RESEARCH ARTICLE
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Comparison of the Effects of Three Preoperative Information Methods on Anxiety in Patients Scheduled for Impacted Third Molar Surgery

Yurttutan et al. Three Preoperative Information Methods on Anxiety in Patients

Mehmet Emre Yurttutan[1], Mert Özlü[1], Elif Polat Balkan[2]

[1]Department of Oral and Maxillofacial Surgery, Ankara University Faculty of Dentistry, Ankara, Türkiye
[2]Department of Oral and Maxillofacial Radiology, Ankara University Faculty of Dentistry, Ankara, Türkiye

Abstract

BACKGROUND/AIMS: Extraction of impacted I3M tooth is the most common surgical procedure and causes the most anxiety in patients. The aim of this study was to measure the effect of verbal, live action video, and animated video information on a patient's anxiety level before impacted I3M tooth extraction. The null hypothesis of this study was that there is a decrease in the anxiety levels of patients who were informed of the procedure by watching an animated video.

MATERIALS AND METHODS: The study was prospective cross-sectional design. The study was conducted within the Department of Oral and Maxillofacial Surgery. A total of 90 patients who met the inclusion criteria were divided into three groups. Patient anxiety was measured at three different timepoints: pre-information (T0), post-information (T1), and post-operation (T2) using MDAS, APAIS-A, APAIS-B, APAIS-C, STAI-1, STAI-2 and HADS tests. In addition, the age and gender of the participants were recorded.

RESULTS: When the T0, T1 and T2 timepoint values were examined between the groups, significant differences were observed in MDAS, APAIS-A, APAIS-B, APAIS-C, and HADS-D values. For T1, MDAS, APAIS-B, and APAIS-C values, the anxiety levels of the group watching an animated video were significantly lower than the group watching a live action video.

CONCLUSION: Although it was determined in the study that three different types of information led to a decrease in the general anxiety level in patients, the superiority of the animated video in reducing the level of anxiety pre-operation should be taken into consideration.

Keywords: Impacted third surgery, anxiety, animated video

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ORCID IDs of the authors: M.E.Y. 0000-0001-9796-5738; M.Ö. 0000-0002-5923-9345; E.P.B. 0000-0001-9952-0548.

Address for Correspondence: Elif Polat Balkan
E-mail: dtelifpolat@gmail.com
ORCID ID: orcid.org/0000-0001-9952-0548

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INTRODUCTION

Dental anxiety (DA) occurs during dental treatments and is defined as tension, stress, anxiety, or anger and frustration experienced by the patient.[1,2] Factors that cause DA include local anesthesia, pain, fear of rotating instruments, and sounds that the patient hears when on the dentist's chair. Impacted mandibular third molar (I3M) surgery, which is one of the most common surgical procedures in dentistry, has been reported as the most worrying procedure in patients[3]. I3Ms extraction is associated with pain, swelling, and trismus, apart from the general complications associated with dentistry. The patient's anticipation of these problems can cause a high level of anxiety before they undergo I3M extraction.[4,5] In addition, DA can also be caused as a result of previous dental experiences.[6] In particular, acute anxiety can cause various physiological (nausea, vomiting, diarrhea, urinary frequency, etc) and behavioral disorders. Extraction of the I3Ms in patients with DA can be difficult not only for patients, but also for surgeons. It has been observed that the duration of the operation is significantly longer, the rate of facial swelling is higher, and the pain is higher in patients with DA.[1,7–9]

Dentists might use a visual analog scale or other specific scales, such as the State-Trait Anxiety Inventory (STAI), the Modified Dental Anxiety Scale (MDAS), or the Intermittent Anxiety Response Scale, to identify anxious patients.[10,11] Conversely, informative videos are widely used to elucidate surgical procedures. Although the effect of preoperative information techniques on anxiety related to impacted I3M surgery has been investigated in some studies, there is still no consensus on the most effective method to reduce DA.[12–15]

In the literature, there are no studies investigating the effect of informing a patient with an animated video about the extraction before I3M tooth extraction, and their anxiety level. The aim of this study was to measure the effect of verbal, live action video, and animated video information about the procedure, on patient anxiety level before impacted I3M tooth extraction. The null hypothesis of this study was that there is no differences between the anxiety levels of patients who were informed of different procedures.

MATERIALS AND METHODS

Study Design and Ethical Considerations

The Declaration of Helsinki was observed for this study, and the local ethics committee approved this retrospective study (36290600/20). This study included 90 patients who underwent third molar extraction under local anesthesia between September and November 2018, in XXX University Faculty of Dentistry, Department of Oral, Dental and Maxillofacial Surgery. Patients were informed about the study and procedure and a written informed consent form was provided by the preoperative evaluation clinic. If the patient had additional questions, these were also included as part of the study.

