

Identification and Management of Dental Anxiety by New Zealand Dentists

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Objective: More than 1 in 8 New Zealand (NZ) adults are dentally anxious, which can lead to avoiding dental care and a higher risk of poor oral health. However, little is known about how dentally anxious patients are identified and managed by NZ general dentists. This survey aimed to investigate how NZ dentists identify and manage dentally anxious patients.

Methods: We conducted an email survey of NZ dentists in 2022, obtaining 212 responses. Along with demographic information, respondents were queried about whether they ask patients about past/current dental fears and their likely origin, how they assessed those fears, their usual management of dentally anxious patients, and how the management of dentally anxious patients could be improved.

Results: Almost three-quarters reported personally asking patients about past and/or current dental fears, and half enquired about bad life experiences that had led to those fears. Only 6 respondents (2.8%) reported using a formal dental anxiety/phobia assessment tool prior to treatment. For managing severely anxious adult dental patients, all dentists used at least 1 pharmacologic or psychological technique or referral to a colleague.

Conclusion: The study identified several weaknesses among NZ dentists in identifying and managing dental anxiety patients. The use of formal dental anxiety/phobia assessment tools prior to treatment needs improvement. Addressing dental anxiety is a complex issue that requires a multipronged approach involving improved education, the development and implementation of better assessment tools, and a greater understanding of how dentists' current assessment and management of dental anxiety can be improved.

Key Words: Adult dental anxiety; Dentally anxious patient; Dental phobia; Dental anxiety management; Managing anxious patient.

Despite the technological advances that have revolutionized modern dentistry, dental anxiety persists.^{1–3} More than 1 in 8 New Zealand (NZ) adults are dentally anxious. Sufferers tend to have more dental caries and missing teeth and a considerably poorer oral health–related quality of life.⁴ A high proportion avoid dental visits and are more likely to attend only when they have a problem,⁵ increasing the likelihood of oral health issues/treatment needs and creating a vicious cycle.^{6,7} Such avoidance behavior leads to oral pain and infection, affecting health, social life, and work performance.^{8–10} Patients suffering from dental anxiety are more likely to cancel appointments or fail to complete courses of treatment.¹¹

The terms *dental fear*, *anxiety*, and *phobia* can be used interchangeably or combined (eg, *dental fear and anxiety*).^{7,14,15} Irrespective of the label used, it is often a persistent condition with complex origins involving various psychological, environmental, and sociodemographic determinants.⁴ Weiner and Sheehan¹⁶ identified 2 dental anxiety categories based on their source: exogenous, arising from traumatic dental experiences (whether direct or indirect); and endogenous, reflecting constitutional vulnerability (such as general anxiety states, multiple severe fears, or mood disorders).

Identifying and then managing dentally anxious patients can be challenging. Effective evaluation prior to dental treatment may facilitate anxious patients' effective management.¹⁷ Armfield and Heaton⁷ suggested that the earlier anxiety is diagnosed, the greater the likelihood of successful treatment. Indeed, diagnosing anxiety allows the practitioner to adopt a patient-centered care approach and prevents actions that may adversely affect the patient's anxiety. There are several methods available for assessing dental anxiety.¹⁸ The most recent and methodologically

Received January 3, 2023; accepted for publication September 14, 2023.

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Anesth Prog 71:115–122 2024 | DOI 10.2344/201833

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sound scale is the Index of Dental Anxiety and Fear (IDAF-4C+), which has demonstrated validity in the NZ adult population.¹⁹ In contrast, assessing dental anxiety in daily practice is less systematic, as practitioners become alert to general nonverbal cues and then ask patients about their anxiety.²⁰ While such an intuitive, ad hoc approach is likely to work with more experienced dentists, using non-standardized methods will likely result in inaccuracy.

