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### Treating highly anxious dental patients in a dental fear clinic

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## Chapter 3

### PSYCHOLOGICAL CHARACTERISTICS OF PATIENTS APPLYING FOR TREATMENT IN A DENTAL FEAR CLINIC<sup>1</sup>

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### **Introduction**

Dental anxiety is widespread throughout the world. In several studies, it has been reported that 3-7% of the general population completely avoid dental treatment (Milgrom, Fiset, Melnick, & Weinstein, 1988; Stouthard & Hoogstraten, 1990), often resulting in deteriorating oral health (Hakeberg, Berggren, & Gröndahl, 1993). This, in turn, makes it even more difficult for highly anxious individuals to seek dental care, since they appraise the anticipated dental treatment as a relatively strong threat (De Jongh, 1995). Fortunately, some of these avoiders are able to break this vicious circle and seek help for their problem in a dental fear clinic.

About 15 years ago, special dental fear clinics were established in several countries in response to the problems of highly anxious dental patients. Most of these clinics offer dental treatment combined with behavioral management techniques and/or pharmacological adjuncts. With regard to the treatment of highly anxious dental patients, one should take concomitant anxieties and other psychological problems into account, since there are indications that highly anxious dental patients have other (general) fears and anxiety besides their dental anxiety and are more difficult to treat than those suffering from dental anxiety alone (Berggren, 1992; Berggren & Carlsson, 1985; De Jongh, 1994; Makkes, 1983; Makkes, Schuurs, Thoden van Velzen, Duivenvoorden, & Verhage, 1987; Moore, 1991). Consequently, there is a need for proper diagnostic instruments as indicators of possible psychopathology. These instruments could be used in clinical practice and in research, for example as a tool for planning treatment strategies.

To assess multiple phobias and general fearfulness, several studies have been conducted demonstrating the usefulness of the modified versions of the Fear Survey Schedule-II (FSS-II; Geer, 1965) (Berggren, 1992; Moore, Brødsgaard, & Birn, 1991; Berggren, Carlsson, Gustafsson, & Hakeberg, 1995; Hakeberg, Gustafsson, Berggren, & Carlsson, 1995). With regard to other psychological variables, detailed psychiatric interviews of patients at dental fear clinics have been proposed (Enneking, Milgrom, Weinstein, & Getz, 1992). Indeed, these interviews may lead to more efficacious diagnostic and treatment methods for dental anxiety. However, it will not always be feasible to conduct such an interview with each patient. Assessment instruments are needed to measure psychological characteristics in a less time consuming and more effortless way, thus posing less of a burden on both patient and interviewer.

Therefore, in the present study, psychological characteristics of highly anxious

dental patients were assessed by use of the Dutch version of the Revised Symptom Checklist (SCL-90; Arrindell & Ettema, 1986), a thoroughly investigated self-report questionnaire. This questionnaire measures several psychiatric dimensions (e.g., depression, anxiety, and somatization), and its reliability and validity proved to be good for both the original and Dutch versions (Arrindell & Ettema, 1986; Derogatis, 1977). Moreover, norm scores are available for the Dutch general population and data for several other Dutch populations (e.g., psychiatric outpatients; Arrindell & Ettema, 1986). The SCL-90 has been used before in dental situations, e.g., to assess psychometric profiles of craniomandibular pain patients (Butterworth & Deardorff, 1987; Broersma-Van der Meulen, Sprangers, & Naeije, 1994), as a diagnostic tool for assessing psychopathology, in order to predict success in behavior therapy for highly anxious dental patients (Kleinhaus, Eli, Baht, & Shamay, 1992), and to identify antecedents of the burning mouth syndrome (Eli, Kleinhaus, Baht, & Littner, 1994). The aim of the present study was to assess psychological characteristics of highly anxious dental patients who applied for treatment at a dental fear clinic, and to compare their scores with the norm scores of the Dutch general population.

