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Dental anxiety and alexithymia: Gender differences

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Abstract

Objective. Alexithymia refers to a personality construct that is characterized by impoverishment of imagination, poor capacity for symbolic thought, and inability to experience and describe feelings. Our aim was to investigate the association of alexithymia and dental anxiety in patients attending dental practice. A further aim was to discover whether gender differences exist in this association when adjusting for the effect of age. ***Material and Methods***. The data were collected among adult (18+years) patients attending the public dental health centers in Pori, Finland. Patients received a questionnaire assessing dental anxiety (Modified Dental Anxiety Scale, MDAS), alexithymia (20-item Toronto Alexithymia Scale, TAS-20), and demographic profile. Total score and scores for three TAS factors: 1) "difficulty identifying with feelings", 2) "difficulty describing feelings", and 3) "externally orientated thinking", were computed. ***Results***. Of 823 patients, 81% correctly completed the questionnaires. Nine percent belonged to the high anxiety (MDAS score 19 or higher) group and 7% reported alexithymia (total score 61 or higher). The prevalence of alexithymia was 15.5% among those reporting high dental anxiety compared with 5.9% among those reporting low dental anxiety ($p = 0.005$). Those with high dental anxiety scored higher in TAS factor 1 than those with lower dental anxiety. No statistically significant bivariate associations with other TAS factors were found. When adjusting for the effect of age and gender, the association between TAS factors and dichotomized MDAS was significant in all TAS scores except TAS factor 3. ***Conclusions***. In a sample representing Finnish adult dental patients, alexithymia was associated with dental anxiety.

Key Words: *Adults, age, patients*

Introduction

Alexithymia, literally "no words for feelings" [1,2], is a multifaceted personality construct characterized by an inability to experience and describe feelings, impoverishment of imagination, poor capacity for symbolic thought, and an externally oriented way of thinking. These facets are believed to cause an inability to regulate emotions and affects, and therefore to predispose individuals with alexithymia to both psychological and somatic symptoms. Until now, more than 1000 scientific reports on alexithymia have been published [3]. Alexithymia has shown to be associated with several medical conditions and anxiety disorders [4]. It seemed, therefore, that alexithymia could be linked to dental anxiety; however, no research reporting this relationship could be found. Furthermore, treating doctors can assess alexithymic patients as boring or even "dull" [5], and alexithymic patients can present major treatment problems [4]. Graugaard et al. [6] have found that alexithymic patients' satisfaction with physicians is more vulnerable than that of other patients. The recognition of alexithymia among dental patients is important, because it can worsen the dentist–patient relationship, especially among dentally anxious patients.

Furthermore, both alexithymia and dental anxiety have been reported to be gender related. To date, four epidemiological studies on alexithymia, with working age samples, have been published [7–10]. According to these studies, the prevalence of alexithymia is 9%–17% for men and 5%–10% for women, being more prevalent among older and

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unmarried people and those with lower socio-economic status, less education, and poorer perceived health.

Gender and age differences in dental anxiety have been reported. Women report higher levels of dental anxiety than men [11–17]. In the Health 2000 Survey in Finland, 7% of men and 13% of women reported being very afraid of visiting a dentist [18]. The association between dental fear and age has also been reported with the low prevalence of dental fear among older adults [19,20].

Both dental anxiety and alexithymia can induce difficulties in the dentist–patient relationship, especially if they occur simultaneously, as the previous literature suggests. Our aim was to investigate the association of alexithymia and dental anxiety in patients attending dental practice. A further aim was to discover whether there are gender differences in the association of alexithymia with dental anxiety when adjusting for the effect of age.

Material and methods

The sample

Pori is the 10th largest city in Finland and has a population of 76,144, with the majority of people (85%) aged between 15 and 64 years. All inhabitants, irrespective of age or social status, are entitled to subsidized public oral health services. A 1.0% consecutive sample of people (823) aged 18 years and over attending all of the 14 public dental clinics in Pori were invited to take part. Each individual approached was provided with written and verbal information explaining the aim of the survey and requesting their participation. They were informed that participation was voluntary and would not affect their present or future dental care. Ethical approval was obtained from the Ethics Committee of the Northern Ostrobothnia Hospital District.

The questionnaire

The questionnaire was divided into three parts, the first inquiring of the participant's demographic profile, which included age and gender. The second section included the assessment of dental anxiety, which was captured by the Finnish version of the Modified Dental Anxiety Scale (MDAS) [21,22]. Of the several available dental anxiety measures, it complies well with the often used DAS measure [23], which in turn complies with Gatchel's Fear Scale [24]. The MDAS is a 5-item questionnaire asking respondents to indicate their emotional reaction to a dental visit, when in the waiting room, to drilling, to scaling, and to local anesthetic injection. The MDAS uses a simple rating scale with five possible responses to each question. These range from "not anxious" (scoring 1) to "extremely anxious" (scoring 5). People with total values between 5 and 18 were categorized in the low dental anxiety group and those with total values between 19 and 25 in the high anxiety group. This categorization was based on clinical evidence of the best cut-off score from patients who had been referred, due to high anxiety, to a specialist dental service [21], and the non-normal distribution of MDAS scores. Reliability for the MDAS is acceptable (internal consistency = 0.89; test-retest = 0.82) [21,22] and was also acceptable in this study (Cronbach's alpha = 0.92).