Dental anxiety may be managed by psychotherapeutic (behavioral or cognitive therapy) or pharmacologic means (sedation or general anesthesia), or a combination of both. Behavioral modification can involve relaxation, breathing techniques, distraction, and positive reinforcement.¹³ By comparison, cognitive strategies focus on restructuring and developing control over negative thoughts. Using these techniques requires dentists to have proper training or support from other experts. Pharmacologic therapy merely enhances patient acceptance of dental treatment without ameliorating or eliminating the underlying cause of the anxiety; thus, psychotherapeutic interventions should be the first choice for managing and treating anxiety as a long-term solution.²¹ However, poor access to the latter in NZ likely means that pharmacologic therapy is the default option for most dental patients, but there is a lack of knowledge of the strategies used. The survey used in this study aimed to investigate how NZ dentists identify and manage dentally anxious patients.

METHODS

A specifically designed online questionnaire was designed and hosted using REDCap survey software (Appendix 1, available online only). Category B ethical approval was obtained from the Human Ethics Committee at the University of Otago prior to distributing the questionnaire. An email survey of actively practicing general dentists was conducted in May 2022. Initially, we intended to take a random sample of dentists from the 2022 Dental Register held by the Dental Council of NZ (DCNZ), but we were unable to obtain access to that list. The New Zealand Dental Association then agreed to place a link to the survey in one of its regular emails to members. When that resulted in only 52 responses after 3 weeks, we used an existing copy of the 2019 Dental Register, sending an emailed link to all dentists with contactable email addresses ($N = 1029$). Those without a current annual practicing certificate or a registration in an additional scope were excluded. Data collection ceased at the end of June 2022.

Respondents were asked a series of questions about their usual management of dentally anxious patients. They were also asked how the management of dentally anxious patients in NZ could be improved. In addition, demographic data

such as practicing characteristics and place of graduation were collected.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS, version 27, IBM Technology Corporation). Analyses used cross-tabulations and chi-square tests for categorical dependent variables, and analysis of variance for continuous dependent variables. The level of significance was set at $P < .05$.

RESULTS

Of the 1029 dentists who were contacted via email, 46 had invalid email addresses and were excluded immediately, leaving 983 in the sample. Of those, 150 responded, providing a response rate of 15.3%. Adding the initial 62 responses gave a total sample size of 212 respondents. Data were reviewed to assess for and remove duplicates and outliers.

Comparison of the demographic and practicing characteristics of those 212 with data from the most recent DCNZ workforce report (<https://www.dcnz.org.nz/assets/Uploads/Publications/workforce-analysis/Workforce-Analysis-2018-2019.pdf>) shows that the responding sample did not differ significantly for reported gender (females: ~45% and ~43%, respectively). However, our sample did have a significantly higher percentage of locally trained general dentists than those trained abroad, as demonstrated by the proportion of local graduates (~80% and ~67%, respectively; $P = .004$).

Of the 212 respondents, just under half were female (Table 1). Fewer female respondents were in the earlier graduation cohort (before 1990) or worked in single-dentist practices. Otago University graduates (the University of Otago is the only dental school in NZ) comprised 80.2% of respondents. Most respondents reported working in a group practice (72.2%) and owning their private practice (75.9%).

Dental Fear Assessment and Referral Practices

Some 73.1% of respondents reported personally asking patients about past and/or current dental fears, and 50.0% enquired about bad life experiences that had led to those fears (Table 2). The latter was more common among overseas dental graduates than local ones (66.7% and 45.9%, respectively; $P = .016$). The proportion of respondents seeking information on past or current dental fears through their patient history form was considerably lower at 47.6%; only 15.1% sought information in that way on bad life experiences leading to dental fears. Only 6 respondents (2.8%) reported using a formal dental anxiety/phobia assessment tool prior to treatment. Overall, 88.7% of respondents (almost 9 out of 10) reported discussing patients' fears with them personally.

