Brazilian Journal of Anesthesiology 2021;71(2) 103–109

Sociedade Brasileira de Anestesiologia

Brazilian Journal of ANESTHESIOLOGY

CLINICAL RESEARCH

Anesthesia-related care dissatisfaction: a cohort historical study to reveal related risks

Chie Okuda, Satoki Inoue *, Masahiko Kawaguchi

Nara Medical University, Division of Intensive Care, Department of Anesthesiology, Nara, Japan

Received 3 March 2020; accepted 18 October 2020
Available online 3 February 2021

KEYWORDS
Anesthesia department, Hospital;
Patient satisfaction;
Administrative claims, Healthcare

Abstract
Background: Most previous reports have used questionnaires to investigate patient satisfaction regarding anesthesia-related care. We retrospectively investigated the dissatisfaction rate for anesthesia and the contributing factors for it using a questionnaire including anesthesia-related adverse events and a simplified patient satisfaction scale.
Methods: This is a retrospective review of an institutional registry containing 21,606 anesthesia cases. We conducted multivariate logistic analysis in 9,429 patients using the incidence of dissatisfaction as a dependent variable and other covariates, including items of anesthesia registry and a postoperative questionnaire, as independent variables to investigate factors significantly associated with the risk of dissatisfaction with anesthesia.
Results: In the study population, 549 patients rated the anesthesia service as dissatisfactory. Multivariate analysis identified the preoperative presence of coexisting disease [odds ratio (OR), 1.29; 95% confidence interval (CI), 1.05–1.59], combination of regional anesthesia (OR, 1.44; 95% CI, 1.10–1.88), self-reported awareness (OR, 1.99; 95% CI, 1.29–3.06), postoperative nausea and vomiting (PONV) (OR, 1.54; 95% CI, 1.25–1.90), occurrence of nightmares (OR, 1.96; 95% CI, 1.52–2.53), and the number of days taken to visit a postoperative anesthesia consultation clinic (OR, 1.01; 95% CI, 1.00–1.02) to be independently associated with dissatisfaction with anesthesia service.
Conclusions: Patients with coexisting disease, undergoing a combination of regional anesthesia, with self-reported awareness, experiencing PONV, suffering from nightmares, and who took longer to visit a postoperative anesthesia consultation clinic tended to rate our anesthesia service as dissatisfactory. Although the exact reasons for the factors contributing to dissatisfaction are unknown, this study suggests that there is room to improve our service.

* Corresponding author.
E-mail: seninoue@naramed-u.ac.jp (S. Inoue).

https://doi.org/10.1016/j.bjane.2021.02.006

Introduction

According to a recent large observational study, 35% of the patients reported severe discomfort related to postoperative side effects, such as thirst, surgical pain, and drowsiness. However, only 5% of the patients reported dissatisfaction with any aspect of anesthesia-related care.[1] This may indicate that anesthesia-related complications are not directly associated with patient dissatisfaction or satisfaction regarding anesthesia management. Patient satisfaction is a sensitive measure of a well-functioning health service system, which is applicable to the anesthesia service.[2] However, it is difficult, and not always appropriate, to determine surrogate outcomes for patient satisfaction with anesthesia-related care.[2] For example, the amount of empathic postoperative care may well have had more influence on patient satisfaction than a reduction in symptoms from anesthesia-related complications.[2] Indeed, it has been reported that patients usually rate the medical care they receive highly,[3] and it has also been suggested that a focus on patient satisfaction may blunt caregiver sensitivity to the need for further improvement.[4] Actually, in our practice, we seldom encounter patient dissatisfaction without attempting to elicit dissatisfaction from patients. Paradoxically, it is reasonable to think that there should be a proper reasoning that cannot be ignored in expressing their dissatisfaction.

Most previous reports have used questionnaires to investigate patient satisfaction regarding anesthesia-related care. However, in this situation, we do not think that dissatisfaction is the reciprocal of ''satisfaction'' because questionnaires usually include a choice of ''even,'' regarding satisfaction or dissatisfaction. Therefore, we need to thoroughly investigate the rate of dissatisfaction with the anesthesia service. In this study, we retrospectively investigated the dissatisfaction rate for anesthesia-related care, as well as the factors contributing to dissatisfaction, using a questionnaire including anesthesia-related adverse events and a simplified patient satisfaction scale.