The power analysis using G*Power has been conducted for a study involving repeated measurements (with a repetition of 3) in animated, verbal, and video-based groups (with a total of 3 groups), where data will be collected. The foundational analysis in the study relies on the repeated measures ANOVA test, with an effect size of 0.30, an α value of 0.05, and a power value (1- β) of 0.80 considered in the power analysis. The total sample size has been

determined as 75. Therefore, it is recommended to recruit a minimum of 25 participants from each group.

The Spielberger State Anxiety Inventory (STAI-S), the Hospital Anxiety (HADS-A) and Depression Scale (HADS-D), the Modified DA Scale (MDAS), and the Amsterdam Preoperative Anxiety and Information Scale (APAIS) are widely used to assess patient DA and were used in this study. Patient anxiety was measured at three different timepoints: pre-information (T0), post-information (T1), and post-operation (T2) using MDAS, APAIS-A, APAIS-B, APAIS-C, STAI-1, STAI-2, and HADS tests. In addition, the age and gender of the participants were recorded.

The inclusion criteria were as follows: adults aged 18 to 40 years, with an American Society of Anesthesiologists physical condition score I and II, absent of any systemic disease, and those who do not regularly use medications.

The exclusion criteria were the inability to read and understand Turkish, had significant impairment in vision or hearing, had an existing psychiatric disorder, were under age 18 years, had previously undergone surgical dental treatment, and had watched an informative video on this subject before.

Each patient was examined by the same doctor who performed the surgical intervention. The patients were divided into three groups:

Group 1: Patients who were verbally informed about I3M extraction before surgery

Group 2: Patients who were shown a live action video about impacted I3M extraction before surgery

Group 3: Patients who were shown an animated video about impacted I3M extraction before surgery

Prior to the surgical intervention, participants in each group received live video, verbal, and animated information separately from the same experienced doctor, individually, in the operating room. The total duration of these sessions was 10 minutes. Patients were randomly assigned to group 1, group 2, and group 3 using an online random allocation software program (www.randomization.com). Information was provided to the patients upon the completion of the questionnaires. All patients in the waiting room received MDAS, APAIS-A, APAIS-B, APAIS-C, STAI-1, STAI-2, and HADS questionnaires 60 minutes before surgery. The demographic data section (age and gender) of the form was filled in by the patients. After the patients were informed of the different information techniques, the same questionnaires were filled out by the patients again.

Surgery was performed by the same physician with standard technique, and the patient was under local anesthesia and without premedication or sedation. In all operations, an envelope incision was made and the mucoperiosteal flap was removed. Impaction of the teeth is related to class II positions B of Pell & Gregory classification and the duration of the operation is 15 minutes. A bone incision was made under 40,000 rpm and irrigation using surgical markets and drills, and the impacted tooth was extracted. After bleeding was controlled, the flap was closed with a 3.0 black silk suture. The live and animated videos portrayed every moment of the surgical procedure from suturing opening to suturing closure, accompanied by the sounds specific to the operation. Patients refilled MDAS, APAIS-A, APAIS-B, APAIS-C, STAI-1, STAI-2, HADS-A, and HADS-D questionnaires in the waiting room, 20 minutes after surgery. The questionnaires were filled by the patients in the same room and at the same table as before the surgery. Patients were prescribed 1000 mg of amoxicillin and clavulanic acid and 25 mg of dexketoprofen postoperatively. They were also instructed to use mouthwash with 0.2% chlorhexidine after 1 day and for 1 week. An ice pack was applied to the operation area for at least 60 minutes after the operation. After 1 week, the patients were called for control.

Modified Dental Anxiety Scale (Mdas)

The MDAS was developed by Humphris et al. by incorporating an injection-related question into Corah's Dental Anxiety Scale.[16] This scale employs a five-point Likert-type rating with five options, yielding a total score ranging from 5 to 25.[17,18]

Amsterdam Preoperative Anxiety and Information Scale (APAIS)

In 1996, Moermann et al. developed the APAIS in the Netherlands, which is used to assess preoperative anxiety. This test categorizes anxiety into three sources: anxiety about anesthesia (APAIS-A), anxiety about lack of information (APAIS-B), and anxiety about surgery (APAIS-C). APAIS consists of six statements related to these sources to evaluate anxiety. To standardize the questionnaire, each statement was assigned a numerical value based on a five-point Likert scale indicating severity, ranging from 1 to 5 (1=none, 2=mild, 3=moderate, 4=severe, and 5=extreme severity). Anesthesia anxiety was determined by summing the scores of questions 1 and 2, surgical anxiety by questions 4 and 5, and overall anxiety by all six questions. Questions 3 and 6 assessed the desire for information about anesthesia and surgery, respectively. Scores on the APAIS range from 6 (lowest) to 30 (highest). [19]

