DOI: 10.4274/csmedj.galenos.2025.2025-10-5

ORIGINAL ARTICLE

109

Cam and Sakura Med J 2025;5(3):109-114

CSMJ

Impact of Pre-procedural Information Videos on Anxiety in Patients Undergoing Colonoscopy

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What is known on this subject?

Colonoscopy is widely utilized in clinical practice; however, the invasive nature of the procedure may still elicit notable anxiety in patients despite conventional pre-procedural counseling. Although several studies have investigated multimedia-supported education prior to colonoscopy, the results are varied and do not allow for a firm consensus.

What this study adds?

As one of the largest randomized controlled investigations in this field, our study confirmed that video-based education effectively decreases state anxiety and enhances satisfaction among patients awaiting colonoscopy. These results endorse animated video education as an accessible and efficient strategy for improving the patient experience and cooperation during colonoscopy.

ABSTRACT

Objective: Colonoscopy is a complex procedure whose optimal outcome depends largely on the patient's active cooperation. This study sought to evaluate whether providing an informative video could reduce anxiety levels in patients awaiting colonoscopy.

Material and Methods: This prospective randomized controlled trial assigned participants to two groups by sequential randomization. One group received standard verbal and written explanations before the colonoscopy, while the other group received an additional video-based educational intervention. Demographic characteristics, satisfaction scores, and State-Trait Anxiety Inventory- State (STAI-S) and State-Trait Anxiety Inventory-Trait (STAI-T) anxiety scores were compared between groups.

Results: A total of 347 patients were assessed prospectively. Following the application of exclusion criteria, the final study population consisted of 300 individuals. Participants were equally distributed, with 150 allocated to the video group and 150 to the control group. The two groups had comparable STAI-T scores; the difference was not statistically significant. In the video group, the mean STAI-S score decreased from 42.3±8.3 pre-intervention to 39.1±8.2 post-intervention, indicating a statistically significant reduction ($p<0.001$). Conversely, in the control group, STAI-S scores remained essentially unchanged (41.1±10.1 vs. 41.2±9.6; $p=0.581$). Post-procedural satisfaction levels were significantly higher in the video group than in the control group (4.3±0.8 vs. 2.8±1.0, $p<0.001$).

Conclusion: Providing video-animated information, in addition to written and verbal information, before colonoscopy reduces patients' preoperative anxiety. Furthermore, incorporating video-based education leads to improved patient satisfaction with the procedure.

Keywords: Anxiety, colonoscopy, satisfaction, STAI-S, STAI-T

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Received: 05.11.2025 **Accepted:** 22.12.2025 **Publication Date:** 23.12.2025

Cite this article as: Can B, Kahvecioğlu ED. Impact of pre-procedural information videos on anxiety in patients undergoing colonoscopy. Cam and Sakura Med J. 2025;5(3):109-114

Introduction

Colonoscopy enables endoscopic visualization of the rectum, colon, and terminal ileum. This invasive technique is commonly used to evaluate unexplained weight loss, rectal bleeding, or persistent constipation, and to screen for colorectal cancer, particularly in adults over the age of 50 (1,2).

Anticipating possible discomfort or harm prior to an invasive procedure can trigger a natural emotional reaction characterized by heightened anxiety (3). Sedation and analgesia are typically administered during colonoscopy, rather than full general anesthesia. Many patients express concerns regarding the sufficiency of sedation, the details of the intervention, its length, and the potential complexity of the procedure. Such heightened anxiety can impair patient tolerance, cause physiological instability, increase postoperative medication requirements, and raise the likelihood of further medical interventions (4,5,6). Therefore, providing patients with adequate and effective pre-procedural information is essential.

Standard pre-colonoscopy preparation typically includes written and verbal counselling about the procedure. Nevertheless, misinterpretation or inadequacy of this information may persist, with anxiety remaining a common challenge. Several studies have explored whether supplementing conventional instructions with animated video content can help reduce anxiety in patients undergoing colonoscopy (7,8). Yet, the findings remain inconsistent, and no definitive conclusion has been established. Therefore, we sought to determine whether adding a brief informational video to standard counselling could impact both anxiety and satisfaction among patients undergoing colonoscopy.

