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Impact of an information video before colonoscopy on patient satisfaction and anxiety

Mahmut ARABUL, Altay KANDEMİR, Mustafa ÇELİK[1], Emrah ALPER, Zehra AKPINAR[1], Fatih ASLAN, Sezgin VATANSEVER[1], Belkıs ÜNSAL

Department of Gastroenterology, İzmir Atatürk Training and Research Hospital, İzmir

Background/aims: *Anxiety is a common problem in patients undergoing invasive medical procedures. Colonoscopy is a demanding procedure and requires a patient's good cooperation for successful results. We aimed to examine the effects of adding an information video to our usual preprocedural information.* ***Materials and Methods:*** *A total of 227 patients were assessed in this study (120 male, 107 female). The patients were divided into two groups as video (n=124) or verbal (n=103). When the patients in the polyclinic with indications for colonoscopy were selected, a text about the procedure and related complications was given to them. A colonoscopy appointment was scheduled for the patients 3-4 weeks following the procedure. On the appointment day, the patients selected randomly in groups of 10 as either verbal or video sections were taken into the communication room 1-5 hours before the procedure. The patients' anxiety was measured afterwards using the Spielberger State-Trait Anxiety Inventory questionnaire. In addition, patients answered individual questions. After the colonoscopy, the patients were asked if they would undergo colonoscopy again for health reasons and whether the procedure was similar to, better, or worse than they had expected (following the information sessions).* ***Results:*** *It was noted in univariate and multiple logistic regression analyses that low State-Trait Anxiety Inventory-State levels ($p \leq 0.001$ and $p=0.016$, respectively) and communication by video ($p<0.001$, $p=0.007$, respectively) had a significant impact on communication success.* ***Conclusions:*** *An information video shown to patients preparing for colonoscopy had an impact on the success of the procedure and on anxiety.*

Key words: Colonoscopy, anxiety, video information

Kolonoskopi öncesinde video ile bilgilendirmenin hasta tatmini ve anksiyete üzerine etkisi

Amaç: *Anksiyete invaziv medikal girişimlere maruz kalan hastalarda yaygın bir problemdir. Kolonoskopi emek isteyen bir prosedürdür ve başarılı sonuç için hastanın kooperasyonunun iyi olması gereklidir. Biz kolonoskopi öncesi rutin bilgilendirmeye ilaveten video ile bilgilendirmenin etkisini değerlendirmeyi amaçladık.* ***Gereç ve Yöntem:*** *Bu çalışmaya 227 hasta (120 erkek, 107 bayan) hasta dahil edildi. Hastalar 2 gruba ayrıldı: Video ile bilgilendirme grubu (n=124), sözlü iletişim grubu (n=103). Hastalara kolonoskopi endikasyonu konduktan sonra, hastalara kolonoskopi ve komplikasyonları hakkında bilgilendirme amaçlı broşür verildi. Yaklaşıl 3-4 hafta içerisinde hastalara kolonoskopi için randevu verildi. Randevu gününde, hastalar randomize olarak yaklaşık 10 kişilik gruplar şeklinde- video grubu yada sözlü iletişim grubu- oluşturuldu. Kolonoskopiden yaklaşık 1-5 saat önce iletişim odasına alındı. Hastaların anksiyetesi Spielberger State-Trait Anxiety Inventory anket soruları ile ölçüldü. Ek olarak bireysel sorular yöneltildi. Kolonoskopi sonrasında sağlığınız için gerekirse yine aynı işlemi yaptırır mısınız? ve işle anlatılana benzer mi? daha iyi mi? daha kötü mü? geçti şeklinde soruldu.* ***Bulgular:*** *Tek değişkenli ve multipl lojistik regresyon analizinde düşük Spielberger State-Trait Anxiety Inventory-State skoru ($p=<0.001$ and $p=0.016$, sırasıyla) ve video ile iletişimin işlem başarısını etkilediğini saptadık ($p<0.001$, $p=0.007$, sırasıyla).* ***Sonuç:*** *Kolonoskopi için yapılan video ile bilgilendirme işlem başarısını ve anksiyeteyi olumlu etkilemektedir.*

