

Influence of the previous dental visit experience in seeking dental care among young adults

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ABSTRACT

Introduction: Dental fear is one of the highly prevalent types of fear which deters patients from seeking dental cares. **Aim:** This study aims to assess the influence of a previous dental visit experience for seeking dental care among adults. **Methodology:** Young adults ($n = 150$, 15-26 years) with previous dental visit for care were selected randomly among outpatients' visit in tertiary dental teaching hospital. To assess the influence of previous experience of dental visit in seeking care, we self-administered a Post-traumatic Check List-Civilian Version [posttraumatic stress disorder (PTSD)], an Autobiographical Memory Questionnaire (AMQ), and a Dental Fear Survey (DFS). The relationship of negative and positive experience of previous dental treatment, dental fear, and symptoms of PTSD was assessed using Pearson's correlations. Spearman's rho was used to find out the correlation between the DFS and PCL-C and history of dental treatment undergone. **Results:** The mean score of the DFS and PCL-C was found to be 69.57 and 40.17, respectively. The characteristics of the most negative experience including physical reactions ($P = 0.936$), emotional intensity ($P = 0.935$), sight ($P = 0.941$), smell ($P = 0.917$), and sound ($P = 0.911$) of dental treatment showed a significant relationship with dental fear, whereas the characteristics of the most positive memory of dental treatment showed only a few statistically significant associations with dental fear. Most of the symptoms of PTSD also show significant associations ($P < 0.05$) with characteristics of the most negative memory. Spearman's correlation between the DFS and the PCL-C was also statistically significant, $r(150) = 0.365$, indicating that dental fear is indeed associated with symptoms of PTSD. **Conclusion:** There is a significant association between the characteristics of the most negative experiences of dental treatment and increased dental fear in young adults, while positive experiences did not show the inverse relationship with dental fear.

Keywords: Dental anxiety, dental care, dentistry, fear, memory, therapeutics

Introduction

Fear is defined as a normal reaction to a real or imagined threat and is considered to be an integral and adaptive aspect of development (King, Hamilton, and Ollendick, 1988; Morris and Kratochwill, 1983).^[1] One of the highly prevalent types of fear is dental fear, and it usually leads to avoidance of dental care which ultimately results in significant health problems.^[2-5]

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Dental fear is the fear most strongly associated with re-experiencing, is intriguing, and warrants replication in other populations.^[2] The four mainly proposed antecedents of dental fear are (a) direct negative or painful dental experience, (b) vicarious negative experiences portrayed by family, friends, and the mass media, (c) generalization of anxiety related to aversive medicines, and (d) patients' personality characteristics or dynamics.^[6] Among these, the onset of dental fear or anxiety has often been attributed to negative dental experiences, particularly painful ones, in childhood and adolescence.^[7,8] Negative dental experiences are one of the important reasons for dental fear

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or anxiety.^[9-11] The etiology of dental fear, anxiety, or phobia is complex and multifactorial and a person may be afraid of the dentist for one or all these factors especially the negative experience of visiting the dentist in the past or childhood.^[12]

The memory of pain experienced during one appointment instigates the person to expect a similar degree of pain during another resulting in dental anxiety.^[13] That is memory of dental pain gets exaggerated with time.^[9] Dental anxiety, which has a higher prevalence in women than in men, is one of the several factors which often leads to irregular dental attendance and avoidance of dental care.^[14,15]

Since most of the studies on dental fear found out the etiology of dental fear or dental anxiety to be negative dental experiences and no study could show a consistent relationship of positive experiences with dental fear, our study focuses to bring out the possible role of both negative and positive experiences in fear of dental treatment.

Objectives

This study aims to find out the influence of previous dental visit experiences for seeking dental care among adults.

Methodology

A sample of 150 people in an age group between 15 and 26 years, who had a previous experience of dental treatment, were included in this questionnaire-based study. The present sample included (1) patients visiting the outpatient department (OPD) of teaching dental hospital, (2) patients visiting the outreach program conducted by teaching dental hospital, and (3) first-year undergraduate students of teaching dental hospital who were eligible and willing to participate in the study. Participants were selected only if they had completed the questionnaire for the analysis. The Institutional Review Board of the dental college provided the ethical clearance for this study and informed consent was obtained from all the study participants prior to the study.

