

## Dental Fear of Japanese Residents in the United States

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The purpose of this study was to investigate dental fear in a sample of Japanese adults and to make preliminary comparisons with a previously described US sample. The survey instrument was translated into Japanese and then translated back into English and was sent to 839 Japanese residing in the Seattle area. A total of 419 (49.9%) usable questionnaires were returned. Results indicate a level of fear higher than the US population (only 17.9% were not at all afraid). Fear level did not vary by age; most respondents (73.3%) acquired their fear in early childhood. While reported utilization was lower than the American sample, the percentage of Japanese respondents who reported being hurt at the last appointment was high (68.0%). Japanese respondents indicated that 35% of dentists appeared to be in a hurry, hurry being associated with being hurt. Japanese coping practices appeared to differ from the American sample. For example, 14.7% of the Japanese whereas 28.2% of the US sample requested the dentist to stop treatment.

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**A** number of studies conducted over the past 30 years indicate that dental fear and avoidance of dentists are major public health problems.<sup>1-8</sup> Studies, primarily conducted with North American and Northern European populations, have suggested some common patterns of dental fear and avoidance.<sup>5,9-12</sup> Domoto and associates

recently reported the results of a dental fear survey conducted in Japan.<sup>13</sup> The high prevalence (80%) of dental fear and the common pattern of delaying dental care in this study of Japanese college students suggest that dental fear is also a public health problem in Japan.

These preliminary data are consistent with cross-cultural evidence pertaining to anxiety and anxiety disorders.<sup>14</sup> Based on data from cross-cultural investigation and common wisdom, we believe dental fear and avoidance of dental care represent a universal barrier to oral health. Dental fear, as a common problem across cultures, is important to address comprehensively, since it affects the health and structure of societies in a significant way.

Additional studies with Japanese populations of various ages are needed to supplement the work conducted with college students. This study attempts to add to our knowledge by assessing the fear levels of Japanese living abroad in the United States.

### METHODS

In March and April, 1988, a sample of Japanese residents of metropolitan Seattle were surveyed by mail. Since our target group was the population of Japanese nationals in the Seattle area, and there was no complete list of these people available, names and addresses of Japanese nationals and their families were taken from lists of Japanese businessmen's associations, academies, and students enrolled in a major university. A total of 879 names was compiled.

Milgrom and colleagues had previously developed a survey instrument to assess demographic characteristics, dental fears, previous dental experiences, and self-perceived current state of dental health. The instrument was then employed to assess dental fear in the Seattle area and was the basis for the instrument in the present study.<sup>12</sup> The entire questionnaire was translated into Japanese by a Japanese native and later translated back to English by another person to compare the result with the original. Meanings and implications of the original English questionnaire were preserved after the two translation pro-

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**Table 1.** Fear Reporting by Japanese Respondents Compared with Non-Japanese Residents

<i>Fear Report</i>	<i>Japanese</i>	<i>Non-Japanese<sup>a</sup></i>
Not at all afraid	17.9	49.8
A little afraid	40.3	29.8
Somewhat afraid	29.2	13.1
Very afraid	9.2	4.4
Terrified	3.4	3.0

<sup>a</sup> Data from Milgrom et al.<sup>12</sup>

cesses. However, some changes from the original were required. For questions about the respondents' previous dental experiences, it was specified that we were concerned about their experiences in Japan. A large space was provided to allow respondents to make any comments on their dental experiences, dental fear, and complaints about the dental system in Japan.

Since most names in the list were male, and since it was desired to have both male and female respondents and to obtain data from as many people as possible, two survey booklets were sent to each name. A cover letter explaining the purpose of the survey and asking all members of the household 18 years old or older to complete the questionnaire was enclosed. Approximately 2 weeks later, a followup letter and two more forms were sent. Of 839 questionnaires, a total of 419 were completed representing a response rate of 49.9%. Two responses were not included in the statistical analyses because the respondents were under 18 years of age.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Subjects were categorized as having high levels of dental fear if they reported either somewhat afraid, very afraid, or terrified of dental treatment.<sup>12</sup> Throughout the analysis, responses of "high fear" and "low fear" groups were compared using Student's *t*-test,  $\chi^2$  analysis, or the Pearson correlation coefficient.

## RESULTS

Respondents ranged in age from 18 to 78 years with a median age of 35.2 years. The number of years living in the United States varied from 0 to 40 years, with a median of 2.0 years. Males accounted for 47% of the sample.

