

The Influence of Dental Fear on Oral Health - An Observational Study

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Abstract

The purpose of this study was to identify the impact of fears from dental interventions because the fears lead to the suspension of therapeutic treatment and deterioration of oral health. The present study was conducted from February 2019 to February 2022 in Albania. The sample is composed of 180 participants, of which 40% were males and 60% were females. The participants' age range varied from 15 to 55 years old.

Many of the patients 70% of them had high dental fear to receive orthodontic treatments and dental fillings, 59% of them had high dental fear to receive dental implants, and most respondents 74% of them had an extreme fear of the tooth extractions.

64% of participants surveyed stated that had gingivitis and 61% of them declared that had dental caries, compared to 53% of patients who had tooth extractions. On the basis of the data analysis, tooth extractions and dental caries had a significant impact on the high blood pressure with a P-value < .0001.

The results suggest improving the dental service in Albania because providing an appropriate dental treatment reduces fear and serves as an instrument for solving oral problems.

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Introduction

Dental fear¹ is responsible for poor oral health. Hill et al² found that about 36% of the adult population is affected by dental fear.

The findings of recent studies have shown that the fear of dental interventions has bad consequences for oral health, and dental fear of approximately 24% is considered high.^{3,4}

Published research has shown that the most serious risk for high dental fear was previous bad experiences and other findings indicated that the high presence of caries was associated with dental fear.^{5,6}

Several surveys have indicated that patients with dental fear tend to postpone the appointment with the dentist⁷ and go to the doctor only when they are in pain.⁸

Moreover, considerable studies, conducted by Zinke et al⁹ and Mustafa et al¹⁰ showed strong correlations between the large number of missing teeth and the avoidance of visits to the dentist because of the fear.

A recent cross-sectional study, conducted in Bangalore city, with regard to the correlation between dental fear and gingivitis has proved that a significant relationship exists.¹¹ Van Wijk et al¹² in their study, found a positive association between pain and dental fears. Further, a study by Zhang et al¹³ showed that the prevalence of moderate and high dental fear was 66.6% and 11.9% in Chinese patients with oral implant surgery.

The dental fear was also positively related to orthodontic treatment, and this fact is widely demonstrated in an important scientific research.¹⁴ A kidney infection can permanently damage the kidneys and cause a life-threatening infection. According to Gupta et al¹⁵ the symptoms of kidney infections can be evaluated by observing the oral cavity and the dentist may play an important role in the diagnosis of the patients.

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This present study aimed to evaluate the importance of identifying the risk factors regarding dental fear in order to reveal the association between dental interventions and fear.

We believe that patients should be aware that avoiding the dentist is not a solution for coping with dental fear as this leads to deterioration of oral health and dental aesthetics.

Materials and methods

The current study was conducted during the period of February 2019 to February 2022 in Albania. This is an observational study.

The sample is composed of 180 participants, of which 72 (40%) were males and 108 (60%) were females. The participants' age range varied from 15 to 55 years old.

The study is part of the program for the recognition of dental fears, as a source of oral health problems. The participants for the study are randomly selected. We divided the participants into four age groups: 15-25, 26-35, 36-45, and 46-55 years old.

The examination of dental caries, gingivitis, and tooth extraction was performed through intraoral control for each participant. The intraoral inspection was performed with a dental mirror and exploration probe. Three doctors participated in our study.

In our questionnaire we assessed the concerns of the patients about the application of local anesthetics, bleeding, fear related to whether the dentist would work on a healthy or infected tooth, if the dentist would perform a bad job or if they would ask for a large amount of money, if the dentist would not respect the amount of time required to complete the procedure, if the dentist would not respect hygiene habits and other matters such as the uncertainty of the patient about the duration of the dental filling, etc, as it is shown in Table 2.

Completion of the questionnaire took almost twenty minutes. All the participants agreed to provide their informed consent. The study had no dropouts.

The exclusion criterion was that the present study is not focused on the evaluation of the dental fear caused by maxillofacial deformities, because these interventions are performed only in the maxillofacial surgery ward and the number of patients is relatively low

compared with other interventions in the field of dental medicine. Exclusion criterion was also the educational level of participants. Another limitation was that patients who had less than 15 years old and more than 55 years old were not taken into consideration.

