Taking Dental Self-care to the Extreme: 24-month Incidence of Dental Self-extractions in the Florida Dental Care Study

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Abstract

Objective: *A common response to health-related symptoms is to treat oneself in lieu of or prior to seeking formal health care. Among the more extreme forms of dental self-care is dental self-extraction. To our knowledge, no study of the incidence of this behavior has been conducted. The objective of this study was to determine if one form of dental self-care, dental self-extraction, is a real phenomenon, and if so, to determine its incidence.* ***Methods:*** *The Florida Dental Care Study is a longitudinal study of changes in oral health, whose subjects participated for an interview and clinical examination at baseline and 24 months after baseline.* ***Results:*** *Of the 739 persons who participated through 24 months, 176 lost one or more teeth. Of these 176 persons, 13 (7%) extracted one or more of their own teeth. The clinical status at baseline of the self-extracted teeth was consistent with the ability to self-extract.* ***Conclusion:*** *The phenomenon of dental self-extraction is real and is not limited to residents of developing nations or geographically isolated areas. Because of the potential for prolonged bleeding or bacterial endocarditis in certain population groups, community health clinicians and officials should be cognizant of this behavior. [J Public Health Dent 1998;58(2):131-4]*

Key Words: tooth loss, self-care, epidemiology, adults.

A common response to health-related symptoms is to treat oneself in lieu of, or as a prelude to, seeking care in the formal health care system (1-3). This response is so common that the majority of health-related symptoms actually are evaluated and treated outside the formal health care system (4). Examples of self-care behaviors include use of unprescribed and/or over-the-counter medications, use of appliances (e.g., heating pads), use of homemade or folk preparations, changes in activity, changes in diet, consulting lay sources for information and/or therapy, or initiating psychological or spiritual interventions. After a decision is made to seek formal health care, it is often sought outside the mainstream health care system. For example, 34 percent of US adults reported using one or more "unconventional" therapies, therapies generally used as adjuncts to conventional medical therapy instead of being a replacement for it (5). "Unconventional" medicine was defined in that study as medical interventions not taught widely at US medical schools.

To date, research on oral/dental self-care has emphasized toothbrushing and flossing habits, use of toothpicks and interdental hygiene devices, use of over-the-counter fluoride or analgesic products, avoidance of between-meal snacking and cariogenic foods (e.g., Payne and Locker (6)), and to a lesser extent, anecdotal and historical reports of actual self-treatment (7-11). To our knowledge, no study of one of the more extreme forms of dental self-care, dental self-extraction (removal of one's own tooth), has been done.

During questionnaire development and pretesting for the Florida Dental Care Study (FDCS), a longitudinal study of risk factors for changes in oral health, we received anecdotal reports of the existence of dental self-extraction behavior. These reports came from dentists and ambulatory adults in the geographic areas targeted for the FDCS, and led us to systematically query participants in the FDCS. The purpose of that systematic query was to determine if this phenomenon is real and, if so, to document its prevalence and incidence in a representative sample of dentate adults.

The overall objective of the FDCS was to develop a risk assessment model of longitudinal oral health outcomes. However, we describe herein the 24-month incidence of one type of dental self-care behavior: dental self-extraction. We have described previously the self-reported prevalence at baseline of nonprofessional dental extractions (12), the majority of which were indeed self-extractions. One of the more important advantages of the FDCS sample is that it is a community-based sample (13) of dentate adults that included subjects without regard to whether they sought dental care regularly, as well as adults from a diverse array of backgrounds. The objectives for the analyses in this report were to: (1) determine if dental self-extraction is a real phenomenon; (2) describe its incidence; and (3) describe the clinical, sociodemographic, and behavioral correlates of the behavior.