Methods

Approval for the review of patient clinical charts, for access to data of the institutional registry of anesthesia, and for reporting of the results was obtained from the Institutional Review Board. The requirement for written informed consent was waived by the Institutional Review Board (No. 1428 approved on Dec-19-2016 and revised on Aug-23-2019).

Perioperative patient treatment

No standardization was conducted for the methods of induction and maintenance of anesthesia. However, the methods of anesthesia did not differ significantly as this study was performed in only one hospital. No premedication was used, and general anesthesia was usually induced with intravenous propofol (1–2.5 $mg.kg^{-1}$) plus either fentanyl (1–2 $\mu g.kg^{-1}$) or remifentanil (0.2–0.3 $\mu g.kg^{-1}.min^{-1}$). Moreover, neuromuscular blockade was achieved with rocuronium (0.6–0.9 $mg.kg^{-1}$). In most cases, bispectral index monitoring was used; however, this decision was based on the preference of the attendant. Tracheal intubation was performed using a Macintosh-type laryngoscope by residents under the guidance of the registered (consultant) anesthetist or by the registered anesthetist. Anesthesia was maintained with sevoflurane (1.5–2%) in a 40% oxygen and air mixture or with propofol (6–10 $mg.kg^{-1}.h^{-1}$); nitrous oxide was not used. Fentanyl (1–2 $\mu g.kg^{-1}.h^{-1}$) or remifentanil (0.1–0.2 $\mu g.kg^{-1}.min^{-1}$) was used for analgesia. Rocuronium (0.2–0.3 $mg.kg^{-1}.h^{-1}$) was used for neuromuscular blockade, and sugammadex (2–4 $mg.kg^{-1}$), since August 2010, or neostigmine (40 $\mu g.kg^{-1}$) plus atropine (20 $\mu g.kg^{-1}$), until July 2010, was used for the reversal of neuromuscular blockade after the evaluation of the neuromuscular blockade status using a nerve stimulator. In case of management by residents, anesthesia management was supervised by consultant anesthetists, and residents could consult supervisors at any time. Tracheal extubation was performed immediately after patients regained consciousness. Tracheal extubations were also performed by residents under the guidance of the consultant anesthetist or by the consultant anesthetist. Unless the patient's trachea was extubated in the operating room, patients were transferred to the intensive care units and managed under mechanical ventilation until tracheal extubation was performed. Occasionally, postoperative analgesia was provided with intravenous fentanyl or epidural ropivacaine combined with fentanyl using a patient-controlled analgesia device. After the completion of anesthesia, the attendant in charge filled out the form for the institutional registry of anesthesia, which included the following information: the attendant's name, name of the person who performed the intubation, patient's demographic variables, information on the final diagnosis and surgical procedures (later categorized into three classes based on the modified surgical risk stratification),[5] background illnesses (hypertension, diabetes mellitus, coronary artery disease, history of heart failure, and lung disease), duration of anesthesia and surgery, American Society of Anesthesiologists (ASA) physical status, urgency of surgery (emergency or elective), anesthesia technique (inhalational or intravenous with or without regional analgesia), intraoperative patient positioning, final airway assessment, requirement of transfusion, implementation of postoperative analgesia, requirement of postoperative intensive care, and adverse intraoperative events, including cardiac events, hypotension, arrhythmia, and hypoxia. The attendant in charge of the case also followed up the patient and recorded any complications, including any unpleasant experience with anesthesia, over several postoperative days. In addition, as a general institutional rule, the patients visited the postoperative anesthesia consultation clinic by hospital discharge and completed a questionnaire using a self-report form; the questionnaire included items on tooth injury, postoperative nausea and vomiting, sore throat, hoarseness, occurrence of nightmares, recall of extubation, and intraoperative awareness. Patients were also requested to rate our perioperative care using a simplified patient satisfaction scale (very satisfactory, satisfactory, even, and dissatisfactory). We also recorded how many days had passed since the operative day when the patient visited the postoperative anesthesia consultation clinic.