Material and Methods

We designed a prospective randomized controlled trial involving individuals scheduled for elective colonoscopy. The Institutional Ethics Committee of University of Health Sciences Türkiye, Başakşehir Çam and Sakura City Hospital granted approval for the study protocol, and the study adhered to the principles of the Declaration of Helsinki (approval number: KAEK-11/25.09.2024.178, approval date: 30.09.2024). This study was conducted at City Hospital, a tertiary healthcare centre with a high patient volume and a focus on education and research. The prospective cohort consisted of patients who underwent colonoscopy between December 2024 and June 2025. Written informed consent was obtained from all participants prior to enrolment.

Individuals aged 18-75 years who were referred for colonoscopy after evaluation in the internal medicine outpatient clinic were eligible for inclusion. Patients who were illiterate or who had previously undergone a colonoscopy were excluded. Additional exclusions were applied to individuals with documented psychiatric disorders or those receiving psychiatric or anxiolytic treatment. Baseline characteristics, including age, sex, body mass index (BMI), educational status, and relevant comorbidities, were collected for each participant.

Sequential randomization was implemented to minimize allocation bias. Patients who met the inclusion criteria were allocated to the video or control group in a 1:1 ratio using sequential assignment based on the order of admission. This approach ensured an even distribution of participants across the two groups. All subjects received routine written and verbal explanations before colonoscopy. The intervention group was also shown an animated educational video. All patients underwent conscious sedation during the procedure.

Anxiety was assessed using the State-Trait Anxiety Inventory (STAI), which includes two separate 20-item scales to measure temporary state anxiety [STAI-State (STAI-S)] and long-standing trait anxiety [STAI-Trait (STAI-T)]. The Turkish adaptation of the STAI, previously validated for clinical use, was utilized in the assessment (9). The STAI-S component captures temporary emotional reactions to the immediate situation, whereas the STAI-T evaluates more persistent anxiety tendencies. Baseline STAI-T scores were collected in both groups to allow comparison of trait anxiety. In both study arms, STAI-S scores were recorded prior to and following the informational intervention to evaluate changes in state anxiety. The enrolment and allocation process is illustrated in Figure 1.

Post-procedure satisfaction was quantified on a 1-to-5 Likert scale, with higher values indicating a more favourable experience (5: very satisfied; 1: very dissatisfied).

Video Information

In the intervention group, the animation was shown on a computer within a separate area adjacent to the endoscopy department, with a physician present to provide support if needed. The educational material consisted of an animated video explaining the steps and purpose of colonoscopy. (https://www.youtube.com/watch?v=mh90RPA-C10&list=PPSV) To ensure comprehension, the video was simultaneously translated into the patient's language by a physician. Patients were encouraged to ask questions about the intervention at any time.

Data analysis was conducted using SPSS 24 (IBM Corp., Armonk, NY, USA). Results for continuous variables are presented as mean values with standard deviations. Group differences were examined using independent-samples t-tests for numerical outcomes and Pearson's chi-square tests for categorical outcomes. Alterations in STAI-S scores were evaluated using paired samples t-tests.

To account for potential confounding factors, univariate analyses were first performed to identify variables associated with changes in state anxiety (ΔSTAI-S), calculated as the difference between pre- and post-intervention STAI-S scores. Variables that were significant or borderline significant ($p<0.10$) in univariate analyses, along with clinically relevant factors, were subsequently included in a multivariate linear regression model. The change in state anxiety (ΔSTAI-S) was used as the dependent variable. Statistical significance was defined as a two-tailed p value <0.05.