Methods

The goal of the sampling design was to ensure that a large number of persons at a hypothesized increased risk for oral health decrements would be included for the FDCS sample at baseline (namely, blacks, rural residents, and persons below the US poverty level). Sampling methodology has been described in detail previously (13). The 873 subjects who participated at baseline resulted in a sample of only modest bias with respect to the popu-

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lation of interest (13). Also, this sample had a dental care recency similar to 1989 National Health Interview Survey data, and conclusions drawn from the FDCS and NHIS regarding determinants of dental care recency were the same (13).

Subjects participated in a face-to-face baseline interview, followed by a clinical dental examination. [We have provided methodologic details regarding the interview and clinical examination in eight earlier publications, a complete list of which can be found at the FDCS Internet page (http://www.nerdc.ufl.edu/~gilbert/).] The baseline session was followed by telephone interviews at six months, 12 months, and 18 months following the baseline. Among other items, subjects were asked to report whether they had lost any teeth since the previous interview and, if so, which teeth were lost. During the interview, interviewers had before them a printed version of which teeth the subject had at baseline. Once subjects had identified the teeth that were lost, they were asked if all these teeth were extracted by a dentist or by someone else, and the number in each category was recorded accordingly.

At 24 months after baseline, the interview was done in person instead of by telephone, and was followed by another clinical examination. For the 24-month time point, the mean number of months subsequent to baseline that the interview actually took place was 24.6 (SD=1.3). The mean lengths of observation did not differ with respect to nine clinical and sociodemographic characteristics. (Analysis available from the authors upon request.) Therefore, statistics reported are not adjusted for differences in length of observation period.

Results were weighted using the sampling proportions to reflect the population in the counties studied. For example, although 35 percent of the sample of 873 subjects at baseline was poor, the weighted percentage was 16 percent to reflect the percentage of 45-year-old or older persons in these counties who were actually poor. The demographic targets were taken from Census data that detailed target populations by age, sex, race, and poverty status (US Bureau of the Census. Unpublished special tabulations for the University of Florida from the 1990 Census of Population and Housing for the US and four counties in north Florida, 1994). The only instance where unweighted numbers are used relates to calculating participation rates in the following paragraph. All other numbers and percentages are weighted values.

The study began at baseline with 873 participants. By 24 months, 764 persons (unweighted number) remained in the study, of whom 723 (unweighted number; weighted number is 739) participated for the 24-month clinical examination. To evaluate the potential for bias as a result of subject attrition, we compared characteristics of those who participated at 24 months for a clinical examination with those who did not for any reason. A detailed report of attrition is available from the authors upon request. Briefly, however, persons lost to follow-up were more likely to have been irregular, problem-oriented dental care attenders (18% of problem-oriented attenders lost to follow-up vs 13% of regular attenders; chi-square test, $P<.05$), and persons in groups correlated with less frequent dental attendance (namely, poor persons and persons with active dental decay). Given that dental self-extraction was ultimately associated with irregular dental attendance and poverty status, the higher attrition rates for these groups probably led to a slight underestimate in the 24-month cumulative incidence rate.

Of the 739 persons who participated for the 24-month clinical examination, 44 percent reported at baseline that they were problem-oriented dental attenders, 58 percent were 45–64 years old at baseline (the rest were 65 years old or older), 27 percent were black (the rest were non-Hispanic white), 20 percent had not completed high school, 44 percent were male, and 45 percent reported at the 24-month interview that their household income was less than $20,000 annually. At baseline, 50 percent of these 739 persons had 25 or more teeth.

Results

Of the 739 persons who participated for a clinical examination at 24 months, 176 persons lost one or more teeth be-

TABLE 1
Incidence of Tooth Loss, Including Dental Self-extractions, Between Baseline and 24 Months after Baseline in the Florida Dental Care Study*

Characteristic (Weighted *n* and Weighted %)	Telephone Interviews			24-month Clinic Exam
	6-month	12-month	18-month	
Number of persons providing data who also participated for a 24-month examination	738	731	735	739
Number (%) of persons with self-reported loss of 1 or more teeth	66 (9%)	43 (6%)	63 (9%)	56 (8%)
Cumulative number (%) of persons with self-reported loss of 1 or more teeth	66 (9%)	99 (14%)	138 (19%)	170 (23%)
Number (%) of persons with loss of 1 or more teeth, as determined by clinical exam	—	—	—	176 (24%)
Cumulative number (%) of persons with clinically confirmed tooth loss who also reported 1 or more self-extractions	—	—	—	13 (7%)

