

Quality of Anesthesia Care in a University Hospital in Thailand

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Background: Service quality is an important factor, which value differs between the patient's satisfaction and expectation. The patient's expectations are important factors for development. This service quality is a key part for improvement of our anesthesia service. In general, an improvement in service design and delivery helps to achieve higher levels of the service quality.

Objective: To evaluate the level of patient's expectation, patient's satisfaction and the quality of anesthesia care in a university hospital in Thailand.

Material and Method: The patient satisfaction questionnaire, developed from service quality criteria and patient satisfaction questionnaire (PSQ-18), was applied to evaluate 467 in patients 24-72 hours after anesthesia care. The patients' expectation was also assessed. A proportional stratified randomized allocation was done. The questionnaire consisted of three dimensions; 1) structure: reliability & empathy, 2) process: assurance & tangible and 3) result: responsiveness. Data expectation and satisfaction were analyzed with mean, standard deviation, t-test, ANOVA and normalized gain for the quality of anesthesia care.

Results: The patient's satisfaction in our anesthesia care is relatively high. The mean patient's satisfaction score is significantly higher than the mean patient's expectation in all dimensions. This study indicated that an anesthesia service in our hospital was a high quality service in the inpatient aspects.

Conclusion: Patient's expectation and satisfaction with anesthesia services in our setting was relatively high. Although most patients never had been any expectation regarding anesthesia service, the information and the involvement in decision-making were the most requirements of the adult inpatients.

Keywords: Quality, Anesthesia, Satisfaction, Expectation, Developing country

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Patients' involvement in all decision processes is becoming increasingly important in modern healthcare. However, patient satisfaction is a sensitive measure of a well-functioning health service system. To date, the new anesthetic drugs and monitoring equipment for safety and efficacy are available⁽¹⁾. The quality of anesthesia care and the patient's satisfaction could not be confirmed. Several studies defined the meaning of patient-centered care, the meaning of patient satisfaction as part of outcome quality and its role in the association with anesthesia. These studies confirmed that patient satisfaction was an important

outcome measure. Goal-oriented care that included communication, information and emotional relationships was necessary for the patient satisfaction with anesthesia care. Furthermore, continuous monitoring, assessment and adaptation to changing patient expectations are the keystones of continuing patient satisfaction⁽²⁾.

The determination of customer satisfaction is an indicator of the customer focus. The quality of care is an important factor, which value differs between satisfaction and expectation. In the past, the research on satisfaction was not reflected in patient's expectation⁽³⁾. The objective of this study is to evaluate the quality of anesthesia care which reported on outcome of the different values between satisfaction and expectation in the adult inpatients who undergoing anesthesia. The result of this study will be data and information for organization to improve and develop a

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future plan on the anesthesia service.

Material and Method

This study was a prospective cohort study. The study was approved by the Siriraj Institutional Review Board. Data were collected from the patients who underwent anesthesia during a period from January, 2012 to March, 2012 at Siriraj Hospital, Thailand. The objective of the study is to assess the patient's satisfaction, patient's expectation and the quality of anesthesia care during this period. A sample size was calculated by using the Proportional Stratified Randomized and Systemic sampling. Patients between 20-80 years of age were eligible for the study. Exclusion criteria included the patients with severe cardio-respiratory instabilities, any clinical evidence of encephalopathy, and the patients with history of psychiatric problems.

All patients completed a questionnaire 24-72 hours after anesthesia. For patients who could not read, the visitor should read for them. There were five visitors in the study. Patients were advised, trained and experimented on using questionnaire before completing the questionnaire. The patient who accepted to accomplish the questionnaire signed consent. The questionnaire had been developed from Patient Satisfaction Questionnaire of the Nation Center for Health Service Research (NCHRS) (PSQ-18; Ware, Snyder & Wright, 1979)⁽⁴⁾. However, the questions about anesthesia service expenses were excluded. The questionnaire had been verified by an expert. The questionnaire consisted of three parts; I: patient's general information, II: patient's personal information, and III: patient's satisfaction. A total of 15 questions were used. All of these, four questions were the structure dimensions (reliability and empathy), seven questions were the process dimensions (assurance and tangible), and four questions were the result dimensions (responsiveness). Each question score had 10 levels except the two last questions on relationship and the suggested needs to be improved anesthesia care.