Anahtar kelimeler: Kolonoskopi, anksiyete, video bilgilendirme

Address for correspondence: Mahmut ARABUL
İzmir Atatürk Training and Research Hospital,
Department of Gastroenterology, İzmir, Turkey
E-mail: mahmutarabul02@gmail.com

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INTRODUCTION

Anxiety is a common problem in patients undergoing invasive medical procedures (1). It causes a preoperative increase in stress, decrease in tolerance, unexpected changes in physiological status (2), postoperative increased need of medication, decreased congruity in treatment programs, and increase in medical procedures in follow-ups (3,4). Cognitive and behavioral training is used for decreasing stress in patients undergoing medical procedures. Cognitive techniques are used by method of informing. Patients are preoperatively informed using two methods: Firstly, patients are informed regarding the intervention and probable events during the procedure. Secondly, they are informed about their senses of perception, sight, hearing, touch, and smell during the procedure. It was observed that information techniques involving emotions, especially during invasive procedures, such as colonoscopy, endoscopy and gynecologic examination, were more effective than procedure-focused information techniques alone (5-9).

Colonoscopy is a demanding procedure and requires a patient's good cooperation for successful results. These procedures might be painful, disturbing and time-consuming. Anxiety can also negatively impact the procedure success (5,10-12). Methods of verbal or written communication used to inform patients are routinely practiced. Information includes both the procedures and complications. However, information to direct patients' perceptions and optimize expectations is often disregarded. With written information, some patients do not read the forms and a majority of patients simply cannot understand them. Generally, verbal information is given a very short time before the procedure. From that time, emotional chaos and stress begin. Therefore, it is considerably difficult to get patients' feelings under control. There are few studies addressing the kind of information that should be given before endoscopic interventions to ensure procedure quality and optimal patient comfort (6,10,12-15). However, in these studies, there are conflicting results on the superiority of visual, verbal or written communication.

This study aimed to compare the effects of informing colonoscopy patients in groups using videos, written and verbal information before the procedure regarding procedural pain, procedure success, and two scales of the Spielberger State-Trait Anxiety Inventory (STAI-State and STAI-Trait). It was also aimed at assessing the effects of gender on the success of the communication.

MATERIALS AND METHODS

Patients

Our primary study group consisted of patients between the ages of 18-70 years with at least primary school graduation, who were directed to the Endoscopy Unit at İzmir Atatürk Training and Research Hospital for colonoscopy. From this group, only patients who were sufficiently clean for analyzing during the procedure were included. The patients who were to undergo anesthesia and sedation and those who could not speak Turkish were excluded. Approval was received by the local ethics committee.

Design

This study was conducted as prospective and randomized. When the patients in the polyclinic who had indications for colonoscopy were selected, a text about the procedure and related complications was given to them. A colonoscopy appointment was given to the patients 3-4 weeks following the procedure. On the appointment day, the patients selected randomly in groups of 10 –as either verbal or video sections- were taken into the communication room 1-5 hours before the procedure. Other physicians, who were not involved in the colonoscopy procedure, carried out the visual and verbal information process, gave information about the questionnaire, and conducted the questionnaire both before and after the procedure. The video/visual section of patients watched a 10-minute video about topics such as *Why is colonoscopy necessary?, The scope used in the procedure, What are the possible complications during the procedure?, What are you going to feel during the procedure?, What you and your doctor should do to eliminate negative feelings? (doctor-patient cooperation), and Length of discomfort that you can expect during the procedure.* After patients had viewed the video, any questions were answered by the physicians. The text version of the video was recited to the verbal section by the physicians who were not involved in the colonoscopy procedure, and the questions of the patients were answered. The patients were questioned regarding their education, sex, age, weight, height, employment, accompanying diseases, medicines used, complaints causing colonoscopy, any previous minor or major operations, any birth history, traffic accidents, tooth extractions, any history of prior endoscopy or colonoscopy, and whether they had been privy to any hearsay regarding colonoscopy or endoscopy experiences from their close acquaintances, in addition

to questions of the STAI-State and STAI-Trait. The questionnaires were completed by the patients. The patients, without sedation and anesthesia, underwent colonoscopy or endoscopy in the following 1-5 hours. The procedures were performed by physicians who were not in the information sessions and did not know the questionnaire results.

