 6 7 8 9 10 Does not interfere … Completely interferes
3.	**Falling asleep**	0 1 2 3 4 5 6 7 8 9 10 Does not interfere … Completely interferes
4.	**Staying asleep**	0 1 2 3 4 5 6 7 8 9 10 Does not interfere … Completely interferes
5.	**How much did the pain cause you to feel:**	Anxious 0 1 2 3 4 5 6 7 8 9 10 Depressed 0 1 2 3 4 5 6 7 8 9 10 Frightened 0 1 2 3 4 5 6 7 8 9 10 Helpless 0 1 2 3 4 5 6 7 8 9 10 Not at all … Extremely
6.	**How often have you experienced any of the following side effects in the last 24 hours?**	Nausea 0 1 2 3 4 5 6 7 8 9 10 Drowsiness 0 1 2 3 4 5 6 7 8 9 10 Itching 0 1 2 3 4 5 6 7 8 9 10 Dizziness 0 1 2 3 4 5 6 7 8 9 10 None … Severe
7.	**In the last 24 hours, how much pain relief did you receive from all of your pain treatments combined? (medicine and non medicine treatments)**	0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100% No relief … Complete relief
8.	**How satisfied are you with the results of your pain treatment while in the hospital?**	0 1 2 3 4 5 6 7 8 9 10 Extremely dissatisfied … Extremely satisfied

Care givers' satisfaction score. Physician's/Nurse's satisfaction with patient's pain relief and recovery.

(Please circle '0' if no; if yes, please circle the one number that best shows the severity of each)

How satisfied you are with the results of your patient's pain relief and recovery while in the hospital?

0 1 2 3 4 5 6 7 8 9 10

Extremely dissatisfied … Extremely satisfied

If dissatisfied, specify the reason _____

On this scale, please indicate the pain you feel while lying in bed without moving:

0 1 2 3 4 5 6 7 8 9 10

No pain … Worst pain possible

On this scale, please indicate the pain you feel while trying to move:

0 1 2 3 4 5 6 7 8 9 10

No pain … Worst pain possible

For how many hours in the last 24 hours were you in severe pain? H H : M M

Were any adverse drug reactions related to use of analgesic(s) experienced during this period? Yes ☐ No ☐

If yes, please fill adverse event form.