As is shown in Table 1, only 17.9% of the Japanese respondents answered not at all afraid of dental treatment. The prevalence of high dental fear (somewhat afraid, very afraid, or terrified) was 41.8%. Equivalent data for non-

Japanese respondents in the Seattle area<sup>12</sup> is also presented in Table 1 and reveals the clear difference between these two groups. Table 2 shows the age of acquiring dental fear by highly fearful respondents. Of the 165 respondents reporting high dental fear, 121 (73.3%) reported having acquired their fear in early childhood.

The proportion of high-fear respondents does not vary significantly by age, though the youngest age group shows the highest prevalence of dental fear. As for the gender difference, 67 of the 194 males (34.5%) reported a high fear level while 106 of the 218 females (48.6%) did so. This reporting difference was significant at the  $P < 0.001$  level.

As is shown in Table 3, a little over half (52.4%) of high fear respondents worried a great deal or almost constantly about receiving oral injections. The analogous proportions are 77.4% for drilling and 26.7% for teeth cleaning. The degree of dental fear is also statistically correlated with fears for the specific procedures. For example, dental fear correlates with fear of injections ( $r = 0.58$ ) and with fear of drilling ( $r = 0.60$ ). Table 4 presents the intercorrelation matrix between fear and worries about specific procedures.

Questions concerning the last dental visit indicated 45.9% of the Japanese respondents visited a dental office within the last 2 years. American respondents previously reported a considerably more frequent rate of utilization within the same period (82.2%).<sup>12</sup> While subjects did not specify whether the last visit was in the United States or Japan, it appears that the mix of services is different. Japanese respondents reported more fillings (69.6% vs 33.3%), more extractions (27.4% vs 8.7%), more root canals (24.4% vs 5.9%) and fewer cleanings (54.3% vs 73.6%). The percentage of Japanese respondents reporting being hurt at their last appointment was 68.0%, compared with 16.2% for the American sample.<sup>12</sup> Report of dental fear and being hurt showed a positive relationship ( $r = 0.35$ ).

**Table 2.** Onset of Dental Fear by Age in Respondents Reporting High Dental Fear

<i>Age of Acquisition</i>	<i>Respondents<sup>a</sup> (%)</i>
Preadolescence	73.3
Adolescence (before 18)	12.7
Young adult (before 30)	11.5
Older adult (after 30)	2.4

<sup>a</sup> n = 165.

**Table 3.** Percentage of High-Dental Fear Respondents Worried About Receiving Specific Dental Treatments

Questions: To what degree do you worry about receiving . . .	Not At All n (%)	A Little n (%)	Somewhat n (%)	A Great Deal n (%)	Almost Constantly n (%)
. . . oral injections?	7 (4.1)	36 (20.9)	39 (22.7)	51 (29.7)	39 (22.7)
. . . drilling?	3 (1.7)	8 (4.7)	28 (16.3)	61 (35.5)	72 (41.9)
. . . teeth cleaning?	33 (19.5)	43 (25.4)	48 (28.4)	30 (17.8)	15 (8.9)

Respondents' perceptions of both dentists' management and their own coping practices were also reported. Japanese respondents indicated that 35% of dentists appeared to be in a hurry (non-Japanese 13.1%<sup>12</sup>). The perception of hurry and being hurt was weakly correlated ( $r = 0.20$ ). When asked if the dental personnel stopped treatment when requested, 14.7% of the Japanese and 28.2% of the non-Japanese indicated that the dentist did so each time; 73.3% of the Japanese and 33% of the non-Japanese who would have liked treatment to stop did not ask. When queried whether or not they expressed fear to anyone in the office, 7.4% of the Japanese and 13.7% of the non-Japanese reported doing so. Similarly, a high percentage of Japanese were uncomfortable asking questions (44.0% vs 14.4% for the non-Japanese sample).

Almost one-third of the sample indicated that they put off making dental appointments because of fear, a similar percentage to that previously reported for the non-Japanese sample (34.1% vs 37.1%<sup>12</sup>). Table 5 presents comparisons between high and low fear subjects on the delaying appointment variable. A highly significant association was found between delay and fear level ( $\chi^2 = 83.04$ ,  $P < 0.001$ ). While 59.1% of high-fear Japanese respondents have delayed making appointments at least once, only 17.0% of low-fear Japanese respondents have done so. Results for cancellation and no shows because of fear showed a similar pattern (12.4% canceling at least once or twice for the Japanese sample, 10.8% for the non-Japanese<sup>12</sup>). Table 6 presents comparisons between high- and low-fear subjects: a highly significant association was found between canceling and fear level ( $\chi^2 = 31.24$ ,  $P < 0.001$ ). While 23.5% of the Japanese respondents with a high level of dental fear have canceled or failed to show, only 5.4% of Japanese low-fear respondents have done the same.

