

Impact of video information before unsedated upper gastrointestinal endoscopy on patient satisfaction and anxiety: a prospective randomized trial

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Abstract

Introduction: Anxiety and stress are common problems in patients undergoing invasive medical procedures. Anxiety before upper gastrointestinal endoscopy may have adverse consequences and can sometimes hamper successful completion of the procedure.

Aim: To investigate the effects of adding an information video or detailed verbal information to our usual preprocedural information.

Material and methods: Four hundred and forty gastrointestinal endoscopy patients were randomly assigned to video (226) or verbal information (214) groups. Patients in the video group watched a 10-minute-long video about the necessity of the endoscopic procedure, doctor and patient cooperation, and possible complications, emphasizing the possible feelings the patients might experience. The patients' situational anxiety was measured using the State-Trait Anxiety Inventory's two scales (STAI-State and STAI-Trait). Patients rated pain and overall satisfaction related to the procedure.

Results: There was a significant difference between the patient groups after endoscopy, in favor of the video group, when the answers to the STAI-S questions "the procedure was similar to what was explained" and "it was worse than what was explained" were evaluated ($p = 0.003$, $p < 0.001$ and $p < 0.001$, respectively).

Conclusions: It can be concluded that information by video helps reduce the anxiety of the patient, increases patient satisfaction and the patient is much more readily convinced to undergo another procedure, in cases where a control is needed.

Introduction

Anxiety is a common problem in patients who have to undergo an invasive medical procedure [1]. The increase in stress, and decrease in tolerance, lead to unexpected changes in physiological status, to an increased need for medication postoperatively, to a lower compliance in treatment and to an increase in medical procedures during follow-up [2-4]. Cognitive and behavioral education are used to decrease the stress in patients scheduled for medical procedures. Cognitive techniques are used by way of informing the patients. Patients are basically preoperatively informed with two different approaches. In one approach patients are

informed about the procedure and the possible experiences they might have during its course. The second approach focuses on information about the feelings, such as perception and olfactory, auditory and tactile sensations they might experience during the procedure. It has been established that the informative approach, focusing upon feelings, is much more effective than just focusing on the procedure itself during endoscopy, colonoscopy and gynecologic examination [5-9].

Endoscopic procedures can be painful and uncomfortable and patient cooperation is very important for a successful result. This anxiety can hamper a successful result of the procedures [5]. In routine practice, ver-

bal or written communication is used to inform the patient. Mostly this information is focused on the procedure itself and its complications, and it is a fact that most of the time management of the patient's feelings and optimizing the expectations are subjects that are neglected. Also, most of the patients do not read the written information, or else they do not understand it. On the other hand, verbal information is usually given just before the procedure, when the patient is already anxious and experiencing stress and emotional chaos, and it is hard for the patient to control emotions in that state. There are different studies investigating the appropriate informative approach before endoscopic procedures, in order to optimize patient comfort and procedure quality [6, 10-13].

Aim

In our study, we aimed to compare the effect of showing an informative video or providing verbal group education before the procedure, in addition to informed consent, on the State-Trait Anxiety Inventory's two scales (STAI-State and STAI-Trait) and on communication success and patient satisfaction in patients scheduled for endoscopy. We also aimed to evaluate the effect of gender on patient satisfaction and communication success.

Material and methods

Patients

The study was carried out in our tertiary reference center (Izmir Atatürk Training and Research Hospital, Department of Gastroenterology) between October 2010 and January 2011. All patients included in the study were aged 18-70 and at least primary school graduates. We did not administer any medicine for sedation before or during the procedure. Patients who could not speak Turkish were not included. Approval was obtained from the local ethics committee. All patients signed informed consent.

Study design

A written form containing information about the procedure and its complications was given to all of the patients who were scheduled for endoscopy. An endoscopy appointment was made for approximately 3-4 weeks later. On the procedure day, about 1-5 h before the procedure, the patients were taken randomly in groups of 5, and appointed to the video or verbal group, to be included in the study. The verbal and video information and also filling out of the questionnaire were all conducted by medical doctors not attending the endoscopic procedure. In the video group, we showed an

approximately 10-minute-long video that we had prepared, providing information such as: the necessity of the endoscopic procedure; doctor and patient cooperation during the procedure; the scope and setting used during the procedure; the possible complications emphasizing the possible feelings the patients might experience; and things that must be done by the doctor and patient in order to avoid excessive nausea, vomiting, retching, distention, etc., which would pass when the procedure was over. Following the video, patients' questions were answered. In the verbal group, the same information that the video included was explained to the patients verbally by a medical doctor not attending the endoscopic procedure and questions were answered again at the end. A questionnaire was filled out for information regarding the patients' age, gender, weight, height, educational status, occupation, concomitant diseases, drugs used, complaints that brought them to an endoscopic procedure, history of a minor or major operation, delivery, traffic accident, tooth extraction, history of any previous endoscopy or colonoscopy, and history of having heard about other people's experience regarding endoscopy or colonoscopy. Also, the questions of the State-Trait Anxiety Inventory's two scales (STAI-State and STAI-Trait) were requested to be answered. In approximately 1-5 h, the patients were taken for endoscopy, without sedation or anesthesia, performed by experienced doctors who were not present in the meeting room and did not have any knowledge about the answers.