## **Material and methods**

### *Subjects*

Subjects were 321 highly anxious dental patients (118 men, 203 women), mostly self-referred, who applied for treatment at a dental fear clinic in Amsterdam, The Netherlands. Age varied from 17 to 69 years (mean 34.2 years,  $SD=10.2$ ). Earlier studies of patients of this clinic indicated an average duration of avoidance of 6 years ( $SD=5.0$ , range 1-27 years) (De Jongh, Muris, Ter Horst, Van Zuuren, Schoenmakers, & Makkes, 1995).

### *Procedure*

Highly anxious dental patients who applied for treatment at the dental fear clinic filled out several questionnaires at home, including measures on dental anxiety, health, and psychopathological complaints. As soon as the patients sent these questionnaires back to the clinic, they were put on a waiting list. After a waiting period of approximately 4 months, patients were phoned for a first appointment with one of the dentists at the clinic.

*Instruments*

The Dutch version of the Revised Symptom Checklist (SCL-90; Arrindell & Ettema, 1986) was used to assess the amount of psychological complaints. This multidimensional psychopathology indicator consists of 90 items, which provide an indication of psychological dysfunctioning on 8 dimensions: agoraphobia (7 items), somatization (12 items), anger-hostility (6 items), depression (16 items), interpersonal sensitivity and paranoid ideation (18 items), anxiety (10 items), cognitive-performance difficulty (9 items), and sleep disturbance (3 items). In the Dutch version, patients are requested to indicate on a 5-point scale from 1 (none) to 5 (numerous) the amount of complaints they experienced during the previous week. The total "Psychoneuroticism" score, composed of the aforementioned subscales and 9 non-scalable items, is derived by adding the 90 items and, thus, varies between 90 and 450. The measurement method in its Dutch version differs from Derogatis' original report on the SCL-90 (Derogatis, 1977) in that the 5-point scale varied from 0 to 4, as did the general symptom index, because scores were divided by the number of items.

Dental anxiety was measured using two questionnaires, namely the dental anxiety scale (DAS) and the short version of the dental anxiety inventory (S-DAI). The DAS (Corah, 1969) is a 4-item dental anxiety questionnaire with total scores that can range from 4 (not anxious at all) to 20 (extremely anxious). Cronbach's  $\alpha$  in the present sample was 0.83.

The S-DAI (Stouthard, 1989) is based on the dental anxiety inventory (DAI) and aims at covering a wide range of dental anxiety, thereby taking into account the multicomponent nature of dental anxiety (Stouthard, Mellenbergh, & Hoogstraten, 1993). The S-DAI contains nine items. Total scores on this questionnaire can range from 9 to 45. Cronbach's  $\alpha$  in the present sample was 0.87. Finally, patients could indicate on a 10-point Likert-scale how anxious they were about visiting the dentist. Scores on this 10-point scale can range from 1 (not anxious) to 10 (extremely anxious).

*Data analysis*

First, the present sample will be described and compared to the normative sample of the Dutch general population. Next, t-tests were used to compare the means of men and women and those of the current and normative sample. The normative population consisted of 1009, randomly selected, persons from the Dutch general population (432

men, 577 women) of 18 years or older. This group participated in a mail survey and was representative of the Dutch general population in terms of educational level, employment class, religion, age, and geographical region (Arrindell & Ettema, 1986). Differences were tested with an overall significance level of 0.05 using a Bonferroni-Holm correction for the number of tests (Holland & Diponzo Copenhaver, 1988). After determining differences between two means, effect sizes were computed (Cohen, 1977). Effect sizes indicate the extent to which the groups differ and, in case of the univariate t-test, how many standard deviation units the group means are separated by. Cohen (1977) suggested as a rule of thumb that an effect size of  $d=0.20$  would be small,  $d=0.50$  medium, and  $d=0.80$  large. Furthermore, reliability of the SCL-90 (Cronbach's  $\alpha$ , corrected item-total correlations) was estimated in this specific population of highly anxious patients.

