

## Evaluation of patients' satisfaction with anesthesia in gastrointestinal endoscopic procedures in Iran

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### ABSTRACT

**Aim:** The purpose of this study was to assess satisfaction level and related factors among patients who had an anesthesia during endoscopic procedures; and also validate a questionnaire for evaluating satisfaction with anesthesia.

**Background:** The level of patient satisfaction with GI endoscopic procedure is an important criterion to indicate the level of expertise in endoscopy.

**Patients and methods:** We performed a prospective descriptive study at Resalat Hospital, Tehran, Iran. Three hundred seventy nine elective patients undergoing anesthesia for GI endoscopy procedure in 2010 were recruited. A 20-item questionnaire was used to evaluate the satisfaction with the anesthesia. The questionnaire was answered within 72 hours after the procedure. The satisfaction was graded into four major groups: anesthesia delivery, procedural recall, side effects and global satisfaction.

**Results:** The level of satisfaction with anesthesia and its related factors were determined. The mean score of satisfaction with anesthesia delivery, procedural recall, side effects, global satisfaction, and total satisfaction (question 1-16) were  $6.15 \pm 1.23$ ,  $5.65 \pm 1.48$ ,  $5.24 \pm 1.16$ ,  $5.01 \pm 1.29$ , and  $5.46 \pm 1.14$ , respectively. There was a significant difference in patients' satisfaction level between different jobs ( $p=0.02$ ) as well as different levels of education ( $p=0.01$ ).

**Conclusion:** Higher educational level was accompanied with greater satisfaction. The highest satisfaction score was seen among retired patients and the lowest level was found in housekeepers.

**Keywords:** Patient satisfaction, Anesthesia, Endoscopy.

(Please cite as: Iravani Sh, Frootan M, Zojaji H, Azizi M, Saedi S, Hashemi MR, et al. Evaluation of patients' satisfaction with anesthesia in gastrointestinal endoscopic procedures in Iran. *Gastroenterol Hepatol Bed Bench* 2011;4(4):214-218).

### Introduction

In recent years the prevalence of gastrointestinal conditions, such as gastro-oesophageal reflux disease, has increased (1, 2). These changes in prevalence have been attributed to changes in lifestyle and an increase in the prevalence of smoking, hypertension, obesity and

psychological stresses in the general population (3). This increase in prevalence of gastrointestinal conditions has led to an increase in the demand for endoscopic procedures (2). Endoscopic procedures are considered safe but they are not without risk of serious complications such as perforation of a viscous. They can also cause pain, discomfort and anxiety in patients (4). Procedures can be performed without sedation, but this requires patient co-operation. Alternatively the procedures

Received: 11 May 2011 Accepted: 18 July 2011

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can be performed with sedation (5). Some data indicate benefits from sedation and anesthesia during these procedures. Studies from the United States suggested that more than 98% of colonoscopies were performed with sedation (6,7). By contrast, endoscopy is commonly performed without sedation or anesthesia in many European countries (2).

The level of patient satisfaction with GI endoscopic procedure is an important criterion to indicate the level of expertise in endoscopy (8). Like other aspects of medicine, there have been several studies to investigate the level of satisfaction in patient underwent upper endoscopy and colonoscopy. These studies have been designed to identify opportunities to improve the quality of elective procedures (1,8-11). VanNatta et al. (12) and others (7, 13) introduced a high-quality sedation with newer treatments such as propofol alone and in combination with older therapies. Nowadays, the level of satisfaction with anesthesia and sedation during GI endoscopy is a matter of concern and is an important factor in decision making about this procedure (10).

In Iran, use of sedation and anesthesia in endoscopic procedures is not common and the level of patient's satisfaction and knowledge of physician has not been investigated. The aim of this study was to assess satisfaction level and its related factors among patients who had an anesthesia during upper endoscopy or colonoscopy.

