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Research Article

Impact of Educational Videos on Dental Anxiety and Fear in Patients Undergoing Root Canal Treatment in Shiraz, Iran

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ABSTRACT

Background and objectives: Dental anxiety refers to the fear associated with the idea of seeking dental care. It is the fifth most common cause of anxiety. The purpose of this study was to investigate efficiency of educational videos for reducing anxiety and fear in adult patients undergoing root canal treatment in private dental clinics.

Methods: This was a quasi-experimental study with a pretest-posttest design. The statistical population consisted of all patients referred to private dental clinics in Shiraz (Iran) during the summer of 2016. Overall, 50 subjects were selected via the convenience sampling method. The subjects were randomly divided into an intervention group (n=25) and a control group (n=25). Both groups responded to two anxiety and fear questionnaires. Then, the intervention group participated in a video training session, while the control group did not receive any training. Subjects in both study groups once again completed the questionnaires. Data were analyzed in the SPSS (version 22) using one-way analysis of covariance and at statistical significance of 0.05.

Results: After the intervention, the mean scores of fear and its components (avoiding dental treatment, physical symptoms caused by anxiety, and anxiety caused by dental stimuli) were significantly lower in the intervention group than in the control group ($P<0.05$).

Conclusion: Based on the findings, it can be concluded that the educational video on root canal treatment could help reduce anxiety and fear in adult patients.

Keywords: Educational video, Anxiety, Fear, Root canal treatment

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Introduction

Fear and anxiety from dental procedures have contributed to the avoidance of dental care. Dental anxiety refers to the fear associated with the idea of seeking dental care (1). It is the fifth most common cause of anxiety. This emotional state is sometimes indistinguishable from the actual threat that confronts us before the encounter occurs (2). According to Saatchi et al., the prevalence of dental anxiety is higher among women, regardless of education level (3). Previous studies have shown an inverse relationship between dental visits and anxiety (1-3). Dental anxiety can lead to dental health problems, such as dental caries (4-6). This problem is often accompanied with a poorer prognosis for restoration and more extractions because of delayed treatment (6). Moreover, the cost of further surgical treatment for the extraction site may be higher and such expenses disincentives patients further from seeking dental care. This may ultimately affect confidence and quality of life of patients (6). A combination of personal and environmental factors may contribute to the development of dental anxiety (5).

Daokar et al. reported that dental anxiety not only affects patients' oral health, but also their daily lives. The authors claimed that audiovisual distraction techniques were effective in reducing dental anxiety (7). Benzodiazepines and sedatives that are widely used to treat anxiety, but these drugs often have several adverse effects and require a doctor's prescription (7,8). The non-pharmacological or complementary approaches for treating anxiety are typically free of side effects and can be used alone or in combination with other treatments (8,9)

The American Academy of Pediatric Dentistry has recommended conducting further research regarding the development of non-pharmacological interventions (10). Music therapy, relaxation, desensitization, ceasing to think, and cognitive reconstruction can help decrease surgical anxiety (11). Adequate patient education and increasing knowledge about the surgical procedure and its complications and benefits can reduce anxiety, postoperative complications, and length of hospital stay while speeding up the recovery process (10).

To avoid negative experiences in patients and ensure quality care, it is critical for dentists to implement effective ways to help patients with dental anxiety overcome their fears. One way to control dental anxiety and fear in the waiting room is to use instructional videos and other forms of patient education (12).

Adel Zakhary et al. demonstrated the beneficial effects of rehabilitation programs along with oral education in reducing dental anxiety (13). In another study, Zhang also showed that audiovisual distraction can effectively reduce dental anxiety among children (14).

The main objective of the present study was to evaluate effects of educational videos on dental anxiety and fear of adult patients undergoing root canal treatment.

