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The impact of childhood sexual abuse on dental fear

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Abstract – *Objective:* Dental fear is a risk factor for poor oral health. Thus, treatment of dental fear is a challenge to dentists. The consequences of childhood sexual abuse (CSA) may include dental fear. A history of CSA complicates dental fear treatment, and it is often a secret. The aim of this study was to explore differences in subjective evaluations of use of dental services, experiences of dental treatment situations, dental appearance and dental problems in women who report both CSA and dental fear, and women who report dental fear only. *Methods:* In an anonymous survey, 58 women with dental fear and a history of CSA were compared with 25 women with dental fear without CSA. Twenty-five women without dental fear acted as a control group. *Results:* No differences between dental fear patients with and without a history of CSA were found in subjective evaluations of use of dental services, dental appearance and dental problems, or in the scores on the Dental Fear Scale (DFS). Women who reported a history of CSA and dental fear had statistically significant higher scores on the Dental Belief Scale (DBS). *Conclusion:* The results suggest that women who report dental fear and a history of CSA assess interpersonal factors concerning communication, trust, fear of negative information and lack of control as more fear evoking than women who report dental fear without a history of CSA.

Key words: childhood sexual abuse; dental anxiety; dental fear; oral health

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Childhood sexual abuse (CSA) may influence oral health in different ways. Numerous reports focus on observable physical signs (1–4). However, the most serious consequences of CSA are likely to be of psychological character. Even when confounding family and social factors have been controlled for, CSA is associated with lowered self-esteem, reduced initiative and difficulties in interpersonal relationships later in life (5). Thus, it may be assumed that an intimate situation like a dental treatment situation may be difficult. In addition, patients in the dental treatment situation are vulnerable so that they may experience feelings of helplessness, and their ability to accept minor or major discomfort associated with instruments in the oral cavity may be reduced. Considering these factors, it is not surprising that sexually abused children have been found to have a tendency to develop dental fear (6).

Walker et al. (7) found that among women with high levels of dental fear, 34% reported a history of childhood sexual molestation, 15% reported attempted rape and 13% reported rape or incest. The Odds ratios for women with high dental fear relative to women with low dental fear were: 1.37 for a history of childhood sexual molestation, 2.11 for a history of attempted rape and 1.96 for a history of rape or incest. Willumsen (8) found that women who reported CSA had higher levels of dental fear than women in normative samples, and that 75% of the women who reported sexual abuse that included oral penetration had high levels of dental fear.

Although many sexually abused children survive without major pathological consequences, they are more likely to seek help for emotional problems, psychiatric disorders and substance abuse than others (9–11). Thus, women who have dental fear and a history of sexual abuse are likely to have multiple psychological problems. Kvale et al. (12) concluded that dental fear patients with multiple psychiatric diagnoses were more difficult to treat than patients with dental fear as the only diagnosis. Thus, it could be hypothesised that women who both report dental fear and have a history of sexual abuse are even more vulnerable to feelings of

helplessness and lack of interpersonal trust than women with dental fear only, and that a history of sexual abuse makes treatment of dental fear more complicated.

Dental fear is a predictor of oral health, as dental fear patients have more dental problems than others (13, 14). In a recent epidemiological study, it was found that the median number of functional teeth in the age group 55–64 was 7.5 for individuals with a high level of dental fear compared to 22 for individuals without dental fear (15). This makes a substantial difference to oral health – both chewing ability and aesthetic functioning. Thus, preventing, detecting and treating dental fear is important. Although anticipatory dental fear may have similar symptoms, for example, the patient feels tense or anxious before treatment, the dental fear may have different aetiology. To treat dental fear adequately, it is important to distinguish between simple dental fear and the more complex nature of the fear (12).

It has been found that the majority of women who report CSA are not aware of the possible connection between previous sexual abuse and dental fear. Only a minority of these women, even among those with a high level of dental fear, had told their dentist about the abuse (8). The aim of the present study was to explore differences in subjective evaluations of use of dental services, experiences of dental treatment situations, dental appearance and dental problems in women who report both CSA and dental fear, and women who report dental fear only.