Outcome Assessments

Because there were only boxes to be marked with checks by the patients (except for the questions regarding name, age, weight, height, occupation, and medicines used), the questionnaires were easily assessed correctly.

STAI-State (STAI-S) and STAI-Trait (STAI-T) are 20-question-paper-pencil tests answered by patients. While STAI-S evaluates fluctuating anxiety, STAI-T evaluates personality trait. These scales were developed by Spielberger. Each test contains 20 questions and each question is graded as “not at all”, “to some extent”, “very much”, or “definitely”. STAI-S and STAI-T are evaluated between 20 and 80 points, and high scores are correlated with anxiety (16). They were adapted to Turkish by Öner and Le Compte (17).

After the procedure, the patients were asked if they would undergo colonoscopy again for health reasons, and if the procedure was similar to, better, or worse than they had expected (following the information sessions). The communication was assessed as successful if the patients stated that the procedure was similar to or better than what they had expected. The other statements were assessed as failure. Additionally, the patients were asked what disturbed them the most during the procedure. They were also asked to score the pain level they experienced (14). Endoscopic diagnoses were indicated at the end of the questionnaire.

Statistical Analysis

Mann-Whitney U test and independent sampling T-test were performed according to data range of comparison between two independent groups. Pearson chi-square test and Fisher's exact square test were used for categorical variables. The impacts of variables on procedure success were assessed using univariate and multiple logistic regression analyses. Mean and standard deviation were indicated together. Limit of significance was accepted as $p<0.05$. Statistical calculations were performed using the Statistical Package for the Social Sciences (SPSS) 13.0 (Chicago, IL, USA).

RESULTS

A total of 227 patients were assessed in this study (107 male, 120 female). The patients were divided into two groups as video or verbal group. The mean age of the verbal group was higher ($p<0.001$). No difference was noted between the two groups in terms of sex, body mass index (BMI), chronic disease, education level, previous history of colonoscopy or endoscopy, or hearsay from close acquaintances (Table 1). Moreover, there was no difference between the two groups in terms of complaints causing colonoscopy (Table 2).

In the assessments of the patients in the video group after colonoscopy, some differences were noted in STAI-S, abdominal pain, the statements of *"The procedure was similar to/better than what I had been told."* and the response to the question of *"Would you undergo colonoscopy again for health reasons?"* ($p=0.001$, $p=0.037$, $p<0.001$, $p=0.039$, and $p<0.001$, respectively). There was no differen-

Table 1. Demographic and clinical characteristics of patients at entry

	Video group	Verbal group	P
Number of patients	124 (55%)	103 (45%)	NS
Age	48.9±12.8	43.4±12.1	<0.001
Gender (Male/Female)	65/59	42/61	NS
Body mass index (kg/m^2)	27.6±4.8	27.5±5.3	NS
Additional chronic disease	46	37	NS
Educational status			
Primary education	78	70	
High school	39	25	NS
University	7	8	
History of endoscopy or colonoscopy	45	29	NS
Were patients privy to negative endoscopic hearsay? (yes/no)	50/74	41/ 62	NS

ce in endoscopic diagnoses between the groups (Table 3).

The communication was accepted as successful for the patients who stated after the procedure that it was similar to or better than they had been told. It was noted in univariate and multiple logistic regression analyses that low STAI-S levels ($p \leq 0.001$ and $p=0.016$, respectively) and communication by video ($p<0.001$, $p=0.007$, respectively) had significant impact on the communication success (Tables 5, 6).

In terms of gender, it was observed that STAI-S and STAI-T were higher in women ($p<0.001$ and $p<0.001$, respectively) (Table 4).

