The effect of video-animated information on the anxiety of male patients before flexible cystoscopy performed under local anesthesia

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ABSTRACT

INTRODUCTION: We aimed to investigate the effect of video-animated information given before flexible cystoscopy under local anesthesia on the anxiety of male patients.

METHODS: Before cystoscopy, patients were divided into two groups with 1:1 standard randomization. While one group was given written and verbal information, the other group was additionally given video-animated information. The patients' anxiety levels before the procedure and their hemodynamic parameters during the procedure were compared between the groups. In addition, pain, satisfaction, and willingness to repeat the procedure were compared between the groups.

RESULTS: State-Trait Anxiety Inventory-Sate (STAI-S) levels were found to be statistically significantly lower in the group given video animation information before cystoscopy ($p<0.01$). It was observed that video information had a positive effect on systolic blood pressure, diastolic blood pressure, and heart rate, and the values were lower than in the comparator group ($p<0.01$). While there was no statistically significant difference between the two groups in visual analog scale (VAS) pain scores ($p=0.24$), VAS satisfaction and VAS willingness to repeat the procedure scores were found to be statistically significantly different ($p<0.01$). It was observed that video-animated information made a positive contribution to satisfaction and willingness to repeat the procedure.

CONCLUSIONS: Video-animated information given before a flexible cystoscopy procedure performed on male patients under local anesthesia has positive effects on the patients' anxiety. In addition, it contributes positively to the patient's satisfaction and desire to repeat the procedure. Video-animated information may be routinely used, in addition to verbal and written information, before csytoscopy.

INTRODUCTION

Cystoscopy is a minimally invasive procedure performed under local anesthesia that can be painful and uncomfortable for patients.[1] Since the male urethra is longer, the procedure is more uncomfortable in men than in women. Flexible cystoscopy is less traumatic and less painful than rigid cystoscopy; however, many patients may still experience anxiety before the procedure.[2] Anxiety about cystoscopy can reduce the effectiveness of the procedure and lead to disruptions in the patient's treatment.[3]

Anxiety before a surgical procedure is normal and can be due to uncertainty, fear of death, fear of not recovering, or fear of anesthesia.[4,5] Lack of understanding of surgical procedures can further increase patients' anxiety and cause them to avoid or delay treatment. In addition, anxiety experienced during treatment may disrupt hemodynamic stability and lead to conditions such as arrhythmia and hypertension.[6]

Patients are often given written and verbal information before an invasive procedure. Adding detailed visual information alongside routine written and verbal information contributes positively to the patient's understanding. Recently, various studies have shown that video information added to verbal and written information provides a better understanding of patients due to a decrease in their anxiety level;[4,7,8] however, there are currently

no studies focusing on the anxiety levels of patients who were given video-animated information before cystoscopy.

Our study aimed to investigate the effects of video-animated information on the patient's anxiety, satisfaction, pain, desire to repeat the procedure, and hemodynamic parameters during flexible cystoscopy under local anesthesia.

METHODS

This was a single-center, randomized controlled study. The study included patients who underwent cystoscopy under local anesthesia at Sakarya University Training and Research Hospital between January 2024 and March 2024. Local ethics committee approval was obtained.

Male patients over 18 years of age, who were going to undergo flexible cystoscopy for diagnostic purposes for the first time and who were communicative and had the intellectual knowledge to understand the purpose and details of the study, were included. The exclusion criteria were: 1) patients with active urinary infection or urethral deformities; 2) those with prior endoscopic invasive intervention to the urethra or bladder (double-J stent removal, urethral dilatation, diagnosed with bladder cancer, etc.); 3) patients who used painkillers within 24 hours before the procedure; 4) those who used medication that affects consciousness and communication; 5) patients diagnosed with overactive bladder or chronic pain syndrome; 6) those with uncontrolled blood pressure disease; and 7) patients already in pain.

Patient demographic data, such as age, previous operations, weight, and height, as well as medical parameters, such as the reason for cystoscopy and American Society of Anesthesiologists (ASA) score, were collected from interviews with the patients and their medical records. Initially, 172 patients were evaluated for inclusion in the study. Three of these patients did not want to participate and nine did not meet the inclusion criteria. Simple randomization was performed with a 1:1 ratio according to the order of patient admission. The patients were divided into two groups: video and non-video. In addition to written information, participants in the video group were given video information under the supervision of a doctor. Participants could ask questions to the doctor during the video information. Participants in the non-video group were provided with written information only.