Outcome assessments

As all of the questions, except those about name, age, weight, height, drugs used and occupation, were prepared to be answered by placing an "x" in small boxes, the questionnaire was evaluated quite clearly.

STAI-State (STAI-S) and STAI-Trait (STAI-T) are two different pen and pencil tests, answered by the individual. One of the scales used in the study, STAI-S, evaluates how the person feels within the conditions he/she is in at the present moment, and the other one, STAI-T, evaluates how the individual feels in general. The scale was developed by Spielberger CD [14]. STAI-S and STAI-T comprise 20 questions each, and are answered as "none", "a little", "a lot", and "totally". STAI-S and STAI-T receive scores between 20 and 80, and higher scores are correlated with the severity of anxiety.

The questions "Would you be prepared to have another procedure for your own health?" and "Was the procedure worse or better than it was explained to be?" were asked to the patients following the procedure. If the patient answered that it was as explained or better, communication was accepted as successful and the

Table I. Demographic and clinical characteristics of patients at study entry

Parameter	Video group (n = 226)	Verbal group (n = 214)	Value of p
Age [year]	46.6 ±13.2	44.3 ±11.7	NS
Gender (male/female)	94/132	92/122	NS
Body mass index [kg/m ²]	27.1 ±11.0	26.5 ±5.0	NS
Educational status:			
Primary education	135	158	
High school	62	37	NS
University	19	19	
History of endoscopy or colonoscopy	60	47	NS
Did the patients hear bad endoscopic hearsay? (Yes/No)	120/93	111/93	NS

NS: $p < 0.05$

patient as happy. The others were accepted to be unsuccessful. The question “What was the most annoying complaint during the procedure?” was also asked. And lastly, the endoscopic diagnoses were written under the questionnaire.

Statistical analysis

Mann-Whitney *U*-test and independent samples *T*-test were performed according to data distribution for comparison between two independent groups. Pearson χ^2 test and Fisher's exact test were used for categorical variables. The impacts of variables on process success were assessed using univariate and multiple logistic regression analyses. Mean and standard deviation were indicated together. The limit of significance was accepted as $p < 0.05$. Statistical calculations were performed using SPSS 13.0 (Chicago, IL, USA).

Results

A total of 440 patients were evaluated in the study. 186 were male, 254 female. Patients were divided into

Table II. Gastrointestinal endoscopy indications of study participants

Parameter	Video group (n = 226)	Verbal group (n = 214)	Value of p
Dyspepsia	141	142	NS
Heartburn	41	51	NS
Bloated feeling	136	125	NS
Early satiety	28	16	NS
Weight loss	24	23	NS
Emesis/vomiting	53	38	NS
Odynophagia	14	21	NS
Others	8	15	NS

NS: $p < 0.05$

two groups, video and verbal. There was no difference between groups in terms of age, gender, body mass index (BMI), concomitant chronic disease, educational status, medical history of previous endoscopic and colonoscopic procedures, and having heard about other people's experience regarding endoscopic procedures (Table I). No difference was found, either, between the two groups of patients in terms of the disease requiring the endoscopic procedure (Table II).

There was a significant difference between groups in favor of the video group, when answers to STAI-S, to the questions “The procedure was similar to what was explained” and “It was worse than explained”, were evaluated after endoscopy ($p = 0.003$, $p < 0.001$ and $p < 0.001$, respectively). There was no difference between groups regarding endoscopic diagnoses and procedural complaints (Table III). When evaluated for gender, we found that STAI-S and STAI-T were higher in females ($p < 0.001$ and $p < 0.001$, respectively) (Table IV).

If the patients stated that the procedure was similar or better than what was explained, the communication was accepted to be successful and the patient satisfied. In the univariate and multivariate logistic regression analysis, it was found that low STAI-S levels ($p < 0.001$ and $p < 0.001$, respectively), communication by video ($p < 0.001$, $p < 0.001$, respectively) and age ($p < 0.001$ and $p < 0.013$, respectively) significantly affect communication success. We also found with multivariate analysis that having undergone a previous endoscopy or colonoscopy affects communication success ($p = 0.035$) (Table V).

Discussion

High anxiety levels before medical or surgical interventions can lead to some undesirable results. The increase in sympathetic discharge and increase in catecholamines and corticosteroids can be very unpleasant

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

Variables	Video group (n = 226)	Verbal group (n = 214)	Value of p
Endoscopy group:			
STAI-State	37.3 ±10.0	46.0 ±9.09	0.003
STAI-Trait	46.5 ±8.08	45.9 ±7.45	NS
Similar to explanation	161	108	< 0.001
Better than explanation	46	42	NS
Worse than explanation	23	64	< 0.001
Would do again (for health) (yes/no)	211/15	193/21	NS
Diagnosis:			
Normal	87	74	
Esophageal	22	31	NS
Gastric	109	93	
Duodenal	8	16	
Complaints (procedural):			
Retching	118	116	
Like choke	15	10	NS
Like tear	0	1	
Abdominal pain	8	7	