DISCUSSION

High anxiety levels before medical and surgical interventions might have unintended consequences. Firstly, it is unpleasant for patients, and secondly, it increases sympathetic discharge, corticosteroid dosage and catecholamine (18,19). If an anesthetic agent is used, it can increase need for the agent (20). It was shown in coronary artery surgery, thalassemia, chronic obstructive pulmonary disease, and cardiac catheterization that visual information positively affected patient cooperation and the results of the treatment (21-25).

There are two main objectives for informing patients before medical and surgical procedures: The first is to inform patients about the disease, the procedure, and postoperative probabilities. The second is to decrease state anxiety (26-28). It requires an understanding of the interaction between state anxiety and association of fear memories as well as past information in order to achieve these objectives. While mild anxiety can be cured with the help of a motivator, acute anxiety is more dif-

Table 2. The indications for colonoscopy

Complaints	Video group (n=124)	Verbal group (n=103)	p
Constipation	54	42	
Diarrhea	17	15	
Weight loss	13	12	
Anemia/rectal bleeding	55	41	NS
Upper 50 years screening	26	9	
Second colonoscopy	6	12	
Others	18	14	

Table 3. Procedure-related outcomes according to video/verbal group

	Video group	Verbal group	p
Number of patients	124 (55%)	103 (45%)	NS
STAI-S	40.5±10.4	45.0±8.9	0.001
STAI-T	46.9±7.7	45.7±8.1	NS
What did you think after colonoscopy?			
Similar to explanation	87	58	0.037
Better than explanation	26	16	NS
Worse than explanation	11	29	<0.001
Would you repeat for health reasons (yes/no)	121/3	93/9	0.039
Diagnosis			
Normal	45	41	
IBS/colitis	3	8	
Malignancy	10	5	NS
Colon polyp	14	9	
Perianal disease (hemorrhoid, fistula, fissure, etc.)	45	39	
Other	6	0	
Complaint (procedural)			
Abdominal pain score	2.58±0.73	2.99±0.51	<0.001

ficult to cure (29). Individual differences in coping with stress caused by procedures might be the main reason for differences in the effectiveness of preoperative information. While some patients require more information, some patients avoid information altogether (30). The ideal regarding the preoperative information to be provided is not yet clear. Traditionally, clinicians inform patients verbally. Differences in intellect and medical and terminological information exchanged between physicians and patients during verbal communication often obstruct the communication channels, making objectives more difficult to achieve through verbal information alone. There have been some studies using video method to standardize and optimize patient information for patients undergoing colonoscopy (6,7,14).

The effectiveness results regarding information conveyed by video before colonoscopy are conflicting. Luck et al. (6) noted that STAI-S was significantly higher in females and the patients with history of colonoscopy, while it was significantly lo-

Table 4. Outcomes according to sex of the patient

	Males	Females	p
Number of patients	107 (47%)	120 (53%)	NS
STAI-S	39.3±9.8	45.4±9.3	<0.001
STAI-T	44.5±7.7	48.1±7.7	<0.001
What did you think after colonoscopy?			
Similar to explanation	70	75	NS
Better than explanation	19	23	NS
Worse than explanation	18	22	NS
Would you repeat for health reasons (yes/no)	103/4	111/9	NS

STAI-S: Spielberger State-Trait Anxiety Inventory-State. STAI-T: Spielberger State-Trait Anxiety Inventory-Trait.

Table 5. Univariate analysis of procedure-related outcomes according to the success of endsocopy

	OR	p
Video/verbal	0.248 (0.117-0.528)	<0.001
Gender	1.110 (0.559-2.204)	NS
Age	0.971 (0.945-0.997)	0.027
Educational status	0.989 (0.590-1.659)	NS
Body mass index	0.942 (0.874-1.014)	NS
Additional chronic disease	1.921 (0.886-4.164)	NS
Were the patients privy to a negative report from acquaintances?	1.151 (0.592-2.239)	NS
STAI-S	1.073 (1.031-1.115)	<0.001
STAI-T	1.035 (0.991-1.082)	NS
Before endoscopy or colonoscopy	0.458 (0.200-1.052)	NS

STAI-S: Spielberger State-Trait Anxiety Inventory-State. STAI-T: Spielberger State-Trait Anxiety Inventory-Trait.

