Research article

Patient satisfaction and its associated factors towards perioperative anesthesia service among surgical patients: A cross-sectional study

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ABSTRACT

Background: Patient satisfaction with perioperative anesthesia services is not well established in developing countries like Ethiopia. This study aimed to assess surgical patients' satisfaction with perioperative anesthesia service and its associated factors.
Method: A cross-sectional study design was conducted in patients who underwent surgeries at Debre Tabor Comprehensive Specialized Hospital, in North Central Ethiopia. Data were collected by Leiden perioperative care patient satisfaction questionnaire (LPPSq) within 24 h postoperatively, after translating to the local language (Amharic). Bivariable and multivariable logistic analyses were done to identify factors associated with satisfaction with perioperative anesthesia service care. Statistical significance level was set at P < 0.05 with 95% CI.
Results: Analysis was done on 387 patients with a response rate of 94.8%. The overall mean satisfaction of patients with perioperative anesthesia care was 62.62% and about 53.7% [95% CI= (48.6–58.4)] of patients were satisfied with perioperative anesthesia service. The mean satisfaction of perioperative anesthesia service in the patient-staff relationship domain was 61.44%; in the information provision domain was 60.32%, and in the fear and concern domain was 72.06%.
Conclusion: There was a moderate level of satisfaction in patients with perioperative anesthesia service. Among the subscales of LPPSq, the lowest satisfaction score was in the information provision and the highest satisfaction score was in the fear and concern domain.

1. Introduction

Perioperative anesthesia service is an important component of healthcare. It includes a perioperative assessment to determine risk factors related to anesthesia and surgery, planning for the type of anesthesia with the possible outcome. Thus, patient satisfaction with perioperative anesthesia service is the degree of satisfying patients' expectations; which is an important component and quality indicator of the health care system [1, 2, 3, 4].

Patient satisfaction is a complex concept that mainly depends on the subjective judgment of a patient. It is also related to several factors including the patient's emotional, social, cultural, past experiences, and future expectations. Patients tend to compare their expectations with the experiences they had as well as with the actual outcomes. When those expectations are not met by the actual situation, the patient may become dissatisfied [5, 6, 7, 8].

Even though patients develop loyalty towards professionals and the quality of care of the hospital; currently, patients are looking for easy and quick care in the fast-growing world [9]. In developing countries, patient's anticipation for health care systems seems largely ignored by many factors such as quality of clinical care provided, the behavior of staff, waiting time, the cost of care, hospital infrastructure, physical comfort, emotional support, and respect for patient preferences [10, 11, 12]. Our country, being among the least fortunate state in health in the world with high morbidity and mortality from communicable disease puts high pressure on patient satisfaction and quality of service delivery [13, 14, 15].

Even though few studies in anesthesia have assessed patient satisfaction, most are restricted to day case surgical patients as well as regional procedures. Patient satisfaction with peri-operative anesthesia service and associated factors remains largely undiscovered [16, 17, 18].

It is very important to identify areas of patient dissatisfaction, to correct and minimize dissatisfaction with perioperative anesthesia care.

This study aimed to assess satisfaction and associated factors of perioperative anesthetic service among surgical inpatients.

2. Methods and materials

2.1. Study area and period

This cross-sectional study was conducted in DTCSH which is a public hospital established in 1934 and located in the South Gondar Zone of Amara Regional State of Ethiopia. It is 97 km to the southwest of Bahir Dar, the capital city of Amara Regional State. According to the 2007 census, the total population of this town was 155,596. It has a latitude and longitude of 11051N3801′E11.8500N 38.0170E with an elevation of 2,706 m (8878ft) above sea level. The hospital provides surgical and anesthesia services with seven operation theatres. The study was conducted on patients who underwent surgery at DTCSH from February 01 to June 30, 2020.

2.2. Inclusion and exclusion criteria

Surgical patients with the age of 18 and above, and ASA I-IV were included; whereas patients with cognitive dysfunction or other inabilities to finish the interview (communication or hearing impairment), very seriously ill patients who cannot communicate post-operatively, patients who were discharged before 24 h, and patients who were operated on in the minor operation room were excluded in this study.

