

COVER STORY

# ASSESSING THE NEED FOR ANESTHESIA AND SEDATION IN THE GENERAL POPULATION

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**F**ear of dentistry persists despite continuing improvements in dental therapy and pain control modalities. Unfortunately, the most common method of blocking pain during dental procedures—the intraoral injection of local anesthetic—is highly aversive to many patients because of the perceived pain associated with intraoral needle puncture. The association between fear of dentistry and administration of local anesthetic is illustrated by a survey finding that more than half of patients who reported being highly fearful of dentistry stated that they worried a great deal about receiving oral injections.<sup>1</sup> Another survey found that 25 percent of adults expressed a fear of injections, with one in 20 respondents indicating that they avoided, canceled or did not appear for dental appointments because of fear.<sup>2</sup>

Fear of painful dental procedures is magnified in young patients, in emotionally and physically disabled people, and in those who have become phobic as a result of unpleasant dental or medical procedures. The results of a telephone survey published in 1983 showed that 29 percent of respondents reported that they are moderately to highly fearful, with approximately half of the respondents in this group avoiding dental care.<sup>3</sup>

A more recent survey found that approximately 20 percent of respondents in Seattle could be classified as having high fear of dentistry, with 3 percent of the total group reporting that they are terrified of dental treatment.<sup>4</sup>

## ABSTRACT

**The authors used a national telephone survey to examine the relationship between dental anxiety and the use of pain and anxiety control measures in the general population. Nearly 30 percent of respondents reported being somewhat nervous, very nervous or terrified about going to the dentist. There was a threefold difference between the reported use of anesthesia and sedation and respondents' preference for these treatment modalities. These data suggest that fear of dentistry is still prevalent and that patients who are fearful would seek oral health care more regularly if general anesthesia or conscious sedation were more readily available.**

TABLE 1

DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE.	
CHARACTERISTIC*	NO. (%) OF RESPONDENTS (N = 400) <sup>†</sup>
<b>Education</b>	
< High school graduate	36 (9)
High school graduate	149 (38)
< Four years of college	110 (28)
College graduate	65 (17)
Graduate degree	31 (8)
<b>Race</b>	
African-American	37 (10)
Asian	9 (2)
White	303 (80)
Hispanic	27 (7)
Other	3 (1)
<b>Sex</b>	
Male	150 (37.5)
Female	250 (62.5)
* The mean age ( $\pm$ standard deviation) of the subjects was $44.2 \pm 16.6$ years. <sup>†</sup> The numbers do not total 400 for all characteristics because some respondents did not answer all questions.	

Two-thirds of the respondents with high levels of fear reported that they acquired their fear of dentistry in early childhood; an additional 20 percent became fearful during adolescence. Using a standard anxiety scale, researchers conducted a random-digit-dialing survey of Canadian adults older than 50 years of age and found that 8 percent of subjects could be classified as anxious about dental treatment.<sup>5</sup> Taken together, these data provide evidence that a substantial portion of the population is fearful of dental treatment, and this fear is primarily acquired during childhood and can persist throughout one's life.

Fear of dentistry in the general population is an indirect

measure of the failure of current therapeutic approaches to reduce pain and anxiety sufficiently to enable people to visit the dentist.

However, until recently, the need for general anesthesia or conscious sedation to overcome dental fear or anxiety has not been studied. A survey of dental practitioners found that 66 percent encounter at least one patient per week who is anxious or fearful about dental care (The Gallup Organization for Astra Pharmaceuticals Inc., Mid-Winter Meeting, Chicago

Dental Society, unpublished data, February 1993). While most of these dentists reported that they use a wide variety of nonpharmacological and pharmacological methods of anxiety control, the majority regularly refer patients whose anxiety cannot be managed in their offices to other dentists.

Gordon and colleagues<sup>6</sup> conducted a mail survey of patients with special health care needs and found a large difference between patient preferences for conscious sedation and general anesthesia and the actual use of these treatment modalities during dental visits. In the youngest group of respondents (younger than 30 years old), 40 percent indicated that they would go to the dentist more frequently if conscious sedation or general anesthesia were offered.

In this study, we examined dental fear/anxiety in the general population as a possible barrier to oral health care and evaluated whether the use of adjunctive anesthesia services is correlated with improved access to dental care.

