Dental Anxiety Among Young Israeli Male Adults as Related to Treatment Received during Childhood

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Abstract

Objectives: *To evaluate dental fear and anxiety among young male adults treated during childhood either by a certified pediatric dentist or a general dental practitioner.* ***Methods:*** *A structured questionnaire that included information regarding issues related to dental fear and anxiety (Intake Interview Questionnaire and the Dental Anxiety Scale) was completed by 497 young male army recruits (18 years old).* ***Results:*** *During childhood, 59 (11.9%) of the participants were treated on a regular basis by a certified pediatric dentist and 344 (69.2%) by a general dental practitioner. Sporadic care (not regular care) by general dental practitioners was given to 94 participants (18.9%). Average level of dental anxiety among participants treated by certified pediatric dentists was 7.9 compared to 8.2 (general dentists) and 8.7 (sporadic care by general dentists). There were no significant differences between the groups. However, significant differences were found in the prevalence of high dental anxiety between participants treated by a regular dentist in childhood and those treated sporadically (15.4% vs. 23.4%, respectively). Negative emotions were common. Environmental etiologic factors were infrequently reported.* ***Conclusions:*** *The general level of dental anxiety among young Israeli males was normal. No relation was found between level of dental anxiety and the professional education of the treating dentist in childhood. Regular dental care in childhood has more effect on preventing the development of high dental anxiety than the professional education of the early caregiver.*

Key Words: professional education, dental fear, dental anxiety, pediatric dentistry

Introduction

Dental fear is common; approximately 6-15% of the population suffers from high dental fear and avoidance worldwide (1). The onset of dental anxiety is thought to originate in childhood (2), peak in early adulthood (3) and decline with age (4).

The etiology of dental fear relates to both individual predispositions to anxiety and fear, and to learned responses. Wolpe (5) describes two different basic patterns for the development of fear and anxiety: cognitive learning and classical conditioning. The cognitive learning pattern of dental fear has been described as the patient's tendency to think negatively about treatment and to expect pain because of indirect learning (6). This assumption is further supported by an association between dental fear and general fears and anxiety, neuroticism, and general psychological distress (7). The classical conditioning pattern refers to a negative experience in dentistry (common pain or negative dentist behavior), most often in childhood (8). An unsupportive dentist with perceived lack of empathy and respect was rated as a common source of increased dental anxiety. The dentist-patient communication pattern strongly affects the patient's stress and anxiety during dental treatment (9). Thus, the development of dental fear is often multifactorial where both conditioned stimuli and cognitive processes interact with personality and other concomitant factors (10).

A major goal of specialization in pediatric dentistry is to teach behavioral approaches required to manage anxious children (11,12). It is expected that a certified pediatric dentist, with advanced education in this field, will be more efficient in avoiding the development of dental anxiety among patients than a general dental practitioner (13). Previous research has found that members of the Australian Society of Dentistry for Children use behavioral techniques more often than general dentists (12). Dentists who receive training in behavior management experience a 20% increase in the number of child patients who accept treatment (14).

The assumption is that a patient treated during childhood by a pediatric specialist would be less anxious during dental treatment and develop less dental avoidance in adulthood. However, only limited studies have examined the effect of treatment by certified pediatric dentists during childhood on dental fear in adulthood. The purpose of this study was to assess dental fear and anxiety in young male adults as related to the professional qualifications of their dentists and to their regularity of treatment during childhood.

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Methods

The study was conducted among male Israeli army recruits (18-19 years old), from various communities around the country, who were screened for dental status immediately after high school. The research group was restricted to males since the study was conducted among recruits into combat military service. The Ethics Committee of Tel Aviv University approved the study.

Questionnaires. The Intake Interview Questionnaire was initially collaboratively developed as a tool to sample various demographic, etiologic and emotional aspects of patient dental anxiety in three centers specializing in dental phobia research (Tel Aviv, Israel, Goteborg, Sweden, and Pittsburg, PA, USA) (15). In addition to date, identification, age and gender, questions included the patient's present and previous experience of dental care, perceived origin and reason for dental fear reactions, effects of dental fear on everyday life, and treatment motivation and preferences.

Questions are presented in three formats: 1) a open assessment (e.g., 'How many years ago was your last regular visit to the dentist?'); 2) selection - one possible alternative (e.g., 'How was your last dental visit?' with alternative answers from 'very successful' to 'worst ever'); or 3) selection of several alternatives (e.g., 'Which were the most important reasons to seek treatment now? Check the alternatives below that fit you') in a list of options. This item format used Likert scales from 0 - "not at all" to 6 – "extremely much/important/fearful," to assess the patients' reactions and opinions.