Hospital Anxiety And Depression Scale (HADS)

The Hospital Anxiety and Depression Scale (HADS) is a four-point Likert-type scale developed by Zigmond and Snaith to assess the risk of anxiety and depression in patients, as well as to measure the severity and changes in these conditions. HADS comprises a total of 14 questions, where odd-numbered questions evaluate anxiety and even-numbered questions evaluate depression. The scale is divided into two subscales: anxiety (HAD-A) and depression (HAD-D). Based on a study conducted in Turkey, the cutoff score for the anxiety subscale was determined to be 10/11, and for the depression subscale, it was 7/8. Therefore, patients scoring above these thresholds were identified as being at risk. Scores on both subscales range from 0 (lowest) to 21 (highest). HADS is often preferred due to its focus on psychological symptoms rather than physical symptoms associated with anxiety and depression.[20]

Speilberger State Anxiety Inventory (STAI-S)

The State-Trait Anxiety Inventory - State version (STAI-S) is extensively employed in anxiety research, despite not being specifically designed for dental anxiety. This inventory consists of two scales, each comprising 20 items that assess state and trait anxiety levels. STAI-trait (STAI-1) measures a patient's underlying or enduring anxiety level, while STAI-state (STAI-2) gauges their current anxiety level. Each of the 20 items is rated on a four-point scale. Scores on the STAI range from 20 to 80, with interpretations typically categorized as follows: scores of 20 to 37 indicate no or low anxiety, scores of 38 to 44 indicate moderate anxiety, and scores of 45 to 80 indicate high anxiety levels.[22,23]

Statistical Analysis

The data collected in the study were analyzed using SPSS 25.0 software. Descriptive statistics including mean, standard deviation, minimum, median, and maximum were employed to summarize the data. Additionally, the Shapiro-Wilk test was used to assess the normality of the data distribution. The assumption of homogeneity of variance was tested using the Levene test. For comparisons involving more than two dependent groups with normally distributed data, repeated measures analysis of variance (ANOVA) was conducted. For data that did not exhibit normal distribution, Friedman analysis was performed instead. Bonferroni analysis was applied following any statistically significant differences identified between measurements. The significance level was set at $p<0.05$ and $p<0.01$. While gathering the data, we conducted one-on-one interviews. We only recorded the scores without collecting sub-questions; therefore, we couldn't assess reliability. However, in the studies where we obtained the scales, the Cronbach Alpha coefficient was found to be high. The effect sizes (Eta-squared, η^2) indicating the proportion of variance in the dependent variables explained by each independent variable (survey method) have been reported in Tables 1 to 5. Eta-squared values were interpreted using Cohen's guidelines, where values of .02, .13, and .26 or above

correspond to small, medium, and large effect sizes, respectively. These effect sizes were calculated to assess the impact of each survey method on anxiety measures, ensuring transparency and reliability in the study's findings.

RESULTS

Out of the 127 patients initially assessed, 37 did not meet the inclusion criteria, leaving 90 who met the criteria and consented to participate. Among these, 22 had prior surgical dental treatment history and 11 declined to complete postoperative questionnaires. Consequently, the study included 90 patients (20 females and 10 males, aged 18 to 40 years). The patient recruitment process is depicted in the Consolidated Standards of Reporting Trials flowchart (Figure 1).

There were no statistically significant differences between groups in terms of mean age ($p=0.621$; Table 1), and the distribution of males and females was similar across groups ($p=0.105$; Table 2).

Evaluation of anxiety levels at T0, T1, and T2 timepoints for patients receiving verbal information (Group 1) showed that T2 APAIS-B values were significantly lower than T0 APAIS-B values. Additionally, T2 STAI-I values were significantly lower than T1 STAI-I values ($p<0.05$; Table 3).

For patients informed through live action video (Group 2), evaluation of anxiety levels at T0, T1, and T2 timepoints revealed that T2 MDAS values were lower than both T0 and T1 MDAS values. Moreover, T2 APAIS-B values were significantly lower than T1 APAIS-B values (Table 4).

Analysis of anxiety levels at T0, T1, and T2 for patients informed through animated video (Group 3) showed that T2 APAIS-A values were lower compared to T0 APAIS-A values (Table 5).