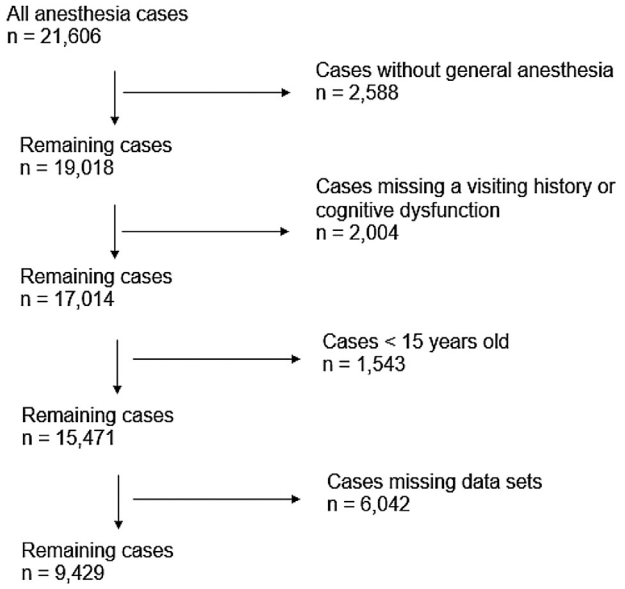

Figure 1 Flow diagram for patient inclusion and exclusion.

Data handling

Data were collected between January 2009 and December 2013, during which period there were 21,606 anesthesia cases. The exclusion criteria for the current study (and the reasons for consequent reductions in eligible patients) were as follows: (1) cases without general anesthesia (n = 2,588), (2) cases missing a history of visiting the anesthesia consultation clinic or those who were unable to answer the questionnaire due to disturbance of cognitive dysfunction (n = 2,004), (3) cases < 15 years old (n = 1,543), and (4) cases missing anesthesia registry data sets or answers on the postoperative questionnaire (n = 6,042) (Figure 1).

Statistical analysis

Continuous variables are presented as mean ± standard deviation if normally distributed or median and interquartile range if nonparametric. Categorical variables are presented as the number of patients. In the study cohort (9,429 patients), univariate analysis was used to identify factors associated with dissatisfaction. Four fifths (n = 7,544) of the study participants were randomly assigned into the model derivation cohort and reserved one-fifth (n = 1,885) for internal validation. We conducted multivariate logistic analysis in the derivation cohort using the incidence of dissatisfaction as a dependent variable and other covariates, including items of anesthesia registry and the postoperative questionnaire, as independent variables in order to investigate the factors that were significantly associated with the risk of dissatisfaction with the anesthesia service. Candidate factors with a significant univariate association ($p < 0.2$) with dissatisfaction were used to perform multivariable logistic regression analysis by forced-entry methods. All candidate variables were entered in the initial model and presented as adjusted odds ratios (ORs) with 95% confidence intervals (CI). Interactions between variables were systematically searched, and collinearity was considered for r or rho > 0.8 using Pearson or Spearman coefficient matrix correlation, respectively. Discrimination of the final model for dissatisfaction was assessed using the likelihood-ratio test. The area under the receiver operating characteristic (ROC) curve was calculated to assess the performance of the model. Calibration of the model was tested using the Hosmer–Lemeshow statistic. The statistical model was then tested on the validation dataset. In short, calculation of predicted risk using the validation cohort data with logistic regression coefficients from the derivation dataset was performed. The ROC curve was calculated to assess the performance of the model. Analyses were computed using the MedCalc statistical package (version 18.11.6, MedCalc Software bvba, Ostend, Belgium). $p < 0.05$ was considered statistically significant.

Results

We analyzed data from 9,429 patients, of whom 549, representing 5.82% of the overall population, were found to rate our service as dissatisfactory. Patient data and perioperative characteristics were compared between patients in both categories (Table 1). Univariate analysis revealed that older age, presence of coexisting disease, postoperative ICU admission, use of inhalational anesthetics, combination of regional anesthesia, difficult airway, self-reported intraoperative awareness, memory of extubation, dental injury, PONV, hoarseness, sore throat, postoperative pain, occurrence of nightmares, and longer time taken to visit the postoperative anesthesia consultation clinic were candidates associated with dissatisfaction with our anesthesia service for the next multivariate analysis. No collinearity was observed between any of the variables.