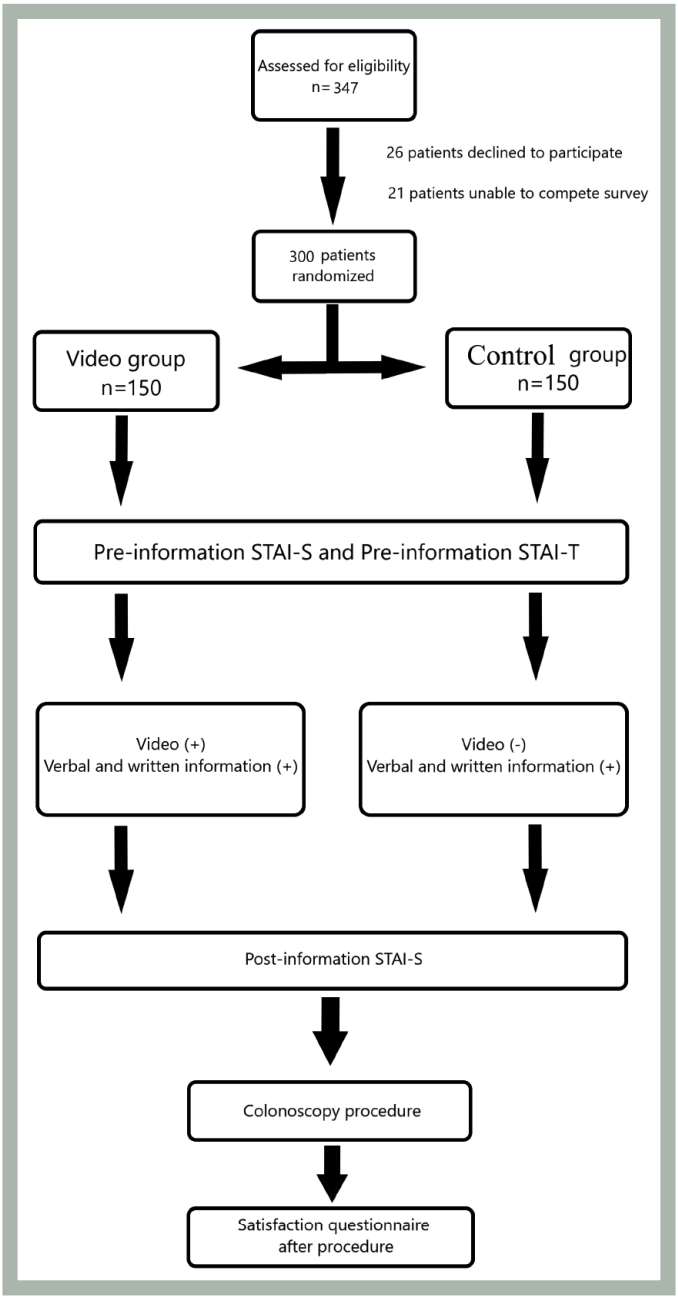

Figure 1. Participant flow diagram.
STAI-T: State-Trait Anxiety Inventory-Trait, STAI-S:State-Trait Anxiety Inventory-State

Results

During the initial assessment phase, 347 patients were prospectively assessed to determine their suitability for inclusion. Of these, 26 individuals declined participation and 21 could not complete the questionnaires. Randomization resulted in two balanced groups of 150 patients each: one group received the video intervention and the other received standard information. Baseline demographic variables, pre-intervention STAI-T scores, and satisfaction results are presented in Table 1.

Participants in the intervention group had a mean age of 39.8±12.5 years, compared with 39.6±12.8 years in the control group (p=0.881). The video group included 72 males and 78 females, whereas the control group consisted of 57 males and 93 females (p=0.102). The mean BMI was similar between the groups: 30.3±5.0 kg/m² in the video group and 29.1±5.4 kg/m² in the control group (p=0.134). Hypertension, diabetes mellitus, and other comorbidities did not differ significantly between groups (p=0.280, p=0.105, and p=0.375, respectively). Educational status distributions were also comparable (p=0.495). Long-term anxiety did not differ significantly between the groups, as reflected by baseline STAI-T means of 47.2±8.1 in the video arm and 46.2±9.0 in the control arm (p=0.307). In contrast, satisfaction scores after the procedure were higher in the video group (4.3±0.8) than in the control cohort (2.8±1.0); $p<0.001$.

As shown in Table 2, state anxiety decreased significantly in the video-based education arm (42.3±8.3 before the intervention vs. 39.1±8.2 after; $p<0.001$). Conversely, STAI-S scores in the control group remained nearly unchanged (41.1±10.1 vs. 41.2±9.6; p=0.581).