*During the telephone interviews (6-, 12-, and 18-month) and the in-person interview (24-month), subjects provided self-reported tooth loss information. This table only includes the 739 persons who participated for a clinical examination at 24 months so that self-reported loss could be verified clinically.

tween baseline and the 24-month examination (Table 1). Of the 176 persons who lost one or more teeth during the follow-up period, 13 persons, or 7 percent, performed one or more dental self-extractions. Consequently, these 13 persons comprised approximately 2 percent of the sample overall. All 13 subjects self-extracted teeth, as compared to having a friend, relative, neighbor, or some other person perform the procedure.

The status at baseline of the teeth that were reported as self-extracted was consistent with the ability to self-extract. The mean periodontal attachment loss at baseline of the self-extracted teeth was 10 millimeters, with a range from 7 mm to 19 mm. Sixty percent of the self-extracted teeth were classified at baseline as severely mobile by the clinical examiners. A total of 32 percent of the self-extracted teeth had active dental decay at baseline. The self-extracted teeth with dental decay at baseline had a mean of five decayed surfaces (out of a total of nine surfaces; five on the crown and four on the root).

Two of these 13 persons also reported receiving dental extractions from a dentist during the 24-month follow-up period. These 13 persons had 28 self-extracted teeth (range=1–5 teeth) and 19 dentist-extracted teeth (range=0–10 teeth) during the 24-month follow-up period.

Five of the 13 self-extractors reported that they removed the tooth or teeth with their fingers and four said that they pulled it with a string. One of the persons who pulled it with a string said that he loosened the tooth over a six-week period, then deliberately inebriated himself, tied one end of a fishing line around the tooth and the other end around a drumstick, and pulled. One person "worked it" with her tongue over a period of several weeks, then deliberately ate a food that she considered "strong," which removed the tooth for her. Three other persons reported similar eating phenomena surrounding their self-extraction. Each of the 13 self-extractors reported that the self-extracted tooth or teeth were very loose, and two of these 13 persons reported that they had an abscess or bad infection from the tooth.

All 13 of the persons who self-extracted one or more teeth also reported at baseline that they never go to a dentist or only go when they have a specific problem; none reported going for checkups or on a regular basis for any reason. Of the 13 persons who reported self-extractions, 72 percent were 45–64 years old, 62 percent were male, 54 percent were black, 51 percent resided in a metropolitan area, 59 percent had not graduated from high school, 34 percent were below the 100 percent poverty level, and 55 percent said at baseline that they would not be able to pay an unexpected $500 dental bill.

An additional five persons reported dental self-extractions, but did not participate in the 24-month clinical examination because they were unavailable, unwilling, or were lost to follow-up. Therefore, the missing teeth could not be confirmed clinically, and were not included in calculations.

Five persons also reported one dental self-extraction each, but upon clinical examination at 24 months, had no tooth loss. The most likely explanation for this poor validity of self-reported tooth loss in each of these five persons was that the reported teeth had intact clinical crowns at baseline; however, at 24 months after baseline, the teeth existed as root fragments with the entire clinical crown missing, with all root surfaces decayed. We speculate that the perception of these five persons was that the tooth should be considered missing if it could not be seen when they looked in their mouths.

Discussion

These findings document that the phenomenon of dental self-extraction is real in the United States, and accounts for about 7 percent of the persons with incident tooth loss in a sample of this design. The 7 percent incidence over 24 months compares closely with the 10 percent prevalence of one or more dental self-extractions in one's adult lifetime measured at baseline (12). In contrast to the situation at baseline where only 68 percent of persons who reported nonprofessional dental extractions were indeed self-extractors, all the incident nonprofessional extractors were self-extractors.