Multivariate analysis in the derivation cohort (n = 7544) revealed that preoperative presence of coexisting disease (OR, 1.29; 95% CI, 1.05–1.59), combination of regional anesthesia (OR, 1.44; 95% CI, 1.10–1.88), self-reported awareness (OR, 1.99; 95% CI, 1.29–3.06), PONV (OR, 1.54; 95% CI, 1.25–1.90), occurrence of nightmares (OR, 1.96; 95% CI, 1.52–2.53), and days taken to visit the consultation clinic (OR, 1.01; 95% CI, 1.00–1.02) were independently associated with dissatisfaction with our anesthesia service (Table 2). Discrimination of the final models, assessed by the likelihood-ratio test, was significant for these variables ($p < 0.001$). Hosmer–Lemeshow analysis suggested an acceptable calibration ($p = 0.900$). The explanatory model based on these variables had an area under the receiver operating characteristic curve of 0.628 (95% CI, 0.617–0.639) (Figure 2A). Figure 2B shows the calculated ROC curve using the validation cohort data with logistic regression coefficients from the derivation dataset. The area under the curve (AUC) was 0.621 (95% CI, 0.599–0.643), which was thus very similar to the AUC from the derivation cohort.

A *post hoc* power calculation was conducted for this forced-entry multivariable logistic regression model using 15 variables. We followed standard methods to estimate the sample size for multivariable logistic regression, with at least ten outcomes required for each included independent variable.[6] With an incidence of dissatisfaction of 549/9,429 (5.82%) in this population, we required 2,577 patients to

Table 1 Results of univariate analyses.

	Dissatisfaction (n = 549)	No dissatisfaction (n = 8,880)	*p*-value
Age (years)	57.5 (17.8)	58.8 (17.2)	0.093a
Sex (M/F)	246/303	4170/4710	0.333
Hight (cm)	159.4 (9.2)	160.0 (9.2)	0.438
Weight (kg)	58.1 (12.9)	58.6 (12.5)	0.450
ASA physical status (1-5)	2 (1-2)	2 (1-2)	0.326
Coexisting disease (Y/N)	336/213	4948/3932	0.013[a]
Duration of anesthesia (min)	251 (149)	255 (152)	0.473
Duration of surgery (min)	187 (137)	192 (140)	0.433
Surgical intensity (1-3)	2 (2-2)	2 (2-2)	0.931
Emergency (Y/N)	82/467	1230/7650	0.484
ICU admission (Y/N)	116/433	1625/7255	0.1[a]
Inhalational anesthesia (Y/N)	413/136	6943/1937	0.111[a]
Postoperative analgesia (Y/N)	166/383	2887/5993	0.28
Combination of regional anesthesia (Y/N)	127/422	1738/7142	0.047[a]
Surgical posture (Supine) (Y/N)	442/107	7035/1845	0.515
Resident management (Y/N)	308/241	5083/3797	0.625
Difficult airway (Y/N)	25/524	298/8582	0.145[a]
Transfusion (Y/N)	73/476	1190/7690	1
Intraoperative adverse event (Y/N)	3/546	28/8852	0.424
Self-reported awareness (Y/N)	34/515	277/8603	< 0.0001[a]
Memory of extubation (Y/N)	55/494	650/8230	0.024[a]
Dental injury (Y/N)	8/541	80/8800	0.172[a]
PONV (Y/N)	180/369	2091/6789	< 0.0001[a]
Hoarseness (Y/N)	253/296	3476/5404	0.0013[a]
Sore throat (Y/N)	253/296	3534/5346	0.004[a]
Postoperative pain (Y/N)	399/150	6056/2824	0.029[a]
Nightmare (Y/N)	112/437	901/7979	< 0.0001[a]
Time taken for postoperative anesthesia consultation clinic (day)	9.2 (8.5)	8.3 (7.1)	0.007[a]

ASA, American Society of Anesthesiologists; ICU, intensive care unit; PONV, postoperative nausea and vomiting.
Variables are expressed as number of patients, Mean (SD) or Median (IQR).
[a] Variables marked with an asterisk were entered into the logistic regression model.

Table 2 Results of multivariate analysis in the derivation cohort (n = 7,544).

Variables	Odds ratio	95% CI	*p*-value
Age (years)	0.99	0.99-1.001	0.334
Coexisting disease	1.29	1.05-1.59	0.014
ICU admission	1.00	0.74-1.35	0.975
Inhalational anesthesia	0.86	0.68-1.08	0.197
Combination of regional anesthesia	1.44	1.10-1.88	0.007
Difficult airway	1.45	0.84-2.49	0.180
Self-reported awareness	1.98	1.29-3.06	0.002
Memory of extubation	0.98	0.69-1.39	0.896
Dental injury	1.54	0.72-3.32	0.265
PONV	1.54	1.25-1.90	0.0001
Hoarseness	1.15	0.93-1.42	0.186
Sore throat	1.12	0.91-1.38	0.299
Postoperative pain	1.19	0.95-1.49	0.124
Nightmare	1.96	1.52-2.53	< 0.0001
Time taken for postoperative anesthesia consultation clinic(day)	1.01	1.00-1.02	0.026

ICU, intensive care unit; PONV, postoperative nausea and vomiting.

