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Tobacco control activities among U.S. pediatric dentists

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Tobacco Control Activities among U.S. Pediatric Dentists

by

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THESIS

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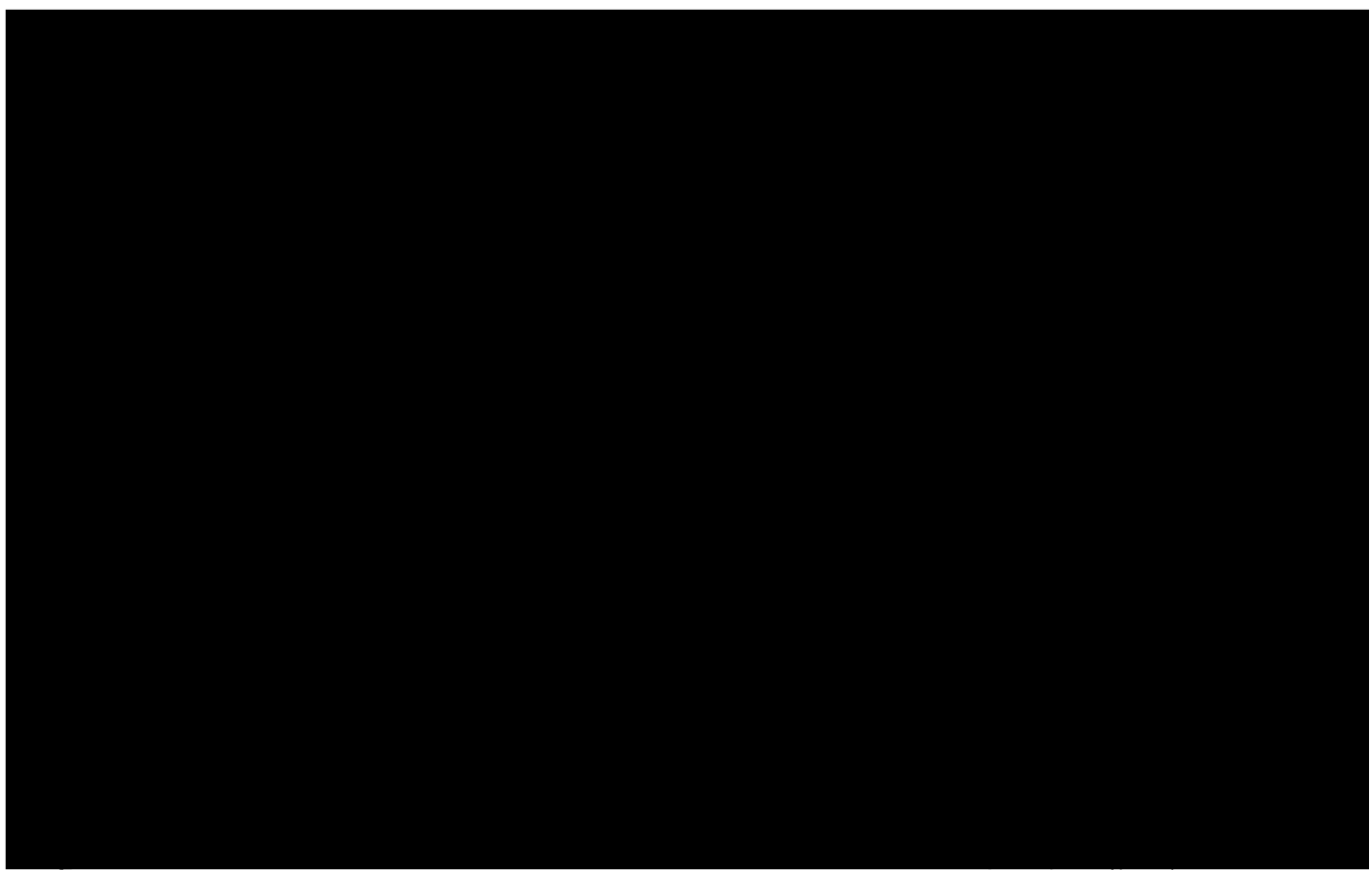

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Degree conferred:...Master of Science.....