Cystoscopy was performed in the standard lithotomy position in all patients. No painkillers were administered before the procedure. During the procedure, the same 16 Fr flexible cystoscope was used, the patients' perineum was cleaned with povidone iodine, and 10 ml of 2% lidocaine gel was applied to the urethra as local anesthesia. The clinician performing the cystoscopy procedure was blinded and did not know whether the patient received written or video-animated information.

State-Trait Anxiety Inventory (STAI) is a self-reported anxiety assessment questionnaire consisting of 20 questions, each with a four-point Likert scale, consisting of two separate components: STAI-state (STAI-S) and STAI-trait (STAI-T). A person's current anxiety level is evaluated with STAI-S and long-term anxiety level is evaluated with STAI-T. The highest score that can be obtained on the scale is 80, while the lowest score is 20.

In this study, initial anxiety levels were evaluated using the Turkish version of STAI-S and STAI-T. STAI-T was used to determine whether there was a difference in long-term anxiety between groups before cystoscopy. STAI-S was used to evaluate the difference in anxiety in the same groups after video information (Figure 1).

Visual analog scale (VAS) score was performed after cystoscopy to evaluate participants' perceptions of pain, satisfaction, and desire to undergo the procedure again. VAS is a 10-unit Likert scale. The patients' perceptions are evaluated through their answers to designated questions, with extreme descriptors on points 1–10 (e.g., "no pain" to "severe pain"). In addition, hemodynamic parameters were recorded during the procedure to compare between groups.

Statistical analysis

Data analysis was performed using IBM SPSS Statistics 22 (SPSS Inc., Chicago, IL, U.S.). The suitability of quantitative data for normal distribution was evaluated using the Kolmogorov-Smirnov test. A two-sided t-test was used to compare differences between two normally distributed groups, while the Mann-Whitney U test was used to compare abnormally distributed continuous variables. Relationships between categorical variables were evaluated using the Pearson Chi-squared test. Statistical significance was considered at $p<0.05$.

A sample size estimation was performed using NCSS and PASS (NCSS LLC., Kaysville, UT, U.S.) statistical package program, and power analysis was based on a previous investigation on anxiety.[9] This required the enrollment of 33 patients in each group for a power of >95%, with 5% type 1 error.

Video information

Video information was provided with patient information videos on the official website of the European Association of Urology (*https://patients.uroweb.org/videos/cystoscopy-video/*). This video is in English, lasts a little more than two minutes, and explains the cystoscopy procedure in detail with 3D animations. While the participant was watching the video, the doctor sat next to him and provided simultaneous Turkish translation if translation was needed. The participant had the authority to stop the video, ask questions, and rewind the video if he did not understand or was confused about a point.

RESULTS

Demographic data and characteristics of the participants are summarized in Table 1. The average age of the participants was 62±10.4 years in the non-video group and 64.4 ±8.8 years in the video group (p=0.48). When the two groups of participants were examined in terms of body mass index (BMI), ASA scores, and cystoscopy purposes, they were observed to have similar distributions. In the evaluation before cystoscopy, no statistically significant difference was detected when STAI-T and STAI-S were compared between the groups (p=0.62 and p=0.94, respectively).

The STAI-S comparison between groups before and after information is shown in Table 2. While STAI-S scores did not change significantly in the group without video information (p=0.92), the STAI-S score did decreased significantly in the group with video information (p<0.01).

The changes in the hemodynamic parameters are shown in Table 3. When systolic heart pressure, diastolic blood pressure, and heart rate were compared between groups, it was observed that video information made a statistically significant positive contribution to hemodynamic parameters (p<0.01).

The VAS scores of pain, satisfaction, and willingness to repeat evaluated after the procedure are shown in Table 4. While video information did not affect procedure pain (p=0.24), statistically significant improvements were observed in satisfaction and willingness to repeat parameters after video information (p<0.01).

DISCUSSION

Cystoscopy, which is performed quite frequently in daily urology practice, can cause serious patient anxiety.[3] Recently, many studies involving pharmacologic and environmental controls have been conducted to relieve pain and anxiety during cystoscopy.[2,10-12]