MATERIALS AND METHODS

This was a quasi-experimental study with a pretest-posttest design. The study included all patients who were referred to private dental clinics in Shiraz (Iran) during the summer of 2016. The sample size was calculated as 45 at 95% confidence level and 80% test ability. After considering sample loss, 50 patients were randomly selected and then equally divided into an intervention group (n=25) and a control group (n=25).

Demographic data were collected using a questionnaire. The patients also completed the dental anxiety scale **(**DAS) and the dental fear scale (DFS) at baseline and after the intervention. The intervention group watched an educational video, while the control group did not receive any training. The educational video for reducing dental anxiety was found on YouTube (available at: https://www.youtube.com/watch?v=QjHIzA4bHtM), translated and voiced by the researchers. Two clinical psychologists and four dentists approved the translated version of the video. The video was played for the

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subjects about 15 minutes before the dental denervation procedure.

The DAS scale was originated by Shuurs & Hoogstraten (15) and is composed of four different dental conditions that include the feeling of being seen in a dental clinic, waiting for treatment in a dental office, shaving teeth, and scaling (16). It is one of the most widely used tools for measuring dental anxiety. The questionnaire examines patients' perceptions of the risk and threat of dental treatment and consists of five multiple-choice questions. The answers were scored from 1 (calmest) to 5 (most anxious). Accordingly, an overall score of less than nine, 9-11, 13-14, and 15-25 indicated low anxiety, moderate anxiety, high anxiety, and severe anxiety, respectively. The validity and reliability of the questionnaire have been verified (3). Pretest and posttest Cronbach's alpha values of the intervention group were 0.81 and 0.88, respectively. Pretest and posttest Cronbach's alpha values of the control group were 0.89 and 0.83, respectively.

The DFS has been widely used to assess individuals' level of dental fear. It includes 20 questions under three categories: avoidance of dental treatment (two questions), physical symptoms caused by anxiety (five questions), and anxiety due to a dental stimulus (13 questions). Questions were related to the patients' feeling about the treatment, possibility of avoiding dental examinations due to fear, approaching the clinic, and sitting in the waiting or on the dental chair are addressed in the questionnaire. The Likert scale was used to score the data from 1 to 5 based on the heart rate recorded during dental work. An overall DFS score of 60 or greater indicated fearful event. A previous study indicated that the DFS has psychometric properties (18). In the present study, pretest and posttest Cronbach's alpha values of the intervention group were 0.91 and 0.86, respectively. Pretest and posttest Cronbach's alpha values of the control group were 0.85 and 0.89, respectively.

Data were analyzed using the SPSS software (version 22). The data were described using mean, standard deviation, frequency, and percentage. Normality of data distribution and equality of variance were assessed using the Kolmogorov-Smirnov test and Levene's test, respectively. The collected data were analyzed using one-way analysis of variance and the. A p-value of less than 0.05 was considered statistically significant.

RESULTS

(Table 1) presents the demographic characteristics of the subjects in both study groups.

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Table 1. The demographic characteristics of the participants

Variables		Intervention group		Control group		P-value
		Frequency	Percentage	Frequency	Percentage	
Gender	Female	18	72	19	76	0.723
	Male	7	28	6	24	0. 128
Marital status	Married	19	76	16	64	0. 427
	Single	6	24	9	36	0. 321
Age (years)	25-35	2	39	4	36	0. 112
	36-45	4	8	4	16	0. 154
	46-55	10	16	10	16	0. 675
	> 55	9	40	7	40	0. 456
Level of education	High school diploma and lower	16	64	15	60	0. 765
	Associate degree	5	20	5	20	0.546
	Bachelor's degree and higher	4	16	5	20	0. 234
Occupational status	Freelance	7	28	3	12	0. 354

As shown in (table 2), the intervention did not significantly change anxiety scores related to dental denervation, fear of dental denervation, dental treatment avoidance, physical symptoms caused by anxiety, anxiety caused by dental stimuli (P>0.05). However, the posttest values of all variables were significantly lower in the intervention group compared with the control group (P<0.05).