2.3. Sample size and sampling technique

The sample size was determined by using single proportion population formula taking the proportion from a study done at Gondar University Hospital with an overall patient satisfaction level of 64.7% (28), and the sample size was calculated by using a 95% confidence interval and 5% margin of error. The sample size was determined using the following formula.

$$n = (Z_{\alpha/2})^2 P(1-P) \Big/ d^2$$

whereas; n = sample size Z = confidence interval (1.96) P = estimated prevalence (0.647).

d = margin of sampling error to be tolerated (0.05).

Constituting, the values in to formula, gives n = 352.

By considering a 15% non-respondent rate the final sample size is 405. All consecutive patients who met the inclusion criteria were sampled till the intended sample size was achieved.

2.4. Data collection instrument and procedures

Data were collected by four anesthetists after 24 h postoperatively using the adopted Leiden Perioperative Care Patient Satisfaction questionnaire (LPPSq) tool. This tool has been widely used to quantify patient satisfaction with good reliability and validity [18, 19, 20, 21, 22]. The LPPSq has three domains: information provision (consists of 6 questions and five points' Likert scale); fear and concern (consists of 6 questions and four points' Likert scale); and staff-patient relationship (consists of 14 questions and five points' Likert scale). There are additional three-component measures of the tool other than the dimensions: Discomfort and needs with nine questions and four points Likert scale, Professional competence with three questions with yes or no answer, and third, service-related with three questions two of them are four-point Likert scale, and one question with yes or no answer [5].

Before data collection, the English version of LPPSq was translated to the Amharic local language by three language expertise and back to English by the other three language expertise to confirm the correctness of language translation. Also, the content validity of the tool was assessed

and insured by research committee members of the anesthesia department.

2.5. Data quality assurance

After training was given to data collectors, data were collected and properly filled in the prepared format. The supervision was made throughout the data collection period to maintain the accuracy, clarity, and consistency of the collected data.

2.6. Ethical consideration

The ethical clearance was obtained from Debre Tabor University and the written informed consent was taken from every study participant after informing about the objective of the study.

Table 1. Socio-demographic characteristics of study participants (n = 387).

Variables	Frequency	Percentage
Gender		
Male	223	57.6
Female	164	42.4
Age		
18–39	159	41.1
40–49	127	32.8
50 and above	101	26.1
Marital status		
Married	162	41.9
Not married	225	58.1
Residency		
Urban	174	45.0
Rural	213	55.0
Educational level		
Illiterate	155	40.1
Read and write	83	21.4
Elementary and above	149	38.5
Profession		
Farmer	195	50.4
Student	68	17.6
Employed worker	124	32.0
Income Annually(ETB)		
Less than 2500	232	59.9
greater or equal 2500	155	40.1
Health insurance		
Paying	190	49.1
Free	197	50.9
Perioperative visit		
Visited	288	74.4
Not visited	99	25.6
Type of anesthesia		
General	203	52.5
Regional	184	47.5
Type of surgery		
General surgery	219	56.6
Orthopedics surgery	105	27.1
Gynecologic procedures	63	16.3
Nature of case		
Elective	247	63.8
Emergency	140	36.2
ASA PS		
ASA I	240	62.0
ASA II	109	28.2
ASA III	38	9.8

Table 2. Identified components' and factor loadings of LPPSq.

Items	Factors		
	1	2	3
Did the theatre staff take into account your personnel preferences?	.729		
Did the theatre staff pay attention to your questions?	.729		
Did you find the theatre staff knowledgeable?	.721		
Did the theatre staff pay attention to complaints like pain and nausea?	.705		
Did you find the theatre staff professional?	.658		
Did the theatre staff pay attention to you as an individual?	.658		
Were you treated kindly by the theatre staff?	.654		
Were the theatre staffs polite?	.644		
Did you experience professional competence?	.640		
Did the theatre staff show understanding of your situation?	.599		
The amount of information about the operation?		.682	
Seeing the operating room?		.618	
The explanation about your stay at the operating theatre.		.610	
The explanation about the operation?		.608	
Pain due to anesthetic?		.606	
The amount of information about your stay in the operating theatre?		.560	
Pain due to surgery?		.531	
The amount of information about anesthesia		.501	
Awaking during the operation?		.476	
The explanation about anesthesia		.420	
Did the theatre staff take into account your privacy?			.662
Did you have confidence in the theatre staff?			.644
Had the theatre staff an open attitude?			.612
Were the theatre staffs respectful?		.487	.501