DEDICATION

This manuscript is dedicated to my parents, Bill & Jane. Without their support and unwavering faith, I would not have been able to complete our study.

Also, to my fiancé and soon to be husband, Cam Tran. His unconditional love inspired me to excel and to believe in myself. Cam has truly been my ray of sunshine on those cloudy San Francisco days.

Acknowledgements

First and foremost, I'd like to acknowledge my extraordinary committee members: **Dr. Margaret M. Walsh, Dr. Stuart A. Gansky, and Dr. Arthur J. Miller.** Their endless support and guidance were instrumental throughout the course of our study.

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Tobacco Control Activities among U.S. Pediatric Dentists

Abstract

Purpose: The purpose of this study was to determine the tobacco-related knowledge, attitudes, and practice behaviors among U.S. pediatric dentists in 2006 and to compare these findings to those from a previous 1999 study.

Methods: A 26-item survey was conducted among a national, random sample of 1,700 American Academy of Pediatric Dentistry members to assess tobacco-related knowledge, attitudes and behaviors. Frequency tables with odds ratios and 95% confidence intervals assessed factors related to tobacco control and were compared to data from the 1999 study.

Results: Of 1,700 questionnaires, 1,410 (83%) were returned. From 1,292 (82%) usable questionnaires, over 75% of the respondents agreed that it is a pediatric dentist's responsibility to help patients who wish to stop using tobacco to accomplish this goal. Only 142 (11%) of the respondents had prior tobacco prevention/cessation training. Of those untrained, 905 (70%) were willing to be trained. Not knowing where to send patients for counseling and feeling ineffective with helping patients to stop their tobacco use were reported as significant barriers by 585 (45%) and 543 (42%) of respondents, respectively. Two hundred forty five (19%) reported always/often asking their adolescent patients about tobacco use; 491 (38%) reported always/often advising known tobacco users to quit; and 284 (22%) reported always/often assisting with stopping tobacco use. Feeling well prepared to perform tobacco control behaviors was significantly associated with performance of tobacco control behaviors (OR= 3.5; 95% CI: 2.4-5.2). Compared with findings from a similar survey in 1999, our results indicate that although positive attitudes toward tobacco control have increased, lack of knowledge of tobacco use prevalence and asking and assisting behaviors among adolescents remain unchanged; and advising behavior has decreased.

Conclusions: Most pediatric dentists agreed that assisting patients to stop tobacco use is their responsibility. More than half of the respondents, however, felt unprepared to do so, but were willing to be trained. Overall, a comparison of results between the 1999 and 2006 studies revealed no increase in the provision of tobacco control services. Thus, training programs are needed to enhance the knowledge and skills of pediatric dentists to promote their tobacco control behavior.

TABLE OF CONTENTS

Page

List of Tables

Page

A. SPECIFIC AIMS AND HYPOTHESES

The specific aims of this study and their corresponding hypotheses are:

Specific Aim 1: To conduct a 2006 survey of U.S. pediatric dentists to assess tobacco-related knowledge, attitudes, and behaviors.

We hypothesized:

a) Less than half of the respondents would correctly answer all of the knowledge questions.

b) At least half of the respondents would report feeling very well or well prepared to ask about tobacco use, to advise users to quit, and to assist tobacco users with the quitting process.

c) Less than half of the respondents would report they always/often ask their adolescent patients about tobacco use, advise users to quit, and/or assist them with the quitting process.

Specific Aim 2: To identify predictors of recommended tobacco-related behavior among U.S. pediatric dentists.

We hypothesized that pediatric dentists who report feeling prepared to ask, advise, or assist tobacco users in their practices will be significantly more likely to do so compared to those who report feeling less prepared to perform these behaviors.