Comparing T0, T1, and T2 anxiety levels across all groups (Table 6) revealed differences in MDAS, APAIS-A, APAIS-B, APAIS-C, and HADS-D values. Specifically, T1 MDAS values were significantly lower in patients informed through animated video compared to those informed through live action video. Additionally, APAIS-A values at T1 were significantly lower in patients informed through animated and live action videos compared to those informed verbally. T1 APAIS-B and APAIS-C values were significantly lower in the animated video group compared to the live action video group. Lastly, T1 HADS-D values were significantly lower in the animated video group compared to the verbal information group.

DISCUSSION

Anxiety experienced before impacted I3Ms is a common clinical problem that leads to many consequences, such as prolonged processing time, increased postoperative pain, slowed down recovery, and even postponed treatment.[2] Managing patients' preoperative anxieties is still a major challenge in maxillofacial surgery, regardless of newly developed surgical and pharmacological techniques.[24] Various scales have been developed to assess all aspects of DA. It has been reported that filling out these scales before treatment does not have a negative effect on the fear and anxiety level of the patients.[16]

To ensure the reliability of clinical trial data, one or more scales were used to evaluate DA. Schuurs and Hoogstraten[25] compared six different scales and showed that those scales were not sufficient to evaluate their findings. Patient anxiety before surgery might be caused by the hospital environment, anesthesia, surgical procedure, postoperative pain anxiety, or previous dentist experiences. Multiple scales are needed to measure DA in all of its aspects. In this study, four different scales were used to better analyze the source of DA and the obtained results. The MDAS, APAIS, STAI, and HADS scales used were preferred for this study because they were understandable, easy to use, and suitable for statistical studies.

In many studies, it has been observed that informing patients of different techniques reduces their anxiety levels.[12,26] However, other studies show that the level of anxiety increases depending on the surgical technique.[27] Other studies have measured the anxiety levels of patients after receiving verbal information.[14,28] In this study, there was no significant decrease in patient anxiety level in the pre-information (T0) and post-information (T1) scales for those who received verbal information. Only after the operation, a significant decrease was observed in the APAIS-B and STA-I scales. This significant decrease might be due to patients' satisfaction with the information given and their trust in the doctor. In the literature, there are many studies that have measured patient anxiety affected by watching informative videos about the surgical procedure.[2,12,14,22,23,28,29] Although there are studies reporting that watching informative videos before surgery reduces anxiety in patients[12], others have reported that watching videos does increases [2,14] the level of anxiety. Kazancioglu et al. reported that in their study of 300 patients who applied to the clinic for I3M tooth extraction, the level of anxiety increased in patients who were shown videos before the operation.[2] In this study, patients who were informed by watching videos had significantly lower postoperative (T2) MDAS and APAIS-B scales. There was no significant difference between T0 and T1 timepoint values. The contradictory results of the studies might have varied depending on the video content watched and the cultural structure of the population who watched. Although the images and sounds are explanatory and comforting for some patients, they could be disturbing for others. Conversely, patients might have already watched online videos about the surgical procedure, some of which could have had misleading content.[30]

In the study, the low anxiety levels observed in the postoperative tests (T2) could be due to the fact that the operation was over. Although verbal and video information was found not to affect preoperative anxiety levels, reduced postoperative anxiety levels suggests that it might be useful for reducing DA in future dental procedures.

To date, there are few published reports supporting the use of 2D cartoon animations to inform patients about different aspects of surgery. Tou et al. showed animated videos to patients before bowel surgery and reported a decrease in anxiety levels.[31] The null hypothesis of this study was that animated videos led to a greater decrease in anxiety level than verbal and live action video information. The fact that low anxiety levels were found in the postoperative tests (T2) is an expected result due to the fact that the operation had been completed. An important finding of this study is with regards to the differences between the values in the post-information (T1) tests. Accordingly, T1 MDAS, APAIS-A, APAIS B, and APAIS-C values in patients who watched the animated video were significantly lower than T1 values in other groups. In addition, T1 HADS-D values of patients who were shown live action and animated video were found to be lower than those who were verbally informed. This study showed that animated videos was more successful for reducing the level of preoperative anxiety compared with other methods. In the animated video, blood and tools did not look as invasive as they did in the live action video, which allows the patient to see images that the patient could not imagine from verbal information. The moment when the patients and the surgeons have the most problems is when the operation takes place, thus the method of informing the patient with an animated video should be carefully evaluated. Finally, the development of animated videos can influence and improve the dialogue between patients and doctors.

Sancak and Akal evaluated the effect of different preoperative verbal and written information on DA using different scales and observed that written information reduced postoperative anxiety scores in patients. In this study, the fact that written information was not evaluated can be counted as a limitation of the study.[15]

Animated videos can be a useful technique to reduce DA. This study can be expanded to reduce the level of DA before different surgical techniques and to also help determine the

variability of animated videos for age and gender-specific anxiety. With developing technology and the increase in screen use from an early age, the effect of animated videos on DA in the child population required further study.

