Factors Influencing Dental Fear in Students of Biomedicine

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Background: Dental fear is a reaction of an individual to actual or potential painful/harmful procedures in dental practice. There is large variation in reports of dental fear prevalence among university students, implying existence of different factors that influence occurrence of dental fear in various populations. **Objective**: The aim of the study was to investigate putative factors that may influence extent of dental fear among university students of biomedicine. **Methods**: This study was designed as cross-sectional investigation. In total, 113 students on study courses on the 3rd, 4th, 5th year of dentistry, and on the 4th, 5th and 6th year of medicine undergraduate program were surveyed at the Faculty of Medical Sciences, University of Kragujevac, Serbia. Fear of dentist was measured by the Dental Fear Survey and other variables were generated by questionnaire with questions about socio-demographic characteristics of the participants. **Results**: Students of biomedicine surveyed in this study did not suffer from dental fear in great extent (median value on the scale was close to the lower limit: 29.5. The only factor that increased risk for developing dental fear in our study was previous traumatic experience with a dentist. **Conclusion:** Dental fear is not very prevalent among biomedical students. However, main risk factor for dental fear in general population, previous traumatic experience with a dental intervention, also remains primary risk factor in population of biomedical students.

Keywords: dental fear, risk factors, university students, dentistry, medicine.

Original article, Received: Jun 05, 2019, Accepted: Jun 26, 2019, doi: 10.5455/ijbh.2019.7.18-20, Int J Biomed Healthc. 2019 Jun; 7(1): 18-20

1. INTRODUCTION

Dental fear is a reaction (involving physiological, behavioral, and emotional aspects) of an individual to actual or potential painful/harmful procedures in dental practice (1). It is highly prevalent among both children (11–11.9 %) (2, 3) and adults (5 – 19 %) (4). It is interesting that there is large variation in reports of dental fear prevalence among university students, ranging from 5.4% (5) to 27.5% (6), implying existence of different factors that influence occurrence of dental fear in various populations.

Several risk factors for dental fear or severe dental anxiety among university students were described in previous studies: rarely visiting dentist, poor oral hygiene (7), pain in mouth, number of missing teeth (8), smoking, abnormal attitude to food (9), etc. However, it is notable that great variety of reported risk factors exists between the studies, depending primarily on characteristics of the target population from which study samples were taken, as well as whether sample size was sufficient to avoid false negative results.

2. OBJECTIVE

The aim of our study was to investigate putative factors that may influence extent of dental fear among university students of biomedicine.

3. METHODS

This study was designed as cross-sectional investigation. The study population were students of medicine and dentistry who fulfilled the following inclusion criteria: active attending study courses on the 3rd, 4th, 5th year of dentistry, or on the 4th, 5th and 6th year of medicine undergraduate program; being domestic student and native Serbian language speaker. The exclusion criteria were: at least one renewed year of study; transfer from another medical or dentistry school; and suffering from an anxiety disorder, as diagnosed by a psychiatrist. The study sample was selected among students of University of Kragujevac, Medicine and Dentistry Faculty, attending courses from February the 1st, until June the 15th, 2020. The sample was chosen at convenience of the investigators, offering participation to students whose e-mail addresses were available. The study was approved by the

Ethics Committee of Faculty of Medical Sciences, University of Kragujevac (decision No: 01-9044, date: 16.10.2020.), and conducted according to the principles of Helsinki declaration and Good Clinical Practice. The participants were supplied with written information about the study and signed an informed consent before the study commencement. Main outcome of the study was fear of dentist measured by the Dental Fear Survey (DFS). The DFS is a questionnaire designed and originally validated by Kleinknecht et al, in 1978 (10) . It was composed of 20 questions, which reflect a feeling that a patient experience at dental office. The answers were graded according to the Lickert's scale: „none at all" (score 1), „a little" (score 2), „somewhat" (score 3), „much" (score 4), and „very much" (score 5). Total score of DFS is calculated by simple summation of individual questions' scores, therefore minimum score is 20 (the lowest degree of dental fear), and maximum score is 100 (the highest degree of dental fear). In our study we used Serbian translation of the DFS that was previously adapted and validated on an independent sample of biomedical students at University of Kragujevac (11).

Independent variables investigated in our study were previous traumatic dental experience, as reported by the study participants in the survey, and study program (medicine or dentistry). The confounding variables taken into account were: age, sex, year of study, average grade, frequency of visiting a dental office, smoking, drinking alcohol, drinking coffee, co-morbidities and concomitant medical therapy. Both responses to the DFS and data about the other variables were collected through an online questionnaire, set up on a Google Drive; the participants were noted about the questionnaire by an e-mail, carrying a link for access.

Size of the study sample was calculated on the basis of the following assumptions: minimum power of the study 80%, probability of the type 1 error of 0.05, standard deviation (SD) of the DFS score according to the study of Ofori et al (12) 8.15, and 95% confidence interval (CI) of 3. Using formula (13) , minimal number of study subjects is 113.

