

Effect of general anesthesia during GI endoscopic procedures on patient satisfaction

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ABSTRACT

Aim: To compare the conventional GI endoscopy and using general anesthesia during the procedure regarding the satisfaction and acceptance among Iranian patients.

Background: Ability to measure and assess the patients' satisfaction with colonoscopy and upper endoscopy will improve the quality of health care provided by gastroenterologists and thus resulting in better acceptability of endoscopy.

Patients and methods: In a prospective, multicenter, non-randomized clinical trial 756 patients were included between 2009 and 2010. A satisfaction developed questionnaire was answered by the patients who were candidate for elective upper and/or lower GI endoscopy within 72 hours after the procedure. Total satisfaction score was measured and compared between endoscopy patients with and without anesthesia. Different variables analyzed in order to find the influencing factors in patient satisfaction during the endoscopic procedures.

Results: The mean age of patients was 40.7 ± 15.1 years and 59% of them were female. Overall, 50.5% of patients underwent general anesthesia during the endoscopic procedure. There was a significant correlation between education level and satisfaction with the endoscopy. Also, anesthesia during endoscopy significantly increased the total satisfaction score of the patients (OR= 2.07, 95% CI: 1.24-2.9, P<0.0001).

Conclusion: The level of patient's education and using anesthesia during GI endoscopy were two factors influencing the total patient satisfaction with the endoscopic procedures. Thus, we suggest using anesthesia for GI endoscopic procedures.

Keywords: Patient satisfaction, Gastrointestinal endoscopy, General anesthesia.

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Introduction

In recent years, there has been a considerable increase in minimally invasive procedures performed out of operating room (1) such as colonoscopy and upper endoscopy, which are both diagnostic and therapeutic procedures. But despite recent improvements

in endoscopic procedures and its flexibility, colonoscopy remains a painful and uncomfortable experience for patients (2).

Ability to measure and assess the patients' satisfaction with colonoscopy and upper endoscopy will improve the quality of health care provided by gastroenterologists and thus resulting in better acceptability of endoscopy (3). The patients' contentment with the endoscopic procedures is going

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to become an essential outcome measurement in GI endoscopy and also a valued criterion in evaluating the physician's endoscopic performance and in planning optimal health care delivery (4, 5).

In recent years, sedation is used by gastroenterologists in order to decrease the pain and anxiety in these procedures. VanNatta et al. (6) and others (7-9) introduced newer sedative drugs such as propofol used to sedate the endoscopic patients with higher quality which led to improve progressively the quality of sedation. Use of sedation and anesthesia in endoscopic procedures differs through the world. In the United States, sedation is used in nearly 100% of colonoscopies and 98% of esophagogastroduodenoscopies (EGDs) (10-12); meanwhile in many European countries colonoscopy is performed without any sedation (7, 13, 14).

In Iran, use of sedation in endoscopic procedures is not common and the level of patient's satisfaction with this issue is not investigated. The aim of this study was to compare the conventional GI endoscopy and using general anesthesia during the procedure regarding the satisfaction and acceptance among Iranian patients.

Patients and Methods

A prospective, multicenter, non-randomized clinical trial was performed on GI endoscopic patients of four different hospitals in Tehran, Iran. This study was carried out between September 2009 and September 2010 with cooperation of Army University of Medical Sciences. Inclusion criteria were all patients who were candidate for elective outpatient upper or lower endoscopy, being at least 18 years old, and having the will and ability to give informed consent before study entry. The study was approved by Ethics Committee of Army University of Medical Sciences. A written informed consent was obtained from all the study participants and they were assured that their private information would be kept confidential.

All endoscopies were performed in the endoscopy room by gastroenterologists. A light general anesthesia was induced with propofol administered by anesthesiologists. The initial intravenous dose of propofol was 1 ± 1.4 mg/kg, followed by additional bolus doses if necessary. Thereafter, propofol was administered intravenously at 1 ± 2 mg/kg/hour continuously during the procedure. Additional doses (0.4 ± 0.6 mg/kg) of propofol were administered if the patient began to move. Supplemental oxygen (2 L/minute via nasal cannula) and pentazocine were administered at the beginning of the procedure.

To evaluate patient's satisfaction with the endoscopy, we developed a questionnaire and asked the patients to fill it within 72 hours after the procedure. The questionnaires were completed and returned in the next visits. This questionnaire consists of 15 multiple choice questions. Response options were presented on a 7-point Likert scale. The developed questionnaire was validated on a sample of thirty subjects. Total satisfaction was calculated as the mean of the individual items. Items reflected the patient's satisfaction with the pre-procedural counseling and informing; ease of the procedure; amount he/she remembered during the endoscopy; pain, abdominal discomfort, nausea associated with the procedure; and returning to ordinary daily activities.

Descriptive statistics (frequency and percentage for categorical variables, and mean (\pm SD) for continuous variables) was calculated. Statistical comparisons of the data from patients were student t test and χ^2 tests. A multivariate linear regression model was used to compare the patient satisfaction global score between the two study groups (with and without anesthesia). Statistical analyses were performed using SPSS v18 (SPSS, Chicago, Illinois, USA) and a P value less than 0.05 was considered significant.

Results

In this study, 756 patients with the mean age of 40.7 ± 15.1 years were participated. Overall, 446 patients (59%) of our sample were female and 310 patients (41%) were male. Approximately all of our patients (97.4%) were living in urban area and the majority of them (n=517, 68.4%) had a high school diploma or lower education levels. Most of our patients were housekeeper (n=299, 39.6%). EGD was the major procedure with 462 (61.2%) cases. Total number of patients who had anesthesia in their procedure was 382 (50.5%) and rest of them underwent conventional endoscopy without anesthesia (n=374, 49.5%) (Table 1).