Study Limitations

In our study, the patient population was limited to ages 18–40 years, as individuals with any previous dental surgery experience were excluded from the study. As previously reported, earlier dental experiences affect the anxiety level of patients.[26,32] Although dental surgery might not have been performed, patients can experience fear of anesthesia and rotary instruments in other dental procedures. This fear might have caused differences in the answers on the scales, especially about anesthesia, and this is the limitation of the study.

CONCLUSION

Although it was determined in the study that three different types of information led to a decrease in the general anxiety level in patients, the superiority of animated videos in reducing the level of anxiety before an operation should be taken into consideration. Testing this method with different operations and techniques could be beneficial for reducing DA in patients.

MAIN POINTS

- Animated videos can be a useful technique to reduce dental anxiety (DA).
- Development of animated videos can influence and improve the dialogue between patients and doctors.
- With developing technology and the increase in screen use from an early age, the effect of animated videos on DA in the child population required further study.

REFERENCES

1. Yusa H, Onizawa K, Hori M, Takeda S, Takeda H, Fukushima S, Yoshida H. Anxiety measurements in university students undergoing third molar extraction. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2004; 98: 23–7.
2. Kazancioglu HO, Tek M, Ezirganli S, Demirtas N. Does watching a video on third molar surgery increase patients' anxiety level? Oral Surg Oral Med Oral Pathol Oral Radiol. 2015; 119: 272–7.
3. Sirin Y, Humphris G, Sencan S, Firat D. What is the most fearful intervention in ambulatory oral surgery? Analysis of an outpatient clinic. Int J Oral Maxillofac Surg. 2012; 41: 1284–90.
4. Coulthard P, Bailey E, Esposito M, Furness S, Renton TF, Worthington HV. Surgical techniques for the removal of mandibular wisdom teeth. Cochrane Database Syst Rev. 2014; 7: CD004345.
5. Gordon D, Heimberg RG, Tellez M, Ismail AI. A critical review of approaches to the treatment of dental anxiety in adults. J Anxiety Disord. 2013; 27: 365–78.
6. Muglali M, Komerik N. Factors related to patients' anxiety before and after oral surgery. J Oral Maxillofac Surg. 2008; 66: 870–7.
7. Elter JR, Strauss RP, Beck JD. Assessing dental anxiety, dental care use and oral status in older adults. J Am Dent Assoc. 1997; 128: 591–7.
8. Humphris GM, Freeman R, Campbell J, Tuutti H, D'Souza V. Further evidence for the reliability and validity of the Modified Dental Anxiety Scale. Int Dent J. 2000; 50: 367–70.
9. Ong CKS, Seymour RA, Tan JM-H. Sedation with midazolam leads to reduced pain after dental surgery. Anesth Analg. 2004; 98: 1289–93.