Frequency (%)		
Gender	Female	108(60%)
	Male	72(40%)
Residence	City	108(60%)
	Countryside	72(40%)
Age Group	15-25 years old	45(25%)
	26-35 years old	80(45%)
	36-45 years old	25(14%)
	46-55 years old	30(16%)

Table 1. Sociodemographic data of the 180 participants.

The Declaration of Helsinki¹⁶ is respected in order to carry out the present study. The questionnaire is designed based on the resolution of the Albanian National Committee no. 9, date 11.11.2011. The present study was approved by the institutional board of the University of Vlora, Albania.

The data were entered and subsequently analyzed using (IBM, New York, USA), SPSS Statistics 23.0. Data were scrutinized by the Post Hoc LSD test in analysis of variance (ANOVA). The $P \leq 0.05$ values were considered significant and the data analysis included the 95% Confidence Interval (CI).

Various dental interventions	Low	High	Extreme
Tooth extraction	11(6%)	36(20%)	133(74%)
Dental filling	36(20%)	126(70%)	18(10%)
Dental implant procedure placed in the oral cavity	33(18%)	105(59%)	42(23%)
Dental orthodontic interventions in the oral cavity	34(19%)	126(70%)	20(11%)
Questions about risk factors	Low	High	Extreme
Application of local anesthetics	97(54%)	65(36%)	18(10%)
Bleeding	54(30%)	108(60%)	18(10%)
The patient suffers from hypertension	36(20%)	106(59%)	38(21%)
The fear if the dentist will work on a healthy or infected tooth	17(9%)	140(78%)	23(13%)
The dentist performs a bad job and asks for large sums of money	21(12%)	34(19%)	125(69%)
The dentist does not respect the amount of time required to complete the procedure	54(30%)	100(56%)	26(14%)
The patient is not sure about the duration of the dental filling	21(12%)	80(45%)	79(43%)
The dentist does not respect hygiene habits	36(20%)	40(22%)	104(58%)
The dentist has an inappropriate behavior	90(50%)	22(13%)	68(37%)
Fear related to local anesthetic that can have side effects	100(55%)	76(42%)	4(3%)
The patient had past dreadful experiences with various dentists	16(9%)	54(30%)	110(61%)
Dental fear caused by an infected tooth	Low	High	Extreme
An infected tooth can cause brain infections	21(12%)	55(30%)	104 (58%)
An infected tooth can cause kidneys infection	25(14%)	51(28%)	104 (58%)
An infected tooth can cause throat infections	37(20%)	63(35%)	80 (45%)
An infected tooth can cause urinary tract infections	31(17%)	90(50%)	59 (33%)

Table 2. Patients' responses about dental fears regarding dental interventions.

Results

The questionnaire included demographic data such as gender, age- range, and residence. The participants came from different areas. 72(40%) of the participants stated that they live in the countryside, whereas 108(60%) of them said that they were residents in the city. The prevailing age range in the sample was mostly from 26 to 35 years old, respectively 45% of the participants. [Table 1]

Many of the respondents 70% of them had high dental fear to receive orthodontic treatments and dental fillings, 59% of them had high dental fear to receive dental implants, and most respondents 74% of them had an extreme fear of the tooth extractions. The most feared item was extreme fear from past dreadful experiences with various dentists, 61% of the participants. However, data collected from the current study indicated that a large proportion of respondents 58% of them had extreme fears about the fact that infected teeth can cause brain infections and kidney infections.

Approximately 45% of the participants had extreme fear related to the fact that an infected tooth can cause throat infections. Fewer participants, 33% of them reported that they had an extreme fear of the reason that an infected tooth can cause urinary tract infections. [Table 2] 64% of participants surveyed stated that had gingivitis and 61% of them declared that had dental caries, compared to more than half of the participants (53%) who had tooth extractions. [Table 3]

Variables	Frequency (%)	
Dental caries	Yes	110 (61%)
	No	70 (39%)
Gingivitis	Yes	115 (64%)
	No	65 (36%)
Tooth extraction	Yes	95 (53%)
	No	85 (47%)

Table 3. Oral health status of the patients with dental fears.