#### METHODS

A professional organization (Biospherics Inc.) performed a random-digit-dialing

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telephone survey of the general U.S. population.<sup>7</sup> Telephone numbers were dialed randomly between the hours of 5 and 9 p.m. in the respective time zones to ensure that the sample would be as unbiased as possible with respect to sex and em-

ployment status. The sample was stratified in each geographical area such that the number of households drawn from a county was proportional to that county's share of households with telephones. This method minimized investigator bias and resulted in a stratified sample with geographical, socioeconomic and racial representation of the entire U.S. population. A population of 200,000 is considered to be infinite in statistical terms and requires a sample of 386 people to be considered representative using this method.<sup>8</sup>

Telephone numbers (n = 387) that were not usable (that is, disconnected numbers, facsimile machines and businesses) were replaced with numbers from the same telephone exchange. Of the 678 people receiving telephone calls placed to their residences, 241 refused to participate and another 37 hung up before the survey was completed. The 400 completed interviews (59 percent participation rate) were performed by professional interviewers with extensive experience in conducting surveys in health re-

search. The impact of non-responders in surveys of oral health conditions using the random-digit-dialing method is small and

does not necessarily compromise the study results.<sup>9</sup> Quinn and colleagues<sup>10</sup> reviewed 25 telephone surveys and concluded that this method yields results comparable to those obtained through face-to-face interviews.

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The interviewers introduced the questions as part of a research study being conducted by the American Dental Society of Anesthesiology; they told respondents that they had been randomly selected and asked them to answer 10 questions about going to the dentist. The

questions consisted of closed-ended inquiries in four categories: demographic characteristics; frequency of use of oral

health care services; respondents' reports of fear/anxiety toward dentistry; drugs currently received vs. those preferred for pain and anxiety control during dental visits.

No other questions were

asked during the interview.

All completed surveys were analyzed with a standard statistical software package (BMDP Statistical Software, SPSS Inc.) to determine the frequency of categorical data and the mean and variation of continuous variables. We analyzed the association between selected factors using Pearson's  $\chi^2$  test with significance set at  $P < .05$ .

## RESULTS

The demographic characteristics of the study sample are summarized in Table 1. One hundred ninety-three (48.3 percent) of the 400 respondents reported that they visited the dentist every six months; 112 (28.0 percent) visited the dentist at least once per year; 61 (15.3 percent) visited the dentist less than once per year; and 26 respondents (6.5 percent) reported that they never went to the dentist. A small portion of



**Figure 1. Reasons identified for not visiting the dentist among respondents who visit fewer than two times per year (multiple responses possible).**

