

THE RELATIONSHIP BETWEEN DENTAL ANXIETY AND PERCEIVED RISKS OF DENTAL TREATMENT

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ABSTRACT

This study was done to identify the relationship between dental anxiety and perceptions of the risks of dental treatment among adult patients attending for dental treatment. Cross-sectional questionnaire survey of 100 adult patients. Patients completed two questionnaires, the Modified Dental Anxiety Scale (MDAS) and the Dental Thoughts Questionnaire (DTQ) at outpatient clinics in Primary Dental Care and Oral Surgery, King's College London Dental Institute. Significant differences were found for 25 DTQ items. Participants indicating 'Yes' to these items were more dentally anxious than those who responded 'No'. For 13 DTQ items (mostly those concerning perceptions of the dentists competence) there were no differences in the level of dental anxiety of those responding 'Yes' or 'No'. Bivariate correlation analysis showed a weak relationship between the extent to which respondents believed DTQ items and dental anxiety. There is a relationship between dental anxiety and perception of risks suggesting that people who have negative cognitions tend to be more anxious.

Key Words: Dental Anxiety; Questionnaire; Adults; Risks Perception.

INTRODUCTION

Dental anxiety and fear about dental procedures are prevalent and this is potentially difficult, both for the patient and for the dental team in managing anxious patients. Furthermore, dental fear and anxiety still presents a major barrier to the uptake of dental treatment. Dental anxiety, an hypothetical psychological construct, which is unpleasant to experience, takes time to dissipate and has an impact on the quality of life and quality of dental treatment performed i.e. limiting attendance for treatment and in the nature of dental treatment likely to be performed.^{1,2,3}

It seems likely that anxious patients imagine a dental treatment more risky than it is and therefore

over estimate the risks of dental treatment. Therefore the purpose of this study is to investigate the relationship between anxiety and the risk perception of patients about the dental treatment. This will help dental practitioners to plan interventions i.e., reducing anxiety prior to the dental procedure by for example, enhancing sense of control, cognitive distraction, environmental change, preparatory information, cognitive behavioral therapy, pharmacological management and reducing uncertainty through reassurance and friendly attitude, which is very crucial for a successful treatment prognosis and for the prevention of progressive dental problems.^{4,5} Individuals who are predisposed to anxiety have dysfunctional behavioral schemata or threat related cognitive schemata, that when activated by the feared stimulus or certain events either in vivo or in imagination, lead to negative and irrational automatic thoughts about the future events based on past experiences which are stored in memory. This activation may trigger expectations, images and beliefs about the self and the situation. These may in turn reinforce the individual's state of anxiety or may result in avoidance and escape behavior.⁶

The aim of this study was to identify the relationship between dental anxiety and perceptions of the risks of dental treatment among adult patients attending for dental treatment.

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METHODOLOGY

The Joint South London and Maudsley and the Institute of Psychiatry NHS Research Ethics Committee and Research and Development Committee have approved this study design (Reference number: KCH1014/NH).

A cross sectional survey of consecutive patients attending two departments in a dental hospital setting was undertaken. A total of 100 adult patients aged 16 and above were recruited, 50 from Oral Surgery and 50 from Primary Dental Care waiting rooms over a period of four weeks. When the patients agreed to participate, each patient received a pack containing a patient information sheet and questionnaire. Completion of questionnaires was taken as consent. The exclusion criteria included patients who were below 16 years of age, who did not understand English and who were unable to understand the study materials (34 patients were excluded as a result of applying these criteria). The first section of the questionnaire collected demographic information, the second section contained the 5 items of the Modified Dental Anxiety Scale (MDAS), a five item scale that was reliable and quick to administer. It had cut-offs for mild, moderate, and phobic levels of anxiety.^{7,8} The third section comprised the 38 items Dental Thought Questionnaire scale.² Data analysis took place in 3 stages, firstly description of the sample, including gender distribution, age, mean level of dental anxiety, average ratings of dental treatment. Secondly the MDAS scores of participants who responded 'Yes' or 'No' on the DTQ items were compared using the Mean-Whitney U test. Third, the non-parametric correlation (Spearman's rho) between the believability scores for the DTQ items and MDAS scores for the DTQ items and MDAS scores were calculated.