Table 1. Respondent Demographic Characteristics

	Total	Gender ^a		P value
		Female	Male	
All combined, No. (%)	212 (100)	97 (45.8)	115 (54.2)	
Graduation cohort, No. (%)				<.001
Before 1990	86 (40.6)	18 (20.9)	68 (79.1) ^b	
1990-1999	50 (23.6)	31 (62.0)	22 (38.0)	
2000-2009	26 (12.3)	15 (57.7)	11 (42.3)	
2010 or later	50 (23.6)	33 (66.0)	17 (34.0)	
Otago graduate, No. (%)				.191
No	42 (19.8)	23 (54.8)	19 (45.2)	
Yes	170 (80.2)	74 (43.5)	96 (56.5)	
Location, No. (%)				.690
Large city	132 (62.3)	62 (47.0)	70 (53.0)	
Provincial city	42 (19.8)	20 (47.6)	22 (52.4)	
Town	38 (17.9)	15 (39.5)	23 (60.5)	
Practice type, No. (%)				.046
Single dentist	37 (17.5)	13 (35.1)	24 (64.9) ^b	
Group	153 (72.2)	69 (45.1)	84 (54.9)	
Other	22 (10.4)	15 (68.2)	7 (31.8)	
Practice ownership, No. (%)				.078
Private	161 (75.9)	68 (42.2)	93 (57.8)	
Corporate	27 (12.7)	13 (48.1)	14 (51.9)	
Other	22 (10.4)	16 (66.7)	8 (33.3)	

P values arise from cross-tabulation (DF = 3) of independent variables (graduation cohort, Otago graduate, location, practice type, and practice ownership) by gender.

^a Denotes No. (% of row total).

^b Denotes statistical significance between male and female respondents within the row; $P < .05$.

Just more than 1 in 5 (22.6%) respondents reported spending at least 15 minutes discussing their patients' fears before commencing treatment (Table 3). This practice was more common among overseas graduates but lower among those working in group practices. More than one-quarter (29.2%) reported recommending or referring patients to specialized therapy for dental fears. This was higher among those working in smaller centers or other than private or corporate practice settings.

Anxiety Management Practices

Respondents were also asked how they usually manage severely anxious adult dental patients (pharmacologic means, psychological techniques, combination, or referral). A total of

160 (75.5%) respondents reported using just 1 of those options, 73 (45.6%) used a combination of those, 45 (28.1%) used psychological techniques, 27 (16.9%) referred to the others, and 15 (9.4%) used pharmacological means,

Suggested Improvements

Responses to the question, "What do you think NZ needs in order to help you manage dentally anxious patients?" are summarized in Table 4. All respondents gave at least 1 suggestion. More than 33% felt that better awareness of the problem within the profession and community was needed, but the most popular options were (1) more training for dentists in the pharmacologic management of dental anxiety (48.1%) and (2) wider availability of specialist psychological services

Table 2. Overview of New Zealand Dentists' Dental Fear Practices

Question	No. (%)
Personally ask patients about past and/or current dental fears	155 (73.1)
Personally enquire about bad life experiences which had led to those fears	106 (50.0)
Seek information on past or current dental fears through their patient history form	101 (47.6)
Patient history form asks about bad life experiences which had led to those fears	32 (15.1)
Use a formal dental anxiety/phobia assessment tool prior to treatment	6 (2.8)
Discussing patients' fears with them personally	188 (88.7)
Spend at least 15 minutes discussing my patient's fears before treatment	48 (22.6)
Recommend/refer patients to specialized therapy for dental fears	62 (29.2)

Table 3. Dental Fear Assessment and Referral Practices

	<i>I spend at least 15 minutes discussing my patient's fears before treatment</i>	<i>P value</i>	<i>I recommend/refer patients to specialized therapy for dental fears</i>	<i>P value</i>
All combined, No. (%)	48 (22.6)		62 (29.2)	
Gender, No. (%)		.502		.621
Female	24 (24.7)		30 (30.9)	
Male	24 (20.9)		32 (27.8)	
Graduation cohort, No. (%)		.694		.629
Before 1990	17 (19.8)		28 (32.6)	
1990-1999	11 (22.0)		13 (26.0)	
2000-2009	8 (30.8)		9 (34.6)	
2010 or later	12 (24.0)		12 (24.0)	
Otago graduate, No. (%)		<.001		.159
No	18 (42.9) ^a		16 (38.1)	
Yes	30 (17.6)		46 (27.1)	
Location, No. (%)		.298		.008
Large city	26 (19.7)		32 (24.2) ^a	
Provincial city	10 (23.8)		11 (26.2)	
Town	12 (31.6)		19 (50.0)	
Practice type, No. (%)		.049		.249
Single dentist	12 (32.4) ^a		13 (35.1)	
Group	28 (18.3)		40 (26.1)	
Other	8 (36.4)		9 (40.9)	
Practice ownership, No. (%)		.386		.017
Private	35 (21.7)		42 (26.1) ^a	
Corporate	5 (18.5)		7 (25.9)	
Other	8 (33.3)		13 (54.2)	