Additionally, we compared the change in state anxiety (ΔSTAI-S) between groups. Patients in the video group showed a significant reduction in anxiety (-3.2±1.7, $p<0.001$), whereas no significant change was observed in the control group (0.1±1.9, p=0.742). The between-group difference in ΔSTAI-S was statistically significant ($p<0.001$), further supporting the anxiolytic effect of the video intervention. This analysis is presented in Table 3.

Univariate and multivariate analyses of factors associated with ΔSTAI-S are presented in Table 4. In univariate analyses, group allocation, sex, and baseline trait anxiety (STAI-T) were associated with changes in state anxiety (ΔSTAI-S), while BMI showed a borderline association. These variables were included in a multivariate linear regression model.

The multivariate model was statistically significant (R^2: 0.11, adjusted R^2: 0.098; F: 9.14, p<0.001). Importantly, after adjustment for baseline STAI-T, sex, and BMI, group allocation remained a statistically significant independent predictor of change in state anxiety. Patients in the video group exhibited a significantly greater reduction in state anxiety than those in the non-video group [B: 3.17, 95% confidence interval (CI): 1.81-4.54, p<0.001]. Male sex was also independently associated with ΔSTAI-S (B: 1.62, 95% CI: 0.24-3.00, p=0.022); whereas baseline STAI-T and BMI were not significant in the adjusted model.

Discussion

Preoperative anxiety is highly prevalent, with reported rates ranging from 25% to 80% among surgical patients (10). Such anxiety can manifest as physiological responses,

Table 1. Demographic features and questionnaire scores

	Video group n=150	Control group n=150	p value
Age (mean ± SD)	39.8±12.5	39.6±12	0.881
Gender (Male/female)	72/78	57/93	0.102
BMI (kg/m²) (Mean ± SD)	30.3±5	29.1±5.4	0.134
Hypertension (Yes/no)	14/136	21/129	0.280
Diabetes mellitus (Yes/no)	9/141	18/132	0.105
Other comorbidities (Yes/no)	15/135	21/129	0.375
Educational level Primary education qualified Highly qualified	24 93 33	18 102 30	0.495
STAI-T score (mean ± SD)	47.2±8.1	46.2±9	0.307
Satisfaction score (Mean ± SD)	4.3±0.8	2.8±1	<0.001

BMI: Body mass index, STAI-T: State-Trait Anxiety Inventory-Trait, SD: Standard deviation

Table 2. Change in STAI-S scores after video-information between groups

	STAI-S (mean ± SD) (Pre-information)	STAI-S (mean ± SD) (Post-information)	p value
Video group	42.3±8.3	39.1±8.2	<0.001
Control group	41.1±10.1	41.2±9.6	0.581

STAI-T: State-Trait Anxiety Inventory-Trait, STAI-S: State-Trait Anxiety Inventory-State, SD: Standard deviation

Table 3. Comparison of pre- and post-procedure STAI-S scores and change in anxiety levels between groups

	ΔSTAI-S (post-pre) mean ± SD	p value*
Video group	-3.2±1.7	<0.001
Control group	+0.1±1.9	0.742
Between-group comparison	-	<0.001

**: Between-group comparison: independent samples t-test. ΔSTAI-S: State-Trait Anxiety Inventory-State change, SD: Standard deviation*

Table 4. Univariate and multivariate analysis of factors associated with change in state anxiety (ΔSTAI-S)

Univariate analyses				Multivariate analyses			
Variable	**Comparison/r**	**Effect estimates**	**p value**	**Variable**	**β (B)**	**95% CI**	**p value**
Group	Video vs. non-video	Mean difference: 3.50 (95% CI: 2.13-4.87)	**<0.001**	Video group	3.17	1.81-4.54	**<0.001**
Sex	Male vs. female	Mean difference: 1.91 (95% CI: 0.49-3.33)	**0.009**	Sex (male)	1.62	0.24-3.00	**0.022**
STAI-T	Pearson r	r: 0.116	**0.044**	STAI-T	0.07	−0.01-0.15	0.093
BMI	Pearson r	r: 0.102	**0.077**	BMI	0.11	−0.02-0.24	0.106
Age	Pearson r	r: 0.040	0.494				
Diabetes mellitus	Yes vs. no	Mean difference: -0.06	0.961				
Hypertension	Yes vs. no	Mean difference: -0.89	0.428				
Educational level	ANOVA	–	0.487				