RESULTS

Table 1 demographic characteristics of participants (N=100) shows there was no difference in the mean age or level of anxiety for male and female participants. The average age (mean) is 44.28 for males and 46.62 for females. Twelve participants scored 19 or more on the MDAS suggesting the presence of a dental phobia.

Table 2 summarizes the data from the Dental Thought Questionnaire. The majority of patients perceive that they will certainly have pain after the dental procedure, that treatment will hurt, that they have no control over what happens, and that they can not stand pain. Very few patient's believe that dentist are incapable, secondly they have a belief that they

TABLE 1: THE DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS ARE 1.

Demographic characteristics of participants (n= 100)			
	Male (N=47)	Female (N=53)	Total (N=100)
Age			
Mean (SD)	44.28 (19.98)	46.62 (17.68)	45.50 (18.74)
Marital status			
Cohabiting / partner	5	1	6
Married	15	18	33
Single	25	22	47
Widowed	1	4	5
Divorced	1	4	5
Not stated	0	4	4
Occupational status			
Not working	3	13	16
Retired	13	9	22
Mean (SD)	11.94 (4.61)	13.62 (5.38)	12.8 (5.07)

themselves are the difficult person and during treatment they think that it is likely that everything will go wrong.

Table 3 shows comparison of mean MDAS scores for participants responding 'Yes' or 'No' to individual DTQ items (Table 2) showed significant differences in the level of anxiety for 25 DTQ items. Participants indicating 'Yes' to these 25 items were more anxious than those who responded 'No'. For the rest 13 DTQ items (mostly those concerning perceptions of the dentists competence) there were no difference in the level of anxiety of those responding 'Yes' or 'No'. The relationship between the believability of DTQ items and MDAS scores indicated five significant correlations (Table 3). The size of the correlation coefficient between these five items and MDAS scores is 0.2, suggesting that there is weak relationship between the believability items and anxiety.

DISCUSSION

Occurrence of more negative thoughts and expectations lead to heightened anxiety and this was particularly on those who believed that they could not suppressed their thoughts adequately. This perceived lack of control made the person more vulnerable to

TABLE 2: NUMBER OF PARTICIPANTS REPORTING THAT THEY BELIEVED STATEMENTS ON THE DENTAL THOUGHTS QUESTIONNAIRE, AND MEAN BELIEVABILITY SCORE PER ITEM

Number	Risk Perception	Do you think this?		Mean believe (SD)
		Yes	No	
	When knowing that I have to undergo dental treatment very soon I think that.....			
Q1	Dentist do as they please.	29	71	47.3 (32.05)
Q2	Dentist are often impatient.	21	79	44.9 (33.54)
Q3	The dentist does not care if it hurts.	30	70	45.6 (35.08)
Q4	Dentists do not understand you.	18	82	43.8 (34.63)
Q5	Dentist are often incapable.	13	87	35.9 (34.70)
Q6	Dentist think you act childish.	22	78	44.4 (37.30)
Q7	Treatments often fail.	25	75	41.5 (32.59)
Q8	My teeth cant be saved.	34	66	48.9 (34.89)
Q9	I should be ashamed about my teeth.	35	65	49.5 (35.89)
Q10	My teeth might break.	41	59	44.3 (33.00)
Q11	I cant stand pain.	52	48	57.3 (34.87)
Q12	I am a tense person.	37	63	53.8 (36.03)
Q13	I am a difficult person.	16	84	40.5 (40.24)
Q14	I am someone with very long roots.	27	73	38.6 (36.57)
	While being treated I think that.....			
Q15	Everything goes wrong.	13	87	45.5 (37.3)
Q16	This treatment will hurt.	58	42	55.5 (31.49)
Q17	My teeth will break.	29	71	44.9 (36.44)
Q18	Something surely will go wrong.	20	80	43.9 (35.14)
Q19	It never runs smoothly.	27	73	47.5 (36.27)
Q20	I am helpless.	30	70	47.9 (39.90)
Q21	I can't control myself.	19	81	43.6 (38.94)
Q22	I can't escape, I ' m locked in.	24	76	44.5 (40.10)
Q23	Anaesthetics often don't work.	26	74	45.0 (37.18)
Q24	The sound of the drill frightens me.	46	54	53.4 (36.28)
Q25	The dentist will drill in my tongue, gums or cheek.	19	81	39.7 (39.04)
Q26	The nerve will be touched .	51	49	49.8 (32.53)
Q27	I have no control over what happens.	57	43	53.7 (36.62)
Q28	I will die during treatment.	10	90	39.1 (42.08)
Q29	I will panic during treatment.	27	73	47.0 (39.78)
Q30	I will faint during treatment.	17	83	45.1 (41.67)
Q31	I will suffocate during treatment.	10	90	39.8 (41.47)
Q32	I can't stand this treatment for long.	38	62	49.4 (35.91)
Q33	I will certainly have pain afterwards.	62	38	56.9 (34.71)
Q34	The filling will certainly fall out and has to be made again.	29	71	45.87 (33.74)
Q35	This treatment fails.	15	85	41.58 (39.96)
Q36	I become sick.	21	79	44.16 (40.10)
Q37	The dentist will lose control over his drill.	14	86	40.75 (38.80)
Q38	The dentist believes that I am a difficult patient and act childish.	11	89	44.05 (41.14)