The third part measured alexithymia with the 20-item Toronto Alexithymia Scale (TAS-20). Of the various methods for measuring alexithymia, the TAS-20 is the most widely used. The TAS-20's internal consistency, test–retest reliability, convergent, discriminant, and concurrent validity have been demonstrated to be good [25–27]. The psychometric properties of the Finnish version of the TAS-20 have been shown to be satisfactory [28]. The items are rated on a 5-point scale ranging from "strongly disagree" to "strongly agree". The TAS-20 total score correlates negatively with different measures of psychological mindedness and awareness of own affects [29], and is normally distributed in the general adult population [7]. The TAS-20 has a 3-factor structure: TAS factor 1 assesses difficulty in identifying feelings (=DIF), TAS factor 2 is concerned with difficulty in describing feelings (=DDF) and TAS factor 3 reflects externally oriented thinking (=EOT). The TAS total score and the three TAS factors are used as continuous variables in this study. According to the recommendation of the developers of the scale, the cut-off point for alexithymia was also used: Subjects with the TAS-20 total score >60 are defined as alexithymic [30]. The internal drop-out rate for TAS-20 items in this study was, on average, 1.56%. These missing values were replaced with the median value of each item for men and women separately. Cases with more than two missing TAS-20 items were rejected. Cronbach's alphas for the TAS total score and TAS factors 1–3 were 0.84, 0.85, 0.70 and 0.59, respectively.

Administration of the questionnaire

Consecutive adult patients attending all of the 14 public dental clinics, either for routine or acute care, were invited to enter the study. Data were collected in the period April to June 2006 by the dental receptionists or dental nurses. The receptionists and dental nurses were instructed on how to approach the potential participant and how to provide assistance if reading difficulties were encountered. They

were instructed not to prompt participants while they completed the questionnaires or assist them when choosing a response. They noted the age and gender on the data collection form. Of the sample, 669 (81.3%) filled out all the questionnaires correctly and gave written informed consent. Of the respondents, 33% visited this time for acute care and 46% had an irregular attendance pattern, i.e. they indicated seeking care only when they were in pain or had other oral problems. The losses did not differ from those participated by age or gender.

Statistical analysis

Alexithymia and dental anxiety were compared between male and female respondents. Statistical significances of the differences between genders were subjected to chi-squared analysis. Correlations between MDAS, TAS and age were assessed with Spearman's rho. The mean levels of TAS scores between low and high dental anxiety groups and between genders were calculated and statistical significances were evaluated by *t*-tests. Separate ANOVA models using the general linear modeling (GLM) procedure were calculated for continuous TAS total and factors scores as outcome variables, and age, gender, and dichotomized MDAS score as fixed factors. In addition, models including interaction between gender and MDAS were performed. SPSS version 14.0 software was used in the analyses.

Results

Of the subjects, two-thirds were women and one-third men. The mean age among men was 42.6 years (95% CI = 40.5–44.7) and among women 40.5 years (95% CI = 39.0–42.0). The prevalence of dental anxiety was significantly higher among women than among men. No differences across gender were observed in the prevalence of alexithymia (Table I). Age correlated with the total MDAS score ($r = -0.37$, $p < 0.001$), but not with TAS scores. The prevalence of alexithymia was 15.5% among those reporting high dental anxiety compared with 5.9% among those reporting low dental anxiety ($p = 0.005$). MDAS correlated statistically significantly with TAS total ($r = 0.09$, $p < 0.05$), TAS factor 1 (DIF) ($r = 0.20$, $p < 0.01$) and TAS factor 3 (EOT) ($r = -0.09$, $p < 0.05$).

Mean TAS scores according to gender and dichotomized MDAS scores, as well as *p*-values for GLM models, are presented in Table II. Men had higher mean values on all TAS scores except TAS factor 1 (DIF). Those with high dental anxiety scored higher in TASfactor 1 than those with lower dental anxiety ($t = -2.96$, d.f. = 1, $p = 0.003$). No other statistically significant bivariate associations with other TAS factors were found. When adjusting for the effect of age and gender, the association between TAS factors and dichotomized MDAS was significant in all TAS scores except TAS factor 3 (EOT). Age had no independent effect on TAS scores. Gender had an independent effect on all TAS scores except TAS factor 1 (DIF) (Table II). Only one statistically significant interaction between gender and dichotomized MDAS ($F = 4.63$, d.f. = 1,603, $p = 0.032$) was found in TAS factor 2 (DFF).

Discussion

The main finding of the present study was that alexithymia was associated with dental anxiety. Alexithymia, as measured with the TAS total score and its two facets, difficulty in identifying feelings (TAS factor 1) and difficulty in describing feelings (TAS factor 2), scored higher among those participants with high dental anxiety.

One in 10 men and 1 in 5 women suffered from dental anxiety, i.e. supporting previous work [11–17]. The prevalence of dentally anxious men and women, however, was slightly lower in this study (5.6% and 10.5%) than in the general Finnish male and female population (7% and 13%), respectively [18].