On the basis of our statistical data analysis, tooth extractions and dental caries had a significant impact on the high blood pressure with a P-value < .0001. Similarly, the analysis of variance in the present study demonstrated that there was a statistically significant correlation between dental caries and tooth extractions with dental fear based on the fact that the dentist does not respect the amount of time required to complete the procedure with P- values < .0001 in both cases. [Table 4]

Discussion

Oral diseases¹⁷ are a public health problem. The previous study conducted by Kazeminia et al¹⁸ showed that the prevalence of dental caries in permanent teeth was 53.8% (95% CI: 50-57.5%). Albanian people, despite

dentists' recommendations to have consultations twice a year, still continue to neglect their oral health and the present study shows that the prevalence of dental caries is 61%.

Variables	Dental fears	P-Value	95% CI Lower	Upper
Dental procedures				
Tooth extraction Dental caries	The transmission of infections related to the poor hygiene practices of the dentist	<.0001 <.0001	0.66 0.28	0.83 0.50
Tooth extraction Dental caries	Hypertension related to following dental interventions	<.0001 <.0001	0.88 0.64	1.07 0.85
Tooth extraction Dental caries	The dentist performs a bad job and asks for large sums of money	<.0001 <.0001	0.50 0.24	0.70 0.52
Tooth extraction Dental caries	The dentist does not respect the amount of time required to complete the procedure	<.0001 <.0001	1.08 0.57	1.28 0.86

Table 4. The correlation between dental procedure and dental fears.

*P < 0.05, 95% CI, 95% confidence interval.

In the present survey, 74% of patients reported that they had extreme dental fear of tooth extractions. Different studies achieved the same conclusion.^{7, 19}

Moreover, 69% of the patients had extreme dental fear about the fact that the dentist performs a bad job and asks for large sums of money.

According to a study conducted in Korea²⁰, high dental fear was associated with gingivitis and the current study showed that 64% of participants suffer from gingivitis.

In the published work by Topcuoglu et al²¹ has been reported that dental fear in orthodontic patients increased, the present study confirms that 70% of the patients had high fear about the application of dental orthodontic appliances. Moreover, our study shows that 59% of Albanian patients have high dental fear regarding the placement of a dental implant. A qualitative study conducted by Lalabonova²² arrived at the same conclusions.

It was confirmed that 61% of the patients have extreme fear from past dreadful experiences with various dentists and the study conducted by Dou et al²³ supports our results.

36% of Albanian patients had high dental fear from the application of local anesthesia. Dental fear of local anesthesia was also related to the fact that the dentist may not respect the right procedure of injection and as a consequence, the local anesthesia may not have the necessary duration to ensure the smooth running of the procedures. The result of our

study is analogous to the outcome of research conducted by Lopez-Jornet et al²⁴.

Our study's results showed that 45% of the patients had high dental fear and were worried about how long dental fillings last in the oral cavity which is confirmed by the previous Israeli study²⁵. Our findings showed that 70% of the patients had high fear in relation to a dental filling, unlike the study presented by Cappelli et al²⁶ which found that the correlation between dental filling and fear was not significant.

According to the Institute of Public Health, 23% of Albanian children have had emotional distress from the bad behavior of the dentist. Overall, the results showed that 37% of the patients had an extreme dental fear of the bad behavior of the dentist. In their study, Brunton et al²⁷ had the same conclusions, as we achieved.

According to Maraki et al²⁸, brain abscesses can be caused by dental infections, too, this study showed that 58% of the patients had an extreme fear of brain abscesses. According to the data found on the official website of the Institute of Public Health in Albania, in 2018, the prevalence of urinary tract infections was 33.0%. This study showed that 50% of Albanian patients had high dental fear about the fact that infected teeth can cause urinary tract infections. The study conducted by Gautam et al²⁹ supports our results.

45% of the Albanian participants had extreme dental fear about the fact that an infected tooth can cause throat infections. The results were analog to the data of a previous study in France.³⁰ In our study, we revealed that 60% of participants had high fear due to oral bleeding. Bleeding gums is indicative of poor oral health. Yildirim³¹ has reported similar data.