10. Humphris GM, Morrison T, Lindsay SJ. The Modified Dental Anxiety Scale: validation and United Kingdom norms. Community Dent Health. 1995; 12: 143–50.
11. Mendola P, O'Shea RM, Zielezny MA, Thines TJ, Corah NL. Validity and reliability of the interval scale of anxiety response. Anesth Prog. 1987; 34: 202–6.
12. Toledano-Serrabona J, Sánchez-Torres A, Camps-Font O, Figueiredo R, Gay-Escoda C, Valmaseda-Castellón E. Effect of an Informative Video on Anxiety and Hemodynamic Parameters in Patients Requiring Mandibular Third Molar Extraction: A Randomized Clinical Trial. J Oral Maxillofac Surg. 2020; 78: 1933–41.
13. Choi S-H, Won J-H, Cha J-Y, Hwang C-J. Effect of Audiovisual Treatment Information on Relieving Anxiety in Patients Undergoing Impacted Mandibular Third Molar Removal. J Oral Maxillofac Surg. 2015; 73: 2087–92.
14. Omezli MM, Torul D, Kahveci K. Does Watching Videos Increase the Perioperative Anxiety in Patients Undergoing Third Molar Surgery? A Randomized Trial. J Oral Maxillofac Surg. 2020; 78: 216.e1-216.e9.
15. Sancak KT, Akal ÜK. Effect of Verbal and Written Information and Previous Surgical Experience on Anxiety During Third Molar Extraction. J Oral Maxillofac Surg. 2019; 77: 1769.e1-1769.e7.
16. Humphris GM, Clarke HMM, Freeman R. Does completing a dental anxiety questionnaire increase anxiety? A randomised controlled trial with adults in general dental practice. Br Dent J. 2006; 201: 33–5.
17. Tunc EP, Firat D, Onur OD, Sar V. Reliability and validity of the Modified Dental Anxiety Scale (MDAS) in a Turkish population. Community Dent Oral Epidemiol. 2005; 33: 357–62.
18. Ilgüy D, Ilgüy M, Dinçer S, Bayirli G. Reliability and validity of the Modified Dental Anxiety Scale in Turkish patients. J Int Med Res. 2005; 33:252–9.
19. Moerman N, van Dam FS, Muller MJ, Oosting H. The Amsterdam Preoperative Anxiety and Information Scale (APAIS). Anesth Analg. 1996; 82:445–51.
20. Aydemir O, Küey L. Reliability and Validity of the Turkish version of Hospital Anxiety and Depression Scale. Turk J Psychiatry. 1997; 8: 280–7.
21. Spielberger CD, Gonzalez-Reigosa F, Martinez-Urrutia A, Natalicio LF, Natalicio DS. Development of the Spanish edition of the State-Trait Anxiety Inventory. Revista Interamericana de Psicología. 1971; 5(3–4):145–58.
22. Jlala HA, French JL, Foxall GL, Hardman JG, Bedforth NM. Effect of preoperative multimedia information on perioperative anxiety in patients undergoing procedures under regional anaesthesia. Br J Anaesth. 2010; 104: 369–74.
23. Ruffinengo C, Versino E, Renga G. Effectiveness of an informative video on reducing anxiety levels in patients undergoing elective coronarography: an RCT. Eur J Cardiovasc Nurs. 2009; 8:57–61.
24. Brasileiro BF, de Bragança RMF, Van Sickels JE. An evaluation of patients' knowledge about perioperative information for third molar removal. J Oral Maxillofac Surg. 2012; 70: 12–8.
25. Schuurs AH, Hoogstraten J. Appraisal of dental anxiety and fear questionnaires: a review. Community Dent Oral Epidemiol. 1993; 21: 329–39.
26. Ong CK, Seymour RA, Yeo JF, et al. Anxiety and pain associated with tooth extraction. Br Dent J. 2000 Nov 11;189(9):503-5.
27. Aznar-Arasa L, Figueiredo R, Valmaseda-Castellón E, Gay-Escoda C. Patient anxiety and surgical difficulty in impacted lower third molar extractions: a prospective cohort study. Int J Oral Maxillofac Surg. 2014 Sep;43(9):1131-6.
28. Akomolafe AG, Fatusi OA, Folayan MO, Mosaku KS, Adejobi AF, Njokanma AR. Relationship Between Types of Information, Dental Anxiety, and Postoperative Pain

Following Third Molar Surgery: A Randomized Study. J Oral Maxillofac Surg. 2023; 81: 329–36.
29. Laskin DM, Priest JH, Alfaqih S, Carrico CK. Does Viewing a Third Molar Informed Consent Video Decrease Patients' Anxiety? J Oral Maxillofac Surg. 2018; 76: 2515–7.
30. Abukaraky A, Hamdan A-A, Ameera M-N, Nasief M, Hassona Y. Quality of YouTube TM videos on dental implants. Med Oral Patol Oral Cir Bucal. 2018; 23: e463–e8.
31. Tou S, Tou W, Mah D, Karatassas A, Hewett P. Effect of preoperative two-dimensional animation information on perioperative anxiety and knowledge retention in patients undergoing bowel surgery: a randomized pilot study. Colorectal Dis. 2013; 15: e256-65.
32. Tanidir AN, Atac MS, Karacelebi E. Information given by multimedia: influence on anxiety about extraction of impacted wisdom teeth. Br J Oral Maxillofac Surg. 2016; 54: 652–7.

Table 1. Distribution of age by group									
Age							**ANOVA test**	**p**	**Effect size**
	n	**Min.**	**Median**	**Max.**	**Mean**	**SD**	**F**		
Group 1	30	18	24	33	24.17	3.82	2.31	0.105	0,050
Group 3	30	18	23	31	23.43	3.48			
Group 2	30	18	25	32	25.43	3.64			
*p<0.05.									