Specific Aim 3: To compare U.S. pediatric dentists' tobacco-related attitudes, barriers, and behaviors in 2006 with those reported in 1999 to assess changes over time.

We hypothesized that there would be no significant change in attitudes, barriers, and behaviors related to tobacco control among the nation's pediatric dentists from 1999 to 2006.

B. BACKGROUND AND SIGNIFICANCE

Health impact of tobacco abuse and prevalence of adolescent tobacco use

The use of tobacco products is the leading preventable cause of illness and death in Western society. Every ten seconds, another person dies somewhere in the world as a result of tobacco consumption.[1] In "developed" countries, tobacco is responsible for 24% of all male and 7% of female deaths.[1] In the US, it is estimated that tobacco use causes 440,000 premature deaths annually.[2] Tobacco use is highly associated with oral malignancies, lung cancer deaths, periodontal disease, and cardiovascular disease. [1,2] The irony is that the adverse effects of tobacco use are highly *preventable* forms of health problems. A concerted effort among all health care providers is therefore critical in the battle against this "silent epidemic."

The rapidly increasing rate of tobacco use among today's adolescents is also quite alarming. Every day in the United States, >4,000 youths who are younger than 18 years of age try their first cigarette.[3] It is estimated that half of these youths will later on become regular smokers, and one-third will succumb to smoking related diseases.[3] In 2000, the U.S. Surgeon General stated that 30% of high school senior boys reported smoking within the past 30 days.[4] Other reports claim that the onset of smoking occurs in about 11% of children by the time they are ten years old. Among high school students, nearly 22% said they smoked cigarettes, and more than 14% said they used either snuff or chewing tobacco.[5] A 2005 study by Shelley et al. illustrated that current smoking among 12th graders (26.7%) remains well above the Healthy People 2010 goal for adolescents of 16%.[3]

Teenagers have long been considered the age group that is most susceptible to the addictive nature of tobacco products. According to the U.S. Centers for Disease Control and Prevention, 80% of tobacco users start during their teenage years.[6] During this adolescence time period, major changes in the brain occur, including those involved with regulating the effects of drugs and other stimuli. A report by the UC Irvine Tobacco Research Program found that age impacts addiction. Adolescents tend to be more receptive to the rewarding effects of nicotine than adults, making addiction more likely to happen during adolescence.[7] In addition, these researchers reported that programs designed to prevent teen smoking have the greatest positive health and economic impact of all smoking-cessation efforts.

Reported tobacco prevention & cessation activities in dental practices

Review of the literature since 1999 concerning tobacco cessation activities among pediatric dentists reveals the current scarcity of information that has been gathered on the national level. The literature compiled thus far, however, reports a low intervention rate of general and pediatric dentists in the area of tobacco use. A study reported by Gansky et al.[8] revealed that 20% of all surveyed pediatric dentists regularly asked their adolescent patients about using tobacco, and almost half of the dentists reported never assisting known tobacco users with the quitting process. Among those pediatric dentists who reported they asked about tobacco use, only 35% advised known users to quit, and 10% assisted users with quitting.[9] As cited by Gansky et al.,[8] the comfort level of pediatric dentists to actively participate in tobacco control behavior was correlated with their levels of tobacco control training. Less than one-fifth of the pediatric dentists felt well prepared to assist, almost half felt minimally prepared to assist, and over one-third felt

unprepared.[8] However, an encouraging finding is that over 70% of responding pediatric dentists indicated a desire for training in tobacco use prevention, and most agreed that it is the dentist's responsibility to help patients in the quitting process.[8]