^a *P* < .05.

to support patients (42.9%). Of the 21 respondents who chose the “other” option, 16 provided free-text suggestions/comments. Those responses fell into the 3 main themes of education and training, talking to and interacting with patients, and using minimal/moderate sedation. One mentioned better access to training in appropriate psychological techniques, and another pointed out that reducing dental trauma in childhood would likely have benefits in adulthood.

DISCUSSION

This survey has identified several shortcomings and areas for improvement in how NZ general dentists identify and

manage dentally anxious patients. Given the inevitability of dentists encountering such patients in their daily practice,^{22,23} it is noteworthy that more than one-quarter of our respondents reported not asking their patients directly about past/current dental fears, and about half reported not including dental fears on their patient history form. In addition, there was negligible use of a formal dental anxiety/phobia assessment tool before treatment.

Turning to our findings, the low rates of anxiety assessment are similar to those reported in Australia, with only 3.7% of Australian dentists using a published scale for screening dental anxiety.²⁴ In a study of Japanese dental practitioners specializing in special needs dentistry and dental anesthesiology, 9.7% used questionnaires to quantify the

Table 4 Suggestions for Addressing the Issue of Dental Anxiety in New Zealand

<i>Respondent suggestions</i>	<i>No. (%)^a</i>
More training in the pharmacologic management of dental anxiety	102 (48.1)
Wider availability of specialist psychological services to support patients	91 (42.9)
Better awareness of the problem within the dental profession	84 (39.6)
Better awareness of the problem within the community	76 (35.8)
Wider availability of general anesthesia for adult dental treatment	55 (25.9)
An “app” that patients could use to measure and monitor their anxiety	29 (13.7)
Other suggestions (see accompanying text)	21 (9.9)

Percentages total more than 100 because multiple responses were permitted.

^a All 212 respondents gave at least 1 suggestion: 91 (42.9%) gave 1; 48 (22.6%) gave 2; 40 (18.9%) gave 3; 19 (9.0%) gave 4; 9 (4.2%) gave 5; and 5 (2.4%) gave 6.

level of dental anxiety.²⁵ One-fifth of a group of UK dental practitioners with a special interest in treating dentally anxious patients reported using adult dental anxiety assessment questionnaires; this rate was higher among practitioners providing intravenous (IV) sedation.¹⁷ There may be a misconception among dentists that completing such an assessment questionnaire and discussing fears may increase a patient's anxiety. This is not the case; rather, it may reduce anxiety because patients may appreciate the practitioner is expressing concern.^{17,26}

Similarly, half of the respondents did not ask their patients about bad life experiences that had led to dental fears, and 6 of 7 did not seek that information on their patient history form. By contrast, almost 9 of 10 stated they personally discuss their patient's "fears" with them, albeit not for long, as only 1 in 5 respondents reported spending at least 15 minutes discussing their patients' fears with them before commencing treatment. In an Australian survey, approximately half of the dentists reported asking their patients directly about possible anxiety or fear, but there was considerable variation in the wording used to elicit that information.²⁴

The higher proportion of overseas graduates who reported spending at least 15 minutes discussing fears could reflect greater attention on fear and anxiety during their dental education as compared with NZ graduates. The tendency among those working in smaller practices to refer dental anxiety patients for specialist care could be due to a lack of support in managing such patients.