Data were collected from the participants using questionnaires. The first part of the questionnaire included the sociodemographic data of participants. The second part included the history of dental treatment which helps explain the type of dental treatment they have undergone. The main part of the questionnaire included a Post-traumatic Check List-Civilian Version, an Autobiographical Memory Questionnaire (AMQ), and a Dental Fear Survey (DFS).

Post-traumatic Check List-Civilian Version^[16] was used to measure the symptoms of posttraumatic stress disorder (PTSD). This 17-item scale measures different reactions to traumatic dental experiences based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)^[17] criteria and 5-point Likert scale which gives a possible summary score between 17 and 85 used to

collect the answers. Participants were asked to complete the scale with reference to a specific traumatic dental treatment. Internal consistency of the questionnaire was high since the Cronbach's alpha was 0.80 in the present sample.

The AMQ^[18] was used to measure the different characteristics of remembering events: reliving; re-experiencing the event including memory for the sight, sound, smell, or taste; remembering the event either voluntarily or spontaneously; and thinking or talking about it; and impact which deals with how the memory influences one's current mood or provokes.^[19] Answers were given on 5-point Likert scale except for item 21 which answers the participants' age at the time of the remembered event. The mean scores for each of the 21 AMQ items were calculated across participants. The dental fear of the participants at the time of this study was measured using a 20-item DFS. The severity of fear related to specific dental procedures was assessed with a 5-point Likert scale. Cronbach's alpha of our study was 0.81. Summary scores on the DFS range from 20 to 100, where a cut-off for clinical levels of dental fear is considered as a score of 60 or above.

Statistical analysis

The collected data were analyzed using Statistical Package for Social Sciences (SPSS) 18.0 (SPSS Inc., Chicago, IL, USA). To assess the relationship between characteristics of the most negative and positive experiences of dental treatment, dental fear, and symptoms of PTSD, Pearson's correlation was used between individual AMQ items, the DFS, and the PCL-C. Spearman's rho was used to find out the correlation between the DFS and the PCL-C and between history of dental treatment undergone with both DFS and PCL-C.

Results

Descriptive and preliminary statistics

Of 150 participants, 83 were males (mean age = 19.8 years) and 67 were females (mean age = 20.5 years). The mean score of the DFS was 69.57 [standard deviation (SD) = 10.652], while the mean score of the PCL-C was 40.17 (SD = 9.47) [Table 1]. Only nine participants (6%) indicated that the traumatic event they reported on the PCL-C was related to dental treatment.

Among the complete sample of 150 participants, 26 (17%) had tried sedation, 20 (13%) had undergone surgery, 122 (26%) had one or more cavities, 50 (33%) reported having worn braces, 98 (65%) reported extraction of teeth, and 117 (78%) had undergone oral prophylaxis. The occurrence of these

Table 1: Mean and standard deviation of DFS and PTSD

	Mean	Std. deviation
Age (years)	20.15	5.65
DFS	69.57	10.652
PTSD	40.17	9.477

DFS=Dental Fear Survey; PTSD=posttraumatic stress disorder

events did not show a statistically significant relationship with either the DFS (Spearman's rho = -0.132 to 0.135) or the PCL-C (Spearman's rho = -0.135 to 0.096) [Table 2]. At the same time, the correlation between the DFS and the PCL-C was statistically significant, $r(150) = 0.365$, at the 0.01 level, indicating that dental fear is indeed associated with symptoms of PTSD.

Associations between characteristics of positive and negative experiences, dental fear, and symptoms of PTSD

Participants recorded a total of 80 negative experiences and 70 positive experiences on the AMQ. The participant's mean age at the time of the most negative memory was 14.3 years, while the mean age at the time of the most positive memory was 15.7 years. To investigate the relationship between the characteristics of the most negative and positive memory of dental treatment,