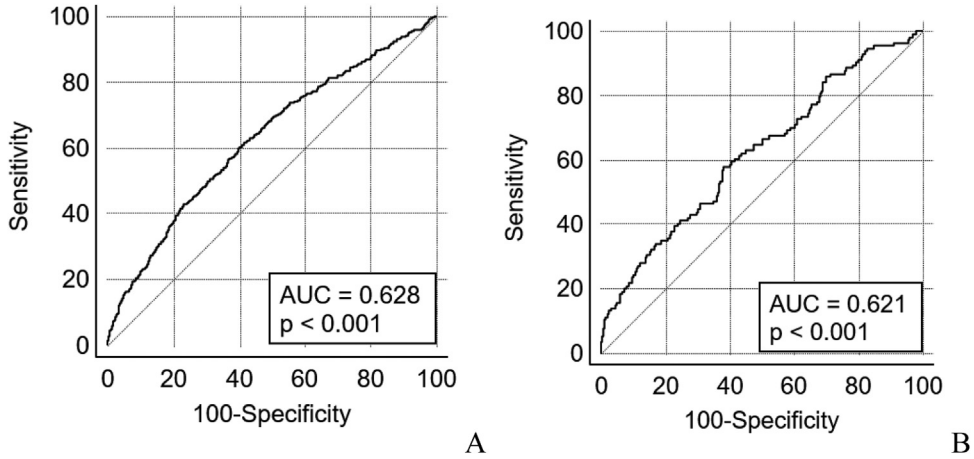

Figure 2 Receiver-operating characteristic (ROC) curves. A, the ROC curve of the 7,544 patients of the derivation data set; B, the ROC curve of the 1,885 patients of the validation data set.

perform accurate multivariable logistic regression with ten variables, which demonstrates that our sample size was sufficient to build the model.

Discussion

This study demonstrated that cases with coexisting disease, undergoing a combination of regional anesthesia, with self-reported awareness, experiencing PONV, suffering from nightmares, and who took longer to visit the postoperative anesthesia consultation clinic were all prone to rating our anesthesia service as dissatisfactory. Interestingly, it seems that patients did not really mind who (residents or anesthetists) provided the anesthesia.

Regarding PONV, it has been previously reported that patients continue to rank nausea/vomiting as their most undesirable surgical outcome.[7] Therefore, it is easy to understand that the presence of PONV was one of the leading causes of dissatisfaction with our anesthesia service.

The preface of the Fifth National Audit Project (NAP 5) report states that intraoperative awareness is an intraoperative complication greatly feared by patients and is a concern raised frequently during preoperative visits.[8] Thus, it is also easy to understand that self-reported awareness caused dissatisfaction with our anesthesia service. In this connection, the incident rate of awareness in our population was 3.4%, which is up to 30-fold higher than the previous reports.[9] We included all self-reported intraoperative awareness cases based on questionnaires, but without any specific validation in our analysis. Therefore, it is highly probable that the majority of our awareness cases were not true intraoperative awareness cases, which means that such patients might have mis-imagined their experience of anesthesia as a result of dreaming either intraoperatively or postoperatively.[10,11] We previously investigated the factors associated with self-reported awareness.[12] In this investigation, we found that higher ASA physical status and emergency case were positively, and application of postoperative analgesia was negatively associated with incidence of self-reported awareness.[12]

A nightmare is an unpleasant dream that can cause a strong emotional response, typically fear but also despair, anxiety, and great sadness, from the mind. The dream may contain situations of discomfort, or psychological or physical terror. Sufferers often awaken in a state of distress and may be unable to return to sleep for an extended period.[13] A nightmare is a type of sleep disorder[13]; thus, it is reasonable to suppose that nightmares can affect a patient's quality of life during his/her hospital stay, which can also cause dissatisfaction with our anesthesia service. The actual question regarding nightmares at the postoperative anesthesia consultation clinic was ''Have you had a terrifying or deeply upsetting dream postoperatively?''. Regarding this question, the time and place were not considered, and the nightmare incidence was determined by referring to the patient's report.