Statistical analysis

Results were expressed as mean \pm SD or percentage (%), when appropriate. The data were analyzed with the statistical software package SPSS for Window version 18 (SPSS Inc., Chicago, IL) by using statistic percentage, mean, a standard deviation and find indicators with Chi-square, t-test ANOVA and normalized gain for quality of anesthetic care. Mean satisfaction score $>80\%$ is the highest satisfaction,

50-80% is the moderate satisfaction, and mean satisfaction score $<50\%$ is the less satisfaction. The same as the different value between satisfaction and expectation, normalized gain (g) >0.7 is "high quality", $0.7 < g < 0.3$ is "medium quality" and $0.0 < g < 0.3$ is "low quality".

Results

There were 467 patients performed during the study period. The majority of the patients were female (57.8%) and mean age between 51-80 years (37.5%) with Bachelor degree of education (33.3%). Most of the patients underwent anesthesia in the first time. In addition, the most common anesthetic technique was general anesthesia (Table 1).

Table 2 demonstrated the quality dimensions including patient's expectation, patient's satisfaction and anesthesia service. The overall satisfaction on medical service was in the highest satisfaction level (9.19 ± 1.27). Mean dimension of the assurance and tangible was 9.04 ± 1.56 and mean dimension of the reliability and sympathy was 9.10 ± 1.37 . The mean satisfaction level in all dimensions was significantly greater than the mean patient's expectation on anesthesia service. However, the overall satisfaction was not significantly different from anesthesia service units, type of operation, duration of operation, patient's information, and the type of anesthetic personnel. Mean patient's expectation was 5.81 ± 3.81 . For quality of anesthesia service, mean overall score was 0.75 ± 0.28 .

Table 3 showed the quality factors-related expectation rate. The majority of the quality factors-related expectation rates were the feeling safety while receiving anesthesia, anesthesia-related side effect, postoperative pain care, service from anesthesia team, and anesthetic technique.

Table 4 showed the quality factors-related satisfaction rate. The majority of the quality factors-related satisfaction rates were the service from anesthesia team, feeling safe while receiving anesthesia, care and devote patient during perianesthesia period, anesthetic technique, and the attention on patient's inquiry, sickness and opinion.

Table 5 demonstrated the quality factors-related anesthesia service. The majority of the quality factors-related anesthesia services were the severity of pain level on surgical area, anesthesia-related side effects, clearing name badge and introduction before anesthesia, anesthetic technique, and the clarification of a possible complication that might occur from anesthesia.

Table 1. Demographic and administrative characteristics of the study sample (n = 467)

Characteristics	Number	%
Sex		
Male	195	41.8
Female	272	58.2
Age (years)		
<20	21	4.5
20-30	82	17.6
31-40	103	22.5
41-50	84	18.0
>50	177	37.9
Education		
Primary/secondary school	119	25.5
Diploma	155	33.2
Bachelor	156	33.4
Post grad	37	7.9
Experience of anesthesia		
1 st	237	50.7
2 nd -3 rd	173	37.0
>3 rd	57	12.2
Anesthetic technique		
GA with ETT	245	52.5
GA with LMA	38	8.1
RA	125	26.8
Combined GA + RA	29	6.2
Peripheral nerve block	7	1.5
TIVA	23	4.9
Operative time (hours)		
<2	249	53.3
≥2	218	46.7
Reimbursement of medical expense		
CGD	163	34.9
Social welfare	69	14.8
Health insurance	143	30.6
Insurance/self-payment	92	19.7
Preanesthesia visitor (Pt. perception)		
Staff anesthesiologist	105	22.5
Nurse anesthetist	2	0.4
Resident in anesthesiology	219	46.9
Nurse student in anesthesiology	53	11.3
Unknown	53	11.3
None	84	18.0
Actual visitor		
Staff anesthesiologist	62	13.3
Nurse anesthetist	1	0.2
Resident in anesthesiology	320	68.5
Nurse student in anesthesiology	7	1.5
None	77	16.5