STAI – State-Trait Anxiety Inventory scale, NS: $p < 0.05$

Table IV. Outcomes according to sex of patients

Variables	Male (n = 186)	Female (n = 254)	Value of p
STAI-S	38.6 ±9.71	45.8 ±9.04	< 0.001
STAI-T	42.3 ±6.84	47.6 ±8.13	< 0.001
What do you think after endoscopy?			
Similar to explanation	118	151	NS
Better than explanation	36	52	NS
Worse than explanation	35	52	NS

STAI – State-Trait Anxiety Inventory scale, NS: $p < 0.05$

for the patient [15, 16]. The need for an anesthetic agent may increase as well, if it is to be used [17]. It has been reported that the information provided visually during cardiac catheterization in coronary artery surgery, thalassemia, and COPD affects patient compliance and treatment results positively [18-22].

There are two main goals that have to be achieved by information before medical and surgical procedures: one is to inform about the disease, the procedure to be performed, and the postoperative possibilities; and the other is to reduce the situational anxiety [23-25]. In order to achieve these goals, the interaction between situational anxiety, memory regarding fear and the association with past knowledge has to be well understood. Although mild anxiety can be healed with the motivator's efforts, the situation is much more complicated and difficult in severe anxiety [26].

The individual differences in coping with the stress caused by procedures can be the reason for the difference in the efficacy of preoperative information. While some patients do want to be informed, others may avoid the information [27]. The ideal approach in preoperative information is not clear yet. Traditionally, this information is provided verbally by the clinician. During the verbal interaction between doctor and patient, the difference in intellectuality and terminology prevents goal achievement. There are some studies about the video method in patients scheduled for colonoscopy, with the aim of creating a standard and optimizing patient information [6, 7]; there also are studies that report on the increase in anxiety during upper gastrointestinal endoscopy [28] and those that have investigated the effects of verbal information [29], but we did not encounter a study in the literature

Table V. Univariate and multivariate analysis of procedure-related outcomes according to the success of communication

Variables	Odds ratio (95% CI) (univariate analysis)	Odds ratio (95% CI) (multivariate analysis)	Value of <i>p</i>
Age	0.968 (0.950-0.987)	0.967 (0.941-0.993)	0.001
Gender	1.111 (0.689-1.790)	0.767 (0.428-1.377)	NS
Educational status	1.225 (0.878-1.709)	1.066 (0.681-1.668)	NS
BMI	0.965 (0.920-1.011)	0.980 (0.933-1.029)	NS
Video/verbal	3.776 (2.236-6.341)	3.997 (2.212-7.220)	< 0.001
STAI-State	1.050 (1.023-1.078)	1.063 (1.027-1.100)	< 0.001
STAI-Trait	1.013 (0.983-1.044)	0.993 (0.952-1.035)	NS
Additional chronic disease	1.294 (0.792-2.113)	1.490 (0.806-2.753)	NS
Did the patients hear bad endoscopic hearsay?	1.112 (0.679-1.819)	0.952 (0.538-1.685)	NS
Regional diagnosis	0.960 (0.824-1.118)	0.959 (0.803-1.145)	NS
Before endoscopy or colonoscopy	1.431 (0.849-2.412)	1.962 (1.048-3.673)	NS

BMI – body mass index, STAI – State-Trait Anxiety Inventory scale, 95% CI – 95% confidence interval. Results expressed as median and inter-quartile 25-75% interval. Student *t* test or Mann-Whitney depending on normal distribution, NS: *p* < 0.05

that investigates the effect of visual communication on anxiety and procedure success.

In the evaluations of patients who have been satisfied with endoscopic and colonoscopic procedures, it has been shown that doctor-patient cooperation is important [10]. In a study with children and adolescents, it was reported that psychological preparation using photographs reduces anxiety [11]. Again in a study with endoscopy and colonoscopy patients, it was reported that music was successful in affecting the auditory perceptions of the patients [12]. In a study performed by Lanius *et al.* [13], it was reported that informing the patient with a pamphlet before an endoscopic or colonoscopic procedure does not provide a decrease in the anxiety, and that information should be individualized [13]. In our study, the situational anxiety (STAI-S) decreased significantly in the group informed by video; we also found a significant superiority in favor of the video group when we evaluated the questions aimed at establishing patient satisfaction (Table IV). The result of our univariate and multivariate analysis regarding communication success showed that situational anxiety is significantly affected by visual communication and age. There are studies about the effect of age on communication success (patient satisfaction) [29]. Also, our result showing that the STAI-S and STAI-T levels are significantly higher in females compared to males is similar to the literature [6, 31].

It can be concluded from the results of our study that information provided by video helps reduce the anxiety of the patient and increases patient satisfaction, and that the patient is much more readily convinced to undergo another procedure in cases where a control is needed. One of the other results of our study is that dif-

ferent strategies should be followed for information in different genders. The effect of visual information on long-term anxiety, patient satisfaction and procedure success in patients scheduled for endoscopy is a topic deserving investigation.

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