We found that preoperative coexisting disease was associated with dissatisfaction with our anesthesia service. It has been previously suggested that patients frequently complained of receiving inconsistent information, had difficulty in obtaining information, and also had an untimely communication of information.[14] The presence of coexisting disease can make informed consent more severe, which may increase the opportunities to encounter such situations. It has been also suggested that the leading causes of patient complaints were unprofessional conduct, poor provider–patient communication, patient treatment and care, and having to wait for care.[15] The presence of coexisting disease should increase the frequency of preoperative extra medical examinations, which may also increase the opportunities to encounter such situations.

It has been reported that patients who preferred general anesthesia over regional anesthesia, or those who were scheduled to undergo regional anesthesia, expressed more fear of suffering back pain and of needle puncture.[16,17] The results also suggested that patients are unaware of the real risks and benefits of regional anesthesia. In addition, as mentioned above, patients frequently complain of having received inconsistent information.[14] Their actual perception of regional anesthesia might have been different from their expectation, even though they endured fear of needle puncture.

Interestingly, the longer time taken to visit the postoperative anesthesia clinic, the higher was the proportion of patients who rated our anesthesia service as dissatisfactory was. It has been reported that the level of satisfaction with the continuity of personal care from the anesthetist was significantly increased by the introduction of a single postoperative visit by the anesthetist compared with no visit, although the overall satisfaction with anesthesia was unchanged.[18] It has also been reported that one of the predictors for anesthesia satisfaction was having received more than two anesthesiologist visits after surgery.[19] This topic may still be a matter of debate,[20] no contact with patients for a longer period may mean poor provider–patient communication, which is one of main causes for patient dissatisfaction.[15] In our hospital, the attendant in charge of the case visited and followed up the patient postoperatively, but not officially, which means it was not clinical routine task. Thus, it may be important for anesthesiologists to officially visit patients at postsurgical wards in cases where it is difficult to ensure an early consultation clinic visit.

The current study has several limitations that merit discussion. First, this study was retrospective in nature; thus, unmeasured variables could still confound the results. We used data from the institutional registry of anesthesia, which includes minimal essential information about each case, but does not include precise details. Therefore, we did not obtain several variables which might have affected patient dissatisfaction. For example, it was reported that anxiety and discomfort due to thirst and drowsiness were most frequently cited as the worst aspect of the perioperative experience.[1] However, our study did not include these items. Second, this study relied on patient self-reports to determine symptoms, which were based on memory. It has been reported that prospective methods using questionnaires detect substantially more unpleasant events than approaches based on spontaneous patient reports,[20] which may explain the relatively higher incidences of postoperative anesthesia-related complications in our population. It cannot be denied that these recalls of anesthesia-related complications could have affected the patients' rating of our service. Third, a considerable number of patients were excluded from the study. However, the excluded patients might not have affected the results because the exclusion was performed according to the objective criteria, and the missing data were at least missing at random. Forth, there should have been some deviations from our institutional anesthesia protocol because the methods of anesthesia were basically left to the preference of the anesthesia attendant. However, our hospital is a teaching hospital. Therefore, it is reasonable to think that the deviation from the standard protocol was not so large even though there had been some deviations. Lastly, our study represents an audit of clinical practice at an individual institution, and our findings might not be generalizable to the practice of anesthesiology as a whole.

Conclusions

Patients with coexisting disease, undergoing a combination of regional anesthesia, with self-reported awareness, experiencing PONV, suffering from nightmares, and who took longer to visit the postoperative anesthesia consultation clinic tended to rate our anesthesia service as dissatisfactory. Although the exact reasons for these factors contributing to patient dissatisfaction remain unknown, this study suggests that there is room to improve our service.

What is known

''Dissatisfaction'' is not the reciprocal of ''satisfaction''. Considerable rates of the patients reported severe discomfort related to postoperative side effects; however, few patients reported dissatisfaction with any aspect of anesthesia-related care.

What is new

We investigated the rate of dissatisfaction with the anesthesia service. Coexisting disease, regional anesthesia, self-reported awareness, PONV, nightmares, and longer periods until visiting a postoperative anesthesia consultation clinic may dissatisfy patients undergoing general anesthesia.

Conflicts of interest

The authors declare no conflict of interest.