Diagnosing dental anxiety may be based on patients disclosing their fear of treatment.²⁵ Holistic patient care first requires objectively identifying dental anxiety to plan and deliver appropriate oral health care.^{1,24,28} Failure to use patient self-assessment tools can compromise dentists' ability to identify patients' anxiety levels. Direct clinical observation and interaction are often insufficient given that practitioners often rate dental anxiety lower than their patients do, especially if the latter are highly anxious.^{20,29} Moreover, clinicians who are more confident in their ability to rate a patient's dental anxiety have actually been found to be worse at it.²⁰ In contrast to other anxiety disorders, the oral health care setting is often both where the disorder arose and where the dental anxiety diagnostic process will occur, and it is not routinely part of psychological evaluations and discussions.³⁰ Knowing whether a patient has dental anxiety is essential because of its negative impact on oral health, social and psychological well-being,^{10,14} dental visiting patterns, and the patient's ability to be satisfactorily and safely managed in the clinical setting.¹⁵

Reducing dental anxiety promotes patient acceptance of treatment while enhancing treatment outcomes and future appointment success, ultimately improving oral and overall health.¹⁰ Many patients with dental fear are considered

difficult, unreliable, and excessive complainers.²² Dental anxiety can be problematic for oral health care providers,³¹ but treating patients with dental anxiety can also be viewed as a positive challenge, with dentists feeling that they are making a helpful contribution and also enhancing their own job satisfaction.^{7,22} Dentists who treat anxious patients report experiencing stress, and anxious patients are perceived as one of the greatest sources of stress in dental practice.^{22,32,33} The impact on the dental team can adversely affect the running of a practice.^{1,10,34}

All respondents in the current study reported using some form of management for patients with severe anxiety, with most (45.6%) using a combination of those means listed. Although 1 in 7 referred to a colleague, the nature of that referral (the other colleague's discipline or service) remains unknown, as the survey did not ask about it. This remains an issue for future investigation.

Interventions used to reduce anxiety should be proportional to the level of the patient's dental anxiety.¹⁴ Accordingly, assessing that anxiety will enable a proper diagnosis and should lead to appropriate management. While dentists may perceive using a dental anxiety scale to be time-consuming,²⁴ there are standardized and validated dental anxiety scales that are simple and easy to implement with little to no cost. A traffic light color code for dental fear with 3 levels (green = no or low fear, yellow = moderate fear, and red = severe fear) could be used to screen for dental anxiety. A patient with a red code response requires further evaluation of dental fear and treatment planning.²⁹ A single item can be used for patients to rank their anxiety on a visual analog scale from 0 to 10. If their anxiety is greater than 5, an additional multidimensional questionnaire (eg, the IDAF-4C+) can be used to obtain more information about specific fear-inducing stimuli. Of the large number of tools available for assessing dental anxiety, the IDAF-4C+ is the only one that has a sound theoretical underpinning.¹⁹ If high levels of dental anxiety are noted—and there has been prolonged avoidance of oral health care—then a suspected diagnosis of dental phobia should be considered. Psychological referral has recently been recommended for such cases.³⁰

Mild to moderate dental anxiety can be managed by building rapport and trust, creating a warm and welcoming environment conducive to cooperation, and providing information and a sense of control for the patient.^{1,14,35,36} However, this type of approach (ie, iatrosedation) takes time, and few dentists in this survey reported spending an extended amount of time (ie, >15 minutes) discussing and helping ease their patients' fears before commencing treatment.

Psychotherapeutic interventions can allow many patients to overcome their fears and become regular users of dental services.³⁷ Interventions differ but are usually either behaviorally or cognitively based, or a combination of both, such as with cognitive behavioral therapy.¹³ Referral to a

psychotherapist is particularly important because approximately half of the patients with dental phobias also have general anxiety or other psychological disorder comorbidities.^{30,38} However, as mentioned above, the cost of such care is likely to be prohibitive for some patients.

Proper education is essential for the safe use of sedation, including the administration of oral or IV benzodiazepines, which necessitates a high standard of care and monitoring. While providing the patient with only transient respite from their anxiety, it is nevertheless appropriate for highly anxious patients requiring urgent treatment.^{1,2,14} Administering any drug for reducing anxiety and/or improving tolerance of dental treatment falls under the Sedation Practice Standard specified by the Dental Council of NZ.²⁷ Sedation involves the use of a drug or drugs to produce depressed central nervous system (CNS) activity, enabling treatment to be carried out. It essentially involves a dose-dependent continuum of CNS depression that serves to suppress (rather than cure) the underlying dental anxiety; thus, it does not enable the patient to overcome the root cause of their fear.^{14,21} The 4 common types of pharmacologic management used by NZ dentists are oral sedation, IV sedation, nitrous oxide in oxygen (inhalational) sedation, and general anesthesia (provided only by an anesthetist).²⁷ Formal undergraduate dental education enables sufficient provision and monitoring of oral or inhalational sedation, but further qualifications are required to administer IV sedation. Dentists need to show evidence of their maintaining competence to administer any form of sedation.²⁷ General anesthesia is now the exclusive domain of physician anesthesiologists in NZ.