The intake interview questionnaire was initially constructed in English. After translation into Hebrew and Swedish, pilot tests were conducted at each clinic. Following patient input, minor adjustments and reduction in the number of questions were made. Experienced bilingual researchers at Tel Aviv and Göteborg re-translated a final selection of items, and the final version was agreed upon. Initial findings of the questionnaire regarding populations of highly anxious dental patients in Sweden, Israel and the United States have been published (15).

The Dental Anxiety Scale measures dental anxiety (16). This is a common, well-known and accepted tool that consists of four items in which the patient is asked to rate, on a 5-point scale, how they would feel in four situations relevant to dental treatment (e.g., if they "had to go to the dentist tomorrow"; "is waiting in the dentist's office for their turn"; etc). The total scale ranges from 4 to 20. A population normative mean score has been reported as 8-9, and a Dental Anxiety Scale score of 13 or higher indicates high dental anxiety (16, 17). The scale is simple to complete, reliable and valid to evaluate dental anxiety (18, 19).

Participants were asked to report their dental visits between childhood and adolescence. Regular care was defined as attending dental clinic every 6 to 12 months.

Questionnaires were distributed to 497 consecutive new recruits. While dental screening is mandatory for all new recruits, participants were told that completing the questionnaires anonymously was voluntary, and that non-responses would have no effect on their dental examination and/or on their future army service. All recruits agreed to participate in the study and completed the questionnaire (100% response rate). This may be due to the long recruiting process, which left recruits with spare time while waiting for their examinations. Additionally, in the socialization process, which starts during recruitment, an individual obeys the requests of their superiors in a military setting.

TABLE 1
Present dental anxiety status among adult male Israeli army recruits

Childhood Attendance Patterns of Recruits	Number (%)	Dental Anxiety Scale Mean* (SD)
Regular Attenders		
To Certified pediatric dentists	59 (11.9)	7.92 (2.75)
To General dentists	344 (69.2)	8.25 (3.2)
Sporatic Attenders		
To general dentists	94 (18.9)	8.73 (3.6)
Total	497 (100)	8.3 (3.2)

* Differences among the responses are from the recruits' groups – NS

Statistical Analysis

Simple descriptive statistics together with Pearson's chi-square test and Kruskal-Wallis tests were used to estimate significant differences. A cut point of $p<0.05$ was considered statistically significant. Data were analyzed by SPSS 10.0 (SPSS, Inc., Chicago, IL, USA),

Results

Of the participants, 403 (81.1%) regularly attended dental treatment during their childhood (general dentists - 69.2%, certified pediatric dentists - 11.9%), compared to 94 (18.9%) who were treated sporadically by different general practitioners.

Mean Dental Anxiety Scale scores were 7.92, 8.25, and 8.73 among participants treated regularly by certified pediatric dentists, general dentists or sporadically by general dentists respectively, with no significant difference among groups (Table 1). A high level of dental anxiety (score >13 on Dental Anxiety Scale) was shown by 17.1% of all participants. Those classified as being highly anxious (Dental Anxiety Scale >13) were 15.6% and 15.2% treated regularly by general dentists and certified pediatric dentists, respectively compared to 23.4% treated sporadically by general dentist ($p= 0.05$).

The frequency of regular dental attendance was generally low. Only 25.4% reported a high frequency of regular dental attendance compared to 63% who reported a low frequency of regular attendance. Differences between participants treated regularly by certified pediatric dentists, general dentists and sporadically by general dentists were non-significant.

Overall, the most recent dental visit within the past 2 years was reported by 300 (60.4%) of the participants compared to 81 (16.3%) who reported no dental visits during the past 5 to 10 years.

Most participants did not experience negative effects on their daily life, i.e., being with the family, having intimate relationships, being with friends, and going to work, due to their dental fear. There were no significant differences between groups (patient treated regularly or occasionally by general practitioners or certified pediatric dentists) (Table 2).

The emotional impact of participants' dental fear, as studied by the statements, "I'm angry about it", "I'm ashamed of it", "I'm depressed about it", and "I try not to think about it" was similar for all groups. Most participants indicated a strong repressive emotional state by rating "trying not to think about dental fear" at the highest level of their negative feelings (Table 2).