References

1. Walker Emk, Bell M, Cook Tm, et al. Central SNAP-1 Organisation; National Study Groups. Patient reported outcome of adult perioperative anaesthesia in the United Kingdom: a cross-sectional observational study. Br J Anaesth. 2016;117:758–66.
2. Heidegger T, Saal D, Nübling M. Patient satisfaction with anaesthesia - Part 1: satisfaction as part of outcome - and what satisfies patients. Anaesthesia. 2013;68:1165–72.
3. Ware JE, Hays RD. Methods for measuring patient satisfaction with specific medical encounters. Med Care. 1988;26:393–402.
4. Goldwag R, Berg A, Yuval D, et al. Predictors of patient dissatisfaction with emergency care. Isr Med Assoc J. 2002;4:603–6.
5. Eagle KA, Berger PB, Calkins H, et al. American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Update the 1996 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery). ACC/AHA guideline update for perioperative cardiovascular evaluation for noncardiac surgery-executive summary a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Update the 1996 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery). Circulation. 2002;105:1257–67.
6. Peduzzi P, Concato J, Kemper E, et al. A simulation study of the number of events per variable in logistic regression analysis. J Clin Epidemiol. 1996;49:1373–9.
7. Macario A, Weinger M, Carney S, et al. Which clinical anesthesia outcomes are important to avoid? The perspective of patients. Anesth Analg. 1999;89:652–8.
8. Van Besou J-P, Harrop-Griffith W, O'Sullivan EP. Chapter 1 Foreword. In: Pandit JJ, Cook TM, editors. NAP5 5th National Audit Project of The Royal College of Anaesthetists and the Association of Anaesthetists of Great Britain and Ireland. Accidental Awareness during General Anaesthesia in the United Kingdom and Ireland. London: The Royal College of Anaesthetists; 2014. p. 9–10.
9. Pandit JJ, Andrade J, Bogod DG, et al. Royal College of Anaesthetists and the Association of Anaesthetists of Great Britain and Ireland. The 5th National Audit Project (NAP5) on accidental awareness during general anaesthesia: summary of main findings and risk factors. Anaesthesia. 2014;69:1089–101.

10. Leslie K, Skrzypek H, Paech MJ, et al. Dreaming during anesthesia and anesthetic depth in elective surgery patients: a prospective cohort study. Anesthesiology. 2007;106:33–42.
11. Leslie K, Sleigh J, Paech MJ, et al. Dreaming and electroencephalographic changes during anesthesia maintained with propofol or desflurane. Anesthesiology. 2009;111: 547–55.
12. Takechi A, Inoue S, Kawaguchi M. Anaesthesia management by residents does not alter the incidence of self-reported anaesthesia awareness: A teaching hospital-based propensity score analysis. Anaesth Crit Care Pain Med. 2019;38:63–8.
13. Reynolds CFIII, O'Hara RM, Morin CM, et al. Nightmare Disorder. In: The DSM-5 Task Force. Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Virginia: American Psychiatric Association; 2013. p. 404–7.
14. Mattarozzi K, Sfrisi F, Caniglia F, et al. What patients' complaints and praise tell the health practitioner: implications for health care quality. A qualitative research study. Int J Qual Health Care. 2017;29:83–9.
15. Montini T, Noble AA, Stelfox HT. Content analysis of patient complaints. Int J Qual Health Care. 2008;20:412–20.
16. Lavado JS, Gonçalves D, Gonçalves L, et al. General or regional? Exploring patients' anaesthetic preferences and perception of regional anaesthesia. Rev Esp Anestesiol Reanim. 2019;66:199–205.
17. Bheemanna NK, Channaiah SRD, Gowda PKV, et al. Fears and Perceptions Associated with Regional Anesthesia: A Study from a Tertiary Care Hospital in South India. Anesth Essays Res. 2017;11:483–8.
18. Saal D, Heidegger T, Nuebling M, et al. Does a postoperative visit increase patient satisfaction with anaesthesia care? Br J Anaesth. 2011;107:703–9.
19. Capuzzo M, Gilli G, Paparella L, et al. Factors predictive of patient satisfaction with anesthesia. Anesth Analg. 2007;105:435–42.
20. Mashour GA, Avidan MS. Intraoperative awareness: controversies and non-controversies. Br J Anaesth. 2015;115 Suppl 1:20–6.