Table 6. Multivariate analysis of procedure-related outcomes according to the success of endsocopy

	OR	p
Video/verbal	0.354 (0.152-0.823)	0.016
Gender	0.456 (0.187-1.110)	NS
Age	0.982 (0.946-1.020)	NS
Educational status	0.739 (0.379-1.441)	NS
Body mass index	0.939 (0.853-1.034)	NS
Additional chronic disease	1.688 (0.679-4.196)	NS
Were the patients privy to a negative report from acquaintances?	0.824 (0.363-1.871)	NS
STAI-S	1.075 (1.020-1.134)	0.007
STAI-T	1.029 (0.969-1.091)	NS
Before endoscopy or colonoscopy	2.044 (1.048-3.673)	NS

STAI-S: Spielberger State-Trait Anxiety Inventory-State. STAI-T: Spielberger State-Trait Anxiety Inventory-Trait.

wer in the video group. Bytzer et al. [14] noted that information by video did not decrease STAI-S scores. While it did not constitute a significant difference with regard to the use of midazolam, it was noted that information by video constituted a statistical difference regarding fentanyl dosage. In our study, standard texts were given to all patients about 3-4 weeks before the procedure. One of the groups was informed verbally and the other group was informed by video. It was aimed to study the differences between the communication methods. The patients with whom sedative and anesthetic agents were used were not included in the study. There were no differences between the two groups in age, BMI, education, previous history of colonoscopy or endoscopy, hearsay from close acquaintances, or the complaints causing colonoscopy (Tables 1, 2). Although the patients with constipation had higher anxiety before the procedure (12), there were no differences between the groups during the assessment of all symptoms in our study. Difference in age probably causes differences in post-procedural findings of anxiety (12). There was a significant difference in STAI-S and the thoughts of patients after the procedure in the group informed by video. The reason for the lack of significant difference in STAI-T might be that the timing of information conveyed by video was close to the procedure.

Bytzer et al. (14) put forward that the reason there was no difference in the video group in terms of STAI-S was that the patients were not informed on the procedure day. At this point, we can conclude that to inform both groups by written forms almost 2-3 weeks before the procedure did not make any differences. *"If the first information is also performed by video, does it make any contribution to chronic anxiety?"* could be a topic for a different study. Furthermore, it is worth considering holding procedural information and sensorial guidance in separate sessions. In Morgan et al.'s study (10), they concluded that in anxiety, the recovery period had a positive impact on sedation dosage; however, perception of pain did not change. In our study, we put forward the significant recovery in pain score in the video group ($p<0.001$) (Table 3). We observed that there was no difference in colonoscopic diagnoses between the video group and verbal group, which was a point we had not found in other studies. We analyzed this parameter due to the fact that polyp scan would cause gas in the intestine with more pain than usual, obstructive events would cause considerable discomfort in non-sedative patients, and perianal diseases cause differences. In keeping with the other studies, anxiety scores were significantly higher in female patients (6,14).

The video/verbal communications were accepted as successful when the patients reported, post-procedure, that the procedure was similar to or better than they had been told. In univariate and multiple logistic regression analyses, we observed that information by video ($p<0.001$, $p=0.007$, respectively) and low STAI-S levels ($p\leq0.001$, $p=0.016$, respectively) affected the procedure success. In addition to this, although age demonstrated a difference in univariate analysis ($p=0.027$), there was no difference in multivariate logistic regression analysis.

From the results of this study, we can conclude that informing patients by video decreases anxiety and abdominal pain during the procedure. It also increases procedure success as well as patient satisfaction levels. Informing by video also provides a platform from which physicians can more easily persuade patients for checks in the future should it be deemed necessary. Another finding of this study is that physicians should pursue different informational strategies considering the patient's gender.

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