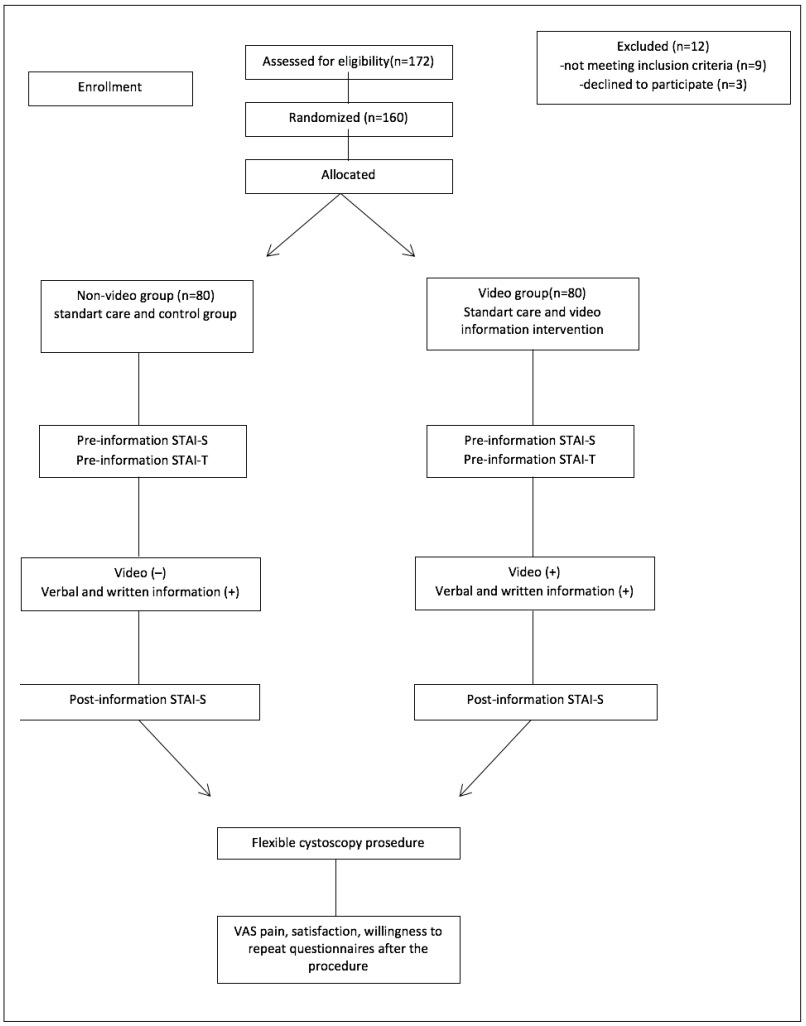

Figure 1. Flowchart of the randomized controlled study. STAI-S: State-Trait Anxiety Inventory-State; STAI-T: State-Trait Anxiety Inventory-Trait.

Pharmacologic methods, such as instillation and lubrication of the urethra with 2% lidocaine, premedication with a short-acting anxiolytic drug, and the use of inhaled nitrous oxide, are helpful methods in coping with pain and anxiety. In addition to the use of pharmacologic agents, some distraction methods can also be used during the procedure to reduce pain and anxiety and increase procedure satisfaction.[3] Ways of interacting with the environment, such as grasping and squeezing a stress ball, watching videos, and listening to music, have been accepted as non-pharmacologic methods to relieve pain and are used in many minimally invasive procedures, including cystoscopy.[3]

Raheem et al investigated the effects of listening to classical music during cystoscopy on anxiety and pain in 137 patients; improvements in VAS pain

Table 1. Patient descriptive characteristics, pre-information STAI and ASA comparisons between video and non-video groups

	Non-video group (n=80)	Video group (n=80)
Age (years)	62±10.4	64.4±8.8
BMI (kg/m²) (mean ± SD)	28.4±4.3	28.8±5.1
STAI-T (mean + SD)	34.2±3.6	35.8±3.8
STAI-S (mean + SD) (pre-information)	39.22±5.88	39.14±5.24
ASA score (ASA 1–2/ASA 3–4)	32/48	27/53
Reasons for flexible cystoscopy		
Macroscopic hematuria	36	32
Microscopic hematuria	28	22
Lower urinary tract symptoms	19	22
Suspicious bladder calculus	0	1

ASA: American Society of Anesthesiologists; BMI: body mass index; SD: standard deviation; STAI-S: State-Trait Anxiety Inventory-State; STAI-T: State-Trait Anxiety Inventory-Trait.

Table 2. Change of STAI-S after informations between groups

	Pre-information STAI-S (mean + SD) (pre-information)	Post-information STAI-S (mean+ SD) (post-information)	p
Non-video group	39.22±5.88	38.98±8.66	0.92
Video group	39.14±5.24	32.68±2.63	<0.01

SD: standard deviation; STAI-S: State-Trait Anxiety Inventory-State.