## Patients and Methods

This prospective cross-sectional study was conducted on GI endoscopic patients in Resalat Hospital in Tehran, Iran. All patients were at least 18 years old and had been referred for elective outpatient upper endoscopy or colonoscopy in the endoscopy department of the hospital between June, 2010, and October, 2011. The patients had the ability

to give informed consent before study entry. The study was approved by the Ethics Committee of the Army University of Medical Sciences. The patients were assured that their private information would be kept confidential and a written informed consent was obtained from them.

All procedures were performed in the endoscopy room by an expert endoscopist. Propofol was administered for induction of anesthesia by an anesthesiologist. The initial intravenous dose of propofol was  $1.0 \pm 1.4$  mg/kg, followed by additional bolus doses if necessary. Thereafter, it was administered intravenously at  $1.0 \pm 2.0$  mg/kg/hour continuously during the procedure and additional doses ( $0.4 \pm 0.6$  mg/kg) were administered if the patient began to move. At the beginning of the procedure, supplemental oxygen (2 L/minute via nasal cannula) and 15mg of intravenous pentazocine were administered.

To evaluate patient's satisfaction with anesthesia, we used a translation from "the Patient Satisfaction with Sedation Instrument (PSSI)" (10). Patients were asked to complete the form within 72 hours of the procedure. The questionnaire consisted of 20 multiple choice questions. Response options were presented on a 7-point Likert scale (range, 7 [very satisfied] to 1 [very dissatisfied]). Questions were categorized into 4 sub scales: anesthesia delivery (2 items), procedural recall (4 items), side effects (10 items) and global satisfaction (4 items).

Statistical analyses were performed using SPSS v.16 (SPSS, Chicago, Illinois, USA) software. Descriptive statistics was included frequency and percentage for categorical variables, and mean [SD] for continuous variables. Cronbach's alpha was used to evaluate internal consistency. Pearson's correlation coefficient was used to assess association among variables. Statistical comparisons of the patients were performed using nonparametric tests. A p-value < 0.05 was considered significant.

## Results

A total of 384 patients were recruited. Five patients did not complete the questionnaire correctly and were excluded from further analysis. A total of 379 patients (159 men and 220 women) were included in the study. Table 1 shows the demographic characteristics of patients. The mean age was  $39 \pm 14$  years. 81% of patients had at least a high school diploma or higher levels of education. 43% were living in urban area (Table 1).

**Table1.** Characteristics of patient population (N=379)

Variables	
<b>Gender</b>	
Male	159 (42%)
Female	220 (58%)
<b>Age (mean±SD)</b>	38.7±13.6 years
<b>Education level</b>	
Illiterate	7 (1.9%)
Under diploma	63 (16.9%)
Diploma	117 (31.4%)
Undergraduate	42 (11.3%)
Graduate	144 (38.6%)
<b>Job</b>	
Private business	86 (23.2%)
Employee	119 (32.2%)
Housekeeper	110 (29.7%)
Student	28 (7.6%)
Retired	17 (4.6%)
Unemployed	10 (2.7%)
<b>Live in</b>	
Urban area	196 (57.1%)
Rural area	147 (42.9%)

Upper GI endoscopy was the major procedure: 337 patients (92.3%) underwent upper endoscopy and 19 patients (5.2%) had a colonoscopy procedure. Both procedures were performed in 9 patients (2.4%). (Table2)

The PSSI subscale scores and total satisfaction (question 1-16) score showed good internal consistency reliability. The reliabilities for the subscale scores were 0.936 for procedural recall, 0.818 for anesthesia delivery, and 0.983 for side effects; for the total satisfaction (question 1-16) score, reliability was 0.92.

**Table2.** Summary of post procedure questionnaire results

Questionnaire results	
<b>Prior anesthesia experience</b>	228(61.8%)
<b>Procedures performed (n=365)</b>	
Endoscopy	337 (92.3%)
Colonoscopy	19 (5.2%)
Endoscopy & Colonoscopy	9 (2.4%)
<b>Satisfaction (mean±SD)</b>	
Anesthesia Delivery	6.1 ± 1.2
Procedural Recall	5.6 ± 1.4
Side Effects	5.2 ± 1.1
Global satisfaction	5 ± 1.3

The mean score of satisfaction with anesthesia delivery, procedural recall, side effects, global satisfaction, and total satisfaction (question 1-16) were  $6.15 \pm 1.23$ ,  $5.65 \pm 1.48$ ,  $5.24 \pm 1.16$ ,  $5.01 \pm 1.29$ , and  $5.46 \pm 1.14$ , respectively (Table 3).