Table 1. Characteristics of endoscopic patient population (N=756)

Variable	Number (%)
Gender	
Male	310 (41)
Female	446 (59)
Education level	
Illiterate	59 (7.8)
Under diploma	204 (27)
Diploma	254 (33.6)
Undergraduate	73 (9.6)
Graduate and more	166 (22)
Job	
Unemployed	13 (1.7)
Housekeeper	299 (39.6)
Employee	126 (16.7)
Private business	200 (26.4)
Retired	58 (7.7)
Student	60 (7.9)
Procedures performed	
Endoscopy	462 (61.2)
Colonoscopy	223 (29.5)
Both	71 (9.3)
Group	
Endoscopy with anesthesia	382 (50.5)
Endoscopy without anesthesia	374 (49.5)

Table 2. Comparison of total satisfaction score between patients' characteristics

Variable	Total satisfaction score	P-value
Gender		
Female	5.1±0.9	NS*
Male	5.0±0.9	
Education level		
Illiterate	4.5±0.7	<0.0001
Under diploma	4.8±0.9	
High school diploma	5.1±0.9	
Undergraduate	5.1±1	
Graduate and more	5.4±0.9	
Job		
Employee	5.4±0.9	0.003
Student	5.3±1	
Retired	5.1±0.8	
Housekeeper	5±0.9	
Private business	5±0.9	
Unemployed	4.8±1.0	
Procedures performed		
Endoscopy	5±0.9	NS
Colonoscopy	5±1	
Both	5±0.8	
Group		
Endoscopy with anesthesia	5.6±0.7	<0.0001
Endoscopy without anesthesia	4.4±0.7	

*NS: Not significant

There was no difference between two groups regarding sex, age, education level, job distribution, and type of endoscopic procedure. The mean of total satisfaction score was 5 ± 0.9 with a range between 2.2 and 7. Total satisfaction scores according to gender were 5.1 ± 0.9 and 5 ± 0.9 in females and males, respectively. As shown in table 2, total satisfaction score rises considerably parallel to their educational level ($P < 0.0001$). Total satisfaction score in employees was greater than other groups (5.4 ± 0.9 ; $P = 0.003$). According to our results, employed patients were the most satisfied ones, and total satisfaction score reduced in this order: students, retired,

housekeepers, private business and unemployed participants. Also, it should be noticed that total satisfaction was significantly greater in patients who had anesthesia during their GI endoscopic procedure versus the other group. In anesthesia group, total satisfaction score was 5.6 ± 0.7 versus 4.4 ± 0.7 in procedures without anesthesia. There was no significant difference between satisfaction score regarding the gender, age and the procedure which they underwent (upper or lower endoscopy). Although patient satisfaction with the ease of the endoscopic procedure was less in two age categories: 18 – 25 years and ≥ 66 years.

Multivariate regression analysis indicated that the most significant predictors for greater satisfaction score were education level and usage of anesthesia. The upper educational levels of patients (OR=0.07, 95% CI: 0.003-0.131; P=0.041) and performing of anesthesia for endoscopy (OR= 2.07, 95% CI: 1.24-2.9; P=0.0001) were two effective factors which increased the satisfaction level of endoscopic patients.

Discussion

In recent century, GI endoscopy has become a routine procedure for screening and therapeutic aspects of GI diseases (15, 16), but anxiety and pain during these procedures can increase operation time, and a prolonged process may lead to higher complication rates (17). In addition, patient satisfaction has become a significant outcome measurement tool in GI endoscopic procedures and it increases the liability of physicians and staffs and, most importantly, can improve the quality of care (18). In a study, Yacavone et al showed that the patient's insight of the endoscopist's technical skill was most important for patient satisfaction, followed by sufficiency of analgesia during the procedure (19). Another study mentioned that sedation reduces

patient discomfort and pain, and allows for safer endoscopic procedures (11).

In present study, we tried to evaluate patient satisfaction in GI endoscopic procedures based on their personal characteristic and reveal the role of anesthesia in their total satisfaction with upper endoscopy or colonoscopy. According to our findings, patient satisfaction was not related to their gender and age. Although, patient satisfaction with ease of the endoscopic procedure was less in two age categories (18 – 25 years and ≥ 66 years). It could be justified with low experience and high sensitivity in the younger group and underlying medical issues which may lead to increase the duration of recovery in elder group patients, dissatisfaction with ease of the endoscopic procedure may occur in these two age groups.

However, there were two noticeable related factors which significantly increased the patient satisfaction. The education level of patients had a positive correlation with their total satisfaction with endoscopic procedures. It may be related to this fact that, educated patients usually do some search about their problem and consult with their physician about the procedure itself and what may happen during this procedure and why it is necessary for their health to do this unpleasant mini operation, and this will prepare them to tolerate about what is going to happen.

The other important factor influencing patient satisfaction was use of anesthesia during endoscopic procedure and it considerably increased the rate of satisfaction; along with reduction in their fear and anxiety of repeating this procedures.

This study had some limitations including the fact that about all of our participants were from urban area and this fact that patients from different regions may have different values to describe pain and discomfort can affect the results. The main limitation was non-randomized design of the study. Also, there wasn't any follow up

questioning to evaluate the patient satisfaction after long-term discharging from hospital, and compare it to their first impressions, in order to exclude the other influencing factors such as drugs, pains and being exhausted from long waiting time in admission room for endoscopic procedure.

In conclusion, the results of this study identified two factors relevant to patient satisfaction with endoscopic procedures: patients' level of education and using anesthesia during endoscopic procedures. Therefore, we suggest using anesthesia under the supervision of the anesthesiologists for upper and lower GI endoscopic procedures.

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