Discussion

For this globalization, either department or organization aims to develop the best medical service

to reach the patient's satisfaction based on professional ethics and the patient's right. Patient's satisfaction is an important key for public health service. Patient's satisfaction is associated with the patients relationship⁽⁵⁾, prosecution⁽⁶⁾, doctor's visit⁽⁷⁾, medical expenses, attention to the patient's inquiry, patient's sickness and provide opinion of doctor and nurse⁽⁸⁾. The development on medical service is important so each organization must have the evaluation of patient's satisfaction and expectation as well as the patient's need. If the organization knows what patients expect from medical services, the organization can design a service plan to match the patient's requirements.

Generally, the evaluation includes measurement, compared evaluation objectives with standard criteria, and compared value judgement about merit, worth, significance, and benefit of evaluation objects. Stake had created an evaluation model⁽⁹⁾. This model included antecedents, action and outcomes. Additionally, the evaluator needed to assess the intentions, observations, standards and judgements. Moreover, the service quality rate depends on the perception that how organization responds to patient's need and expectation as well as the result of patient's evaluation after receiving service. In present, patients have higher education so the medical services shall not be only providing medical expertise or focus only on recovery of the patients without concerning on the patient's need and expectation.

The present study demonstrated that the mean satisfaction rate of the anesthesia service in our hospital was significantly higher than the mean expectation rate in all dimensions. Additionally, the dimension of responsive on anesthesia service has the lowest expectation but has the highest satisfaction. This study also confirmed that our quality of anesthesia service was significantly higher than the patient's expectation. Importantly, the patients will come back to Siriraj Hospital for treatment of their health problems. They will recommend their friends and the other patients. However, some factors including pain management during and after surgery as well as adequate information need to be improved.

Patient's satisfaction on treatment is the important factors to present a success on providing medical care, measuring quality of care, evaluating performance of the department or organization whether our care is correspond to expectation of patients as well as its potential quality of care. From patient's perspective, the level of quality care is depended on the level of satisfaction on anesthesia care rather than

Table 2. Quality dimension on patient's expectation, patient's satisfaction, and anesthesia service

Quality dimensions	Expectation		Satisfaction		Anesthesia service	
	Mean	SD	Mean	SD	Mean	SD
Overall	5.81	3.81	9.10	1.43	0.75	0.28
Structure (reliability, empathy)	5.52	3.98	9.10	1.37	0.75	0.32
Process (assurance, tangibles)	5.77	3.80	9.04	1.56	0.74	0.31
Result (responsiveness)	6.15	3.67	9.19	1.27	0.74	0.32

Table 3. Quality factors-related expectation rate

Quality factors	Mean	SD
1) Feeling safety while receiving anesthesia (Q5 assurance, tangibles)	7.88	2.81
2) Anesthesia-related side effect (responsiveness)	6.39	3.27
3) Postoperative pain care (result)	6.24	3.85
4) Service from anesthesia team (R4 responsiveness)	6.15	3.81
5) Anesthetic technique (R1 responsiveness)	6.05	3.96

Table 4. Quality factors-related satisfaction rate

Quality factors	Mean	SD
1) Service from anesthesia team (R4 responsiveness)	9.50	0.96
2) Feeling safe while receiving anesthesia (Q5 assurance, tangibles)	9.48	1.15
3) Care and devote patient during perianesthesia (Q6 assurance, tangibles)	9.45	1.06
4) Anesthetic technique (R1 responsiveness)	9.37	1.10
5) Attention on patient's inquiry, sickness and opinion (P2 reliability, empathy)	9.30	1.18