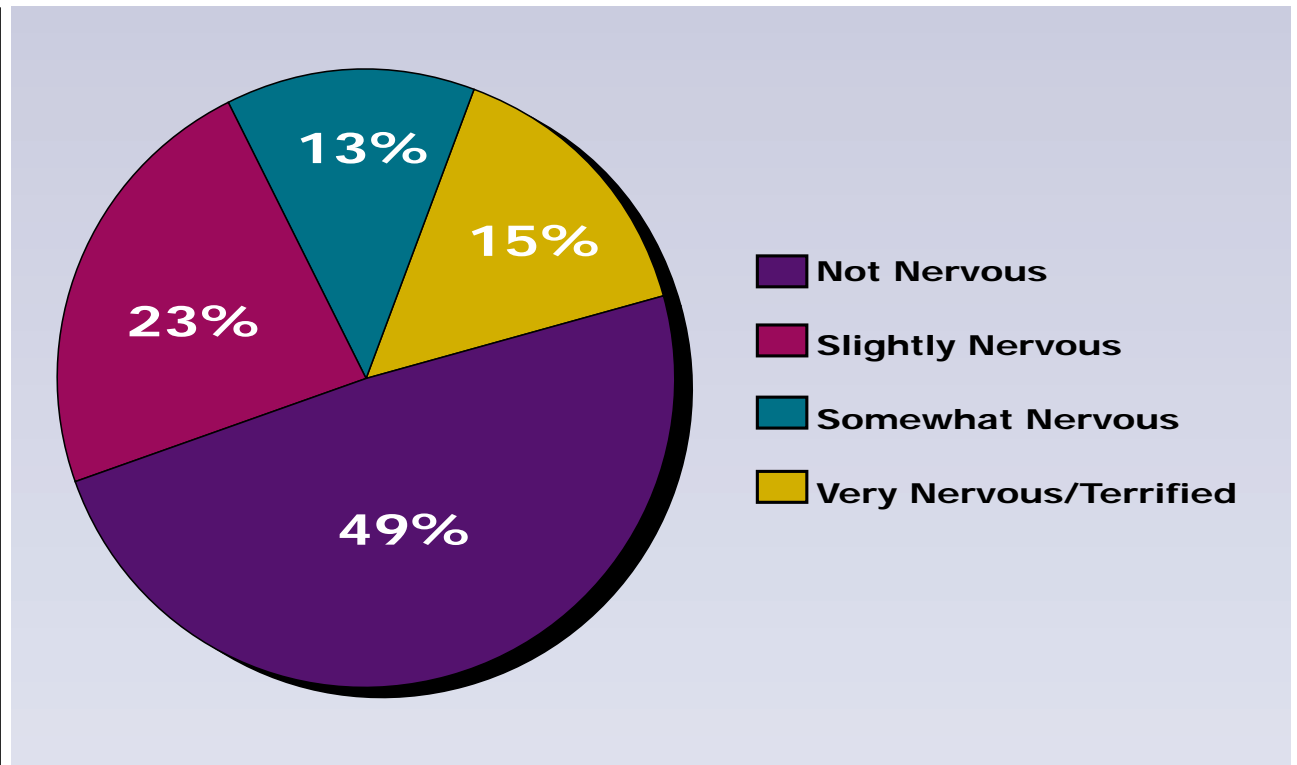


Figure 2. Level of dental fear/anxiety for all respondents.

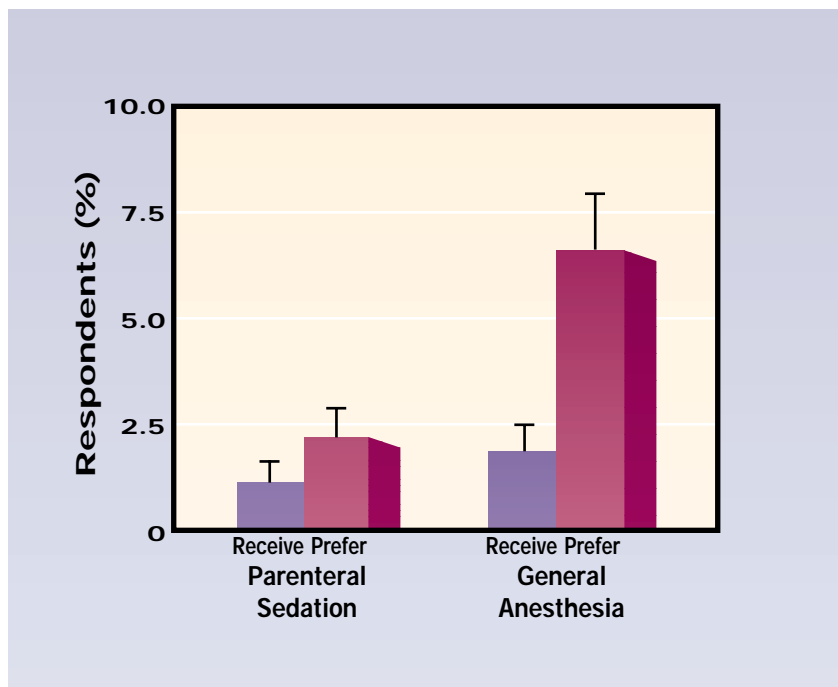


Figure 3. The percentage of respondents who receive parenteral sedation or general anesthesia (purple bars) vs. the percentage who would prefer to receive these treatment modalities (magenta bars).

the sample (1.8 percent) provided explanations such as not

going to the dentist because of edentulism.

Figure 1 summarizes the reasons identified by the 207 subjects (51.7 percent) who reported that they do not receive dental care regularly (defined as fewer than two visits per year). The level of dental fear/anxiety among all respondents ranged from “not at all nervous” to “terrified” (Figure 2). Fifty-nine (14.8 percent) of the respondents admitted avoiding or postponing a dental appointment because of fear/anxiety. Figure 3 summarizes the types of anxiolytic medications that patients reported having received to reduce their fear/anxiety during dental visits, along with the types of medications preferred. Of 387 respondents, 70 (18.1 percent) reported that they would go to the dentist more often if he or she could give them a drug that would make them less nervous during the procedure.

Several associations among the factors were statistically significant (Table 2). Patients with high dental anxiety (very anxious or terrified) reported having significantly fewer visits than respondents reporting low dental anxiety (not nervous or slightly nervous). Patients who responded that they missed dental appointments reported having significantly more fear/anxiety than patients who did not miss appointments. Similarly, significantly more respondents with high anxiety than low anxiety reported that they would go to the dentist more often if they could receive a drug to help them relax.

#### DISCUSSION

The distribution of ages, educational levels and race in the study sample is proportionate to that of the general U.S. population; the one exception is sex, which is overrepresented by women. This is not an unexpected finding in telephone surveys.