Materials and methods

Participants

In Norway, there are regional support centres for sexually abused persons. These centres are organised primarily as self-help groups. Women from three regional support centres for sexually abused persons participated in this study. Two of the support centres were located in central Norway (Nord-Trøndelag and Sør-Trøndelag) and one was located in southern Norway (Agder). One hundred and ninety women, who had sought support from a centre at least three times and who had received regular information from one of the centres, were invited to participate in the study. The support centres administered the mailing lists and distributed the questionnaires. It was emphasised that participation was voluntary. For ethical reasons, no reminders were sent. The questionnaires were returned anonymously. All subjects were encouraged to contact the support centre if filling in the questionnaire provoked negative emotions. One hundred women returned the questionnaire. Fifty-seven per cent of the women in this sample were categorised as having dental fear (CDAS < 12; for further information see (8)). All these 57 women were selected to constitute the fear and abuse group in the present study.

Women who reported dental fear but no history of being sexually abused (the fear-only group) were recruited from six private general dental practices located in different places in southern Norway. These practices were randomly selected among dentists who volunteered to participate. The dental staff informed patients who reported dental fear about the trial and handed out questionnaires to all women in the same age group as the fear and abuse group (20–60 years of age) who reported dental fear. Women with a score on CDAS above 12 were included in the present study. When data from 25 women with dental fear without a CSA history were collected, they constituted the fear-only group.

Similarly, all women in the same age group who reported no dental fear were informed and asked to participate in the control group. When data from 25 women without dental fear (CDAS < 12) and without a CSA history were collected, they constituted the control group. The National Ethical Committee for Medical Research approved the study.

Inclusion criteria

Inclusion in the study groups was based on Corah's Dental Anxiety Scale (CDAS), the most often used instrument to measure anticipatory dental fear (16, 17). This 4-item test measures anticipatory dental fear on a scale from 4 (no fear) to 20 (extreme fear). It is considered to be a coarse but valid and reliable instrument (18). The inclusion criterion for being allocated to the dental fear groups was a CDAS score >12 (17).

Exclusion criteria

In the groups recruited from general practice, women who reported a history of sexual abuse were excluded. Five women in the fear-only group were excluded according to this criterion.

Measures

To test the women's subjective evaluations of use of dental services and their experiences of dental treatment situations, the different dimensions of the Kleinknecht Dental Fear Scale (DFS; 19–21) and the Dental Belief Scale (DBS) (22) were used. DFS

comprises 20 items with scores ranging from 1 (none) to 5 (extreme) (20, 21). This test has five dimensions: 1, 'Avoidance of dental care'; 2, 'Physiological arousal during dental treatment'; 3, 'Anticipatory anxiety while waiting for dental treatment'; 4, 'Fear of the injection needle'; and 5, 'Fear of the drill' (22). DBS was used to evaluate the patients' interpersonal relationship with the dentist. This test comprises 15 items grouped into four dimensions: communication, trust, fear of negative information and lack of power. All items had scores from 1 (none) to 5 (extreme) (23, 24).

In addition, the women assessed how much fear 10 concrete aspects of the dental treatment situation (see Table 3) provoke on a scale from 1 (no fear) to 5 (very much fear).

To explore use of dental services, the women were asked 'How do you use dental services?' in three categories (see Table 1) and 'Have you been to the dentist once a year in the last 3 years? The women's subjective experience of the appearance of their teeth was assessed on a scale from 1 (very much uglier than others of my age) through 5 (average) to 10 (prettier than others of my age). Subjective experience of dental problems was assessed on a scale from 1 (very few problems compared to others of my age) through 5 (average) to 10 (many more problems). Finally, the women assessed how much pain they tolerated during dental treatment on a scale from 1 (I tolerate very little pain) through 5 (average) to 10 (I tolerate very severe pain).

Statistical analysis

Cronbach's alpha was used to determine the internal consistency reliability of the dental fear tests.

One-way ANOVA was used for parametric data. As most of the variables concerning dental fear and dental situations had skewed distributions, non-parametric tests were used. Between-group differences were tested using the Chi-square and Mann–Whitney tests, and Kruskal–Wallis one-way ANOVA.

