Measurement of satisfaction with anesthetic recovery in a high-complexity postanesthetic care unit: a patient perspective

Medición de la satisfacción en la recuperación anestésica en una Unidad de Cuidados Post-anestésicos de alta complejidad: Perspectiva del paciente

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Abstract

Introduction: Quality assessment of anesthetic recovery requires patient-centered measurements such as satisfaction. In Colombia, a validated Quality of Recovery Scale (QRS), which includes the perspective of the user, was applied in the Post-anaesthetic Care Unit of Hospital Universitario de la Samaritana (HUS) in the city of Bogotá.

Objectives: To determine patient satisfaction with postoperative care for 11 specialties at HUS as a quality indicator of postanesthetic recovery, and to assess the internal consistency or validity of the QRS applied in a high-complexity hospital.

Materials and methods: Cross-sectional descriptive study which included patients of the HUS postanesthetic care unit. A population size of 379 patients was estimated, with a final sample of 154. Following the application of the QRS, bivariate analyses were performed using control variables and clinical characteristics. In addition, internal consistency was analyzed using Chronbach's Alpha and Spearman's Rho.

Results: Overall, 154 patients were analyzed, 48.7% females and 51.3% males. Median age was 52 years (interquartile range: 35–64); 91.56% belong to the subsidized health insurance regime, and 8.44% to the contributive regime. Of the total number of patients surveyed, 7.14% are satisfied with the quality of recovery (QRS ≥ 56). Internal consistency is high (Cronbach's Alpha = 0.854) and interitem correlation is average (Rho = 0.295).

Conclusion: The test is highly reliable, allowing to identify the strengths and weaknesses of the postanesthetic service at HUS. This input contributes to decision-making and to the selection of strategies for improving the quality of recovery in high-complexity patients.

Resumen

Introducción: La evaluación de la calidad en la recuperación requiere mediciones centradas en el paciente como la satisfacción. En Colombia, se validó la escala Calidad de Recuperación (CdR) que incluye la perspectiva del usuario, el cual fue aplicado

en la Unidad de Cuidados Post-anestésicos del Hospital Universitario de la Samaritana (HUS) de la ciudad de Bogotá.

Objetivos: Determinar la satisfacción de los pacientes en cuidado post-operatorio del HUS como indicador de calidad de la recuperación post-anestésica, así como, evaluar la consistencia interna y validez de la escala CdR en 11 especialidades aplicada en un hospital de alta complejidad.

Materiales y métodos: Estudio descriptivo transversal que incluyó pacientes de la Unidad de Cuidados post-anestésica del HUS. Se estimó un tamaño poblacional de 379 pacientes, con una muestra final de 154. Se aplicó la escala CdR, posteriormente, se realizaron análisis bivariados con las variables de control y las características clínicas. Adicionalmente, se analizó la consistencia interna con el Alpha de Cronbach y el rho de Spearman.

Resultados: Se analizaron 154 pacientes, 48.7% son mujeres y 51.3% son hombres. La mediana de la edad fue 52 años (RIQ: 35–64). 91.56% pertenecen al régimen subsidiado y 8.44% al contributivo. Del total de encuestados el 7,14% de los pacientes están satisfechos con la calidad de la recuperación (puntaje ≥56 de CdR). La consistencia interna es alta (Alpha de Cronbach=0,854) y una correlación inter-ítem promedio (rho=0,295).

Conclusiones: La prueba tiene una alta confiabilidad, lo que permite identificar las fortalezas y debilidades en la prestación del servicio en cuidados post-anestésicos del HUS, siendo un insumo que permite tomar decisiones y generar estrategias para mejorar la calidad en la recuperación de los pacientes de alta complejidad.

Introduction

Quality of care "is the level at which healthcare services provided to people and populations improve desired health outcomes." To achieve this, healthcare must be safe, effective, timely, efficient, equitable, and, above all, patient-centered.[1] In anesthesiology, quality of care includes anesthetic care that contributes to the creation of good health outcomes, in this case perioperative outcomes, including reduced frequency of adverse events, shorter recovery time, and greater patient satisfaction.[2]

In view of the above, it follows that involvement of patient perceptions will provide a unique perspective regarding non-technical aspects of medical care and will help evaluate services, taking into consideration patient needs and expectations as determinants of healthcare outcome.[3–6] At present, patient-centered tools have been developed to assess the quality of patient recovery in postoperative care areas, and reviews are available of the tools that provide the closest measurements of satisfaction with care.[7–10]

In Colombia, the Quality of Recovery Scale (QRS) was created for measuring the quality of postanesthetic recovery from the patient's perspective. It was developed in a Colombian population for assessing care processes (except for pain) in low-to-intermediate-complexity care units.[2] The QRS was used in postoperative periods of 3 specialties: orthopedic, abdominal, or thoracic surgery. According to the results, 80.4% of the patients achieved satisfactory out-

comes.[11] However, satisfaction in patients of high-complexity specialties has not been assessed. The objectives of this article are to determine patient satisfaction in the Hospital Universitario de la Samaritana (HUS) postoperative care unit (PACU) as a quality indicator of postanesthetic recovery, and to assess the internal consistency and validity of the QRS in a high-complexity reference hospital. The aim is to identify strengths and weaknesses of the care process in the postanesthetic recovery area to create strategies designed to improve quality of care provision.