Findings concerning the prevalence of alexithymia were interesting. No gender difference was found for the prevalence of alexithymia. This is contrary to previous Finnish research reports [7–10]. The men in the present study scored significantly higher than did the women for the TAS total score and for TAS

Table I. Distribution of the subjects according to their reported level of dental anxiety and alexithymia among men and women.

	All ($n = 669$)		Men ($n = 250$)		Women ($n = 419$)		
	N	%	*N*	%	*N*	%	*p*-value[1]
Dental anxiety							
Low (5–18)	611	91.3	236	94.4	375	89.5	0.029
High (19–25)	58	8.7	14	5.6	44	10.5	
Alexithymia							
Non-alexithymic (20–60)	624	93.3	232	92.8	392	93.6	0.706
Alexithymic (61–100)	45	6.7	18	7.2	27	6.4	

[1]Chi-squared *p*-values for significance of the difference between genders.

Table II. The continuous alexithymia scores (TAS total score, TASfactors 1–3; means and 95% confidence limits [=95%CI]) according to gender and dental anxiety levels.

	TAS Total score				TAS factor1[a]			TAS factor2[b]				TAS factor3[c]			
	Mean	95% CI	p^d	p^e	Mean	95% CI	p^d	p^e	Mean	95% CI	p^d	p^e	Mean	95% CI	p^d	p^e
All $n=669$	43.0	42.2–43.8			13.8	13.4–14.2			11.0	10.7–11.3			20.3	20.0–20.7		
MDAS			0.121	0.032			0.003	0.004			0.313	0.034			0.309	0.946
5–18 ($n=611$)	42.8	41.9–43.6			13.6	13.2–14.0			10.9	10.6–11.2			20.4	20.0–20.7		
19—25 ($n=58$)	45.0	41.8–48.2			15.8	14.2–17.4			11.6	10.3–12.9			19.7	18.5–21.0		
Gender			<0.001	<0.001			0.810	0.923			<0.001	<0.001			<0.001	<0.001
Men ($n=250$)	45.5	44.3–46.8			13.7	13.0–14.4			12.0	11.5–12.4			22.2	21.6–22.7		
Women ($n=419$)	41.4	40.4–42.4			13.8	13.3–14.3			10.4	10.0–10.8			19.2	18.8–19.7		
Age				0.225				0.242				0.286				0.121

[a]TAS factor1: difficulty in identifying feelings.
[b]TAS factor 2: difficulty in describing feelings.
[c]TAS factor 3: externally-oriented thinking.
[d]*t*-test *p*-values.
[e]*p*-values for GLM analyses, including age, gender and dichotomized MDAS as fixed factors, no interactions included.

factors 2 and 3. These findings are in agreement with earlier population studies [7–10]. It may be suggested that the lack of statistical difference in alexithymia prevalence might be due to an artifact through the selection of a different cut-off point. The cut-off 60/61, widely used in alexithymia research, originates from a study with a small sample of students [30]; its level has been questioned [31,32].

The prevalence of alexithymia in men was lower than in earlier Finnish population studies [7–10]. In subjects with different physical diseases, the prevalence of alexithymia is higher compared with that of population norms [2,4]. Therefore, in a population study of subjects with temporomandibular symptoms, the prevalence of alexithymia was 12.2% in men and 6.5% in women with dental pain [33]. It is reasonable to suggest that the prevalence of alexithymia in male (15.5%) and female (5.9%) respondents in the present study reflected that of populations with oral symptoms, as the study group represented patients seeking dental care. It may be concluded that dental problems are not so closely associated with alexithymia as other somatic diseases.

The creator of the concept alexithymia, Peter Sifneos, originally postulated that alexithymic personality differs in many facets from "neurotic personality" and would be associated especially with so-called classical psychosomatic diseases [1,5]. Many studies, however, have shown an association of alexithymia with phobic and other anxiety disorders [5,34–36].

The association of alexithymia and dental anxiety may reflect difficulties in identifying and describing personal feelings among subjects with high dental anxiety. Cox et al. [35] also found that the difficulties in identifying feelings were associated with panic disorder and social phobia. Among female college students, Berthoz et al. [37] showed an association of alexithymia, in general, and difficulties in identifying feelings, in particular, with both state and trait anxiety. In the future, works including measures of global anxiety could improve our further understanding of these relationships.

Although the psychometric properties of these instruments have been shown to be good, one limitation in the present study was that all the assessments were self reports. It is not possible to make psychiatric diagnostic assessments using questionnaires alone. The sample of this study was drawn from the adult Finnish population attending for dental care in a Finnish town. The losses did not bias the representativeness of the results. Therefore, this sample population is representative of those attending for dental care. The finding of this relationship in a population with reduced numbers of dentally anxious people calls for further investigation on representative population samples.

It may be concluded that an association of alexithymia with dental anxiety was found in a sample representing Finnish adult dental care patients. This indicates that some dentally anxious patients may have difficulties in identifying and describing their personal feelings also in a dental setting.

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