Table 2. Mean score of variables related to dental anxiety in the pretest and posttest.

Variable	Groups	Pretest	Posttest	Intragroup difference (pretest vs. posttest)	Intergroup difference (posttest)
		Mean ± SD	Mean ± SD		
Anxiety caused by dental denervation	Intervention	11.44±3.54	8.12±2.82	0. 236	0.001
	Control	11.05±2.64	10.2±2.71	0. 206	0.001
Fear of dental denervation	Intervention	44.08±17.4	33.76±25.11	0. 321	0.001
	Control	43.18±15.12	42.67±13.62	0. 651	0.001
Dental treatment avoidance component	Intervention	4.4±1.21	3.37±1.69	0. 533	0.001
	Control	4.31±1.23	4.26±1.02	0. 243	0.001
Component of physical symptoms caused by anxiety	Intervention	11.02±3.3	8.44±2.25	0. 187	0.001
	Control	10.79±3.17	10.66±2.56	0. 734	0.001
Anxiety component created by dental stimuli	Intervention	28.65±5.65	21.94±4.89	0. 576	0.001
	Control	28.06±4.49	27.73±5.01	0. 322	0.001

SD: standard deviation

DISCUSSION

In the present study, we evaluated the effects of an educational video on dental anxiety and fear among patients undergoing root canal treatment. According to the results, the mean score of dental anxiety variables did not change significantly in the

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study groups. However, the posttest mean values of the variables were significantly lower in the intervention group. In many medical specialties, providing preoperative information could reduce anxiety and complaints among patients and increase positive outcomes. Moreover, providing information to patients can help prepare them for treatment by reduces anxiety levels (17-20). Our findings are in line with findings of some previous studies (6, 21, 22).

One of the most common reactions to a stressor is anxiety (19-22). Most people experience anxiety when facing stressful events. In fact, anxiety is a sporadic state of arousal after perceiving a real or imagined threat that is future-oriented and emotion-focused that can be an adaptive response. Stressful conditions occur, but a fundamental cause of anxiety is an irregular response to the stressful situation (23).

In general, anxiety is classified by two main characteristics: mental characteristics (fear, difficulty concentrating, sadness, etc.) and physical symptoms (increased heart rate, shortness of breath, tremors, sweating, redness of the skin, and involuntary movements such as hand or face movement). There are several techniques for reducing stress, anxiety, and psychological problems. We assumed that an educational video could reduce anxiety by demonstrating that root canal treatment is not necessarily painful.

The results showed that the mean scores of fear of denervation differed significantly between the groups after the intervention. This finding is consistent with findings of some previous studies (24-27). Mark (2017) concluded that some methods, such as adapting to body posture and relaxation, can reduce dental anxiety (24). Heidari et al. (2020) also reported a relationship between anxiety and unpleasant experience before dental appointment (27).

In general, fear is a warning sign, and it is normal feel afraid when facing an external, definite, and conflict-free threat. A common reason for people's dental fear is denervation because the procedure can be painful. Using educational videos, dentists can minimize pain and reduce dental fear in patients (26).

Study limitations

Limitations of the present study were the small sample size and lack of follow-ups. Moreover, we had no control over factors that may have influenced subjects' answers to the questionnaire, such as problem-solving skills and resilience.

CONCLUSION

Based on the findings, it can be concluded that the educational video on root canal treatment could help reduce anxiety and fear in adult patients.

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DECLARATIONS

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Ethics approvals and consent to participate

Informed consent was obtained from all participants after ensuring confidentiality of personal information.