Table 5. Quality factors-related anesthesia service

Quality factors	Mean	SD
1. Severity of pain level on surgical area (responsiveness)	1.71	0.89
2. Anesthesia-related side effect (responsiveness)	1.59	0.83
3. Clearing name badge and introduction before anesthesia (reliability, empathy)	1.57	0.78
4. Anesthetic technique (responsiveness)	0.79	0.37
5. Clarification of a possible complication that might occur from anesthesia (assurance, tangibles)	0.78	0.38

the level of expectation before receiving anesthesia. The patient's satisfaction involves the patient's feeling has risen from satisfaction or disappointment. When comparing with the patient's expectation, there are five criteria of quality care including reliability, assurance, tangible, empathy and responsiveness⁽¹⁰⁾. The important thing that the quality management of organization is focusing is on patient who will receive anesthetic care. Therefore, the organization has to

study patient's satisfaction and expectation while receiving anesthesia care with these five criteria to improve valuable information on self-assessment and the departmental service. This is also a care indicator that organizations can respond to according to patient's expectation and requirement during anesthesia care.

Consequently, patient satisfaction is used as an outcome measure in interventional and quality

improvement studies. Previous reports have found that there are few appropriately developed and validated questionnaires available. Barnett et al conducted a systematic review to recognize all tools used to evaluate the patient satisfaction with anesthesia⁽¹¹⁾. They performed a psychometric development and validation process, assessed the quality of the processes, and formulated the recommendations of tools that might be appropriate for the use in different clinical and academic settings. This review demonstrated that a high number of strongly developed and successively validated instruments were created. However, several studies still used the non-validated and/or poorly developed instruments. This could lead to biased and inaccurate results⁽¹¹⁾.

The construction of a new, valid and reliable questionnaire to evaluate the patient satisfaction is a complex and time-consuming task. Nubling et al presented a protocol for the construction of a psychometric questionnaire, supplemented by practical aspects for researchers and clinicians. They recommended that the construction and quality assessment of psychometrically developed questionnaires to assess the satisfaction with general anesthesia care in adult inpatients must follow a complex, rigorous, step-by-step approach including the elements of content validity, criterion validity, construct validity and the reliability. In addition, they also suggested that researchers and clinicians should produce more meaningful results if they used properly validated existing questionnaires instead of trying to design their own, with the risk of producing inadequate and misleading results⁽¹²⁾.

Furthermore, a previous study from Ethiopia evaluated the patient satisfaction with anesthesia services and also assessed the associated factors in 200 patients at the referral and teaching hospital. All patients underwent general and regional anesthesia during the study period from April 15-30, 2013. The authors used the standardized questionnaire for postoperative patient interview. The result showed a response rate of the study was 78%. The overall proportion of patient satisfaction with anesthesia services was 90.4%. In addition, the factors that affected patient satisfaction negatively were general anesthesia, intra-operative awareness as well as pain during and immediately after the procedure. The authors concluded that patient satisfaction with anesthesia services in their center was low when compared with the previous studies. The factors that affected patient satisfaction negatively might be preventable or better managed⁽¹³⁾.

Moreover, Hocking et al developed a short psychometric instrument for assessment of the patient's perception of the quality of anesthesia. They used the Quality of Health Care through the Patient's Eyes series of studies performed by the Netherlands Institute of Health Services Research. The authors concluded that postoperative nausea and vomiting, periprocedural pain management, and the communication with the anesthesiologist are the most important features of the patient's experience⁽¹⁴⁾. The result of our study is similar to this previous report.

From this study, there are many factors that could be developed from the patient's expectation and suggestion. For example, the introduction of the anesthesia's team to the patients because many patients do not know that anesthetic personnel will visit them before performing anesthesia and they do not know who give information, standard and safety on the anesthesia care. Moreover, the clinicians should allow the patient to be a part of consideration and decision making on the types of anesthetic techniques as well as to plan of postoperative care. For the next study, there should be a separate interview or questionnaire in the two time periods in order to get the correct information.