In 2000, a survey conducted by the ADA asked pediatric dentists if they offer their patients tobacco-use cessation services. Seventy-four percent of respondents claimed they did not presently offer any type of tobacco-use cessation service to their patients.[4] A common reason cited lies in the fact that a majority of the clinicians believe that this is beyond their scope of services. Another study, by Tomar et al.,[5] reported that more than four out of ten general dentists do not routinely ask about tobacco use, and six out of ten do not routinely advise tobacco users to quit. When patients were surveyed, a low percentage (24%) reported that their dentist had advised them to quit. Similar results were found in a study by Seserman[2], where more than one-third of current smokers reported *never* being assessed for smoking and encouraged to quit by dentists. In 2002, Albert et al.[10] conducted a study to compare the quality of tobacco prevention services offered by a variety of health care providers, including physicians, dentists, and social workers. The authors concluded that cessation interventions by dental providers ranked *lowest* in terms of both quality and quantity.[10] Of the general dentists surveyed, fewer than one-fifth had asked about tobacco use with more than 80% of their patients, and over 60% reported that assisting patients who used tobacco in establishing a specific quit date was not a part of their activities.[10]

Even more recently, evidence that pediatric dentists do not play a role in tobacco-use cessation still persists. In a 2003 pilot study that assessed attitudes of pediatric dentists towards tobacco intervention, only about 20% of respondents thought that their

job should include giving attention to use of tobacco among children and adolescents.[11] The overall confidence level of these clinicians was also quite low, with only 9% of pediatric dentists stating they were confident in their ability to deal with tobacco use in their child and adolescent patients.[11] Although many pediatric dentists believe it is their responsibility to intervene in tobacco use among their patients, most do not feel comfortable doing so. The study also found that pediatric dentists who had received formal instruction on tobacco counseling were more likely to confidently deliver prevention and cessation services to their patients.

The most recent survey, published in March 2005, assessed physician and general dentist tobacco use counseling among adolescent patients.[3] The results taken from patients revealed that 16.4% reported receiving advice to quit from a physician, while only 11.6% reported receiving similar advice from a dentist.[3] Surveys of a wide range of health care professionals (pediatricians, internists, and dentists) indicate a decreasing trend of compliance with tobacco treatment guidelines. Preventive and cessation counseling rates were low, particularly among general dentists.[3] It is important to note, however, the most recent national data reported for pediatric dentists are from 1999. Since nicotine addiction is reported to be a pediatric disease, it is important to determine the current level of training and involvement of pediatric dentists in addressing tobacco use among their patients. With this current information, we can more effectively determine the extent of the need for a national program for pediatric dentists to provide them with knowledge, skills, and tools to treat and prevent tobacco use in their dental practices.

Significance

Adolescence is the primary time during which tobacco use is initiated and during which the transition from experimentation to nicotine dependence occurs.[6] It has been estimated that 65% to 75% of adolescents will try smoking before they complete high school, more than one third will become daily smokers, and almost one quarter will become nicotine dependent.[12] It is well documented that the vast majority of nicotine dependent adult smokers begin smoking by the age of 18.[12] Given the association between smoking in adolescence and resultant health problems in adulthood, initiation and maintenance of smoking during adolescence represent a genuine public health concern. In 1997, the *Journal of Pediatrics* published an article entitled "Nicotine addiction: a Pediatric Disease," documenting that adolescents are the gateway through which tobacco addiction enters the population.[13]

The pediatric dental office itself provides an excellent environment for providing tobacco prevention and cessation services to adolescents. A large number of adolescents see their pediatric dentist each year, and this close contact between the health care professional and the young patient enables pediatric dentists to regularly assess oral health and to make preventive suggestions for problem areas, such as tobacco use. Despite being presented with this rare opportunity, surveys among health care professionals indicate that dentists, particularly pediatric dentists, have one of the lowest intervention rates with respect to prevention and treatment of tobacco use.[5] Since 1999, no studies have been conducted to report on tobacco control-related knowledge, attitudes, and behaviors among pediatric dentists in the United States. Consequently, there is a need to reassess the level of involvement in tobacco control among pediatric dentists compared

to the data presented in past studies. More information will allow us to assess trends in this group of health care providers. In addition, findings will suggest directions for the development of programs targeted at pediatric dentists to increase their tobacco-control awareness and interventions to assist adolescents who are at risk for tobacco use and its associated adverse health effects.