2.7. Data entry and analysis

Data were cleaned, coded, and entered into Epidata version 4.2 and exported to SPSS version 23 for analysis. The internal consistency of satisfaction measures was checked using Cronbach's α. Explanatory factor analysis was done to identify relationships between the measured items. Inter-item correlation and item-discriminant validity were applied to measure the relation of items within the scale and between the scales respectively. Percentage, mean and standard deviations were used as appropriate. The overall mean satisfaction score and mean satisfaction score for each dimension were computed. After categorizing the overall mean satisfaction score, independent variables were analyzed using binary logistic regression with perioperative patient satisfaction. Variables with a p-value of ≤ 0.2 from the bivariable analysis were fitted to a multivariable logistic regression, and some variables were considered with their clinical significance in the model. The odds ratio, 95% confidence interval, and p-value were computed to identify associated factors and to determine the strength of the association. A p-value of <0.05 was considered statistically significant. Hosmer-Lemeshow test of goodness of fit was performed to check the appropriateness of the analysis model.

2.8. Operational definitions

Satisfied: Patients who scored greater than or equal to the mean perioperative LPPSq values were considered satisfied.

Dissatisfied: Patients who scored less than the mean perioperative LPPSq values were considered dissatisfied.

3. Results

This study was conducted on a total of 387 participants with a response rate of 94.8%. Most of them (41.1%) were in the age range of 18–39 years, 57.6% were males, and majorities (55.0%) were from rural areas (Table 1).

3.1. Explanatory factor analysis for subscales of satisfaction

Confirmatory factor analysis was done to confirm factor validity before computing patient satisfaction levels. The analysis was performed using factor correlation matrices. KMO and Bartlett's tests were checked to show a KMO value of 0.928 and Bartlett's tests of sphericity (P = 0.00). Extraction of commonalities was checked on the matrix and all item values were greater than 0.3. Parallel analysis was performed and three new components of eigenvalues have fulfilled the criteria and the component correlation matrix of Varimax was an appropriate model (Table 2). The reliability of the new factors was checked that showed values of factor-1 (Cronbach's α = 0.89), factor- 2(Cronbach's α = 0.809), and factor -3 (Cronbach's α = 0.701).

3.2. Reliability of items of peri-operative satisfaction

The internal consistency of the three dimensions and total LPPSq were showed a good consistency level. The internal consistencies of inter-item correlation (IIC) of the three dimensions were significant (Table 3).

3.3. Satisfaction level of patients in perioperative anesthesia service

The overall mean satisfaction score of patients with peri-operative anesthesia service was 62.62% [95% CI= (61.31–64.03)]. About 53.7% [95% CI= (48.6–58.4)] patients were satisfied with the perioperative anesthesia service. Among the three dimensions, fear and concern showed the highest mean satisfaction level (72.06%), while information provision was showed the lowest mean satisfaction level 60.32% (Figure 1). Also other than perioperative domains, the mean satisfaction score of fear and concern related to anesthesia was 69.17%, professional competence 70.71%, and Service provision 65.49%.