Statistical analysis

The data were first described by descriptive statistics. After testing for normality of the data distribution, values of continuous variables were presented by mean and standard deviation (if normally distributed) or by median and interquartile range (if not normally distributed). Associations between putative risk factors and the study outcome were tested by multiple linear regression. Probability of null hypothesis was set at ≤ 0.05. All calculations were performed by the SPSS, version 18.

4. RESULTS

There were 130 participants in the study. Their characteristics are shown in the Table 1. Since values of continuous variables were not distributed normally (Kolmogorov-Smirnov's test = 0.117, p = 0.000), they are presented by median (measure of central tendency) and interquartile range (measure of variability).

Characteristic	Value	
Age	24.0 [1.0]	
Sex (m/f)	33/97 (25.4%/74.6%)	
Study course	Medicine	66 (50.8%)
	Dentistry	64 (49.2%)
Year of study	Third	23 (17.7%)
	Fourth	32 (24.6%)
	Fifth	42 (32.3%)
	Sixth	33 (25.4%)
Frequency of visiting dentist	Almost never	2 (1.5%)
	Once monthly	16 (12.3%)
	Once every three months	23 (17.7%)
	Once every six months	42 (32.3%)
	Once yearly	34 (26.2%)
	Only when having pain	13 (10.0%)
Previous traumatic dental experience	Yes	58 (44.6%)
	No	58 (44.6%)
	Do not remember	14 (10.8%)
Smoking	Yes	17 (13.1%)
	No	113 (86.9%)
Drinking alcohol	Yes	73 (56.2%)
	No	57 (43.8%)
Drinking coffee	Yes	114 (87.7%)
	No	16 (12.3%)
Having at least one chronic disease	Yes	15 (11.5%)
	No	115 (88.5%)
Dental Fear Survey score	29.5 [15]	
Median mark of the students	8.9 [0.7]	

Table 1. Characteristics of the study sample.

Effects of study variables on the Dental Fear Survey (DFS) score was investigated by multiple linear regression. Final model (F = 10.269; df1 = 2; df2 = 127; p = 0.000) was developed by Backward deletion method, and it explained 12.6% of the DFS score variability (Adjusted R^2 = 0.126). The only variable with significant effect on the DFS score was previous traumatic dental experience (B = 7.088; 95% Confidence Interval 3.889 – 10.287; p = 0.000), and it was adjusted for average mark of the students.

5. DISCUSSION

Students of biomedicine surveyed in our study did not suffer from dental fear in great extent (median value on the scale was close to the lower limit). The only factor that increased risk for developing dental fear in our study was previous traumatic experience with a dentist.

Dental fear is prevalent in almost all age groups, and quite a number of studies dealt with factors that increase risk of acquiring dental fear (3). Previous stressful or painful experience with a dentist was associated with higher dental fear in almost all studies with this topic (14). In the study by Oosterink et al structure of the traumatic experience after a visit to dental office was studied; after analyzing 67 possible intra-office events that elicit fear in adults the first eight were separated from others due to high frequency and impact on the study subjects. The most influential events were possible injuries of soft tis-

sues during dental intervention as well as the pain itself, especially if associated with a root canal treatment. Although un-empathic behavior of a dentist may contribute to development of dental fear, majority of authors agree that even small injuries during treatment or inadequate pain control during dental interventions in early life sensitize a person who may develop dental fear or become prone to develop it, if similar experience is repeated (15). If a dentist is trying to avoid pain during treatment, is not overtly critical, is not behaving remotely or keeping too distant, there is good chance that dental experience will not be traumatic, and therefore the risk of developing dental fear and consequent avoidance of dental treatment will be diminished (15, 16).

It is well known that students of dentistry or medicine less frequently have significant degree of dental fear, probably due to their practical training experience or clinical knowledge (6). However, it is important that students of dentistry understand feeling of their patients and have empathy for them in order to be more careful during interventions, and pay special attentions to mitigate unpleasant events possibly forming a nucleus around which will develop dental fear in the future (17, 18).

There are certain limitations of our study. Apart from relatively small sample and its convenient nature, which may introduce selection bias in the results, the students from the first two years of study were not involved in the survey. Second, objective examination of oral health was not performed, depriving statistical analysis of important variables that could help with explanation of differences in dental fear among the students.

6. CONCLUSION

Dental fear is not very prevalent among biomedical students. However, main risk factor for dental fear in general population, previous traumatic experience with a dental intervention, also remains primary risk factor in population of biomedical students.

- *Author's contribution:* ***All authors were involved in all steps of preparation this article. Final proof reading was made by the first author.***
- *Conflict of interest:* ***None declared.***
- *Financial support and sponsorship:* ***Nil.***

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