C. METHODS AND MATERIALS

Human research committee approval

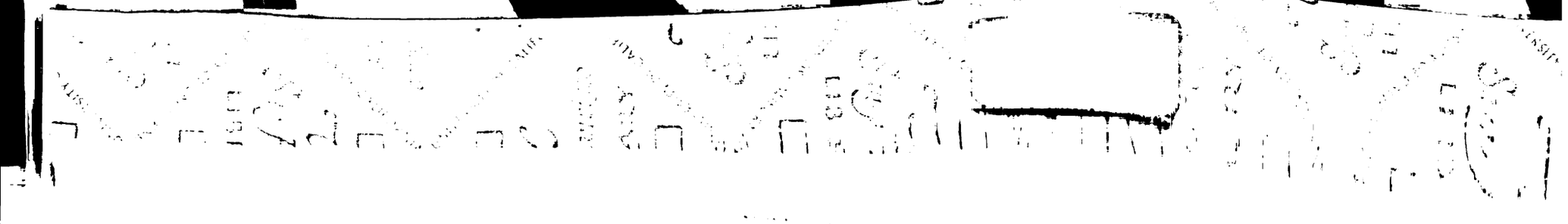
This study was approved by the Committee on Human Research (CHR) in the University of California, San Francisco (the Institutional Review Board (IRB)) on September 7, 2005. (Approval number: H1242-27530-01)

Development of questionnaire

Prior to finalizing the questionnaire, we tested a pilot questionnaire among a convenience sample of 20 practicing pediatric dentists (11 females, 9 males) in the East and South Bay areas of Northern California. Upon completion of the questionnaire, each practitioner was interviewed to gain feedback on the acceptability of the questionnaire, and on the feasibility of pediatric dentists completing and returning it. Based on this feedback, we refined and eliminated some of the questionnaire items.

Study overview

To conduct this cross-sectional study, we first obtained a randomized list of pediatric dentists in the U.S. who actively participated in clinical practice from the American Academy of Pediatric Dentistry (AAPD). Subsequently, a study questionnaire, along with an informed consent cover letter, and a return-addressed stamped envelope, were mailed to 1,700 randomly selected pediatric dentists from the randomized AAPD list. The cover letter explained the purpose, methods, risks, potential benefits of the study, and provided information regarding the confidentiality of responses. The returned questionnaires were coded without personal identifiers, and hard copies were kept securely in a locked file in an office at UCSF.



Description of questionnaire items

The self-administered study questionnaire consisted of twenty-six items and defined the adolescent age group as ranging from 11-17 years old, and tobacco users as smokers (cigarettes, pipes, or cigars) or smokeless tobacco users (oral snuff or chewing tobacco). The questionnaire assessed practice-related demographics. Items included: type of practice (solo, group, academic, hospital, public health, or military); location (urban, suburban, or rural); and number of adolescent versus total number of patients seen per day. In addition, the questionnaire assessed whether tobacco use was allowed anywhere in the office by staff ("yes" or "no"); or by patients or parents ("yes" or "no"); history and characteristics of pediatric dentists' tobacco use (cigarettes, pipes, smokeless tobacco: "current daily," "current occasional," "former", "experimented with," and "never"); methods employed to identify tobacco users (8 possible response options to check including the option of "other" with the opportunity to specify); percentage of adolescent patients they asked about smoking or smokeless tobacco use in the last 3 months (91-100%, 75-90%, 51-74%, 25-50%, 11-24%, 1-10%, or None); person in the office responsible for asking about tobacco use (Dentist, Dental Assistant, Hygienist, Receptionist, health history form, no one person, or we do not ask); of those patients reporting smoking or smokeless tobacco use, the percentage the dentist advised to stop (91-100%, 75-90%, 51-74%, 25-50%, 11-24%, 1-10%, or None); the frequency of performing specific behaviors in their practices to intervene with adolescent patients about tobacco use (13 behaviors with 4-levels ranging from "always" to "never"); and barriers to providing tobacco cessation services (11 potential barriers with 3-levels: "not a barrier," "somewhat of a barrier," and "a strong barrier").