Results

Five of the women (10.4%) in the fear and abuse group reported sexual contact without penetration, 16 (33.3%) reported vaginal/anal penetration and 27 (56.3%) reported oral penetration. All sexual abuse had occurred before the victims were 16 years of age. Further details of the fear and abuse group are described elsewhere (8).

Five women reported abuse only when they were younger than 6 years of age. Significantly more women in the fear and abuse group (76.4%) reported that they had been victims of physical abuse as a child than in the fear-only (17.4%) and the control groups (7.1%; $P < 0.001$).

The mean age of the women in the fear and abuse group was 35.2 (SD = 9.7), in the fear-only group, it was 33.8 (SD = 11.6) and in the control group, it was 40.8 (SD = 10.1). One-way ANOVA revealed a significant difference between the groups ($F = 3.7$; $P = 0.030$). Post hoc tests with Bonferroni adjustments approached statistically significant difference between the fear-only and the control groups ($P = 0.053$). Table 1 shows background variables in the three research groups.

Differences in use of dental services were found between the dental fear groups and the control group. Kruskal–Wallis one-way ANOVA showed between-group differences in woman who had regular dental examinations ($\chi^2 = 13.4$; $P = 0.001$), who had attended the dentist only if they needed dental treatment ($\chi^2 = 11.7$; $P = 0.003$) and who had been to

Table 1. Background variables

	Fear and abuse* (N = 57; %)	Fear only** (N = 25; %)	Mann–Whitney (fear and abuse/fear only) Z	P	Control*** (N = 25; %)
More than 12 years of education	57	70	1.263	0.207	61
Use of dental services					
Regular dental examinations	57	67	0.5832	0.394	96
Only when need for treatment	40	32	0.558	0.557	4
Do not use dental services	3	0	0.940	0.347	0
I have been to a dentist once a year in the last 3 years	44	44	0.162	0.871	89

*Women who report dental fear and CSA.
**Women who report dental fear but no history of CSA.
***Women who do not report dental fear.

Table 2. Mean values of dental fear measures in the three groups

	Fear and abuse* ($N = 57$)		Fear only** ($N = 25$)		Mann–Whitney (fear and abuse/fear only)		Control*** ($N = 25$)	
	Mean	SD	Mean	SD	Z	P	Mean	SD
CDAS	16.4	2.6	15.5	2.5	1.151	0.131	6.9	2.1
DFS total	3.9	0.6	3.6	0.6	2.33	0.020	1.6	0.5
DFS avoidance of dental care	3.4	1.1	3.5	0.9	−0.10	0.919	1.3	0.6
DFS physiological arousal during dental treatment	3.7	0.7	3.3	0.7	1.59	0.121	1.6	0.5
DFS anticipatory anxiety while waiting for dental treatment	3.9	0.6	3.5	0.2	2.56	0.010	1.6	0.5
DFS fear of the injection needle	4.2	1.2	3.4	1.5	2.32	0.020	1.9	0.8
DFS fear of the drill	4.4	0.8	4.3	0.7	1.142	0.254	1.9	0.8
DBS total	2.9	1.0	1.8	0.9	4.077	0.000	1.2	0.2
DBS communication	3.1	1.1	2.1	1.2	3.365	0.000	1.2	0.2
DBS trust	2.1	1.0	1.4	1.0	3.111	0.002	1.1	0.2
DBS fear of negative information	3.0	1.2	1.8	0.9	4.230	0.000	1.1	0.2
DBS lack of control	3.0	1.0	1.8	1.1	4.293	0.000	1.2	0.3

*Women who report dental fear and CSA.
**Women who report dental fear but no history of CSA.
***Women who do not report dental fear.

the dentist once a year in the last 3 years ($\chi^2 = 16.8$; $P < 0.001$). The statistical significant differences were found to be between the dental fear and the control groups. No between-group differences were found between the fear and abuse and fear-only groups.

Concerning the dental fear measures, reliability analyses showed that Cronbach's alpha was 0.94 in CDAS, 0.95 in DBS and 0.98 in DFS.

The dental fear groups scored significantly higher on all dental fear measures than the control group. As shown in Table 2, the total mean score for DFS did not differ in the fear and abuse and the fear-only groups. However, the fear and abuse group scored significantly higher than the fear-only group concerning anticipatory anxiety while waiting for dental treatment and fear of the injection needle. For DBS, the fear and abuse group reported significantly higher fear scores in all dimensions.