Table 3 describes the etiologic factors for increased dental fear, which includes separate factors relating to negative experiences (direct learning and vicarious learning factors) and subjects' preferences of dentist's professional attributes. Nearly similar results were found among the certified pediatric dentists and general dentists. On the highest level of preference, both groups rated it important that the dentist "tries to avoid pain" (mean 4.27 and 4.55, respectively), and that the dentist should be "supportive and patient" (4.56 and 4.51, respectively).

Discussion

There is general agreement as to the prevalence of dental fear and anxiety worldwide (15). Numerous epidemiologic studies conducted since 1960 have evaluated the prevalence of dental fear and anxiety over the world, and found that it ranged between 5-15% of the adult population (1, 10, 19-23). The emotional status of these individuals has an extreme adverse effect on their oral health (24), and thus special attention and treatment are needed.

A predominant belief is that dental treatment provided by certified pediatric dentists can reduce or even prevent the development of long-term dental anxiety, since they are more skilled in behavioral management techniques, use them more often, and spend more time talking to the children and their parents (12) than general dentists. A study conducted on children, 7 to 9 years old, has shown that children treated regularly by certified pediatric dentists report not being afraid of dental treatment more frequently than those treated by general dentists (25).

In contrast, the present study showed that the average levels of dental anxiety in young adult males treated regularly during childhood by certified pediatric dentists, general dentists, or sporadically by general dentist were similar. This may indicate that further professional education of the treating dentist (i.e. specialization in pediatric dentistry) may only have a minor effect on the development and persistence of long-term dental anxiety in adulthood. However, these results may be misleading. It is possible that children with high anxiety are referred to certified pediatric dentists. Also, some general dentists may have had extensive training in behavior management.

The results showed that irregular or sporadic attendance with a general dentist in childhood was associated with increased prevalence of high dental anxiety in early adulthood (Dental Anxiety Scale > 13). That is, patients who did not receive regular dental care during childhood (by general dentists or certified pediatric dentists), in all likelihood, would become highly anxious patients as adults. These results are in accordance with others, in which a correlation was shown between dental anxiety and regularity of dental attendance. The reasons may be different. It is possible that irregular attendance in childhood leads to mistrust of the dentist and a greater probability of developing high dental anxiety. It is also possible that children who are highly anxious initially fail to establish positive relationships with a dentist in childhood and grow up to be highly anxious young adults. Furthermore, anxious children who fail to receive regular treatment during childhood may receive more painful treatments (root canal and extractions as opposed to dental restorations) at an older age, confirming (or supporting) anxious states as adult patients. However, children who learn from an early age to accept dental treatment (either by general dentists or certified pediatric dentists) may become regular and collaborative attendees in dental clinics in adulthood. Socioeconomic status, as well as ethnicity, might affect the association between

TABLE 2
Negative effects and feelings from dental fear of adult male Israeli army recruits. Assessments on a Likert scale from 0 (not at all) to 6 (very much)

	Childhood Attendance Patterns		
	Regular Certified Pediatric dentists Mean (SD)	Regular General densists Mean (SD)	Sporadic General dentists Mean (SD)
Negative effects			
Being with the family	0.19 (0.5)	0.13 (0.6)	0.06 (0.3)
Having intimate relationships	0.14 (0.5)	0.09 (0.4)	0.04 (0.3)
Being with friends	0.14 (0.4)	0.1 (0.5)	0.04 (0.2)
Go to work	0.19 (0.5)	0.2 (0.9)	0.14 (0.7)
Negative feelings			
I'm angry about it *	0.4 (0.98)	0.38 (1)	0.7 (1.6)
I'm ashamed of it*	0.37 (0.9)	0.25 (0.8)	0.49 (1.3)
I'm depressed about it	0.51 (1.2)	0.46 (1.2)	0.49 (1.2)
I try not to think about it	1.93 (2.3)	1.86 (2.3)	2.18 (2.5)

* p=0.07

TABLE 3
Reported etiologic background of dental fear and subjects' preferences of dentist's professional attributes. Assessments on a Likert scale from 0 (not at all) to 6 (very much)

