

Assessment of anxiety levels in patients during elective upper gastrointestinal endoscopy and colonoscopy

Elektif yapılan gastroskopi ve kolonoskopi işlemlerinin hasta kaygı düzeyi üzerine olan etkisi

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Background/aims: Upper gastrointestinal endoscopy and colonoscopy are frequently performed procedures that can cause anxiety related to disappointing expectations, embarrassment and fear of discomfort. The aim of this study was to examine the possible relationship between state anxiety and trait anxiety with upper gastrointestinal endoscopy and colonoscopy. **Methods:** Ninety-eight consecutive outpatients (52 gastroscopy and 46 colonoscopy) undergoing upper gastrointestinal endoscopy and colonoscopy were interviewed to evaluate anxiety. Anxiety was rated at baseline and immediately prior to upper gastrointestinal endoscopy and colonoscopy using the Spielberger State-Trait Anxiety Inventory. **Results:** A modest but significant increase was detected in state anxiety prior to upper gastrointestinal endoscopy and colonoscopy but no change was detected in trait anxiety in either group. Anxiety levels were not related with the type of endoscopic procedure. State anxiety scores increased from 36.9 (28.5–42.5) to 45.7 (27.5–48.0) ($p=0.001$) in patients undergoing upper gastrointestinal endoscopy and from 36.2 (26.5–38.5) to 44.8 (30.5–48.0) ($p=0.001$) in patients undergoing colonoscopy. Females had higher anxiety levels than males in both groups. **Conclusions:** Diagnostic outpatient upper gastrointestinal endoscopy and colonoscopy were associated with remarkable anxiety in patients; however, anxiety levels were not related with the type of endoscopic procedure.

Key words: Anxiety, upper gastrointestinal endoscopy, colonoscopy

INTRODUCTION

Upper gastrointestinal endoscopy and colonoscopy are frequently performed to diagnose and treat a wide range of problems. These can be uncomfortable and painful procedures with some problems; for example, benign, transient arterial oxygen desaturation and tachycardia may occur during upper gastrointestinal endoscopy and colonoscopy

Amaç: Gastroskopi ve kolonoskopi; sıkça uygulanan ancak endişe verici beklentiler, utanç ve ağrı duyma korkusu nedeniyle sıklıkla kaygıya da yol açan işlemlerdir. Çalışmamızın amacı; bu işlemler ile durumsal ve sürekli kaygı durumu arasındaki ilişkiyi irdelemektir. **Yöntem:** Ayaktan gastroskopi ve kolonoskopi işlemi uygulanan 98 hastaya (Gastroskopi=46, Kolonoskopi=52) kaygı seviyelerini belirlemek için çeşitli sorular soruldu. Bazal kaygı ve işlem öncesi gelişen kaygı; STAI aracılığıyla değerlendirildi. **Bulgular:** Gastroskopi ve kolonoskopi öncesi; her iki grupta da durumsal kaygıda orta derecede ancak anlamlı bir artış saptandı. Sürekli kaygıda değişim olmadı. Kaygı seviyeleri, endoskopik işlemin türü ile ilintisizdi. Gastroskopi yapılan hastalarda; durumsal kaygı seviyeleri 36.9'dan 45.7'ye yükseldi. Kolonoskopi yapılan hastalardaki durumsal kaygı skorları ise; 36.2'den 44.8'e çıktı. Her iki grupta da, kadınların kaygı düzeyinin erkeklere oranla daha yüksek olduğu görüldü. **Sonuç:** Tanısal gastroskopi ve kolonoskopi işlemleri endoskopik türünden bağımsız olarak hastalarda anlamlı kaygı artışına yol açmaktadır.

Anahtar kelimeler: Kaygı, gastroskopi, kolonoskopi

procedures. As a result, patient acceptance of these procedures can sometimes be blurred by some concerns (1-3). While sedation is commonly given to prevent discomfort, from a patient's perspective, gastrointestinal endoscopy and colonoscopy are still accepted as invasive procedures with the potential for embarrassment, discomfort and disap-

pointment related to unexpected findings. All these concerns can result in anxiety that unfavorably affects the will to undergo or the ability to tolerate a gastroscopic or colonoscopic procedure (4). Variables found to be associated with lower anxiety scores in previous studies were history of previous endoscopy or colonoscopy, male sex, lower income, lower education, and older age (5).

Many different scales, such as Spielberger's State-Trait Anxiety Inventory (STAI), Hospital Anxiety and Depression Scale (HAD) and the Visual Analog Scale (VAS) have been used to measure anxiety qualitatively or quantitatively in patients undergoing upper gastrointestinal endoscopy and colonoscopy (6-8). Spielberger's STAI has been translated into Turkish, and the Turkish version of STAI is being widely used in Turkey as a reliable psychological test for measuring the anxiety of patients (9).