Table 2. Distribution of gender by group										
		Group 1		**Group 2**		**Group 3**		**Chi-squared test**	**p**	**Effect size**
		n	**%**	**n**	**%**	**n**	**%**			
Gender	Male	10	33.3	7	23.3	10	33.3	X^2=0.952	0.621	0,008
	Female	20	66.7	23	76.7	20	66.7			
*p<0.05										

Table 3. Comparative analyses of surveys conducted after patients were verbally informed of the surgical procedure

		n	Min	Median	Max	Mean	SD	Test	*p*	Effect size	Bonferroni	p
MDAS	T0	30	5	14	22	13.4	4.14	F=1.858	0.180	0,060		
	T1	30	5	14	22	13.3	4.37					
	T2	30	5	14	21	12.53	4.06					
APAIS-A	T0	30	3	5	9	5.23	1.96	X^2=0.844	0.656	0,014		
	T1	30	2	5	8	5.2	1.92					
	T2	30	2	5	10	4.97	1.99					
APAIS-B	T0	30	3	5	10	5.9	2.14	X^2=12.36	0.002*	0,206	T2<T0 T2<T1	0.002* 0.015*
	T1	30	2	5	10	5.73	2.36					
	T2	30	2	5	10	5.27	2.24					
APAIS-C	T0	30	2	4	9	4.8	1.83	X^2=0.553	0.758	0,009		
	T1	30	2	4	10	4.87	2.11					
	T2	30	2	4	10	4.73	2.03					
STAI-2	T0	30	32	45.5	51	45.03	4.56	X^2=2.48	0.289	0,041		
	T1	30	39	45	66	45.67	4.46					
	T2	30	39	45	62	45.53	4.13					
STAI-1	T0	30	27	41	50	39.6	6.35	X^2=8.985	0.011*	0,150	T2<T1	0.002*
	T1	30	20	42	50	40.07	7.30					
	T2	30	20	41	46	38.43	6.80					
HADS-A	T0	30	3	7	17	7.43	3.52	F=1.119	0.333	0,037		
	T1	30	0	7	18	7.77	4.25					
	T2	30	0	7	12	6.67	3.25					
HADS-D	T0	30	3	6	12	7.23	2.96	F=0.589	0.500	0,020		
	T1	30	0	7	13	6.93	3.69					
	T2	30	0	7	20	6.7	4.29					

F=ANOVA. X^2=Friedman test. *p<0.05

Table 4. Comparative analyses of surveys conducted after patients were informed of the surgical procedure by live action video												
		n	**Min**	**Median**	**Max**	**Mean**	**SD**	**Test**	**p**	**Effect size**	**Bonferroni**	**p**
MDAS	T0	30	6	12.5	22	12.97	3.68	F=14.261	0,000*	0,330	T2<T0 T2<T1	0* 0*
	T1	30	6	15	24	14.73	4.26					
	T2	30	6	12	19	11.87	2.99					
APAIS-A	T0	30	2	3	8	3.87	1.61	X^2=2,000	0.368	0,033		
	T1	30	2	4	10	3.97	1.87					
	T2	30	2	4	7	3.7	1.32					
APAIS-B	T0	30	2	6	10	5.77	1.92	F=12.719	0,000*	0,305	T2<T0 T2<T1	0.011* 0*
	T1	30	2	6	10	6.6	2.04					
	T2	30	2	5	10	4.93	1.86					
APAIS-C	T0	30	2	5	8	5.27	1.48	F=2.933	0,086	0,092		
	T1	30	2	6	10	5.7	1.8					
	T2	30	2	5	8	5.1	1.52					
STAI-2	T0	30	3	47	56	47.1	4.25	F=3.066	0.057	0,096		
	T1	30	40	46	56	46.03	3.66					
	T2	30	40	46	56	46.03	3.85					
STAI-1	T0	30	29	40	53	39.83	4.52	X^2=3.352	0.187	0,056		
	T1	30	32	40	55	40.8	4.81					
	T2	30	32	39	51	39.9	3.06					
HADS-A	T0	30	2	7.5	16	7.6	3.29	X^2=1.581	0.454	0,026		
	T1	30	2	8	13	8.17	3.22					
	T2	30	1	8	13	7.7	2.76					
HADS-D	T0	30	1	5.5	10	5.47	2.56	X^2=5.531	0.063	0,092		
	T1	30	1	6	13	5.8	2.73					
	T2	30	1	5	12	5.23	2.62					
F=ANOVA. X^2=Friedman test. *p<0.05												

Table 5. Comparison analyses of surveys conducted after patients were informed of the surgical procedure by animated video