The questionnaire also asked questions related to former training experience in tobacco use prevention and cessation strategies ("yes" or "no"); estimated total number of training hours and the manner in which training was received (CE course, organized study club, dental school curriculum, pharmaceutical company program, or other); willingness to receive future training ("yes" or "no"); and preferred formats (CE courses, pharmaceutical program, or other); and pediatric dentists' level of perceived preparedness to assist in tobacco cessation services (4-levels ranging from "very well prepared" to "unprepared"). Knowledge of tobacco use by adolescents was assessed by two true/false questions and eight questions related to pediatric dentists' attitudes toward tobacco control (5-levels ranging from "strongly agree" to "strongly disagree"). Finally, the questionnaire assessed demographic factors (age, ethnicity, gender, year in school) and year of graduation from residency.

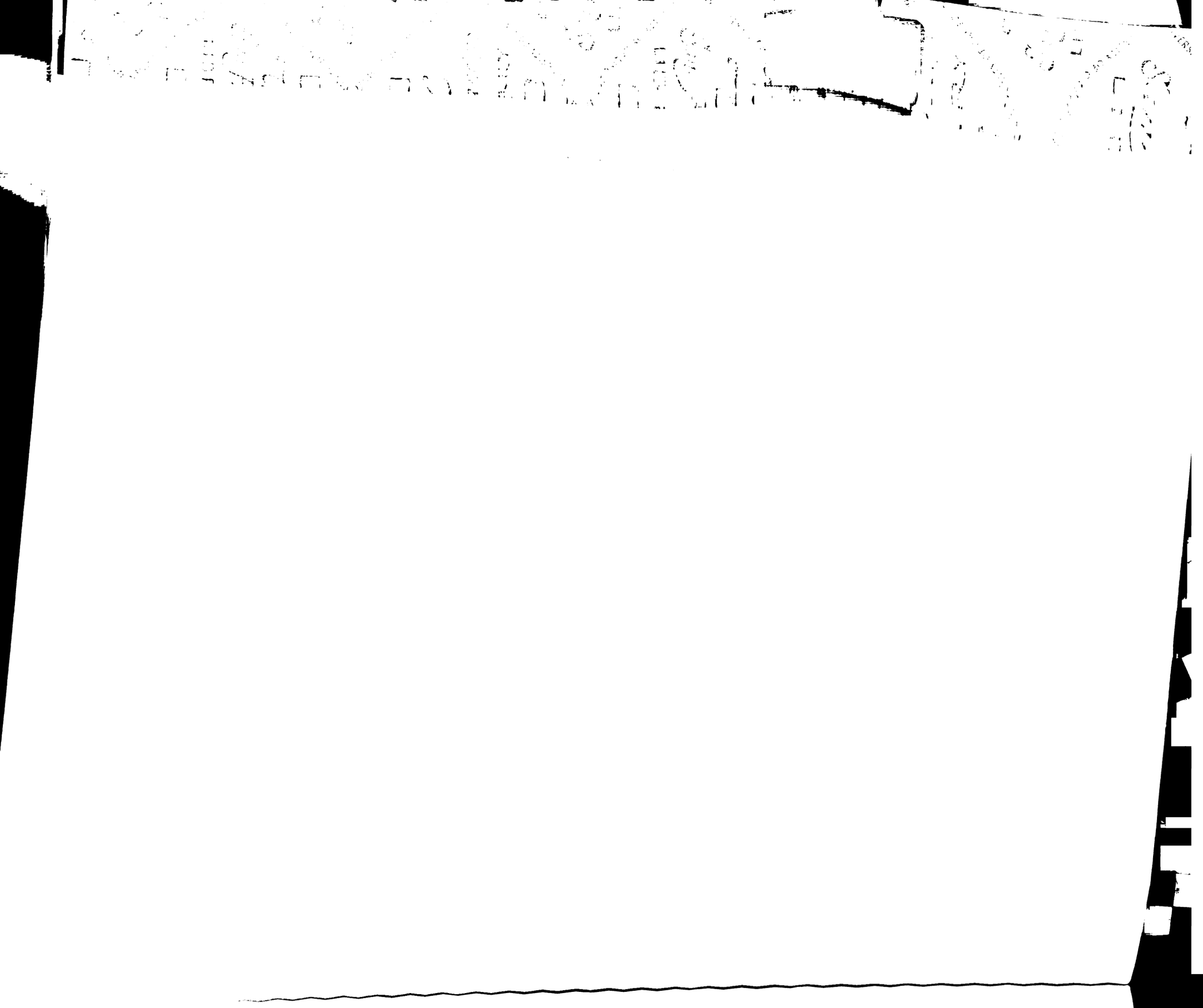
Pilot testing of questionnaire and preliminary results