## Results

Mean scores (and SD) for both men and women on the SCL-90 are shown in Table 1. Women scored significantly higher on the SCL-90 total scale and on four subscales (see Table 1). In addition, the presented effect sizes indicated small effects (0.20-0.50) for most subscales.

Table 1 Means (and standard deviations) for the SCL-90 for the highly anxious dental patients and t-test results for differences between men and women

Variable	Women		Men		df	t	p	d
	Mean	SD	Mean	SD				
SCL-Tot <sup>b</sup>	166.5	64.3	142.7	47.2	273.5	3.58	0.000 <sup>c</sup>	0.42
SCL-Ago	11.3	6.0	9.2	2.6	263.3	4.26	0.000 <sup>c</sup>	0.46
SCL-Anx	21.1	9.4	18.0	7.4	268.5	3.05	0.003 <sup>c</sup>	0.37
SCL-Dep	32.0	13.6	25.6	10.4	269.4	4.44	0.000 <sup>c</sup>	0.53
SCL-Som	22.6	9.2	19.0	6.8	275.6	3.85	0.000 <sup>c</sup>	0.44
SCL-CPD	16.8	7.8	15.0	6.1	267.0	2.20	0.029	0.26
SCL-ISPI	32.1	14.0	28.5	11.4	260.2	2.39	0.017	0.28
SCL-AH	9.7	4.1	9.4	4.5	285 <sup>a</sup>	0.61	0.540	0.07
SCL-Sle	6.4	3.5	5.7	3.2	247.4	1.61	0.110	0.21

<sup>a</sup> equal variance estimate

<sup>b</sup> Ago= SCL-Agoraphobia; Anx= SCL-Anxiety; Dep= SCL-Depression; Som= SCL-Somatization; CPD= SCL-Cognitive-Performance Difficulty; ISPI= SCL-Interpersonal Sensitivity and Paranoid Ideation; AH= SCL-Anger-Hostility; Sle= SCL-Sleep Disturbance.

<sup>c</sup> significant using a Bonferroni-Holm correction

In Tables 2 (women) and 3 (men), mean scores (and SD) of the normative Dutch general population, and t-test results with regard to the difference between this norm group and the present sample, are shown. Again, differences were tested using the Bonferroni-Holm correction, and it was found that the mean scores for the highly anxious dental patients (men and women) were significantly higher for all subscales (separate variance estimates). Effect sizes varied from 0.33 to 0.84. The mean scores of the total SCL-90 scale were above the 80th percentile of the norm scores of the Dutch general population both for women and men (Arrindell & Ettema, 1986). Thus, the means fell in the range "high" (scores between the 80th and 95th percentile) of the norm scores of this population. The means of 6 subscales for women and 4 for men were above the 80th percentile. The other means were well above the 65th percentile.

With respect to the reliability of the SCL-90 in the present sample, Cronbach's  $\alpha$  was 0.98 for the total scale, and varied from 0.82 to 0.93 for its subscales. Mean inter-item correlations were 0.35 or higher for all scales, and the corrected item-total correlations were all above 0.20, which is satisfactory (Nunnally, 1967). Finally, none of the SCL-90 subscales correlated significantly ( $\alpha=0.01$ ) with either the DAS ( $M=17.5$ ,  $SD=2.8$ ), S-DAI ( $M=39.9$ ,  $SD=6.2$ ), or the 10-point scale ( $M=8.9$ ,  $SD=1.7$ ).

Table 2 Means (and standard deviations) for the SCL-90 for the women of the normative sample (Arrindell & Ettema, 1986) and t-test results for differences between highly anxious dental patients and the normative sample (women)

Variable	Mean	SD	df	t	p	d
SCL-Tot	128.9	36.4	177	7.42	0.000	0.72
SCL-Ago	8.7	3.4	179	5.53	0.000	0.53
SCL-Anx	14.6	5.7	179	8.77	0.000	0.84
SCL-Dep	23.8	8.6	177	7.57	0.000	0.72
SCL-Som	18.7	7.1	178	5.20	0.000	0.47
SCL-CPD	14.1	5.1	179	4.35	0.000	0.41
SCL-ISPI	26.3	8.8	176	5.19	0.000	0.50
SCL-AH	7.6	2.4	179	6.52	0.000	0.63
SCL-Sle	5.2	2.8	178	4.18	0.000	0.38