It is not surprising that all of the incident self-extractors reported at baseline that they were problem-oriented dental attenders, not regular or preventively oriented attenders. Our expectation before baseline data gathering was that dental self-extraction would be a phenomenon limited to a tiny fraction of geographically isolated residents in the three nonmetropolitan counties in the FDCS. The finding that the majority of the self-extractors were actually residents of the metropolitan county (urban population of approximately 700,000 persons) was unanticipated.

In retrospect, given the findings in the literature on self-care for a broad range of nonoral symptoms, as well as the limited literature on dental self-treatment, it should not have been surprising that some persons would engage in this form of dental self-care. For example, a study of older adults in New York state (14) found that about 2 percent of persons recommended self-treatments that a panel of clinicians considered "definitely harmful," while about 71 percent mentioned treatments that were judged "conditionally harmful."

Given the potential for prolonged bleeding or introducing a clinically significant bacteremia in persons at high risk for endocarditis or infection of an indwelling prosthesis/device, we would place dental self-extraction in the "conditionally harmful" category. The decision to self-extract may well take place as a result of a rational decision-making process where the benefits and risks of performing the extraction are considered. However, the self-extractors may not have realized the potential harm.

We have documented previously that irregular dental attenders in this sample, who comprised the entirety of the self-extractors, have more negative attitudes toward dental health and dental care (12). These more negative attitudes, the expected monetary cost of dental treatment, in conjunction with a perceived lack of harm from doing the extraction, may have made the choice seem an obvious one to those who made a deliberate decision to self-extract.

Because dental self-extractors do not go to a dentist for treatment, public health clinicians and officials should be cognizant of this phenomenon. Although potential for harm is limited, the potential harm is salient for certain segments of the population at increased risk for bacterial endocarditis and/or prolonged bleeding.

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References

1. Kronenfeld JJ, Wasner C. The use of unorthodox therapies and marginal practitioners. Soc Sci Med 1982;16:1119-25.
2. Murray RH, Rubel AJ. Physicians and healers: unwitting partners in health care. New Engl J Med 1992;326:61-4.
3. Stoller EP, Forster LE, Portugal S. Self-care responses to symptoms by older people: a health diary study of illness behavior. Med Care 1993;31:24-42.
4. Dean K. Lay care in illness. Soc Sci Med 1986;22:275-84.
5. Eisenberg DM, Kessler RC, Foster C, Norlock FE, Calkins DR, Delbanco TL. Unconventional medicine in the United States: prevalence, costs, and patterns of use. New Engl J Med 1993;328:246-52.
6. Payne BJ, Locker D. Oral self-care behaviours in older dentate adults. Community Dent Oral Epidemiol 1992;20:376-80.
7. Clancy JMS, Dixon DL. Cyanoacrylate home denture repair: the problem and a solution. J Prosth Dent 1989;62:487-9.
8. Curtis EK. The string and the doorknob: profile of a popular approach to dental extraction. J Oral Maxillofac Surg 1990; 48:1084-92.
9. Ring ME. Do-it-yourself dentistry! Bull Hist Dent 1993;41:33-4.
10. Shirley PJ. A case of undeclared home-made false teeth. Anaesth 1994;49:651-2.
11. Moss HD. An intrapulpal foreign object. Gen Dent 1995;43:570-1.
12. Gilbert GH, Duncan RP, Heft MW, Coward RT. Dental health attitudes among dentate black and white adults. Med Care 1997;35:255-71.
13. Gilbert GH, Duncan RP, Kulley AM, Coward RT, Heft MW. Evaluation of bias and logistics in a survey of adults at increased risk for oral health decrements. J Public Health Dent 1997;57:48-58.
14. Stoller EP, Pollow R, Forster LE. Older people's recommendations for treating symptoms: repertoires of lay knowledge about disease. Med Care 1994;32:847-62.