Preventing or alleviating intense anxiety during the examination was found to be important, not only because of its unpleasantness per se, but also because anxiety may prolong the procedure and increase the probability of side effects (10). To reduce a patient's anxiety during invasive procedures like gastroscopy and colonoscopy, various approaches have been used to distract the patient's attention, such as therapeutic communication, information, visualization, aroma therapy, therapeutic touch, and listening to music (11, 12).

The aim of this study was to determine a possible relationship between state anxiety and trait anxiety with upper gastrointestinal endoscopy and colonoscopy. Another aim was to compare the types of anxiety (state and trait anxieties) in patients undergoing endoscopy. The possible effect of gender on anxiety was also evaluated.

MATERIALS AND METHODS

Patients

The patient population consisted of 110 consecutive ambulatory patients scheduled for upper gastrointestinal endoscopy or colonoscopy procedure for various reasons, between April 2008 and October 2008, at the Endoscopy Laboratory of İstanbul Education and Research Hospital.

Patients were excluded if they were currently undergoing therapeutic procedures, declined conscious sedation or had previously undergone endoscopy with conscious sedation. Other exclusion criteria included: patient age below 18 or above 75

years, hearing problems due to any cause, physical inability to participate, any overt or borderline psychiatric illnesses, senile dementia, treatment with anxiolytic medication in the last 72 hours prior to examination, and any considerable cardiopulmonary morbidity.

On the day of the scheduled endoscopy procedure, all patients enrolled in the study completed a questionnaire, which was explained by one of the investigators, before the procedure. All patients provided written informed consent for participation in the study. The study protocol was approved by the local ethical committee of İstanbul Education and Research Hospital.

Evaluation

In this study, demographic characteristics of the patients (age, gender) and their previous non-formal information about upper gastrointestinal endoscopy or colonoscopy were recorded. Subjects completed the Spielberger STAI form before they were taken to the endoscopy room.

The STAI was designed to measure temporary and situational anxiety as well as the tendency to awaken situational anxiety when under stress. STAI was developed by Spielberger et al. in 1970 (6) and adapted to the Turkish population and confirmed for reliability and validity by Oner and Le Compte (9). This instrument has been used extensively in clinical settings to measure feelings of apprehension, tension, and nervousness. STAI is a two-part 40-item self-report. The Trait Portion (20 items) measures a person's general disposition and the State Portion (20 items) measures how a person feels at the time of the operation. The instrument is rated on a four-point scale. Scores are added to obtain an overall score (higher scores indicate higher levels of anxiety). It is simple to use, generally taking < 5 min to complete, and easy to score.

Enrolled patients subsequently completed the STAI on a day that they considered "ordinary" and again immediately prior to upper gastrointestinal endoscopy or colonoscopy. All upper gastrointestinal endoscopies and colonoscopies were performed under intravenous sedation in the same operating room by one of the researchers.

Statistical Evaluation

All statistical analyses were performed using the NCSS 2007 program. Student's t-test was used for between-group comparisons, and the chi-square test was employed to compare qualitative param-

ters. A p value <0.01 was considered statistically significant.

RESULTS

One hundred and ten consecutive patients meeting the inclusion criteria were recruited, and 98 were enrolled (52 gastroscopy and 46 colonoscopy cases). Of the 110 patients invited first-hand, 5 refused to participate. All the others returned their signed informed consent letters. Further exclusion criteria led to additional decrease in the sample size as follows: previous upper gastrointestinal endoscopy or colonoscopy or in emergency ($n=4$), risk of serious cardiopulmonary morbidity ($n=2$), hearing problems ($n=1$), treatment with anxiolytic medication in the last 72 hours prior to examination ($n=2$), and physically unable to participate ($n=3$). Their mean age was 43.2 ± 10.7 years (M: 47, F: 51, M/F: 0.90, range: 19–75).

Group 1, patients undergoing upper gastrointestinal endoscopy, included 25 men and 27 women, with ages ranging between 19 and 74 (mean age: 43.3 years). Group 2, patients undergoing colonoscopy, included 23 men and 23 women, with ages ranging between 21 and 75 (mean age: 45.1 years). No significant difference existed between upper gastrointestinal endoscopy and colonoscopy groups with respect to age and sex.

Comparison of baseline and pre-procedural state and trait anxiety scores is shown in Table 1. No difference was detected in mean anxiety scores between patients undergoing colonoscopy or upper endoscopy at the baseline and prior to endoscopy. There was a modest but significant increase in state anxiety score prior to upper gastrointestinal endoscopy and colonoscopy but no change in trait anxiety score in either group. Mean trait anxiety scores were 43.5 (26.5–50.0) at baseline and 42.5 (28.5–44.5) prior to upper gastrointestinal endoscopy ($p=0.59$). State anxiety scores increased from

36.9 (28.5–42.5) to 45.7 (27.5–48.0) ($p=0.001$) in patients undergoing upper gastrointestinal endoscopy. Mean trait anxiety scores were 43.8 (30.5–50.0) at baseline and 41.4 (35.5–44.5) immediately prior to endoscopy ($p=0.59$) in patients undergoing colonoscopy. State anxiety scores increased from 36.2 (26.5–38.5) to 45.8 (30.5–48.0) ($p=0.001$) in patients undergoing colonoscopy. The STAI scores at baseline and immediately prior to endoscopy were not statistically different between the patients undergoing upper gastrointestinal endoscopy and those undergoing colonoscopy. Women showed significantly higher state anxiety scores immediately prior to endoscopy than did men ($p=0.003$), but there was no statistically significant difference between genders in the trait anxiety scores at baseline and immediately prior to the procedure (Table 2).