**Table 4.** Intercorrelation Between Dental Fear and Worries About Specific Procedures

	Injections	Drilling	Prophylaxis
Dental fear (high-low)	.43	.48	.37
Injections		.51	.43
Drilling			.54

Note: All correlations are statistically significant at  $P = 0.001$ .

In addition to assessing the influence of dental fear on utilization variables, the impact on perceived oral health was assessed. Results indicate that a greater percentage of high-fear Japanese respondents (62.4%) were dissatisfied with their appearance than were low-fear Japanese subjects (45.2%), ( $\chi^2 = 13.5$ ,  $P < 0.003$ ).

## DISCUSSION

Milgrom and associates<sup>12</sup> recently published the results of an examination of the epidemiology of dental fear in a major US city (Seattle, WA). This article focuses on a sample of Japanese people living in the same city. Despite the small sample size and bias inherent in selecting Japanese students, business people, and their families living in Seattle, this investigation offers several insights into dentistry in Japan and in the US.

In comparing the data of the sample of Japanese people with the non-Japanese sample in the larger Seattle study, numerous similarities and differences emerged. Perhaps the most startling difference was the prevalence of dental fear. Only 17.9% of the Japanese living in Seattle reported they were "not at all afraid" of dental treatment, whereas nearly half of the respondents from the randomized Seattle sample<sup>12</sup> reported this. In both samples, females were more likely to report high fear than males. Non-Japanese females were 1.8 times and Japanese females were 1.4 times more likely to report high fear.

In addition to the high rate of dental fear, surprising data concerning pain of dental treatment were presented. This Japanese sample reported four times more pain at the last appointment than the American sample. Such a high percentage, pain reported by more than two in three patients, may indicate that inadequate attention is given to pain control in Japan. The apparent underutilization of local anesthetics may not be recognized by dental practitioners, who traditionally do not receive feedback from their patients. Japanese patients infrequently report their fears and do not seem to complain directly about discomfort. Since regular utilization is not expected, subsequent avoidance of the dentist may go unnoticed. Future studies focusing on the pain of dental treatment from the dentist's

**Table 5.** Effect of Dental Fear on Delaying Appointments

Fear Level	Frequency of Delay in Making Appointments			
	Never n (%)	Once/Twice n (%)	A Few Times n (%)	Often or Nearly Every Time n (%)
High fear	70 (40.9)	41 (24.0)	32 (18.7)	28 (16.4)
Low fear	200 (83.0)	22 (9.1)	14 (5.8)	5 (2.1)

$$\chi^2 = 83.04 \text{ (df = 4, } P < 0.001\text{)}.$$

and patient's perspective may be revealing. Comparisons may be made to US data.<sup>15,16</sup> As there is little published on Japanese dental practice management, study of actual management practice may also help our understanding. Similarly, study of actual coping behaviors of Japanese patients could lead to appreciation of both the uniqueness of Japanese patients and how they are similar to Western patients.

As in the previous study, more than 80% of the fearful Japanese in Seattle reported that they acquired their fear of dental treatment in childhood or adolescence. The implications for preventing dental fear by early and effective intervention are obvious. The process by which dental care is provided is crucial in the prevention of dental fear. Proven behavioral approaches and effective pain control are essential in the treatment of children as well as adults. Many effective, nonaversive techniques in the management of children exist.<sup>17</sup> Chambers has even pointed out that there is an "embarrassment of riches" of management techniques in dentistry for children.<sup>17</sup> Experts agree that prevention of dental fear in childhood is far superior to implementation of a variety of therapeutic interventions on fearful adults.<sup>18</sup> Investigators and dental educators both in Japan and the US recognize the value of optimizing dental care for children so that the vicious cycle of pain, fear, and avoidance of dental care is ameliorated in adults. Worldwide improvements in safe and effective methods of patient management and pain control will provide a significant impact on the dental attending behavior of future generations of adults.