3.4. Factors associated with the overall satisfaction of patients with perioperative anesthesia care

The multivariable logistic analyses showed that patients who came from rural areas were 3.17 (AOR = 3.17; 95%CI: 1.08–9.35) times more satisfied than patients who came from urban areas. The odds of being illiterate were 2.72 (AOR = 2.72; 95%CI: 1.19–6.17) times more satisfied than patients with its counterpart. Patients who have health insurance
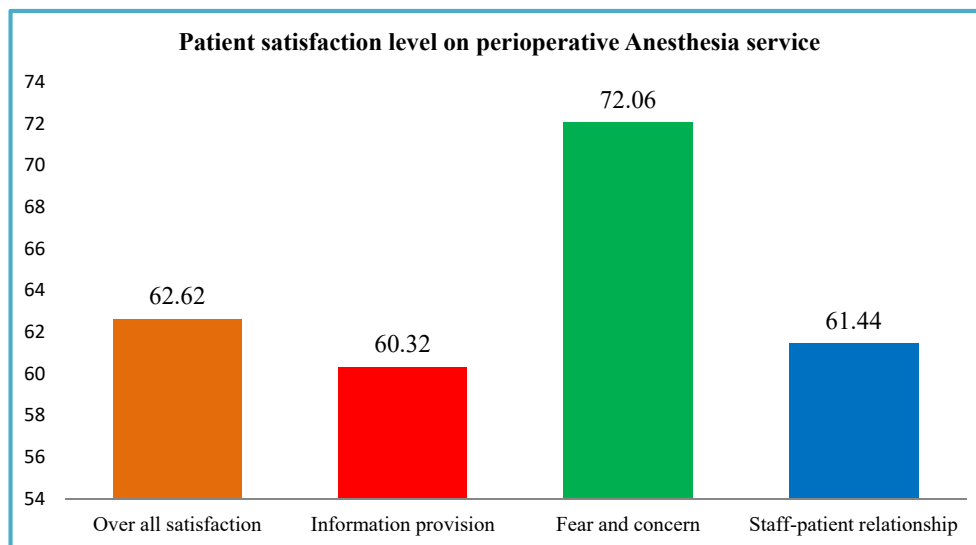
Table 3. Reliability of items of perioperative satisfactions.

Dimension	Number of Items	Chronbach A	Mean dimension score (SD)	Maximum possible dimension score	Inter-item correlation (IIC)	Item-discriminant validity (IDV)
Information	6	0.77	18.09 (4.97)	30	0.22–0.55*	0.10–0.55
Fear & concern	4	0.653	11.53 (2.70)	16	0.25–0.42*	0.04–0.42
Staff-patient relationship	14	0.897	43.01 (10.92)	70	0.07–0.58*	0.04–0.58
LPPSq	24	0.911	72.64 (16.00)	116	c	C

* Significant value (p < 0.001), c = not computable.

Figure 1. Overall satisfaction of study participants with perioperative anesthesia care.

coverage were 4.02 (AOR = 4.02; 95%CI: 2.39–6.73) more satisfied than patients with no health insurance. Also, patients who were visited pre-operatively in the pre-anesthesia clinic were 3.65 (AOR = 3.65; 95%CI: 1.97–6.76) times more likely satisfied who had not visited the pre-anesthesia clinic. Also, patients done with regional were 3.19 (AOR = 3.19; 95%CI: 1.89–5.37) times more likely satisfied with than patients done under general anesthesia; and emergency patients were 1.87 (AOR

= 1.87; 95%CI; 1.07–3.27) times more likely satisfied with perioperative anesthesia service than patients done with elective bases (Table 4).

4. Discussion

In this study, the overall mean satisfaction score of patients with perioperative anesthesia service was 62.62%. Similarly, studies

Table 4. Factors affecting the satisfaction of study participants with perioperative anesthesia care (n = 387).

Variables	Satisfaction level on Anesthesia service		Crude odds ratio	Adjusted odds ratio	p-value
	Satisfied	Not Satisfied	(95% CI)	(95% CI)	
Age					
18–39	87 (54.7%)	72 (45.3%)	1.45 (0.88,2.38)	1.69 (0.89,3.23)	0.110
40–49	75 (59.1%)	52 (40.9%)	1.72 (1.02,2.92)	1.93 (0.99,3.77)	0.054
50 and above	46 (45.5%)	55 (54.5%)	1	1	
Residency					
Urban	55 (31.6%)	119 (68.4%)	1	1	
Rural	153 (71.8%)	60 (28.2%)	5.52 (3.56,8.54)	3.17 (1.08,9.35)	0.036*
Educational level					
Illiterate	112 (72.3%)	43 (27.7%)	4.33 (2.67,7.01)	2.72 (1.19,6.17)	0.017*
Read and write	40 (48.2%)	43 (51.8%)	1.55 (0.89,2.66)	1.46 (0.69,3.09)	0.319
Elementary and above	56 (37.6%)	93 (62.4%)	1	1	
Profession					
Farmer	134 (68.7%)	61 (31.3%)	5.37 (3.28,8.78)	0.97 (0.30,3.14)	0.960
Student	38 (55.9%)	30 (44.1%)	3.09 (1.67,5.73)	2.09 (0.91,4.83)	0.083
Employed worker	36 (29.0%)	88 (71.0%)	1	1	
Health insurance					
Paying	64 (33.7%)	126 (66.3%)	1	1	
Free	144 (73.1%)	53 (26.9%)	5.35 (3.46,8.27)	4.02 (2.39,6.73)	0.000*
Perioperative visit					
Visited	173 (60.1%)	115 (39.9%)	2.75 (1.71,4.42)	3.65 (1.97,6.76)	0.000*
Not visited	35 (35.4%)	64 (64.6%)	1	1	
Type of anesthesia					
General	73 (36.0%)	130 (64.0%)	1	1	
Regional	135 (73.4%)	49 (26.6%)	4.91 (3.18,7.58)	3.19 (1.89,5.37)	0.000*
Nature of cases					
Elective	126 (51.0%)	121 (49.0%)	1	1	
Emergency	82 (58.6%)	58 (41.4%)	1.36 (0.89,2.06)	1.87 (1.07,3.27)	0.028*