However, there are several limitations of this study that should be noted. First, the present report used questionnaires for measuring patient satisfaction after anesthesia. The main limitation of this study is its reliance on self-reported data. These self-reporting data may tend toward an underestimation of unpleasant data. Second, this is a single-center study. These results could not be reproducible constantly in other settings. Third, a sample size of the study was relatively small due to limitation of time; the short time elapsed between anesthesia and assessment of satisfaction, and the use of a questionnaire with dichotomous answers. Fourth, there are several anesthetic personnel participated in this study. A wide variability of the experience might be occurred. The authors therefore assume that the data are realistic and reveal daily clinical practice. Finally, our results may not be applicable to patients in developed countries.

In conclusion, the anesthesia care performed by anesthetic personnel of the Department of Anesthesiology, Siriraj Hospital was a high quality service. It also produced a high patient satisfaction rate in all dimensions. The information and the participation in decision-making were the most requirements of the adult in patients. In addition, the dimension of reliability and empathy needed to be

improved.

What is already known on this topic?

Patient satisfaction is an important measure of the quality of health care and is used as an outcome measure in interventional and quality improvement studies. The assessment of patient satisfaction and the patient experience are key performance measures that are increasingly being used in payment for performance plans. In the setting of a developing country, the adult inpatients' satisfaction with overall anesthesia care is very high. There is no difference in overall satisfaction scores between the patients having various types of anesthesia. However, patients were more satisfied with the provision of information and the involvement in decision-making before undergoing anesthesia.

What this study adds?

This study is essential to increase provider confidence in survey scores, particularly in a high-stakes environment. Practices reporting patient satisfaction data will do so as part of more global reporting of clinical and demographic information. This will allow multi-variable assessment of the relative influence on satisfaction scores of various confounders. In the future, it is likely that payment for anesthesia services will depend in part on measures of patient satisfaction. Survey data begin to be used to advise the patients and accredit health plans. In addition, patient satisfaction data had the potential to impact healthcare providers' participation. A questionnaire for assessment of the patient satisfaction should consist of multiple domains including information provision and communication between patients and physicians.

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Potential conflicts of interest

None.

References

1. Amornyotin S. Anesthesia innovations for endoscopy of gastrointestinal tract. In: Amornyotin S, editor. Endoscopy-innovative uses

and emerging technologies. Croatia: InTech; 2015: 40-61.

2. Heidegger T, Saal D, Nubling M. Patient satisfaction with anaesthesia - Part 1: satisfaction as part of outcome - and what satisfies patients. *Anaesthesia* 2013; 68: 1165-72.
3. Kravitz R. Patient satisfaction with health care: critical outcome or trivial pursuit? *J Gen Intern Med* 1998; 13: 280-2.
4. Marshall GN, Hays RD. Patient Satisfaction Questionnaire Short-Form (PSQ-18) [Internet]. 1994 [cited 2016 Feb 10]. Available from: <http://www.prgs.edu/content/dam/rand/pubs/papers/2006/P7865.pdf>
5. Korsch BM, Gozzi EK, Francis V. Gaps in doctor-patient communication. 1. Doctor-patient interaction and patient satisfaction. *Pediatrics* 1968; 42: 855-71.
6. Vaccarino JM. Malpractice. The problem in perspective. *JAMA* 1977; 238: 861-3.
7. Marquis MS, Davies AR, Ware JE Jr. Patient satisfaction and change in medical care provider: a longitudinal study. *Med Care* 1983; 21: 821-9.
8. Kawlaeid N, Pumnoy K, Wongleang K, Buranapanitkit B. Factors affecting satisfaction of orthopedic inpatients with their care. *Songkla Med J* 2004; 22: 111-6.
9. Abma TA, Stake RE. Stake's responsive evaluation: core ideas and evolution. *New Dir Eval* 2001; 92: 7-21.
10. Zeithami VA, Parasuraman A, Berry LL. Delivering quality service: balancing customer perceptions and expectations. New York: The Free Press; 1990.
11. Barnett SF, Alagar RK, Grocott MP, Giannaris S, Dick JR, Moonasinghe SR. Patient-satisfaction measures in anesthesia: qualitative systematic review. *Anesthesiology* 2013; 119: 452-78.
12. Nubling M, Saal D, Heidegger T. Patient satisfaction with anaesthesia - Part 2: construction and quality assessment of questionnaires. *Anaesthesia* 2013; 68: 1173-8.
13. Gebremedhn EG, Chekol WB, Amberbir WD, Flatie TD. Patient satisfaction with anaesthesia services and associated factors at the University of Gondar Hospital, 2013: a cross-sectional study. *BMC Res Notes* 2015; 8: 377.
14. Hocking G, Weightman WM, Smith C, Gibbs NM, Sherrard K. Measuring the quality of anaesthesia from a patient's perspective: development, validation, and implementation of a short questionnaire. *Br J Anaesth* 2013; 111: 979-89.