A questionnaire was sent out to a randomly selected national sample of 200 pediatric dentists. Seventy-nine questionnaires were returned, however, 5 of these were omitted since the respondents no longer provided patient care. The final number of questionnaires analyzed was 74, for an adjusted response rate of 38% (74/195). The majority of respondents were Caucasian, male, group practitioners working four days per week in private practice, suburban settings. States with the highest questionnaire response rate were Pennsylvania (41%) and California (39%). All respondents ranged in age from 29-63 years and graduated from residency from 1968-2005. The average number of adolescents these practitioners treated per day was 11. Twenty-three percent of respondents had prior training in tobacco use prevention and cessation. Of those without

training, 76% were willing to be trained. About 30% felt well prepared to ask patients if they used tobacco and to advise users to quit, but 47% felt that they were minimally prepared to assist users with the quitting process. Almost all (99%) respondents banned tobacco use in their practices, and about three-quarters reported being personally responsible for asking patients about tobacco use.

Questions regarding current information about adolescent tobacco use revealed rather low knowledge, with approximately one-half admitting that they "do not know" the answer to questions regarding up-to-date statistics. With respect to attitudes, over half of respondents believed that pediatric dentists are responsible for convincing and assisting patients, who use tobacco, to stop. Of the various perceived obstacles to tobacco intervention, the strongest barrier was the amount of patient resistance to cessation services. Fifty-seven percent of practitioners also felt that they were unable to effectively help patients quit tobacco use. Having insufficient materials to hand out, not knowing what to say, and not knowing where to send patients for counseling, posed moderate challenges to tobacco cessation practices. Twenty-five percent of respondents believed it was inappropriate for the pediatric dentist to intervene in their patients' tobacco use. (Data not shown for pilot study)

With respect to inquiring about tobacco use, 5% of pediatric dentists routinely asked about cigarette use, and only 1% regularly assessed for use of smokeless tobacco. Forty-one percent of respondents never encouraged non-users to remain tobacco free, and 58% did not have prevention educational materials for tobacco users in their reception areas. Fortunately, 62% of these practitioners stated that they were willing to supply these materials if they were made readily available to their office. For the patients who reported



smoking, 56% of practitioners advised the majority of these individuals to quit. However, 41% never discussed strategies to quit with their patients strategies to quit, 74% never encouraged patients to set a definitive quit date, and 74% never recommended cessation programs for these patients. Of those who never referred, 53% of practitioners were willing to engage in referral services. About three-quarters of respondents never provided follow up care for those who were trying to quit, but 50% stated they would be willing to provide this service if the dentists are given guidance in the proper protocol.