DISCUSSION

The aim of this study was to detect the possible relationship between state anxiety and trait anxiety for upper gastrointestinal endoscopy and colonoscopy. Our results suggest that there may be a significant relationship between upper gastrointestinal endoscopy, colonoscopy and state anxiety. The mean change in state anxiety was 8.8 in patients undergoing upper gastrointestinal endoscopy. We demonstrated a modest but significant increase in state anxiety associated with upper gastrointestinal endoscopy. Similarly, a modest but significant increase in state anxiety was detected in patients undergoing colonoscopy. The mean change in state anxiety was 9.6. In accordance with these findings, previous investigations had already reported that anxiety scores were significantly higher in patients immediately prior to upper gastrointestinal endoscopy and colonoscopy procedures compared to baseline or control values (5, 10, 13–15). However, these results are not in accordance with previous studies of the upper gastrointestinal

Table 1. Comparison of mean state and trait anxiety scores at baseline and prior to colonoscopy and upper gastrointestinal endoscopy

Score (Mean $\pm$ SD)	Baseline	Pre-procedural	P Value
Upper Gastroendoscopy ($n=52$)			
STAI (State anxiety)	36.9 $\pm$ 10.0	45.7 $\pm$ 10.2	$p=0.001^*$
STAI (Trait anxiety)	43.5 $\pm$ 9.6	42.5 $\pm$ 10.5	NS
Colonoscopy ($n=46$)			
STAI (State anxiety)	36.2 $\pm$ 7.4	44.8 $\pm$ 10.1	$p=0.001^*$
STAI (Trait anxiety)	43.8 $\pm$ 10.3	42.5 $\pm$ 10.0	NS

SD: Standard deviation. STAI: Spielberger's State-Trait Anxiety Inventory. NS: Not significant. $^*p<0.01$, significant.

Table 2. Mean VAS scores

Score (Mean $\pm$ SD)	Women (n=50)	Men (n=48)	P
STAI (State anxiety)	47.3 $\pm$ 10.2	42.2 $\pm$ 9.8	p=0.003*
STAI (Trait anxiety)	45.8 $\pm$ 10.1	45.7 $\pm$ 10.2	NS

SD: Standard deviation. STAI: Spielberger's State-Trait Anxiety Inventory. NS: Not significant. *p<0.01, significant.

endoscopy and colonoscopy / anxiety relationship (3, 16). For example, Trevisani et al. (13) did not detect any significant difference between upper gastrointestinal endoscopy and colonoscopy, in means of state and trait anxiety. In the study of Oxelmark et al. (17), the median anxiety scores obtained for colonoscopy patients were within the ranges seen in normal healthy subjects.

We also compared anxiety in patients undergoing upper gastrointestinal endoscopy with that of patients undergoing colonoscopy. There was no difference in patient anxiety scores at baseline and immediately prior to the procedure between patients undergoing upper gastrointestinal endoscopy when compared with colonoscopy. We also did not see significant differences in the change of state anxiety from baseline to pre-procedure when comparing upper gastrointestinal endoscopy and colonoscopy patients. This is consistent with the previously reported work of Trevisani et al. (13) and Condon et al., who did not find a difference between endoscopy and colonoscopy in terms of patient likelihood to have pre-procedural anxiety.

Anxiety prior to the upper gastrointestinal endos-

copy and colonoscopy has been reported to be more severe in women than in men (13, 15). In agreement with this, the present investigation showed higher STAI state anxiety scores in women than in men in both patient groups (upper gastrointestinal endoscopy and colonoscopy).

This study has a number of limitations. Because these study data are cross-sectional, no causal relationship between anxiety and upper gastrointestinal endoscopy and colonoscopy could be concluded. In our opinion, future studies of the relationship between anxiety and upper gastrointestinal endoscopy and colonoscopy should evaluate the influence of other variables (e.g. self-efficacy, previous experience, socioeconomic status, and education) that may modulate the relationship between anxiety and upper gastrointestinal endoscopy and colonoscopy (10).

We did not attempt to evaluate patient anxiety with respect to diagnosis because patients undergoing upper gastrointestinal endoscopy and colonoscopy for suspected malignancy would clearly be expected to be more anxious than those being evaluated for more benign indications (5).

In conclusion, our data suggest that diagnostic upper gastrointestinal endoscopy and colonoscopy performed with conscious sedation are associated with modest but remarkable increases in state anxiety. Anxiety before upper gastrointestinal endoscopy and colonoscopy seems to be more severe in women than in men.

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