dental fear, and symptoms of PTSD, Pearson's correlation was used between individual AMQ items, the DFS, and the PCL-C [Table 3]. Several characteristics of most negative memory of dental treatment was significantly related to dental fear, in particular items concerning re-experiencing different aspects of the negative event [i.e. physical reactions ($P = 0.936$), emotional intensity ($P = 0.935$), sight ($P = 0.941$), smell ($P = 0.917$), and sound ($P = 0.911$), etc.] and the emotional valence shows a negative relationship with dental fear due to higher valence describing more positive emotion. Most of the symptoms of PTSD also show statistically significant associations with characteristics of the most negative memory including events like re-experiencing, emotional intensity, mood changes, and so on. The associations found between the characteristics of positive experiences and dental fear were positive rather than negative. The characteristics of the most positive experience of dental treatment showed only a few statistically significant associations with dental fear (i.e. sight, smell, and remembrance of physical surroundings), and the symptoms of PTSD show statistically significant negative association only with item 14 "consequences for life" [Table 3]. The important fact to be noticed was that the study could not find out the predicted inverse relationship between the characteristics of positive experiences, dental fear, and symptoms of PTSD.

Discussion

Our study investigated the relationship between experiences of the most positive and negative treatment events, fear of dental

Table 2: Spearman's rho between history of dental treatment with DFS and PTSD

	DFS Spearman's rho coefficient	PTSD Spearman's rho coefficient
Tooth extraction	-0.063	-0.135
Sedated during dental procedure	0.070	0.096
Undergone surgical procedure	-0.120	-0.008
Orthodontic treatment	-0.022	-0.093
Tooth restoration	0.135	-0.026
Oral prophylaxis	-0.132	-0.111

DFS=Dental Fear Survey; PTSD=posttraumatic stress disorder. Correlation is insignificant at both 0.01 level and 0.05 level (two-tailed)

Table 3: Correlations between characteristics of negative and positive experiences of dental treatment (AMQ items), fear of dental treatment (DFS), and symptoms of posttraumatic stress (PCL-C)

AMQ item	DFS		PCL-C	
	NEG (r) coefficient	POS (r) coefficient	NEG (r) coefficient	POS (r) coefficient
Physical reaction (e.g, beatingheart, tension, tears, laughter)*	0.936**	-0.169	0.878**	0.077
Change in mood*	0.940**	0.052	0.866**	0.225
Feels like travelling back in time	0.944**	0.100	0.881**	-0.075
Vivid and clear†	0.936**	-0.065	0.855**	0.119
See what happened†	0.941**	0.237*	0.875**	-0.190
Hear the sounds†	0.911**	0.164	0.873**	0.082
Smell and taste sensations†	0.917**	0.242*	0.872**	0.114
Remember the physical surroundings‡	0.828**	0.270*	0.800**	-0.135
Re-experience it all again†	0.917**	-0.022	0.882**	-0.188
Emotional intensity*	0.935**	0.182	0.871**	0.027
Appears as bits and pieces	0.059	0.191	0.039	0.005
Comes to me in words§	0.277*	0.172	0.236*	0.113
Appeared spontaneously§	0.905**	0.219	0.842**	0.037
Consequences for my life*	0.179	0.119	0.179	-0.248*
Forms a coherent story‡	0.328**	0.222	0.280*	-0.056
I've spoken about it§	0.052	0.044	0.035	0.096
I've thought about it on purpose (e.g, voluntarily)§	0.036	0.050	0.015	0.077
Visual perspective	0.212	0.064	0.173	0.050
Emotional valence	-0.509**	-0.079	-0.493**	-0.198
I believe it really happened this way‡	0.174	-0.062	0.152	0.317**
Age during event	0.044	-0.202	0.091	-0.197

AMQ=Autobiographical Memory Questionnaire; DFS=Dental Fear Survey; PCL-C=Post-traumatic Check List; NEG=most negative memory of dental treatment; POS=most positive memory of dental treatment. *Impact item, †Reliving item, ‡Rehearsal item, §Belief item, Statistically significant ($P < 0.05$) correlations are marked in bold

treatment, and symptoms of PTSD in young adults leaving a previous dental treatment. Several characteristics of negative experiences of dental treatment were significantly associated with dental fear and symptoms of PTSD, whereas the characteristics of positive experiences did not show any inverse relationship with either dental fear or symptoms of PTSD.