Similar to the work of Balasubramaniyan et al³² one of the findings of this study is the strong correlation between tooth extractions with high blood pressure with a P-value of < .0001.

The present study is the first from Albania to indicate the correlation between dental fear and oral health. As a limitation of the current study, it can be mentioned the small sample size that was taken under consideration. Also, the age range can be seen as a limitation because patients younger than 15 years and older than 55 years were excluded from the study.

Our study suggests that finding a hospitable specialist, skillful in giving

interpretations and demonstrating step by step the dental procedures he will perform will allow the patients to overcome much more easily dental fears. The results of the study are significant because showed noteworthy risk factors for dental fears and reported high rates of gingivitis in 64% of the patients, 61% had dental caries, compared to 53% of the participants who had tooth extractions.

The strengths of this study are that it correlated dental fears with the transmission of infections, high blood pressure, the bad job of the dentist, and the amount of time required to complete the procedure. In our opinion, patients may be required to overcome dental fears, but patients with a fragile nature may be subject to dental fears.

Conclusions

This study highlights the importance to improve the dental service in Albania because providing an appropriate dental treatment reduces fear and serves as an instrument for solving oral problems.

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Declaration of Interest

The authors report no conflict of interest.

References

1. Amila Z, Jasmin H, Edina H, Muhamed A, Elmedin B. Evaluation of Dental Fear and Anxiety in Displaced Persons in Bosnia and Herzegovina. *Acta Stomatol Croat* 2018; 52(2):140-147.
2. Hill KB, Chadwick B, Freeman R, O'Sullivan I, Murray JJ. Adult Dental Health Survey 2009: relationships between dental attendance patterns, oral health behaviour and the current barriers to dental care. *Br Dent J* 2013; 214(1):25-32.
3. Leal SC, Menezes Abreu DM, Frencken JE. Dental anxiety and pain related to ART. *J Appl Oral Sci* 2009; 17:84-88.
4. Mehrstedt M, John MT, Tönnies S, Micheelis W. Oral health-related quality of life in patients with dental anxiety. *Community Dent Oral Epidemiol* 2007; 35(5):357-363.
5. Heaton LJ, Carlson CR, Smith TA, Baer RA, de Leeuw R. Predicting anxiety during dental treatment using patients' self-reports: less is more. *J Am Dent Assoc* 2007; 138(2):188-195.
6. Torriani DD, Ferro RL, Bonow ML, Santos IS, Matijasevich A, Barros AJ, Demarco FF, Peres KG. Dental caries is associated with dental fear in childhood: findings from a birth cohort study. *Caries Res* 2014; 48(4):263-70.
7. Rodríguez Vázquez LM, Rubiños López E, Varela Centelles A, Blanco Otero AI, Varela Otero F, Varela Centelles P. Stress amongst primary dental care patients. *Med Oral Pathol Oral Cir Bucal* 2008; 13(4):E253-6.
8. Heft MW, Meng X, Bradley MM, Lang PJ. Gender differences in reported dental fear and fear of dental pain. *Community Dent Oral Epidemiol* 2007; 35(6):421-428.
9. Zinke A, Hannig C, Berth H. Comparing oral health in patients with different levels of dental anxiety. *Head Face Med* 2018; 14(1):25.
10. Mustafa S, Younis R, Islam H, Durrani O. Dental fear in patients pursuing orthodontic treatment. *Pak Orthod J* 2017; 9:37-42.
11. Bairappan S, Puranik MP, Shanbhag N. Association between cognitive vulnerability, dental fear, and oral health status among schoolchildren in Bangalore city - A cross-sectional study. *J Indian Soc Pedod Prev Dent* 2020; 38(3):222-231.
12. Van Wijk AJ, Lindeboom J. The effect of a separate consultation on anxiety levels before third molarsurgery. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2008; 105(3):303-7.
13. Zhang X, Wang B, Qiao SC, Gu YX, Shi JY, Lai HC. A study on the prevalence of dental anxiety, pain perception, and their interrelationship in Chinese patients with oral implant surgery. *Clin Implant Dent Relat Res* 2019; 21(3):428-435.
14. Romero-Maroto M, Santos-Puerta N, González Olmo MJ, Peñacoba-Puente C. The impact of dental appearance and anxiety on self-esteem in adult orthodontic patients. *Orthod Craniofac Res* 2015; 18(3):143-55.
15. Gupta M, Gupta M, Abhishek. Oral conditions in renal disorders and treatment considerations - A review for pediatric dentist. *Saudi Dent J* 2015; 27(3): 113-119.
16. Williams RJ. The Declaration of Helsinki and public health. *Bull World Health Organ* 2008; 86(8): 650-652.
17. Fiorillo L. Oral Health: The First Step to Well-Being. *Medicina (Kaunas)* 2019; 55(10):676.
18. Kazemina M, Abdi A, Shohaimi S, Jalali R, Vaisi-Raygani A, Salari N, Mohammadi M. Dental caries in primary and permanent teeth in children's worldwide, 1995 to 2019: a systematic review and meta-analysis. *Head Face Med* 2020; 6; 16(1):22.
19. Jeddy N, Nithya S, Radhika T, Jeddy N. Dental anxiety and influencing factors: A cross-sectional questionnaire-based survey. *Indian J Dent Res* 2018; 29(1):10-15.
20. Won YS, Shim YS, An SY. The relationship between subjective oral health and dental fear in Korean adolescents. *J Dent Anesth Pain Med* 2017; 17(4):289-295.
21. Topcuoglu T, Yildirim O, Birlik M, Sokucu O, Semiz M. The effect of orthodontic extraoral appliances on depression and the anxiety levels of patients and parents. *Niger J Clin Pract* 2014; 17(1):81-5.
22. Lalabonova CK. Impact of Dental Anxiety on the Decision to have Implant Treatment. *Folia Med (Plovdiv)* 2015; 57(2):116-21.
23. Dou L, Vanschaayk MM, Zhang Y, Fu X, Ji P, Yang D. The prevalence of dental anxiety and its association with pain and other variables among adult patients with irreversible pulpitis. *BMC Oral Health* 2018; 18(1):101.
24. López-Jornet P, Camacho-Alonso F, Sanchez-Siles M. Assessment of general pre and postoperative anxiety in patients undergoing tooth extraction: a prospective study. *Br J Oral Maxillofac Surg* 2014; 52(1):18-23.
25. Fux-Noy A, Zohar M, Herzog K, Shmueli A, Halperon E, Moskovitz M, et al. The effect of the waiting room's environment on level of anxiety experienced by children prior to dental treatment: a case control study. *BMC Oral Health* 2019 19(1):294.
26. Cappelli DP, Moblely CC. Prevention in clinical oral health care. St. Louis, Mo: Mosby Elsevier 2007; 35(1):22-34.