TABLE 3: MEAN MDAS SCORES FOR PARTICIPANTS RESPONDING YES OR NO TO INDIVIDUAL DENTAL THOUGHTS QUESTIONNAIRE ITEMS AND CORRELATION OF ITEM BELIEVABILITY WITH MDAS SCORE

No.	Believability <i>When knowing that I have to undergo dental treatment very soon I think that.....</i>	M-W U test	Mean MDAS Score		Rho (Spearman's Correlation)
		(p)	Yes Average Mean (SD)	No Average Mean (SD)	
Q1	Dentist do as they please.	0.007	14.9(4.43)	12.0(5.12)	0.18
Q2	Dentist are often impatient.	0.047	14.9(4.9)	12.3(5.01)	0.05
Q3	The dentist does not care if it hurts.	0.005	15.03(4.9)	11.9(4.89)	0.03
Q4	Dentists do not understand you.	0.057 ns	14.8(5.23)	12.43(4.97)	0.04
Q5	Dentist are often incapable.	0.326 ns	14.0(4.51)	12.5(5.2)	-0.05
Q6	Dentist think you act childish.	0.0001	16.6(4.1)	11.8(4.82)	0.09
Q7	Treatments often fail.	0.135 ns	14.1(4.73)	12.4(5.15)	0.12
Q8	My teeth cant be saved.	0.004	14.8(4.84)	11.83(4.94)	0.17
Q9	I should be ashamed about my teeth.	< 0.001	15.5(4.9)	11.40(4.6)	0.19
Q10	My teeth might break.	0.248	13.5(5.33)	12.34(4.9)	0.05
Q11	I cant stand pain.	< 0.001	14.9(5.1)	10.60(4.04)	0.16
Q12	I am a tense person.	< 0.001	15.6(4.3)	11.22(4.83)	*0.26 p=0.008
Q13	I am a difficult person.	0.036	15.3(4.7)	12.4(5.04)	0.18
Q14	I am someone with very long roots.	0.383 ns	13.5(5.5)	12.6(4.93)	0.01
While being treated I think that.....					
Q15	Everything goes wrong.	0.026	15.7(4.05)	12.41(5.10)	0.02
Q16	This treatment will hurt.	<0.001	14.8(4.52)	10.1(4.52)	*0.23 p=0.024
Q17	My teeth will break.	0.095 ns	14.2(5.51)	12.3(4.81)	0.13
Q18	Something surely will go wrong.	< 0.001	16.6(4.41)	11.9(4.81)	0.01
Q19	It never runs smoothly.	0.002	15.4(5.1)	11.9(4.8)	0.12
Q20	I am helpless.	0.013	14.6(4.31)	12.1(5.22)	0.10
Q21	I can't control myself.	0.003	15.7(4.01)	12.2(5.08)	-0.02
Q22	I can't escape, I ' m locked in.	0.003	15.5(4.25)	11.99(5.05)	0.01
Q23	Anaesthetics often don't work.	0.15	14.9(5.52)	12.1(4.73)	0.03
Q24	The sound of the drill frightens me.	<0.001	15.9(4.1)	10.2(4.24)	0.20 p=0.05
Q25	The dentist will drill in my tongue, gums or cheek.	0.326 ns	13.8(5.11)	12.6(5.07)	-0.03
Q26	The nerve will be touched .	0.764 ns	13.0(4.9)	12.7(5.3)	*0.19 p=0.05
Q27	I have no control over what happens.	< 0.001	14.5(4.8)	10.7(4.7)	0.15
Q28	I will die during treatment.	0.001	17.7(3.92)	12.3(4.91)	-0.05
Q29	I will panic during treatment.	<0.001	17.0(4.3)	11.3(4.5)	0.05
Q30	I will faint during treatment	<0.001	17.1(4.43)	11.95(4.8)	0.04
Q31	I will suffocate during treatment.	0.07 ns	15.30(3.7)	12.6(5.15)	0.03
Q32	I can't stand this treatment for long.	<0.001	15.7(4.59)	11.1(4.6)	0.11
Q33	I will certainly have pain afterwards.	<0.001	14.4(5.0)	10.3(4.15)	*0.27 p=0.006
Q34	The filling will certainly fall out and has to be made again.	0.185 ns	13.7(4.8)	12.5(5.2)	0.10
Q35	This treatment fails.	0.111 ns	14.6(4.55)	12.5(5.12)	-0.03
Q36	I become sick.	<0.001	16.7(3.61)	11.8(4.93)	0.04
Q37	The dentist will lose control over his drill.	0.163 ns	14.3(4.30)	12.6(5.17)	-0.08
Q38	The dentist believes that I am a difficult patient and act childish.	<0.001	18.0(3.23)	12.2(4.9)	0.08