There was a significant difference in patients' satisfaction level when results were compared according to employment ( $p=0.02$ ) and education ( $p=0.01$ ). When considering results by employment status; mean satisfaction levels were (from the highest to the lowest respectively): retired ( $5.9 \pm 0.8$ ), student ( $5.6 \pm 0.9$ ), employee ( $5.5 \pm 1.2$ ), private business ( $5.4 \pm 1.0$ ), unemployed ( $5.4 \pm 0.9$ ), and housekeeper ( $5.1 \pm 1.1$ ). The level of satisfaction was significantly associated with the level of education, so that patients with graduate level of education were more satisfied than other categories of education, especially illiterate patients. But there were no significant difference between patient's satisfaction and their gender,

age, residence (urban or rural), prior experience of anesthesia, and the procedure which they

patients undergoing procedures may include an increased understanding of the procedure, leading

**Table3.** Anesthesia satisfaction in detail

Gender	Anesthesia delivery	Procedural recall	Side effects	Global satisfaction	Total satisfaction
Female	6.1±1.2	5.6±1.4	5.1±1.1	5± 1.2	5.3± 1.1
Male	6.1±1.2	5.7±1.4	5.3±1.1	4.9±1.3	5.5±1.1
Total	6.1±1.2	5.6±1.4	5.2±1.1	5±1.2	5.4±1.1

underwent.

## Discussion

In recent years, satisfaction of patients with endoscopic procedures has become important in health care systems and is considered as a critical criteria to evaluate a physician's ability in performing of this mild invasive procedure (14). As endoscopic procedures are used for both screening and therapeutic purposes, the quality of the procedure, including patient satisfaction, is important. There are a few studies to evaluate the level of patients' satisfaction and its related factors (15, 16).

In our country, experience with anesthesia for GI endoscopy is developing and we are unaware of any standardized documentation to assess a patients' satisfaction with the anesthesia. In view of this, we applied a previously validated questionnaire to assess patient satisfaction with anesthesia for endoscopy (10). We evaluated the validity of Persian translated version of the questionnaire. Cronbach's Alpha for this translated version was 0.92 which indicated it was highly valid for measuring the satisfaction in our patients.

Our results showed that patients' satisfaction was significantly associated with the educational achievement and differed significantly according to employment. The level of satisfaction was positively correlated with the level of education so that highest satisfaction level was obtained in graduated patients. Factors that may explain increased satisfaction among the more educated

to reduced anxiety, compared to those with a lower level of education.

Another significant association was between patients' satisfaction and job. The highest satisfaction was found among retired patients and the lowest score was seen in housekeepers. This is difficult to explain. One may assume that retired patients may have had a previous high level of educational attainment, or lower expectations of health care provision.

Surprisingly, there was no correlation between patients' satisfaction and their gender, age, place of living and even prior experience of anesthesia. This is contrary to previous studies that found younger age as well as female gender was associated with patient dissatisfaction (17, 18). It seems that the satisfaction level of patients is more related to their knowledge than their physical and environmental situation.

This study has some limitations. It was performed in a single Iranian health care center and confounding factors such as the quality of bowel preparation and duration of endoscopic procedure were not assessed.

In conclusion, our results identified two factors relevant to the satisfaction with endoscopic procedures: level of education and employment status. It is recommended to perform studies in this field to determine and evaluate other factors that may have influence on patients' satisfaction with anesthesia in endoscopy.

## Acknowledgements

The study was supported by AJA University of Medical Sciences. We acknowledge the help of Resalat Hospital in providing us with their census data, as well as the patients who participated in the study.