คุณภาพของการระงับความรู้สึกในโรงพยาบาลมหาวิทยาลัยแห่งหนึ่งในประเทศไทย

สุดตา ปริกโกโมคม, เพชร เจนจบ, ธนาภรณ์ นภาโชติ, ปรีชาต อภิเดชากุล, สุปราณี พวงจันทร์, พาพิรุณ น้อยตาแสง, สมชาย อมรโยธิน

ภูมิหลัง: คุณภาพของการบริการเป็นปัจจัยที่สำคัญชนิดหนึ่ง ซึ่งเป็นผลของความแตกต่างระหว่างความพึงพอใจ ความคาดหวังของผู้ป่วย ความคาดหวังของผู้ป่วยยังเป็นปัจจัยที่ทำให้เกิดการพัฒนางานบริการ คุณภาพของการบริการยังเป็นส่วนที่ทำให้การบริการพัฒนาดีขึ้น

วัตถุประสงค์: เพื่อศึกษาระดับความคาดหวัง ความพึงพอใจของผู้ป่วย และคุณภาพของการระงับความรู้สึก ในผู้ป่วยที่ได้รับการระงับความรู้สึกในโรงพยาบาลมหาวิทยาลัยแห่งหนึ่งในประเทศไทย

วัสดุและวิธีการ: แบบสอบถามที่ดัดแปลงมาจาก patient satisfaction questionnaire (PSQ-18) สอบถามในผู้ป่วยใน 467 คนหลังการระงับความรู้สึก 24-72 ชั่วโมงระดับความคาดหวัง ความพึงพอใจของผู้ป่วยและคุณภาพของการระงับความรู้สึกแบบสอบถามประกอบด้วย 3 ส่วน; 1) โครงสร้าง: reliability & empathy, 2) กระบวนการ: assurance & tangible and 3) ผลลัพธ์: responsiveness วิเคราะห์ระดับความคาดหวังและความพึงพอใจของผู้ป่วยด้วย ค่าเฉลี่ย และค่าเบี่ยงเบนมาตรฐาน, t-test, ANOVA และวิเคราะห์คุณภาพของการระงับความรู้สึกด้วย normalized gain

ผลการศึกษา: ความพึงพอใจของผู้ป่วยในการระงับความรู้สึกพบว่าค่อนข้างสูง ค่าเฉลี่ยของระดับความพึงพอใจของผู้ป่วยสูงกว่าค่าเฉลี่ยของระดับความคาดหวังของผู้ป่วยในทุกมิติ การศึกษานี้บ่งชี้ว่าคุณภาพของการระงับความรู้สึกสำหรับผู้ป่วยในของโรงพยาบาลศิริราชมีคุณภาพสูง

สรุป: ระดับความคาดหวังและความพึงพอใจของผู้ป่วยที่ได้รับการระงับความรู้สึกสำหรับผู้ป่วยในของโรงพยาบาลศิริราชค่อนข้างสูง แม้ว่าผู้ป่วยจำนวนหนึ่งไม่ได้มีความคาดหวังเกี่ยวกับการระงับความรู้สึก อย่างไรก็ตามข้อมูลที่เกี่ยวข้องและการมีส่วนร่วมในการตัดสินใจสำหรับการระงับความรู้สึกเป็นความต้องการของผู้ป่วยมากที่สุด