Methodology

A cross-sectional descriptive study which followed the local and international recommendations for human research, approved by the Research Sub-Committee of Universidad de La Sabana and the Ethical-Scientific Committee of HUS.

Characteristics of the recovery room

The study was conducted in the HUS PACU which comprises 17 beds: 14 beds and 3 additional intensive care beds in the so-called Rapid Transit Unit, which is the place where critically ill patients stay while in transit to a final location. They are all under the care of an anesthetist, available exclusively for the unit 24 hours a day. The nursing staff consists of a head of nursing and a licensed practical nurse for every 3 beds.

Study population and sample

The population analyzed included patients 14 years and older authorized by their guardians, considering that this is the age limit for patient care at HUS.

Excluded were patients requiring mechanical ventilation postoperatively, patients with altered mental status or prior cognitive deficit, as well as patients who did not agree to participate in the study.

A total of 148 patients were estimated, with an 80.4% satisfaction with recovery,[12] 95% confidence level, 5% accuracy, and a monthly population size of 379 patients, based on the number of surgeries performed in the service. The calculation was done using the Epidat 3.1 software. Convenience sampling was used, and data collection was performed during a 6-month period during the second semester of 2013.

Postanesthetic recovery status was determined using the Bromage[13] and Aldrete[14] tests (in regional and general anesthesia, respectively) to determine the absence of residual anesthetic effects.

Quality of Recovery Scale (QRS)

The QRS consists of 3 domains: overall quality (8 items with a minimum score of 8 and a maximum of 40),

recovery room (5 items with a minimum score of 5 and a maximum of 25), and pain (1 item with a minimum score of 1 and a maximum of 5). Thus, the minimum score is 14 and the maximum is 70.[2] Patient recovery is considered satisfactory with a score of 56 or more on the QRS.[11]

The tool was administered once by the recovery unit anesthetist to those patients who agreed to participate in the study voluntarily and who had a score of 10/10 on the Aldrete scale, 3 hours after the surgery. Once participants were found to be competent and free of residual anesthetic effects, they were asked to sign an informed consent before administering the survey. In underage patients, the informed consent was signed by the parents or guardians.

Statistical analysis

Apart from the questions contained in the QRS, control questions were asked to gather information about the sociodemographic characteristics of the patients and the clinical variables. Discrimination by age groups was considered given that the presence of comorbidities and the surgical site, particularly in patients over 70 years of age, may influence the quality of recovery.[15,16]

The clinical variables include the type of anesthesia received, classification by service type, Lee index and the value of the *American Society of Anesthesiologists* (ASA) classification system used to determine the pre-anesthetic risk of the study population. Scores on the QRS were compared with the control variables and the clinical characteristics, using a bivariate analysis. Frequencies were calculated for qualitative variables, and central trend and scatter were calculated for quantitative variables. Variable normality was analyzed using the Shapiro–Wilk test. The Wilcoxon test was used to estimate the median difference between the groups. In addition, internal consistency and criterion validity of the QRS was analyzed in a high-complexity hospital using Cronbach's Alpha and Spearman's Rho.

The STATA version 13 software package (StataCorp. 2013. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP) was used for data analysis.

Results

In the end, 154 patients were analyzed and, of them, 51.3% were males. The median age was 52 years (interquartile range: 35–64), the minimum being 15 and the maximum 90; the group between 30 and 70 years of age had the highest representation (60.3%).

In terms of the affiliation to the health insurance system, the vast majority belong to the subsidized regime (91.5%).

In terms of clinical variables, 44.8% of the respondents were found to have an ASA II pre-anesthetic risk. A Lee index lower than 2 was identified in 92.2% of the cases.

Table 1. Clinical characteristics.

Variable	n	%
Surgery service		
Head and neck	2	1.3
General surgery	32	20.7
Maxillofacial surgery	6	3.9
Plastic surgery	23	14.9
Gastroenterology	13	8.4
Gynecology	16	10.3
Neurosurgery	2	1.3
Ophthalmology	9	5.8
Orthopedics	42	27.2
Otolaryngology	4	2.6
Urology	5	3.2
ASA anesthetic risk		
Lower than or equal to I	44	28.5
Higher than I lower than II	69	44.8
Higher than II	41	26.6
Lee Index		
Lower than 2	142	92.2
Higher than or equal to 2	12	7.7
Type of anesthesia received		
Regional	56	36.3
Local controlled	16	10.3
General	82	53.2

ASA = American Society of Anesthesiologists.
Source: Authors.