The results of this survey agree with previous findings among the general population regarding the utilization of oral health

care services and the prevalence of fear/anxiety in regard to dentistry.<sup>11-13</sup> Although this study does not permit us to demonstrate a causal relationship between fear/anxiety and dental care use, a large number of fearful respondents attributed postponed or missed appointments to dental fear/anxiety

**A large number of fearful respondents indicated that they would go to the dentist more frequently if they could receive a drug to make them less nervous.**

TABLE 2

RELATIONSHIP BETWEEN LEVEL OF FEAR/ANXIETY AND FREQUENCY OF DENTAL VISITS, MISSED DENTAL APPOINTMENTS AND AVAILABILITY OF SEDATIVE DRUGS.			
FACTOR	NO. (%) OF RESPONDENTS		P-VALUE
	Low Fear/Anxiety*	High Fear/Anxiety*	
<b>No. of dental visits</b>			
Twice a year	147 (51.9)	25 (41.7)	< .05
Once a year	79 (27.9)	14 (23.3)	
< Once a year	57 (20.1)	21 (35)	
<b>Missed dental appointments</b>			
Yes	21 (7.3)	30 (50)	< .001
No	268 (92.7)	30 (50)	
<b>Would go to the dentist more often if given a sedative drug</b>			
Yes	25 (10.6)	32 (55.2)	< .001
No	211 (89.4)	26 (44.8)	

\* The low fear/anxiety group consisted of subjects reporting that they are not nervous or are slightly nervous; the high fear/anxiety group consisted of subjects reporting that they are very nervous or terrified about going to the dentist. Subjects reporting that they are somewhat nervous were not included in this analysis.

and indicated that they would go to the dentist more frequently if they could receive a drug to make them less nervous. The body of evidence in the literature provides a reasonable basis

for inferring that a substantial proportion of the general population is very anxious or terrified about receiving dental care.<sup>1,3-5,11-13</sup>

The percentage of subjects reporting that they prefer parenteral sedation or general anesthesia (8.6 percent) when receiving dental care was threefold greater than the percentage of subjects who were actually receiving these treatment modalities (2.8 percent); this suggests a need for increased use of these

modalities in dental practice.

A national survey found that while dentists frequently encounter anxious patients, 55 percent of respondents (n = 300) reported that they routinely refer patients who require adjunctive anesthesia to oral surgeons and pediatric dentists rather than treat them in their practices (The Gallup Organization for Astra Pharmaceuticals Inc., Mid-Winter Meeting, Chicago Dental Society, unpublished data, February 1993). Pediatric dentists and oral surgeons receive advanced training in anesthesia and sedation during their specialty training. However, because of the limited population served (pediatric dental patients) or limited scope of services provided (oral surgery), therapeutic alternatives for adults in need of general anesthesia or conscious se-

dition for routine dental care are not available.

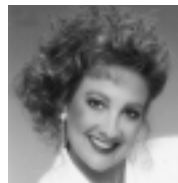
Dramatic changes have occurred in the past decade in regard to regulatory issues, training and drug safety that affect dentists' ability to provide adjunctive anesthesia services. Virtually all states have amended their dental practice acts to increase the amount of training that dentists must receive to be allowed to use parenteral sedation or general anesthesia. Mandatory office inspections and requirements for continuing education ensure that the benefits of advanced training are maintained over time and standards of care keep pace with advances in pharmacology and patient monitoring.

It is likely that these changes have improved patient safety by eliminating less-than-qualified practitioners and ensuring that greater attention be given to preventing untoward reactions through preoperative patient evaluation and monitoring during dental procedures. These standards are applied equally to generalists, specialists and those with advanced training in anesthesia to assure the public that all dental practitioners with a permit to administer general anesthetic or sedative drugs are adequately trained.

Any proposed increase in the use of sedation or anesthesia for dental outpatients would require not only an appropriately trained cadre of clinicians but also professional consensus to identify drugs and their combinations that provide an ade-



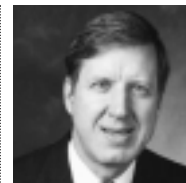
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quate balance between patient safety and anxiolytic efficacy. The results of this survey and others suggest that a substantial number of patients need adjunctive anesthesia ser-

vices to access oral health care. A greater availability of dentists trained in anesthesia and sedation would permit patients who now avoid dental care because of fear/anxiety to receive comprehensive treatment along with behavioral therapy (such as progressive relaxation techniques and biofeedback) that would eventually minimize their apprehension. However, a growing body of evi-

dence suggests that prototypic sedative drugs and their combinations given orally, sublingually or parenterally can be safe and effective when administered by appropriately trained dentists, at recommended doses and rates, and with careful patient monitoring.<sup>16-20</sup>

#### CONCLUSION

Our findings indicate that fear of dentistry is still prevalent in the general population and, for many patients, is a barrier to receiving dental care. When the data are extrapolated to the U.S. population, they translate to an approximate 45 million people being very nervous or terrified about visiting the dentist; 23 million avoiding dental care because of fear; and almost 23 million willing to go to the dentist more frequently if general anesthesia and conscious sedation were more readily available. ■

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