Δ*STAI-S: State-Trait Anxiety Inventory-State change, CI: confidence interval, BMI: Body mass index, STAI-T: State-Trait Anxiety Inventory-Trait, ANOVA: Analysis of variance*

including hypertension and cardiac rhythm disturbances (11). These effects may compromise not only patient well-being but also procedural performance. Conventional written and verbal counselling often remains insufficient to alleviate this anxiety completely. Therefore, we conducted the largest randomized controlled trial to date to investigate whether supplementing standard counselling with video-based education more effectively reduces colonoscopy-related anxiety.

Even with routine sedation and analgesia, colonoscopy can still be associated with pain and discomfort. Previous studies have shown that heightened anxiety increases sedative and analgesic requirements (12). Thus, strategies aimed at reducing anxiety represent a logical means to improve procedural tolerance. Multimedia-supported educational approaches have been evaluated in different branches of medicine. Research in urology and anesthesia has demonstrated that video-assisted preoperative information can effectively reduce anxiety (13,14). Conversely, a study in gynecology reported no significant anxiolytic effect of video education prior to intrauterine device insertion (15).

Although available evidence on colonoscopy-specific video education remains limited, findings have similarly been inconsistent. Arabul et al. (8) reported reduced anxiety and improved procedural outcomes with video education, whereas Bytzer and Lindeberg (16) observed no significant improvements in tolerability or anxiety.

Arabul et al. (8) also noted decreased pain levels among patients receiving video-assisted information. Given the potential confounding effects of sedation and analgesia on pain perception, we did not include pain scoring in our methodology. Instead, patient-reported satisfaction was analysed and found to be significantly higher in the video group.

Some previous studies have suggested that female patients may experience greater anxiety during colonoscopy (8,16). Accordingly, gender-tailored educational strategies have been proposed. In contrast, our larger cohort did not reveal significant gender-related differences in anxiety scores. We believe that the impact of gender differences on anxiety remains a topic of debate. Therefore, the influence of sex on procedural anxiety remains open to interpretation.

The psychological determinants of anxiety are multifaceted and highly individualized. Patients may also differ in their desire for procedural information, with some seeking extensive details and others preferring limited disclosure (17). For this reason, ensuring comparable baseline anxiety characteristics between groups was prioritized. We confirmed measurement equivalence for trait anxiety using the validated STAI-T. This methodological consistency strengthens the validity of our group comparisons. Despite existing evidence, the optimal format for patient education continues to be debated in the literature.

In the present study, anxiety levels decreased significantly in the video group, whereas no significant change was observed in the control group. Additionally, the between-group comparison of ΔSTAI-S confirmed a greater reduction in anxiety among patients who received video-based education. These findings support the hypothesis that visual information may reduce the fear of the unknown by enhancing cognitive preparedness and procedural predictability. Increased

familiarity with the upcoming steps of colonoscopy may also strengthen the patient-provider relationship and provide a sense of control, thereby reducing situational anxiety.

Study Limitations

One notable advantage of this study is the relatively large number of participants included, making it the largest randomized trial to investigate video-assisted education prior to colonoscopy. We did not evaluate certain procedure- or anesthesia-related factors that may influence patient stress, including pre-procedural complications, colonoscopy duration, or variability in sedation quality. Therefore, the potential impact of these factors on anxiety levels could not be assessed

Conclusion

Colonoscopy may be a challenging experience for patients, and anxiety can adversely influence procedural success. Effective pre-procedural education aims to improve understanding of the procedure and to alleviate anxiety. Video-based education was independently associated with a greater reduction in pre-procedural anxiety after adjustment for potential confounders. Our findings demonstrate that incorporating animated video-based information not only reduces pre-procedural anxiety but also enhances patient satisfaction with the colonoscopy experience.