Regarding classification by surgical service, patients taken to orthopedic surgery had the highest participation (n = 42), followed by patients taken to general surgery procedures (n = 32), whereas patients of the head and neck specialty had the lowest participation (n = 2) (Table 1).

For the study population, the average QRS score was 49.2 (Standard Deviation: 4.1), with a minimum of 39 and a maximum of 61. However, of the total number of

Table 2. Sociodemographic and clinical characteristics by satisfaction status.

Variable	Not satisfied (n=143)		Satisfied (n=11)	
	n	Mean (SD)	n	Mean (SD)
Quality of Recovery Scale	143	48.6 (3.2)	11	57.6 (1.7)
Sex	**n**	**%**	**n**	**%**
Female	68	47.5	7	63.6
Male	75	52.4	4	36.3
Age group				
Younger than 30	30	20.9	3	27.2
Between 30 and 70 years	86	60.1	7	63.6
Older than 70 years	27	18.8	1	9.0
Specialty				
Head and neck surgery	2	1.4		
General surgery	31	21.6	1	9.0
Maxillofacial surgery	6	4.2		
Plastic surgery	23	16.0		
Gastroenterology	12	8.3	1	9.0
Gynecology	13	9.0	3	27.2
Neurosurgery	2	1.4		
Ophthalmology	9	6.2		
Orthopedics	37	25.8	5	45.4
Otorlaryngology	4	2.8		
Urology	4	2.8	1	9.0
ASA anesthetic risk				
I	42	29.3	2	18.1
II	62	43.3	7	63.6
Higher than II	39	27.2	2	18.1
Lee Index				
Lower than 2	132	92.3	10	90.9
Greater or equal to 2	11	7.6	1	9.0
Type of anesthesia received				
Regional	52	36.3	4	36.3
Local controlled	16	11.1		
General	75	52.4	7	63.6
Social security affiliation				
Subsidized	130	90.9	11	100.0
Contributive	13	9.0		

ASA = American Society of Anesthesiologists; SD = Standard Deviation.
Source: Authors.

Table 3. t Test for relevant characteristics.

Variable	Observations	Median (IRQ) QRS	p
Not satisfied	143	48 (45–51)	0.000
Satisfied	11	50 (49–51)	
Female	75	48.5 (45–51)	0.40
Male	79	48 (46–51))	
General anesthesia	82	49 (47–51)	
Local/regional	72	48 (45–50)	0.76

IQR = interquartile range; QRS: Quality of Recovery Scale. Wilcoxon test to determine median differences.
Source: Authors.

respondents, 7.14% (n=11) were satisfied with the quality of recovery (QRS ≥ 56) versus 92.86% (n=143) who were not satisfied (QRS < 56) (Table 2).

The mean values for patients who were satisfied and who were not satisfied were 57.64 (Standard Deviation: 1.7) and 48.65 (Standard Deviation: 3.2), respectively. There were no satisfied patients in the population belonging to the contributive health insurance regime. Of the 11 specialties which took patients to interventions or procedures, only 5 had patients who were satisfied (orthopedics, gynecology, general surgery, gastroenterology, and urology).

In terms of differences related to the most relevant characteristics, the Wilcoxon test results for the QRS show a statistically significant difference only between satisfied and not satisfied patients (P < 0.05). There are no statistical differences for patient gender or the type of anesthesia, which signals that the QRS has no effect for those characteristics. The results of the t test for the most relevant characteristics are shown in Table 3.

Finally, Cronbach's Alpha test used to determine consistency of the QRS showed high internal consistency (Cronbach's Alpha=0.854), with an average interitem correlation (Rho=0.295) (Table 4). This confirms the reliability of the scale and allows to assume that there is a high correlation among items for measuring the postanesthetic recovery quality construct in a high-complexity setting.

Discussion

Patient satisfaction is an outcome measure that allows to assess 1 of the 6 quality-of-care domains, namely, "Patient-centered care."[3,17] In anesthesiology, the quality of recovery is associated with the degree of patient satisfaction and quality of life; when these 2 elements are combined, they allow to obtain patient-centered results which are key for decision-making and improvement in care service provision.[18]

Table 4. Cronbach's alpha and interitem values for the Quality of Recovery Scale.