		n	Min	Median	Max	Mean	SD	Test	p	Effect size	Bonferroni	p
MDAS	T0	30	5	12	21	11.9	3.95	X^2=1.326	0.515	0,022		
	T1	30	6	11.5	20	11.57	3.71					
	T2	30	5	11	18	10.67	3.91					
APAIS-A	T0	30	2	3	9	3.73	1.68	X^2=8.291	0.016*	0,138	T2<T0	0.05*
	T1	30	2	3	8	3.4	1.75					
	T2	30	2	2	6	2.93	1.36					
APAIS-B	T0	30	2	5	10	4.53	2.03	X^2=1.373	0.503	0,023		
	T1	30	2	5	8	4.77	1.65					
	T2	30	2	4	10	4.13	2.11					
APAIS-C	T0	30	2	4.5	9	4.47	1.96	X^2=2.469	0.291	0,041		
	T1	30	2	4	10	4.63	1.99					
	T2	30	2	4	10	4	2.24					
STAI-2	T0	30	32	44.5	57	44.93	5.63	X^2=1.564	0.458	0,062		
	T1	30	36	45.5	80	46.83	7.92					
	T2	30	31	43.5	55	44.33	5.39					
STAI-1	T0	30	28	38	51	38.37	5.88	X^2=3.784	0.151	0,063		
	T1	30	32	38	80	39.8	8.85					
	T2	30	31	42	75	41.77	8.74					
HADS-A	T0	30	0	7	19	6.87	3.76	X^2=1.312	0.519	0,022		
	T1	30	2	7	15	6.5	2.69					
	T2	30	0	6	13	6.03	3.3					
HADS-D	T0	30	0	4.5	10	4.8	2.38	F=1.249	0.290	0,041		
	T1	30	0	5	9	4.53	2.53					
	T2	30	0	4.5	15	5.23	3.77					

F=ANOVA. X^2=Friedman text. *p<0.05

Table 6. Comparison of the types of surveys conducted in the groups													
		Group	**n**	**Min**	**Median**	**Max**	**Mean**	**SD**	**Test**	***p***	**Effect Size**	**Bonferroni**	***p***
MDAS	T0	1	30	5	14	22	13.4	4.14	F=1.158	0.319	0,026		
		2	30	6	12.5	22	12.97	3.68					
		3	30	5	12	21	11.9	3.95					
	T1	1	30	5	14	22	13.3	4.37	F=4.436	0.015*	0,093	G3<G2	0.011
		2	30	6	15	24	14.73	4.26					
		3	30	6	11.5	20	11.57	3.71					
	T2	1	30	5	14	21	12.53	4.06	X^2=3.532	0.171	0,018		
		2	30	6	12	19	11.87	2.99					
		3	30	5	11	18	10.67	3.91					
APAIS-A	T0	1	30	3	5	9	5.23	1.96	X^2=11.489	0.003*	0,109	G3<G1 G2<G1	0.023*
		2	30	2	3	8	3.87	1.61					
		3	30	2	3	9	3.73	1.68					
	T1	1	30	2	5	8	5.2	1.92	X^2=15.155	0*	0,151	G3<G1 G2<G1	0.010*
		2	30	2	4	10	3.97	1.87					
		3	30	2	3	8	3.4	1.75					
	T2	1	30	2	5	10	4.97	1.99	X^2=20.336	0*	0,210	G3<G1 G2<G1	0.000*
		2	30	2	4	7	3.7	1.32					
		3	30	2	2	6	2.93	1.36					
APAIS-B	T0	1	30	3	5	10	5.9	2.14	X^2=7.674	0.022*	0,065	G3<G2	
		2	30	2	6	10	5.77	1.92					
		3	30	2	5	10	4.53	2.03					
	T1	1	30	2	5	10	5.73	2.36	F=6.057	0.003*	0,122	G3<G2	0.002*
		2	30	2	6	10	6.6	2.04					
		3	30	2	5	8	4.77	1.65					
	T2	1	30	2	5	10	5.27	2.24	X^2=5.43	0.066	0,039		
		2	30	2	5	10	4.93	1.86					
		3	30	2	4	10	4.13	2.11					
APAIS-C	T0	1	30	2	4	9	4.8	1.83	X^2=4.882	0.087	0,033		
		2	30	2	5	8	5.27	1.48					
		3	30	2	4.5	9	4.47	1.96					
	T1	1	30	2	4	10	4.87	2.11	X^2=6.527	0.038*	0,052	G3<G2	0.015*
		2	30	2	6	10	5.7	1.8					
		3	30	2	4	10	4.63	1.99					
	T2	1	30	2	4	10	4.73	2.03	X^2=8.298	0.016*	0,072	G3<G2	0.010*
		2	30	2	5	8	5.1	1.52					
		3	30	2	4	10	4	2.24					
STAI-2	T0	1	30	32	45.5	51	45.03	4.56	X^2=3.182	0.204	0,013		
		2	30	39	47	56	47.1	4.25					
		3	30	32	44.5	57	44.93	5.63					
	T1	1	30	39	45	66	45.67	4.46	X^2=0.546	0.761	0,002		
		2	30	40	46	56	46.03	3.66					
		3	30	36	45.5	80	46.83	7.92					

Figure 1. The patient recruitment process is explained in the Consolidated Standards of Reporting Trials flowchart