

Gender Differences in Dental Anxiety: Is the Chair Position Important?

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Abstract

Dental anxiety in the general population is more prevalent in females than in males. The presence of dental anxiety was studied in a group of 189 females and 176 males using the following scales: the Dental Anxiety Scale (divided into DAS 1 containing 6 items, which explores a patient's dental anxiety and DAS 2 containing 13 items, which looks at dental anxiety concerning dentist-patient relations), the Self-Rating Depression Scale (SDS), and the Quality of Life Index (QL-Index). The results obtained showed significant differences only in relation to dental anxiety regarding the use of instruments (such as needles and handpieces) and the tilted-back position of the chair (DAS 1). No significant gender differences emerged between the two groups in relation to dental anxiety regarding dentist-patient relations (DAS 2), depression (SDS), and the quality of life (QL-Index). The results may explain why women avoid dental care and indicate new designs to make the chair position more comfortable would be useful.

Keywords: Dental anxiety, gender difference, dental chair, dental stimuli

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Introduction

Gender differences relating to dental anxiety may be not only numerical but there may also be qualitative differences. A higher rate of dental anxiety was found in females in the general population and similarly in a group of university students.^{1,2,3} In a group of dental patients female gender was found to be the strongest predictor of dental anxiety.⁴ In a group from the general public the rate of dental anxiety between childhood to adulthood was found to increase significantly in female subjects in contrast with males.⁵

Severe forms of dental anxiety are more commonly found in women.⁶ Moreover, the implications of dental anxiety are more serious in women compared to men because women are more likely to discontinue dental care treatments as a result of their anxiety, with a consequent higher risk to their health.⁷



The experience of pain reported in dental treatments may differ between the two sexes, with women tending to remember the pain more vividly after the completion of the appointment.⁸ This may help to explain increased anxiety following dental experiences.⁹⁻¹¹

The issue that needs to be addressed by all studies for measuring anxiety is the identification of the core variables which differentiate this condition between men and women.¹² The aim of this study was to look at the constituent components of anxiety by means of a widely-used tool for measuring dental anxiety (Dental Anxiety Scale). This scale deals with all facets of dental anxiety and also meets the criteria set by the Seattle System classification.¹³

Method and Materials

The 365 subjects in the study were enlisted from several dental offices in the region of Sicily in the period from November 2003 to January 2004. Male and female subjects formed two main groups and were also assessed according to age and, for this purpose, were divided into three age groups: 17-22 years, 23-45 years, and 46 years and over.

The subjects were interviewed and, having obtained their consent, were given the following scales:

1. The Dental Anxiety Scale (DAS) is used to show dental anxiety.^{14,15} The scale is divided into two parts: the first part (DAS 1) is made up of 6 items that explore a patient's dental anxiety, and the second part (DAS 2) contains 13 items that address dental anxiety regarding dentist-patient relations. This scale is widely employed in dental anxiety studies.^{10,16}
2. The Self-Rating Depression Scale (SDS) contains a total of 20 items that highlight the following core elements of depression: depressed mood, insomnia, lack of appetite, sexual interest, somatic worries, asthenia, difficulty in concentrating, state of tension, pessimistic thoughts, and suicidal fantasy.^{17,18}
3. The Quality of Life Index (QL-Index), Spitzer WO et al.¹⁹, is made up of 5 items chosen to indicate the quality of life through the exploration of the following dimensions: working activity, self-management ability, state of health, support received from others, and mood.

The SDS and the QL-Index do not deal with traumatic sexual experiences. However, these would be difficult to evaluate in a dental office setting.

Results

All statistical calculations were performed using SPSS version 10.0 software.

The group of 365 subjects consisted of 189 females and 176 males aged between 17 and 75 years (average age = 35.04; S.D. = 15.82).

The univariate ANOVA test was applied (having previously verified homogeneity using the Levene Test). The DAS 1 relating to patient dental anxiety showed significant differences between the sexes. There was higher dental anxiety in females versus males relating to: anticipatory anxiety during the wait before anesthesia, anticipatory anxiety while waiting for tooth preparation, and the passive position in the chair (Table 1). No significant differences were found between the three age groups considered.

Table 1. Comparison of dental anxiety between males and females using the DAS.