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Interitem correlation average	Alpha
HQ anesthesiology	154	+	0.839	0.796	0.268	0.827
HQ nursing	154	+	0.808	0.759	0.272	0.829
HQ medical staff	154	+	0.831	0.787	0.269	0.827
Overall HQ general	154	+	0.848	0.808	0.268	0.826
CQ nursing	154	+	0.791	0.738	0.274	0.830
CQ general	154	+	0.794	0.742	0.273	0.830
CQ in recovery	154	+	0.725	0.659	0.280	0.835
Medical care	154	+	0.751	0.690	0.278	0.833
Prompt patient check	154	–	0.334	0.220	0.322	0.860
Wound observation	154	–	0.449	0.344	0.310	0.854
Constant physical assessment	154	–	0.451	0.346	0.309	0.853
Sufficient information	154	+	0.163	0.042	0.340	0.870
Recovery anesthetist	154	+	0.168	0.047	0.339	0.870
Wound pain	154	–	0.275	0.157	0.328	0.864
Test					0.295	0.854

CQ=care quality, HU=human quality.
Source: Authors.

The QRS allows to include patient perspective as part of the quality indicator in recovery. When it was applied to the group of patients at HUS, it was found that 7.14% of the total sample was satisfied with the quality of recovery, as compared with the results published previously for this scale in Medellín (80.4%).[11] The difference in the values of the 2 publications may also be attributed to the types of procedures performed in the high-complexity hospital, and to the timing of the assessment (3 vs 24 hours).

In terms of distinction by sex, there were no statistically significant differences. In the female population, 9.3% reported satisfaction, whereas satisfaction in the male population was 5.3%. This may be associated with the type of surgical event (short obstetric and gynecological interventions), leading to differences in the type of intervention as well as recovery.[2] In this study, the percentage of dissatisfied patients was higher in all age groups.

Regional anesthesia is considered a modifier of patient satisfaction because of improved postoperative pain control and less adverse effects with the use of regional techniques.[19] No statistically significant differences were found for satisfaction in relation to the anesthetic technique. In another study conducted with a visual analogue scale at San Ignacio Hospital in Bogotá, no differences were found in terms of patient satisfaction regarding the type of anesthesia. However, the results of the 2 studies are not comparable because the tools used to measure satisfaction with recovery were different.[20]

Satisfaction status at HUS was negatively affected by pain severity in the postoperative recovery area, and this is consistent with other studies that described an association between pain and low scores in the recovery unit.[11,21,22] Like pain control, the domain for the recovery room, where items such as visits by family members, frequency of physical assessment, and the presence of the anesthetist in the PACU are rated, had a negative effect on the satisfaction score.

Finally, the high reliability level of the consistency test using Cronbach's Alpha opens the door to the application of the QRS in other institutions of higher complexity distributed in other areas of the country. This result is particularly important considering that the QRS was applied to patients who underwent surgery in 11 specialties, with satisfactory results found for orthopedics,

gynecology, general surgery, gastroenterology, and urology.

Limitations

There are other variables that may influence patient satisfaction which are not considered in the QRS. These include negative experiences with prior anesthesia interventions and waiting time for bed assignment in the inpatient units,[17] as well as the complexity of the surgical procedure itself and the right timing for administering surveys during the postoperative period.

It is worth highlighting that extrapolation of the results to other high or higher complexity institutions is not possible, given the characteristics of the study population. This means that further analyses are required to ensure the external validity of the study. Likewise, additional studies could measure satisfaction with postoperative recovery at different times of application of the QRS.

Conclusion

Assessing satisfaction after receiving anesthesia is critical for gaining insight into patient perception regarding quality of recovery. Consistent with that objective, the QRS was applied with the aim of measuring 3 domains: overall quality, recovery room, and pain. However, in the case of Samaritana University Hospital in Bogotá, a high-complexity referral hospital, only 7.14% of the patients were satisfied with recovery, this time at 3 hours following the intervention, a shorter period of time than previously reported.

Pain is considered the fifth vital sign,[23] and pain relief is considered a fundamental human right.[24,25] It is expected that creating awareness about effective pain control in patients in the postoperative care area of Samaritana University Hospital will improve the satisfaction rating as quality indicator in postoperative recovery.

In addition, overall satisfaction could improve with the implementation of strategies designed to enhance care in the HUS recovery room domain. These strategies include greater frequency of wound assessment, guidance on care conditions and perioperative risk, continuous anesthetist attendance, and timely communication with family members.

Ethical disclosures

A transversal descriptive study was carried out and local and international recommendations on research in humans were followed. The study was approved by the research sub-commission of the Universidad de La Sabana, through act No. 275 of November 1, 2013, and the Scientific-Ethical Committee at Hospital Universitario de La Samaritana, through act No. 4 of October 18, 2013.

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SCIENTIFIC AND TECHNOLOGICAL RESEARCH

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