Note: the p-values were extracted from the multivariate logistic regression model.
* = p-value <0.05 1 = reference.

conducted in Saudi Arabia (67.3%) [6], Rwanda (61.9%) [25], and Ethiopia (65%) [2] had comparable satisfaction scores regarding perioperative anesthesia service. In contrary to this finding, studies in Netherland (92.1%) [20], England (86.7%) [21], Eretria (68.8%) [5], and Ethiopia (99.3%) [23] had higher satisfaction scores regarding perioperative anesthesia service.

This study revealed that the satisfaction of patients on perioperative anesthesia service in the patient-staff relationship subscale was 61.4%, the information provision subscale was 60.32%, and the fear and concern subscale was 72.06%. The lowest level of satisfaction was seen in information provision. In agreement with this finding, some studies reported that the information provision domain was the lowest score of perioperative anesthesia service dimensions [5, 6, 20, 21, 25]. The highest level of satisfaction was seen in the fear and concern subscale. Dissimilarly, a higher patient-staff relationship score has been seen in a study done in Eretria [5] and the United Kingdom [21]. This might be due to a lack of patient counseling and preparation for surgery.

This study showed that patients who came from rural areas, who had health insurance coverage, patients who were illiterates, patients who visited pre-anesthesia clinics, patients who received regional anesthesia and were done under emergency bases were more satisfied with perioperative anesthesia care service than their counterparts (Table 4). In contrary to this finding a study done in Eritrea patients who came from urban settings and literates were more satisfied with perioperative anesthesia services [5]. The satisfaction of patients done under emergency cases than their counterpart could be due to most emergency patients might be getting relieved from their life-threatening conditions.

This study showed as there is a positive association between having a pre-anesthesia clinic visit and satisfaction level. Another study conducted in Ethiopia also revealed that having a preoperative visit was positively associated with patient satisfaction [24]. Also, regional anesthesia had a positive association with perioperative patient satisfaction as compared to general anesthesia. Some studies in the United Kingdom [21], Ethiopia [2], and Eritrea [5] showed that receiving regional anesthesia was more likely satisfied with perioperative anesthesia services than general anesthesia.

In this study patients done under emergency cases were more satisfied with perioperative anesthesia service than elective cases. This result contradicts the finding of a study done in Eritrea [22]. This might be due to healthcare professionals being prepared well and giving greater care for life-threatening conditions than elective ones.

4.1. Limitations of the study

Being a single-center study might be the main limitation of this study. Even though there were alternatives to logistic regression (Cox regression model, the Log-binomial regression model, and the Poisson regression model with robust variance regression) that may be more appropriate for this study, the logistic regression model was used with its limitations.

5. Conclusion

There was a moderate level of satisfaction was achieved in patients with perioperative anesthesia service. Among the subscales of LPPSq, the lowest satisfaction score was in the information provision and the highest satisfaction score was in the fear and concern domain.

6. Ethical approval and consent to participate

To keep the ethical soundness of the research, an ethical approval letter was obtained from Debre Tabor University. Written informed consent was also secured from each study participant.

7. Data sharing statement

The data will be shared upon reasonable request from the corresponding author.

Declarations

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