Both Japanese and American samples demonstrated significant relationships between dental fear and worries about specific procedures. The Japanese and the Ameri-

cans were fearful of oral injections, drilling, and prophylaxis. Worries about the specific procedures were intercorrelated. In a previous investigation,<sup>13</sup> oral injections and drilling were rated by Japanese college students as objects of high fear. In that same study, however, prophylaxis was not as highly rated. It was assumed that due to the young age (18 to 22 years) of this sample the prevalence of periodontal problems and associated discomfort would be less evident than samples with a broader age range.

The effects of dental fear on avoidance behavior is striking in Americans. Nearly 70% of high-fear subjects reported that they delayed making appointments "a few times or nearly every time" and 20% canceled or failed to appear for appointments "a few times" or "nearly every time."<sup>12</sup> Only about 35% of the high-fear subjects from the Japanese sample reported that they delayed making dental appointments "a few times" or "nearly every time" and only about 8% of the high-fear subjects reported canceling or failing to appear for appointments "a few times or nearly every time."

The apparent differences between American and Japanese samples may be explained by elements based in cultural differences in the concept of "appointments." Ohnuki-Tierney<sup>19</sup> points out that virtually no clinic or hospital has an appointment system in Japan. She further explains that dentists and specialists in acupuncture are an exception to this practice, since their treatments often require more time than medical visits. However, there appears to be much more variability in Japan regarding dental appointments than in the US, and it is very likely that many of the respondents of our Japanese questionnaire may have had a different concept of "appointment" than their American counterparts. Many dental prac-

**Table 6.** Effect of Dental Fear on Keeping Appointments

Fear Level	Frequency of Canceling or Not Appearing for Appointments			
	Never n (%)	Once/Twice n (%)	A Few Times n (%)	Often or Nearly Every Time n (%)
High fear	130 (76.5)	26 (15.3)	11 (6.5)	3 (1.8)
Low fear	228 (94.6)	11 (4.6)	1 (0.4)	1 (0.4)

$$\chi^2 = 81.24 \text{ (df = 4, } P < 0.001\text{)}.$$

tioners in Japan have no appointment system or have a mixed system of appointments and "first come, first served." Consequently the responses to the question of appointment delay due to fear is confounded by the variation in the concept and experience of dental "appointment." We also speculate that the responses to the delay question are further clouded by the differences in the severity of pathology. Japanese people, since periodic examinations and preventive visits are less common in Japan than in the US, may have more severe symptoms at the time of dental treatment than the people in the US. That is to say that the Japanese have a different baseline of attending to their dental needs than the Americans. The Americans appear to view some prescribed interval, every 6 months or annually, as the expectation; the Japanese appear to utilize services based on the perceived need for surgical and operative interventions. The high percentage of restorative procedures, exodontia, and endodontics at the last appointment support this interpretation.

The extremely low appointment cancellation or "no show" rate of the highly fearful Japanese respondents can be explained by two major factors. First, when an "appointment" is defined as being in the queue, the likelihood of cancellation is quite small, since a major personal commitment has already been made to the process of dental care. Second, the Japanese culture places a high value of respect for people in authority, so it is not likely that even a fearful person would abrogate his/her obligation to the dentist once an appointment has been arranged.

The comments on the returned questionnaires were very interesting. The responses suggest a willingness to share experiences and insights regarding dental care. Many of these comments are helpful in the identification of key issues for the improvement of dental care. There were a total of 135 written comments on the returned questionnaires. Sixteen respondents described concerns regarding dental care in Japan. These comments are grouped in two categories. Most common were concerns that expressed that too many visits were required for completion of treatment. The second category of comments described a pattern of attending the dentist only when pain became great. As one person commented, "I wait until the pain is severe, then when I go to the dentist, I experience more pain and fear." Eleven of the comments noted the value of effective communication and 10 people noted the need or value of the relationship with the dentist built upon trust. Eight respondents expressed concern for the high cost of dental care. Twenty-four of the comments were positive assessments of dentists/dentistry in the United States. The most common responses grouped in descending order of frequency are as follows: preventive dentistry and recall system, technical skills of the dentist, length of individual appointments and the appointment

system, clear explanations, minimization of discomfort, and kindness and consideration.

In all, this study reported considerable dental fears and fear-related behaviors of Japanese residents in Seattle. Though not a representative sample, it was clear that fear did not vary much with age and that suboptimal pain control may be an important contributing factor. Additional studies of both Japanese dentists and patients are recommended.

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