Experiences in childhood and adolescence have an important effect on the behavior of an adult.^[7] Hence, the present study questions included the positive and negative treatment experiences which occurred in the childhood of the participant. The samples of the study are at an age group of 15–26 years since a cohort study by Thomson *et al.* found an increase in dental anxiety from 15 to 26 years of age.^[20] According to the study by Chowdhury CR *et al.* (2019), dental anxiety is commonly observed among young adults between 18 and 26 years of age.^[21] In contrast to these results, the study by Astrom AN *et al.* showed reduced dental anxiety and dental attendance among 25-year-olds in Norway.^[14]

In this study, the previous history of dental treatment of the participants did not show any significant relationship with either DFS or PTSD, whereas the relationship between DFS and PTSD showed a positive significant association and these results are in agreement with the study results of Staugaard *et al.*^[7] However, the study by Bernstein DA *et al.* reported that early dental experiences are strongly related to subsequent development of dental fear.^[6]

Experience of a negative event was found to be strongly associated with dental fear especially the reliving factors including physical reaction, re-experience, sight, sound, smell, and remembrance of physical surroundings. Oosterink *et al.* in their study also showed that fear of dental treatment is strongly associated with intrusive re-experiencing.^[2] The spontaneous appearance of negative dental experience in the mind of participants showed a significant positive correlation with dental fear and this finding agrees with the study by Van Houtem *et al.* which showed a moderate correlation between dental fear and the spontaneous recall of a negative treatment event.^[10] The impact factors such as change in mood and emotional intensity also showed a significant relationship with dental fear, whereas the factor “consequences for life” did not show a significant relationship in our study. The idea that memory of dental pain becomes exaggerated with time is supported by the study findings by McNeil *et al.*^[9]

Negative experiences of dental treatment even show a significant relationship with PTSD also. The AMQ items including physical reactions, change in mood, sight, smell, sound, re-experience of event, remembrance of physical surroundings, and so on showed a significant positive relationship, while the factor “emotional valence” showed a significant negative relationship with PTSD. The study also found an increased belief in the accuracy of the memory, but the relationship was not significant and this finding is in contrast to the study by Staugaard *et al.*^[7] which found out

a reduced belief of memory by participants. The age of the study participants during the event did not show a significant relationship with either DFS or PTSD. In the study of Staugaard *et al.*, the age during the event was found to have a significant negative relationship with PTSD but failed to achieve a significant association with DFS.^[7]

The positive experiences were supposed to have a significant relationship with reduced dental fear, but our study fails to achieve the expected result. Even though some of the AMQ items like physical reactions, vivid, and clear and re-experiencing show a slightly negative relationship with dental fear, the results were not significant. Surprisingly, like the study by Staugaard *et al.*,^[7] our study also found out a significant relationship between some aspects of positive experiences and increased dental fear. None of the positive experience showed a significant relationship with PTSD and this result is also in agreement with the study by Staugaard *et al.*^[7]

Generalizability of the results possibly will be one of the limitations of our study since the dental staff, socioeconomic status, educational status, and so on of the study participants were different. It is a fact that studies involving the use of questionnaires are susceptible to acquiescence bias and social desirability bias and this may also remain as a limitation.

The previous negative dental experience usually leads to dental fear, and this dental fear, which acts as a hindrance to dental care delivery, is not only a mental health issue but also a public health concern. Previous research revealed that adults suffering from dental fear more often have poorer quality of life than those who do not have dental fear.^[22] Fear of dental treatment increases the probability of experiencing oral health problems as a result of irregular or delayed dental visiting, and severe oral symptoms may reinforce dental fear. This dental fear and delayed dental visits are a major hindrance for the practice of primary dental care and so potentially disgusting or threatening interventions are anticipated.

Since most negative memory has a significant association with dental fear, one of the factors which should be taken care of by the dentists to overcome the dental fear among patients is not to create a negative memory even though positive experiences fail to reduce the dental fear.

Conclusion

The findings of our study conclude that there is a significant association between the characteristics of the most negative experiences of dental treatment and increased dental fear in young adults, while positive experiences did not show the inverse relationship with dental fear. The negative experiences focused on the pain experienced during procedure, dentist behaviors, and physical discomfort, and as anxiety, while positive experience mainly focused on the friendly behavior of dentist. This emphasizes the importance of behavior of the dentist toward

their patients and restructuring the patient's negative experience to accentuate the positive aspect.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflict of interest

There is no conflict of interest.

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