Conflict of interest

The authors declare that there is no conflict of interest regarding publication of this article

REFERENCE

1. Appukuttan DP. Strategies to manage patients with dental anxiety and dental phobia: a literature review. Clinical, cosmetic, and investigational dentistry. 2016;8:35. [View at Publisher] [DOI] [PubMed] [Google Scholar]

2. Carter AE, Carter G, Boschen M, AlShwaimi E, George R. Pathways of fear and anxiety in dentistry: A review. World Journal of Clinical Cases: WJCC. 2014 Nov

[DOI: 10.52547/jcbr.5.3.45]

16;2(11):642. [View at Publisher] [DOI] [PubMed] [Google Scholar]

3. Saatchi M, Abtahi M, Mohammadi G, Mirdamadi M, Binandeh ES. The prevalence of dental anxiety and fear in patients referred to Isfahan Dental School, Iran. Dental research journal. 2015 May;12(3):248. [View at Publisher] [PubMed] [Google Scholar]

4. Anbari F, Elmi Z, Anbari F, Rezaeifar K. General Anxiety and Dental Fear: Is There A Relationship?. Journal of Dental Materials and Techniques. 2019;8(4):190-6. [View at Publisher] [Google Scholar]

5. Hegde N, Shetty A, Bhat R. Patient satisfaction and assessment of the reason for seeking root canal treatment in a cost-free hospital setup. Dentistry and Medical Research. 2020 Jul 1;8(2):49.]. [View at Publisher] [DOI] [Google Scholar]

6. Wang MC, Vinall-Collier K, Csikar J, Douglas G. A qualitative study of patients' views of techniques to reduce dental anxiety. Journal of dentistry. 2017 Nov 1;66:45-51. [View at Publisher] [DOI] [PubMed] [Google Scholar]

7. Daokar S, Pophli S, Pawar K, Wahane K, Tambake R, Late L. Effect of Audio and Audiovisual Aids on Anxiety Level of Patients during First Appointment of Root Canal Treatment: An In Vivo Study. International Journal of Scientific Study. 2018;6(5):121-6.

8. Maurice-Szamburski A, Auquier P, Viarre-Oreal V, Cuvillon P, Carles M, Ripart J, Honore S, Triglia T, Loundou A, Leone M, Bruder N. Effect of sedative premedication on patient experience after general anesthesia: a randomized clinical trial. Jama. 2015 Mar 3;313(9):916-25. [View at Publisher] [DOI] [PubMed] [Google Scholar]

9. Anthonappa RP, Ashley PF, Bonetti DL, Lombardo G, Riley P. Non-pharmacological interventions for managing dental anxiety in children. The Cochrane Database of Systematic Reviews. 2017 Jun;2017(6). [View at Publisher] [DOI] [Google Scholar]

10. Baakdah RA, Turkistani JM, Al-Qarni AM, Al-Abdali AN, Alharbi HA, Bafaqih JA, Alshehri ZS. Pediatric dental treatments with pharmacological and non-pharmacological interventions: a cross-sectional study. BMC Oral Health. 2021 Dec;21(1):1-9. [View at Publisher] [DOI] [PubMed] [Google Scholar]

11. Armfield JM, Heaton LJ. Management of fear and anxiety in the dental clinic: a review. Australian dental journal. 2013 Dec;58(4):390-407. [View at Publisher] [DOI] [PubMed] [Google Scholar]

12. Lahti S, Suominen A, Freeman R, Lähteenoja T, Humphris G. Virtual Reality Relaxation to Decrease Dental Anxiety: Immediate Effect Randomized Clinical Trial. JDR Clinical & Translational Research. 2020 Oct;5(4):312-8. [View at Publisher] [DOI] [PubMed] [Google Scholar]

13. Adel Zakhary S, Eid MH, Wassef NM. Audio-Visual Distraction Effect on Heart Rate in Children during Dental Treatment, A Randomized Clinical Trial. Egyptian Dental Journal. 2020 Jan 1;66(1-January (Orthodontics, Pediatric & Preventive Dentistry)):27-34. [View at Publisher] [DOI] [Google Scholar]

14. Zhang C, Qin D, Shen L, Ji P, Wang J. Does audiovisual distraction reduce dental anxiety in children under local anesthesia? a systematic review and meta-analysis. Oral diseases. 2019 Mar;25(2):416-24. [View at Publisher] [DOI] [PubMed] [Google Scholar]