the dental anxiety. Conversely if a patient with moderate number of negative cognitions believed that he or she was able to master threat-related thoughts might be able to control anxiety reactions to a certain degree.⁹ But the majority of patients perceived that they would certainly have pain during and after the dental procedure.

Humphris et al has demonstrated that anxiety level decreases with increasing age with those people over 60 years old being generally less anxious than their younger generation.^{10,11} He has shown additionally that females are more anxious than males, regardless of age. Furthermore they believed that they had little or no control over what would have happened and they would not stand pain. These results suggested that perception of having no control was an important factor which was involved in different forms of anxiety. Various authors had given the importance to the perception of having control because perceived control decreases the intensity of pain, and discomfort by decreasing uncertainty.^{7,11,12}

Other thoughts of dentally anxious patients reported in the literature refer to the patient's own personality (troublesome, tense, anxious), catastrophic ideas about dental treatment (e.g., pain), thoughts about embarrassment, (e.g., I am just a neurotic) and ideas about their teeth (e.g., "my teeth are rotten anyway"). The more anxious a patient is about dental treatment, the greater the possibility that he or she thinks or ponders on the condition of his or her teeth or thinks on negative possible outcomes of treatment, particularly pain and supposed to be less able to apply treatment strategy during dental treatment (relaxation and distraction) and encounter difficulties in suppressing the negative thoughts. In addition, highly anxious individuals seem to overestimate the intensity of a potential aversive event in the situation or impending situation.^{6,13}

The results of the present study showed that people who had negative cognitions about dentistry tend to be more dentally anxious. The results of the present study were in accordance with many other studies, indicating that anxiety was associated with a negative cognitive content.^{13,14}

The difference between anxious and non-anxious patients was related to the differences in the expectations about the dental treatment. For example anxious patients expected dental treatment to be more painful and traumatic, expected themselves to be more difficult to be treated and to be more nervous and helpless and less able to apply distraction and relaxation treatment strategies during the dental treatment and indicated

anxiety to be a major or secondary reason for not regularly and frequently attending the dentists.^{15,11}

Patients' reasons for attendance at the clinic can be considered in terms of 'push' and 'pull' factors, taking them from primary dental care and drawing them into secondary/tertiary care environments.¹⁶ Threat related cognitions based on past experiences might be activated by the feared stimulus. This activation might trigger negative expectations of the dental situations which in turn lead to phobia.¹⁷ The findings of the present study had explored more and confirmed the previous studies about the correlation between dental anxiety and cognition and suggested that there was little relationship between strength of belief and level of anxiety.

Some important limitations must be considered when interpreting the results of this study. Due to the cross-sectional nature of the results, no indication of the sequence of events could be referred, that was, whether anxiety occurred before or after or during the perception of risk of the dental treatment. The sample was not representative of the entire population with regards to demographic data and different levels of anxiety.

CONCLUSION

From this study it's concluded that, firstly there is a relationship between dental anxiety and perception of risks suggesting that people who have negative cognitions tend to be more anxious. Secondly there is a little relationship between strength of belief and level of anxiety in the middle aged adult patients.

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