There was universal agreement among respondents that the situation for dentally anxious patients needs to improve. Many respondents would like to see wider availability of specialist psychological services to support patients. Are there enough psychologists practicing in NZ? The most recent data¹ show that 3385 psychologists hold practicing certificates; 2924 are designated as either psychologists or clinical psychologists, either of whom could include work with dentally anxious clients within their scope of practice. Such involvement would take place entirely within the private sector, with costs being prohibitive for many patients. Other common suggestions for managing dentally anxious patients were more training in the pharmacologic management of dental anxiety and better awareness of the problem within the community and dental profession. The New Zealand Society for Sedation in Dentistry provides courses on IV sedation, but demand far exceeds course availability. Greater awareness of dental anxiety within both the profession and the community is necessary for better management, but greater awareness alone is insufficient.

¹New Zealand Psychologists Board Annual Report (2020-2021); <https://psychologistsboard.org.nz/wp-content/uploads/2021/11/Psychologists-Board-Ann-Rprt-2021-J-online.pdf>

Our findings suggest that it is necessary to increase didactic and practical teaching in dental education in NZ to improve the identification and management of dental anxiety. New graduates should have sufficient practice in diagnosing and treating dentally anxious patients. Dentists also require more advanced training for nonpharmacologic management of dentally anxious patients using communication techniques and building trust. There is also a need to better understand current curriculum content to improve dental anxiety education at both undergraduate and postgraduate levels.

There appears to be a need for improved holistic teaching of dental anxiety at the undergraduate, postgraduate, and continuing professional development levels as part of the contemporary patient-centered approach to oral health care.^{1,27} Further research is required to understand how dentists' current poor assessment of dental anxiety can be improved, including (1) identifying the training needs of oral health professionals and (2) developing evidence-based recommendations and guidelines for managing dental anxiety. Dental students should have sufficient knowledge and skills in treating dental anxiety upon graduating³⁹; this could involve interprofessional collaboration with psychology staff and students.⁴⁰ Training for dental professionals has been shown to improve their confidence in managing dentally anxious patients.^{41,42} Since dental anxiety rests at the interface of dentistry and psychology, greater interprofessional collaboration is essential.²

Limitations and Strengths

The most important weaknesses of the study were our inability to obtain an up-to-date sampling frame from either the DCNZ or the NZ Dental Association, and the low response rate. It is becoming more difficult to undertake such surveys because professional bodies are becoming steadily more protective of their members' interests and privacy, with that arising from changes in their organizational policies rather than in the privacy legislation itself. While this might be appropriate, it impedes the conduct of health services research (such as the current study), which produces beneficial findings not only for those members but also for the professional bodies concerned. Low response rates have been a feature of several dental surveys in recent years, and perhaps the onus is on researchers to more effectively communicate their existing findings and the background and rationale for any future surveys. Although the gender distribution of the sample closely resembled that of the NZ dental workforce, the proportion of Otago University graduates did differ,² so any generalizing from our findings should be done with caution. Another

²<https://www.dcnz.org.nz/assets/Uploads/Publications/workforce-analysis/Workforce-Analysis-2018-2019.pdf>

weakness of the study was that we did not determine which assessment tools were being used. The main strength of this study is that it is a long overdue investigation of how NZ general dentists identify and manage dental anxiety and their views on what is needed to improve the situation.

CONCLUSION

The use of formal dental anxiety/phobia assessment tools prior to treatment among NZ general dentists was found to be minimal, indicating a significant area for improvement. Addressing dental anxiety is a complex issue that requires a multipronged approach involving improved education, the development and implementation of better assessment tools, and a greater understanding of how dentists' current assessment and management of dental anxiety can be improved.

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