Note: d=effect size; Ago= SCL-Agoraphobia; Anx= SCL-Anxiety; Dep= SCL-Depression; Som= SCL-Somatization; CPD= SCL-Cognitive-Performance Difficulty; ISPI= SCL-Interpersonal Sensitivity and Paranoid Ideation; AH= SCL-Anger-Hostility; Sle= SCL-Sleep Disturbance.

Table 3 Means (and standard deviations) for the SCL-90 for the men of the normative sample (Arrindell & Ettema, 1986) and t-test results for differences between highly anxious dental patients and the normative sample (men)

Variable	Mean	SD	df	t	p	d
SCL-Tot	117.2	27.3	108	5.39	0.000	0.66
SCL-Ago	7.9	2.1	109	4.84	0.000	0.55
SCL-Anx	13.0	4.3	109	6.77	0.000	0.83
SCL-Dep	20.7	6.3	108	4.69	0.000	0.54
SCL-Som	16.6	5.7	109	3.40	0.001	0.38
SCL-CPD	13.2	4.6	109	2.88	0.005	0.33
SCL-ISPI	24.6	6.8	108	3.41	0.001	0.42
SCL-AH	7.5	2.5	108	4.23	0.000	0.52
SCL-Sle	4.6	2.4	109	3.36	0.001	0.39

Note: d=effect size; Ago= SCL-Agoraphobia; Anx= SCL-Anxiety; Dep= SCL-Depression; Som= SCL-Somatization; CPD= SCL-Cognitive-Performance Difficulty; ISPI= SCL-Interpersonal Sensitivity and Paranoid Ideation; AH= SCL-Anger-Hostility; Sle= SCL-Sleep Disturbance.

## Discussion

The results show that both men and women in this sample can be distinguished from the Dutch general population on the basis of their scores on the SCL-90 (both total and subscale scores). That is, the highly anxious patients scored higher on all SCL-90 subscales. The effect-size of the difference between the 2 populations for the total SCL-90 was "medium" (Cohen, 1977), while for the subscales the differences in terms of effect sizes were "small" to "large" for one dimension (anxiety). Hence, a large proportion of the highly anxious dental patients was not just dentally anxious, they showed complaints on a wide range of psychological dimensions.

The results are in line with those of Roy-Byrne, Milgrom, Tay, Weinstein, and Katon (1994), who found that 40% of the highly anxious dental patients in their study not only displayed high dental anxiety levels, but also showed concomitant psychopathology. In their study, prevalence of life-time psychiatric illness was 70%, which would be, as the authors stated, higher than that seen in epidemiological studies and in patients seeking health care in primary medical settings. The present results and those of other studies investigating the prevalence of multiple phobias, general anxiety, and agoraphobia in highly anxious dental patients (Milgrom et al., 1988; Moore et al., 1991; Kleinhauz et al., 1992; Moore & Brødsgaard, 1995), demonstrate that it is common to a large group of patients attending dental fear clinics to have



additional fears and other psychological complaints.

It may well be the case that the mere presence of multiple disorders negatively influences the treatment of the highly anxious dental patients. Consequently, the dental treatment of patients with multiple psychological problems may need to be supported by pharmacological adjuncts more often than the treatment of patients with dental anxiety per se. Therefore, and in order to plan treatment more efficiently, it is important to have a useful indicator of possible psychopathology. The SCL-90 seems to be a suitable diagnostic instrument for this purpose. Our next step will be to assess the influence of psychological characteristics on the treatment of highly anxious dental patients with regard to choice of treatment strategy (i.e., behavioral management techniques, nitrous oxide sedation, intravenous sedation, and general anaesthesia), and with regard to treatment success.

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