15. Schuurs AH, Hoogstraten J. Appraisal of dental anxiety and fear questionnaires: a review. Community dentistry and oral epidemiology. 1993 Dec;21(6):329-39. [View at Publisher] [DOI] [PubMed] [Google Scholar]

16. Frere CL, Crout R, Yorty J, McNeil DW. Effects of audiovisual distraction

[DOI: 10.52547/jcbr.5.3.45]

during dental prophylaxis. J Am Dent Assoc. 2001; 132(7): 1031-8. [View at Publisher] [DOI] [PubMed] [Google Scholar]

17. Jafari A, Pouramir M, Shirzad A, Motallebnejad M, Bijani A, Moudi S, Abolghasem-Zade F, Dastan Z. Evaluation of salivary alpha amylase as a biomarker for dental anxiety. Iranian Journal of Psychiatry and Behavioral Sciences. 2018 Mar 31;12(1). [View at Publisher] [DOI] [Google Scholar]

18. Yaghooti Khorasani MM, Shakerian M, Irannezhad M. The relationship between level of dental fear and anxiety and DMFT index in students of Rafsanjan University of Medical Sciences, Iran, during the 2010-2011 academic years. Journal of Occupational Health and Epidemiology. 2016 Jul 10;5(3):143-50. [View at Publisher] [DOI] [Google Scholar]

19. Cumming G, Finch S. Inference by eye: confidence intervals and how to read pictures of data. American psychologist. 2005 Feb;60(2):170. [View at Publisher] [DOI] [PubMed] [Google Scholar]

20. Alsaffar H, Wilson L, Kamdar DP, Sultanov F, Enepekides D, Higgins KM. Informed consent: do information pamphlets improve post-operative risk-recall in patients undergoing total thyroidectomy: prospective randomized control study. Journal of Otolaryngology-Head & Neck Surgery. 2016 Dec;45(1):1-6. [View at Publisher] [DOI] [PubMed] [Google Scholar]

21. Montero J, Gómez-Polo C. Personality traits and dental anxiety in self-reported bruxism. A cross-sectional study. Journal of dentistry. 2017 Oct 1;65:45-50. [View at Publisher] [DOI] [PubMed] [Google Scholar]

22. Seligman LD, Hovey JD, Chacon K, Ollendick TH. Dental anxiety: An understudied problem in youth. Clinical psychology review. 2017 Jul 1;55:25-40. [View at Publisher] [DOI] [PubMed] [Google Scholar]

23. Song D, Li Y, Zhang K, Liu P, Cheng H, Wu T. Stress distribution modeling for interference-fit area of each individual layer around composite laminates joint. Composites Part B: Engineering. 2015 Sep 1;78:469-79. [View at Publisher] [DOI] [Google Scholar]

24. Mark AM. Coping skills for facing dental fears. The Journal of the American Dental Association. 2017 Feb 1;148(2):130. [View at Publisher] [DOI] [PubMed] [Google Scholar]

25. Vigu A, Stanciu D. When the fear of dentist is relevant for more than one's oral health. A structural equation model of dental fear, self-esteem, oral-health-related well-being, and general well-being. Patient preference and adherence. 2019;13:1229. [View at Publisher] [DOI] [PubMed] [Google Scholar]

26. Al-Namankany A, Petrie A, Ashley P. Video modelling for reducing anxiety related to the use of nasal masks place it for inhalation sedation: a randomised clinical trial. European Archives of Paediatric Dentistry. 2015 Feb 1;16(1):13-8. [DOI] [PubMed] [Google Scholar]

27. Heidari E, Newton JT, Banerjee A. Minimum intervention oral healthcare for people with dental phobia: a patient management pathway. British Dental Journal. 2020 Oct;229(7):417-24. [View at Publisher] [DOI] [PubMed] [Google Scholar]
17-24.

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