To explore the effect of physical abuse, the women in the fear and abuse group who reported physical abuse were compared to the women in the fear and abuse group who were not victims of physical abuse. Mann–Whitney tests did not show statistical differences between these groups concerning CDAS ($Z = 1.86$; $P = 0.073$), DFS ($Z = 1.49$; $P = 0.139$) or DBS ($Z = 0.26$; $P = 0.269$) scores.

Concerning the subjective experience of their own teeth, differences were found concerning the appearance of teeth. The mean score for the fear and abuse group was 6.6 (SD = 2.1), for the fear only group, it was 5.7 (SD = 1.9) and for the control group, it was 4.9 (SD = 1.3). ANOVA showed a statistically significant difference between the groups ($F = 7.9$; $P = 0.001$). Post hoc tests with Bonferroni adjustments showed that the fear and abuse group assessed the appearance of their teeth significantly less favourably than the control group ($P = 0.001$).

Concerning dental problems, the mean score for the women in the fear and abuse group was 6.4 (SD = 2.6), for the fear-only group was 6.4 (SD = 2.3) and for the control group was 4.6 (SD = 2.0). ANOVA showed a statistically significant difference between the groups ($F = 5.5$; $P = 0.005$). Post hoc tests with Bonferroni adjustments showed that the control group reported significantly less dental problems than the fear and abuse ($P = 0.006$) and fear-only ($P = 0.036$) groups.

The womens' assessment of their pain tolerance in dental treatment situations showed a mean score of 3.7 (SD = 3.0) for the fear and abuse group, 3.0 (SD = 2.3) for the fear-only group and 5.7 (SD = 2.1) for the control group. ANOVA showed a statistically significant difference between the groups ($F = 7.8$; $P = 0.001$). Post hoc tests with Bonferroni adjustments showed that the control group assessed their pain tolerance to be significantly higher than the fear and abuse ($P = 0.003$) and the fear-only ($P = 0.001$) groups.

As shown in Table 3, the fear and abuse group scored significantly higher than the fear-only group on all items concerning concrete aspect of the dental treatment situation except 'not knowing what is happening'.

Table 3. Mean values for scores on fear from different specific dental situations

	Fear and abuse* (N = 57)		Fear only** (N = 25)		Mann–Whitney (fear and abuse/fear only)		Control*** (N = 25)	
	Mean	SD	Mean	SD	Z	P	Mean	SD
The dentist is a woman	2.0	1.3	1.6	0.6	3.19	0.001	1.1	0.4
The dentist is a man	3.2	1.4	2.1	1.5	2.98	0.003	1.5	0.8
The dentist moves the head	3.6	1.2	1.7	0.9	5.35	0.000	1.3	0.7
Touching the lips	3.7	1.3	1.4	0.6	5.70	0.000	1.1	0.3
Touching the back of the mouth	4.2	1.0	2.6	1.3	4.66	0.000	1.6	0.6
The dentist is close physically	3.7	1.3	1.6	1.1	5.30	0.000	1.2	0.6
To open the mouth	3.8	1.2	2.0	1.1	5.12	0.000	1.2	0.4
To hear about new cavities	3.9	1.2	3.1	1.4	0.16	0.031	2.1	1.1
Not knowing what is happening	4.2	0.8	3.9	1.1	0.99	0.322	2.3	1.2
To be laid back in the chair	4.5	0.9	2.2	1.3	6.03	0.000	1.3	0.6

*Women who report dental fear and CSA.
**Women who report dental fear but no history of CSA.
***Women who do not report dental fear.