27. Brunton P. Summary of patient safety in dentistry - state of play as revealed by a national database of errors. *Br Dent J* 2012; 213(3): 126–127.
28. Maraki S, Papadakis IS, Chronakis E, Panagopoulos D, Vakis A. *Aggregatibacter aphrophilus* brain abscess secondary to primary tooth extraction: Case report and literature review. *J Microbiol Immunol Infect* 2016; 49(1):119-22.
29. Gautam NR, Gautam NS, Rao TH, Koganti R, Agarwal R, Alamanda M. Effect of end-stage renal disease on oral health in patients undergoing renal dialysis: A cross-sectional study. *J Int Soc Prev Community Dent* 2014; 4(3):164-169.
30. Alotaibi N, Cloutier L, Khaldoun E, Bois E, Chirat M, Salvan D. Criteria for admission of odontogenic infections at high risk of deep neck space infection. *European Annals of Otorhinolaryngology, Head and Neck Diseases* 2015; 132(5):261-264.
31. Yıldırım TT. Evaluating the Relationship of Dental Fear with Dental Health Status and Awareness. *Journal of clinical and diagnostic research: JCDR* 2016; 10(7): ZC105-ZC109.
32. Balasubramaniyan N, Rayapati DK, Puttiah RH, Tavane P, Singh SE, Rangan V, et al. Evaluation of Anxiety Induced Cardiovascular Response in known Hypertensive Patients Undergoing Exodontia - A Prospective Study. *Journal of clinical and diagnostic research: JCDR* 2016; 10(8): ZC123-ZC127.