Ethics

Ethics Committee Approval: The Institutional Ethics Committee of University of Health Sciences Türkiye, Başakşehir Çam and Sakura City Hospital granted approval for the study protocol, and the study adhered to the principles of the Declaration of Helsinki (approval number: KAEK-11/25.09.2024.178, approval date: 30.09.2024).

Informed Consent: Written informed consent was obtained from all participants prior to enrolment.

Footnotes

Authorship Contributions

Concept: B.C., Design: B.C., E.D.K., Data Collection or Processing: B.C., E.D.K., Analysis or Interpretation: B.C., Literature Search: B.C., E.D.K., Writing: B.C.

Conflict of Interest: The authors declare that there is no conflict of interest with any financial organization, corporation, or individual that can inappropriately influence this work.

Financial Disclosure: The author declared that this study received no financial support.

REFERENCES

1. Alsahafi M. Colorectal cancer screening: a focused review of current methods. Saudi J Intern Med. 2025;14:3-8.
2. Gimeno-García AZ, Quintero E. Role of colonoscopy in colorectal cancer screening: available evidence. Best Pract Res Clin Gastroenterol. 2023;66:101838.
3. Cooper R. Diagnostic and statistical manual of mental disorders (DSM). Knowl Organ. 2017;44:668-676.
4. Alimonaki EC, Bothou A, Diamanti A, et al. Management of preoperative anxiety via virtual reality technology: a systematic review. Nurs Rep. 2025;15:268.
5. Friedrich S, Reis S, Meybohm P, Kranke P. Preoperative anxiety. Curr Opin Anaesthesiol. 2022;35:674-678.
6. Shebl MA, Toraih E, Shebl M, et al. Preoperative anxiety and its impact on surgical outcomes: a systematic review and meta-analysis. J Clin Transl Sci. 2025;9:e33.
7. Hsueh FC, Chen CM, Sun CA, et al. A study on the effects of a health education intervention on anxiety and pain during colonoscopy procedures. J Nurs Res. 2016;24:181-189.
8. Arabul M, Kandemır A, Çelık M, et al. Impact of an information video before colonoscopy on patient satisfaction and anxiety. Turk J Gastroenterol. 2012;23:523-529.
9. Öner N, Le Compte A. State–Trait Anxiety Inventory. In: Öner N, editor. Handbook of State-Trait Anxiety Inventory. Istanbul: Boğaziçi University Publications; 1985. Vol. 333, p. 1-26.
10. Stamenkovic DM, Rancic NK, Latas MB, et al. Preoperative anxiety and implications on postoperative recovery: what can we do to change our history. Minerva Anestesiol. 2018;84:1307-1317.
11. Vetter D, Barth J, Uyulmaz S, et al. Effects of art on surgical patients: a systematic review and meta-analysis. Ann Surg. 2015;262:704-713.
12. Chen YK, Soens MA, Kovacheva VP. Less stress, better success: a scoping review on the effects of anxiety on anesthetic and analgesic consumption. J Anesth. 2022;36:532-553.
13. Can O, Bozkurt M, Danış E, Taha Keskin E, Kandemir E, Lutfi Canat H. The effect of informative video before the procedure on anxiety levels in patients who will have ureteral stent removal under local anesthesia. Actas Urol Esp (Engl Ed). 2024;48:377-383.
14. Lin SY, Huang HA, Lin SC, Huang YT, Wang KY, Shi HY. The effect of an anaesthetic patient information video on perioperative anxiety: a randomised study. Eur J Anaesthesiol. 2016;33:134-139.
15. Eriç J, Purut YE, Harmancı H. The effect of video assisted information on anxiety and pain associated with intrauterine device insertion. Gynecol Obstet Invest. 2020;85:82-87.
16. Bytzer P, Lindeberg B. Impact of an information video before colonoscopy on patient satisfaction and anxiety - a randomized trial. Endoscopy. 2007;39:710-714.
17. Ahmed A, Nasur M, Mohamed E, et al. Preoperative anxiety and information desire among patients undergoing elective surgery in Northern Sudan: multicenter cross-sectional study. JMIR Perioper Med. 2025;8:e75736.