Discussion

Several factors limit the generalisability of this study. First, as the sample of the fear and abuse group was comprised of persons who were receiving help from support centres for sexually abused persons, selection bias might be present. Receiving support from a support centre does not prove CSA, but more clinically relevant, shows that the women have memories of being sexually abused. Seeking help in a support centre implies that the women have psychological problems connected to their memories of CSA. It should also be noted that the women who attended the study could have a personal interest, e.g. high dental fear, when attending the study. Thus, this sample is not representative of all women who had been exposed to sexual abuse. Several reports conclude that sexual abuse does not necessarily cause psychological problems (5, 9, 25). Research has shown that CSA is often connected with social and family variables that may influence psychological health in adults. In studies where, for example, the connection between CSA and eating disorders or mental problems have been explored, multivariate analyses, with these factors controlled for, have shown that the connection ceased to be significant. One theory is that children from more stable and supportive family backgrounds are likely to have acquired greater resilience in terms of psychological and social development and thus are less likely to develop psychological problems from CSA later in life (5). Such social and family variables were not available in the present study. This study indicates that, in contrast to women in the fear-only and control groups, the majority (76%) of the women in the fear and abuse group reported to be victims of physical abuse. This is more than what McMillan et al. (11) found in a probability sample of Canadian citizens, where 56% of women with a history of CSA reported physical abuse as well. McMillan et al. concluded that physical abuse was at least as important a correlate for psychiatric morbidity as sexual abuse. This may indicate that the women in the present sample are among those CSA victims who were seriously damaged as children and who presumably had a high frequency of psychopathology. However, in the present study, we did not find statistically significant differences between women who reported physical abuse and CSA and those who reported CSA only on CDAS, DFS or DBS.

Second, data were only available for women. Both genders are possible victims of sexual abuse, but the relationship between psychiatric illness and CSA history tends to be stronger for women than for men (11). However, men are even more likely than women to report abuse involving oral sex (26–28), and CSA involving oral penetration is associated with a high level of dental fear (8).

Third, this report has a very long retrospect. The issue of forgetting, repressing or having false memories of sexual abuse incidents has been discussed (29). Evaluations of these aspects are beyond the scope of this article. However, in this study, only five women reported abuse incidents only before the age of six.

Finally, the questions concerning subjective evaluations of dental appearance, dental problems and pain tolerance during dental treatment, as well as the items presented in Table 3, were not tested for validity and reliability. Consequently, the results should be interpreted with this in mind.

The results from this study imply that problems related to dental fear and CSA are of clinical interest,

as almost all sexually abused women used dental services regularly or when they needed dental treatment. Dentists are most often unaware of the patient's history of being abused as only a minority of women with dental fear and a history of CSA tell their dentist about their CSA (8).

Compared to the control group, women with dental fear attended the dentist less frequently, more often only when they needed treatment, they had more dental problems, they reported a less favourable appearance of their teeth and they were more sensitive to pain. This supports earlier findings about dental fear patients (30–32). No differences concerning dental attendance, dental problems, appearance and pain were found between the fear and abuse group and the fear-only group.

Women in the fear and abuse group reported more anticipatory anxiety while waiting for dental treatment (DFS). However, physiological arousal during dental treatment was comparable and so was fear of the drill.

Not surprisingly, as most sexual abusers are men, women with a history of CSA reported male dentists to be more fear-provoking. The results from the DBS questionnaire suggest that women with dental fear and a history of CSA are more vulnerable in communication with the dentist and that they have more difficulties in establishing a trusting relationship. The fear and abuse group also reported significantly more fear of negative information and they were even more frightened of loosing control. This may explain why they react more negatively to being laid back in the dental chair or having an injection than the fear-only group. The fear and abuse group reported significantly more negative impact from physical intimacy ('physical closeness of the dentist', 'when the dentist moves my head', 'when the dentist touches my lips' and 'when the dentist touches the back of my mouth') than the fear-only group.

Some dental fear signs are fairly easy for a dentist to explore. Patients willingly tell that they feel nervous, fear the drill, etc. The dentist can also, to some degree, observe physiological arousal during treatment. Other factors are more difficult to detect, such as lack of trust and negative reactions to physical intimacy.

In conclusion, in the present sample, women with dental fear and who reported a history of sexual abuse scored higher on anxiety connected to interpersonal factors like communication, trust and lack of control than women who reported dental fear without such a history.

The present results should be interpreted with caution. Among people who report dental fear, only a few have a history of sexual abuse. Dentists should be careful not to jump to conclusions concerning former sexual abuse in patients. On the other hand, insecurity should not prevent the dentist from making professional evaluations of the situation, taking necessary precautions and seeking interdisciplinary cooperation.

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