## References

1. Revicki DA. Patient assessment of treatment satisfaction: methods and practical issues. *Gut* 2004; 53 Suppl 4: iv40-4.
2. Rex DK, Khalfan HK. Sedation and the technical performance of colonoscopy. *Gastrointest Endosc Clin N Am* 2005; 15: 661-72.
3. Winawer S, Fletcher R, Rex D, Bond J, Burt R, Ferrucci J, et al. Colorectal cancer screening and surveillance: clinical guidelines and rationale-Update based on new evidence. *Gastroenterology* 2003; 124: 544-60.
4. Iwao T, Toyonaga A, Harada H, Harada K, Ban S, Minetoma T, et al. Arterial oxygen desaturation during non-sedated diagnostic upper gastrointestinal endoscopy. *Gastrointest Endosc* 1994; 40: 277-80.
5. Goulson DT, Fragneto RY. Anesthesia for gastrointestinal endoscopic procedures. *Anesthesiol Clin* 2009; 27: 71-85.
6. Cohen LB, Wechsler JS, Gaetano JN, Benson AA, Miller KM, Durkalski V, et al. Endoscopic sedation in the United States: results from a nationwide survey. *Am J Gastroenterol* 2006; 101: 967-74.
7. Faulx AL, Vela S, Das A, Cooper G, Sivak MV, Isenberg G, et al. The changing landscape of practice patterns regarding unsedated endoscopy and propofol use: a national Web survey. *Gastrointest Endosc* 2005; 62: 9-15.
8. Ko HH, Zhang H, Telford JJ, Enns R. Factors influencing patient satisfaction when undergoing endoscopic procedures. *Gastrointest Endosc* 2009; 69: 883-91.
9. Keefe EB, O'Connor KW. 1989 A/S/G/E survey of endoscopic sedation and monitoring practices. *Gastrointest Endosc* 1990; 36: S13-8.
10. Vargo J, Howard K, Petrillo J, Scott J, Revicki DA. Development and validation of the patient and clinician sedation satisfaction index for colonoscopy and upper endoscopy. *Clin Gastroenterol Hepatol* 2009; 7: 156-62.
11. Ladas SD, Aabakken L, Rey JF, Nowak A, Zakaria S, Adamonis K, et al. Use of sedation for routine diagnostic upper gastrointestinal endoscopy: a European Society of Gastrointestinal Endoscopy Survey of National Endoscopy Society Members. *Digestion* 2006; 74: 69-77.
12. VanNatta ME,DK Rex. Propofol alone titrated to deep sedation versus propofol in combination with opioids and/or benzodiazepines and titrated to moderate sedation for colonoscopy. *Am J Gastroenterol* 2006; 101: 2209-17.
13. Riphaus A, N Stergiou,T Wehrmann. Sedation with propofol for routine ERCP in high-risk octogenarians: a randomized, controlled study. *Am J Gastroenterol* 2005; 100: 1957-63.
14. Subramanian S, S Liangpunsakul,DK Rex. Preprocedure patient values regarding sedation for colonoscopy. *J Clin Gastroenterol* 2005; 39: 516-9.
15. Pena LR, HE Mardini,NJ Nickl. Development of an instrument to assess and predict satisfaction and poor tolerance among patients undergoing endoscopic procedures. *Dig Dis Sci* 2005; 50: 1860-71.
16. Yacavone RF, Locke GR 3rd, Gostout CJ, Rockwood TH, Thieling S, Zinsmeister AR. Factors influencing patient satisfaction with GI endoscopy. *Gastrointest Endosc* 2001; 53: 703-10.
17. Raymond JM, Michel P, Beyssac R, Capdenat E, Couzigou P, Janvier G, et al. [Patient's opinion following an upper digestive endoscopy in ambulatory care. Results of a national survey (II)]. *Gastroenterol Clin Biol* 1996; 20: 570-4.
18. Schutz SM, Lee JG, Schmitt CM, Almon M, Baillie J. Clues to patient dissatisfaction with conscious sedation for colonoscopy. *Am J Gastroenterol* 1994; 89: 1476-9.