Table 3. Comparisons of hemodynamic parameters measured during cystoscopy between groups

	Non-video group	Video group	p
Systolic pressure (mean ± SD)	155.6±14.8	142.4±10.8	<0.01
Diastolic pressure (mean± SD)	109.8±11.1	92.3±8.5	<0.01
Heart rate (mean ± SD)	96.3±3.8	85.6±4.6	<0.01

SD: standard deviation.

score and STAI anxiety score were reported as statistically significant.[12] Gezici et al conducted a study in which video, stress ball, and music were used during cystoscopy. Significant reductions in pain and anxiety were observed when all three distractors were used.[13]

A patient's sociocultural level, literacy, attention, and motivation are very important in understanding procedure-related information; however, anxiety before an intervention can negatively affect the patient's cognitive skills. A clearer understanding of the procedure can lead to increased motivation, self-confidence, and compliance.[14]

Recent literature has shown that the use of video-based explanations, in addition to routine verbal and written information, can support clearer understanding and alleviate anxiety. After Bozkurt et al shared video-animated information with patients undergoing percutaneous nephrolithotomy surgery, investigators noted a statistically significant decrease in anxiety levels.[7] Can et al observed a decrease in anxiety and an increase in satisfaction for patients who were given video-animated information before a ureteral stent removal procedure, which is similar to cystoscopy.[4] In addition, Tarhan et al have shown that video information given before a prostate biopsy procedure under local anesthesia, which is widely used in daily urology practice, contributes positively to patients' anxiety.[15]

Oral and written informed consent is routinely obtained from patients before surgical procedures. Due to legal regulations, written information is detailed and long, which may confuse patients. In a study conducted by Stanley et al, it was reported that written and verbal patient information did not create a significant change in patients' perceptions of the surgical intervention and the complications that may occur as a result.[16]

More recently, multiple publications have shown that patient information provided with virtual reality (VR) devices or video animations make a significant positive contribution to patients' preoperative anxiety.[3,7,15] Combined with our results, these studies illustrate that additional methods of information-sharing, other than only verbal and written formats, enable patients to better understand procedures being performed.

In minimally invasive surgical procedures performed under local anesthesia, the patient's level of consciousness may cause additional anxiety. This may negatively affect patient satisfaction. When Ketsuwan et al's randomized controlled study conducted by VR on anxiety

Table 4. Comparison of pain, satisfaction, and willingness between two groups

	Non-video group	Video group	p
VAS-pain (0–10) (mean ± SD)	3.2±2.2	3.1±2.4	0.241
VAS-satisfaction (0–10) (mean ± SD)	8.6±1.3	9.2±1.1	<0.01
VAS-willingness to repeat (0–10) (mean ± SD)	1.8±0.3	2.2±0.4	<0.01

SD: standard deviation; VAS: visual analog scale.

was examined, no statistically significant results were obtained in the post-intervention pain scores, while satisfaction and willingness to repeat scores were found to be statistically significant after the intervention.[3] Consistent with these findings, while we did not observe a significant change in pain scoring after the intervention, we obtained statistically significant positive results in satisfaction and desire to repeat scores. This study shows that a decrease in anxiety levels tends to increase patients' satisfaction and willingness to repeat the procedure.

Painful minimally invasive surgical procedures, such as cystoscopy performed under local anesthesia, may affect hemodynamic parameters. Many studies have investigated the effects of distracting activities used to reduce pain and anxiety during cystoscopy on hemodynamic parameters. Gupta et al reported that simple distracting activities significantly reduced the heart rate and systolic pressure of patients.[17] In another study, Gezginci et al showed that simple distraction methods made a positive contribution to hemodynamic parameters.[13] Based on this, in the present study, we measured the hemodynamic parameters of the patients during the procedure after information was given via video animation. We observed that providing information via video not only had a positive effect on anxiety but also had a statistically significant positive effect on hemodynamic parameters, such as systolic blood pressure, diastolic blood pressure, and heart rate.

Strengths and limitations

The strength of our study was its clear format and prospective nature; however, there are some limitations. First, although the same cystoscopy protocol was applied to each patient, the surgeon performing the procedure was not the same. Surgical techniques may vary individually. Second, situations that may affect anxiety, such as income level, cultural structure, and sociocultural level, have been ignored. Third, since the study was carried out in a single center in a single local cystoscopy room, the same results may not be obtained in another center where environmental factors may change. Finally, differences in patients' prostate sizes may affect the response to the procedure.

CONCLUSIONS

Cystoscopy is a simple procedure that is frequently performed by urologists in their daily routine, but it can be worrying for patients. Providing written and verbal information before cystoscopy, as well as video-animated information, is a simple-to-apply, low-cost, and effective method that reduces patient's anxiety and increases satisfaction.

COMPETING INTERESTS: The authors do not report any competing personal or financial interests related to this work.

This paper has been peer reviewed.

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