Variables	Mean		S.D.		F	Sig.
	M	F	M	F		
Overall anticipatory anxiety*	1.75	1.90	0.97	0.99	2.188	NS
Anticipatory anxiety in the chair*	1.92	2.10	0.97	1.01	2.791	NS
Anticipatory anxiety pre-anesthesia*	2.10	2.40	0.92	0.91	10.131	.002
Anticipatory anxiety pre-drilling*	2.13	2.36	0.88	0.88	5.997	.015
Anticipatory anxiety prior to teeth cleaning/scraping*	1.58	1.66	0.77	0.87	.923	NS
Fear of needles*	2.47	2.30	1.90	1.51	.946	NS
Fear of drill*	3.87	3.62	2.06	1.97	1.432	NS
Fear of pain*	2.87	2.69	1.72	1.70	.993	NS
Disgust for smell of teeth*	4.96	4.86	1.69	1.72	.340	NS
Lack of air*	3.41	3.64	1.86	1.87	1.327	NS
Tilted-back chair position*	5.48	5.03	1.64	1.89	5.808	.016
DAS 1	9.48	10.51	3.53	3.68	7.416	.007
DAS 2	22.43	22.17	3.25	3.24	.581	NS

(* item content summarized)

In contrast no significant differences between the sexes emerged in relation to dental anxiety regarding dentist-patient relations (DAS 2), depression (SDS), or the quality of life (QL-Index).

Given that DAS 2 measures anxiety regarding dentist-patient relations, it is unlikely male anxiety remains hidden. Furthermore, epidemiological data we have examined from the ministero della Salute Mentale 2002²⁰ shows anxiety disorders are more prevalent in females than in males. The higher degree of anxiety found in females from the region covered by the present study concurs with the levels found in other regions of Italy.

The adequacy of the sample, limited to the female group (n° = 189), tested by Kaiser Meyer Olkin Test (KMO = 0.738) and the Bartlett Test (470.701) was more than acceptable.

Factorial analysis demonstrated dental anxiety in the female group configured around four factors. The weight of the non-rotated factors were: 3.156 (variance explained = 28.69%); 1.598 (variance explained = 14.52%); 1.278 (variance explained = 11.61%), and 1.074 (variance explained = 9.76%).

Through the analysis of the main components and subsequent Varimax rotation, the following clusters were nucleated:

- Component A referring to pre-treatment anxiety linked particularly to the chair, (pre-anesthesia, tooth preparation, and dental cleaning);
- Component B referred to fear of needles and of pain;
- Component C referred to the feeling of lack of air and the tilted-back chair position;
- Component D regarding fear of the handpiece and revulsion for the smell of tooth debris during preparation (Table 2).

The statistics showed that the females compared to males are particularly anxious about dental treatment in both overall terms as well as the individual components that characterize the anxiety dimension. Qualitatively speaking, four components of this dimension can be highlighted:

1. Factor A, included anticipatory anxiety in the chair, anticipatory anxiety pre-anesthesia, anticipatory anxiety of handpiece use, and anticipatory anxiety of teeth cleaning. Here, the anxiety is linked mainly to the use of dental instruments. Factor A is in line with the common anxiety model as being an indeterminate state of being.
2. Factor B, composed mainly of fear of needles and of pain, which in the present study confirmed the significant difference between the two gender groups. Factor B brought together the variables regarding fear of pain.

Table 2. Analysis of the main components of dental anxiety in females.

	A	B	C	D
Anticipatory anxiety pre-anesthesia*	.839			
Anticipatory anxiety in the chair*	.830			
Overall anticipatory anxiety*	.806			
Anticipatory anxiety pre-drilling*	.762			
Anticipatory anxiety prior to teeth cleaning/scraping*	.669			
Fear of pain*		.798		
Fear of needles*		.752		
Tilted-back chair position*			.761	
Lack of air*			.727	
Disgust for smell of teeth*				.829
Fear of drill*				.631

Rotation method: Varimax with Kaiser normalization (*item content summarized).

- Factor C, constituting the feeling of lack of air and the tilted-back chair position, where the anxiety component is linked to the passive position induced by the chair itself. It is not surprising that such a subordinate position induces greater anxiety in females than in males, but there is no single explanation to account for this. Factor C is in line with the model already highlighted on the difference between males and females but refers specifically to the chair position and lack of air.
- Factor D is fear of the dental handpiece and revulsion for the smell of tooth debris during preparation, where the anxiety component is linked to olfactory stimuli.

Both the other scales used for depression and the quality of life supplied no substantial gender differences and are, therefore, examined no further.

Conclusions

Anxiety is an emotional state that is often present on a visit to the dentist and is more frequently found in females than in males.²¹⁻²⁷ The high level of dental anxiety in females can be traced to various conditions such as: infrequent visits to the dentist, the long wait in the dental office, previous

traumatic dental experiences, pain during dental treatment, the type of treatment received, and how invasive the treatment is.^{27, 28, 29, 30, 31}

The factors that best seem to predict the origins of dental fear and anxiety are the tilted-back chair position and the stimuli associated with dental treatment as our results also demonstrate.^{3, 31}

The posture induced by the chair leads to an attitude of muscular tension giving rise to higher sensitivity to dental stimuli and, therefore, anxiety.³¹ The stimuli that most often bring on an anxiety reaction in female patients are the noise of the dental handpiece and seeing and/or feeling the use of needles, and our results concur with these findings.³

This dental anxiety may explain why women avoid dental treatment and care.³²⁻³⁴ It also suggests new chairs be designed to reduce the discomfort the position brings about in order to reduce their anxiety.



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