Etiologic background	Childhood Attendance Patterns		
	Regular Certified Pediatric dentists Mean (SD)	Regular General densists Mean (SD)	Sporadic General dentists Mean (SD)
Negative experience			
Mean dentist	0.81 (1.6)	0.59 (1.5)	0.59 (1.5)
Painful treatment	1.76 (2.2)	1.68 (2.2)	1.51 (2.2)
Vicarious learning			
Mother	0.85 (1.5)	0.7 (1.4)	0.69 (1.5)
Father	0.37 (0.9)	0.6 (1.4)	0.51 (1.4)
Friends	1.18 (1.8)	0.91 (1.6)	0.68 (1.4)
Specific statements			
"Others made me fearful"	0.53 (1.1)	0.36 (1.1)	0.54 (1.3)
"Feel a lack of control"	0.78 (1.6)	0.61 (1.4)	0.66 (1.4)
"Always been fearful"	0.92 (1.5)	0.93 (1.7)	1.02 (1.9)
Preference of dentist's professional attributes			
Supportive and patient	4.56 (2.1)	4.51 (2.1)	4.48 (2.1)
Explains treatment	4.63 (1.9)	4.26 (2.1)	4.60 (2.1)
Tries to avoid pain	4.27 (2.1)	4.55 (2.0)	4.61 (2.1)
Works fast and efficient	4.15 (2.1)	4.0 (2.1)	4.00 (2.4)

*Differences among groups - NS

anxiety and regular attendance to dental care. These are interesting issues that require further investigation.

The reasons for the development of dental anxiety are still not fully determined. Two alternate paths to dental anxiety in adults have been shown - early onset of anxiety associated with conditioning events and late onset (26), characterized by high levels of general fearfulness and trait anxiety and relatively few aversive conditioning events (22). Adult onset of dental anxiety is often associated with specific personality characteristics (21). The level of a patient's dental anxiety is affected by environmental factors and by specific psychopathologic traits (interpersonal sensitivity, general and phobic anxiety) (19). While psychopathologic traits are involved in a patient's current dental anxiety, the pattern of attachment (secure or insecure) may have a dominant effect as to whether this anxiety persists throughout life or can be modulated through later corrective emotional experience (27).

The fact that no differences exist between general dentists and certified pediatric dentists with regard to their patients' average levels of dental anxiety and their probability of becoming highly anxious individual adults is intriguing. Generally, adults rate perceived lack of pain, empathy, and respect from the dentist as significant factors influencing their fear of dentistry (8, 19, 24). The ability of the dentist to offer respect to the patient is primarily related to personal character rather than to post-graduate education. Moreover, the ability of the dentist to carry out dental treatment without pain, a factor rated in previous studies as important in the etiology of dental fear, is not necessarily related to post-graduate studies (28). Therefore, it is possible that these factors, rather than professional specialization, have the most impact on the responses of the young adults. Similarly, Schwarz (20) claims that early expression of dental anxiety and a negative self-assessment of dental health are the most important predictors for future dental anxiety.

Regarding antecedents of dental fear, no significant differences among groups could be observed in the present study. For most, painful treatment was the major reason for fear, which is similar to the reason given by highly anxious dental patients in Israel and Sweden (15, 28). The most common emotional reaction was repression ("trying not to think about the fear") and the quoted etiologic background was "always been fearful" indicating that patients could not indicate a specific reason for their fear and refer to it as something general that had always been present in their lives.

Preferences for dentist's attributes were similar among groups and are similar to other studies that focus on patients suffering from high dental fear and phobia (24, 29). It is noteworthy that the level of dental anxiety of participants in the present study was normal (mean Dental Anxiety Scale of 8.3).

The relatively low Dental Anxiety Scale score was slightly lower than scores reported by Peretz and Ephrat regarding Israeli adolescents who were treated by a certified pediatric dentist (Dental Anxiety Scale of 9.5) (23). The reason may be that the present study included only males. Females usually are reported to score higher on dental fear surveys than males (23, 30). Including female subjects in the study might have increased the mean scores obtained for dental anxiety.

Conclusion

The results indicated that while the average level of dental anxiety in early male adulthood was unaffected by the specialization of the treating dentist during childhood, patients irregularly treated during childhood are more likely to become more anxious adults. Apparently, a long-term relationship with a regular dentist in childhood has more of an effect on preventing the development of high dental anxiety in adulthood than the professional specialty of the dentist. Thus, regular dental treatment in childhood should be encouraged to decrease the probability of high dental anxiety in adults. Parents should be persuaded to take their children for

routine regular dental examinations. Dentists in private as well as public dental health and educational health programs should address this important issue.

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