In summary, the pilot data suggested a persistent lack of preparedness among these practitioners. However, our current sample size was not large enough to draw definitive conclusions. Moreover, given our relatively low response rate, we cannot assert that our data are an accurate reflection of the findings in the U.S., especially since a large portion of the returned questionnaires came from Pennsylvania and California. In addition, since 80% of respondents were Caucasian, we were unable to successfully extrapolate the level of tobacco control activities in several underrepresented minority groups, such as African Americans (1%), Hispanics (4%), and Asians (12%). In order to effectively and reliably answer our research question, we conducted a study with a much larger sample size that may encompass a more proportional distribution of practitioners from diverse backgrounds across the nation.

Survey Administration

The descriptive questionnaire, along with an informed consent cover letter, and a return-addressed stamped envelope were mailed to 1,500 randomly selected pediatric dentists from the randomized American Academy of Pediatric Dentistry (AAPD) list. The cover letter explained the purpose, methods, risks, and potential benefits of the study, and

provided information regarding the confidentiality of responses, as well as the contact information of the co-principal investigator and the Committee on Human Research at UCSF. The returned questionnaires were coded without personal identifiers, and hard copies kept securely in a locked file in the home office of Dr Cynthia Yee. In addition, data from coded questionnaires were entered electronically into a password secured computer file. CD back-ups of data files were kept securely in the same location as the hard copies of the questionnaire. All hard copies of questionnaires will be shredded upon publication of study findings.

Methods of statistical analysis

The data gathered was analyzed by a combined effort involving the study's statistician, Dr. Stuart Gansky, and by the Principal Investigator, Dr. Cynthia Yee. We computed means, frequencies, odds ratios, and confidence intervals to compare the use of tobacco control services documented by Gansky et al.[8] with the current trends seen among pediatric dentists in the U.S. Odds ratios with 95% confidence intervals estimated the relationship between feeling prepared and tobacco control activities. An OR with a 95% CI that does not include 1 was accepted as statistically significant.

Epi Info and Microsoft Excel 2005 with data validation rules were used to create data entry screens. The 2006 information gathered from the questionnaire was summarized, including frequency distributions of practices, attitudes, and knowledge, and were compared to the 1999 data. The data were analyzed using the statistical software program SAS©. Data were tested using $p \leq 0.05$ to indicate statistical significance.

D. RESULTS

Specific Aim 1: To conduct a 2006 survey of U.S. pediatric dentists to assess tobacco-related knowledge, attitudes, and behaviors.

Response Rates

Of 1,700 questionnaires mailed out, a total of 1,410 were returned, for an unadjusted response rate of 83%. Of these respondents, 118 were excluded (111 were not involved in patient care, and 7 reported seeing no adolescents in their practices). Thus, 1,292 questionnaires, with an adjusted response of 82%, (1292/1582) were analyzed.

Description of overall sample:

Tables 1 through 4 present data describing the overall 2006 sample of pediatric dentists.

Table 1 shows that the average age of pediatric dentists was 43 years. Over half of the respondents were male, and graduated from their pediatric dental residency program in 1990 or after 1990. In addition, most of the respondents were Caucasian (65.9%). African Americans (6.8%) and Native Americans (1.8%) had the smallest representation in the study sample.

Practice characteristics are described in Table 2. The majority of practices were located in a suburban setting (69%). Over half of respondents worked in a group practice clinic (55%). The mean number of days worked per week was 3.7. In a typical day, respondents saw an average of 31 patients. Of these patients, an average of 9 (29%) were adolescents. (Data not shown.)

Table 3 shows that 2% of the study sample currently smoked cigarettes or cigars, and only 1% smoked pipes or used smokeless tobacco. Interestingly, 15% of the respondents were former cigarette smokers and 26% were former cigar smokers. Almost

100% of practices had an office policy prohibiting tobacco use by patients, parents, and staff (99%).

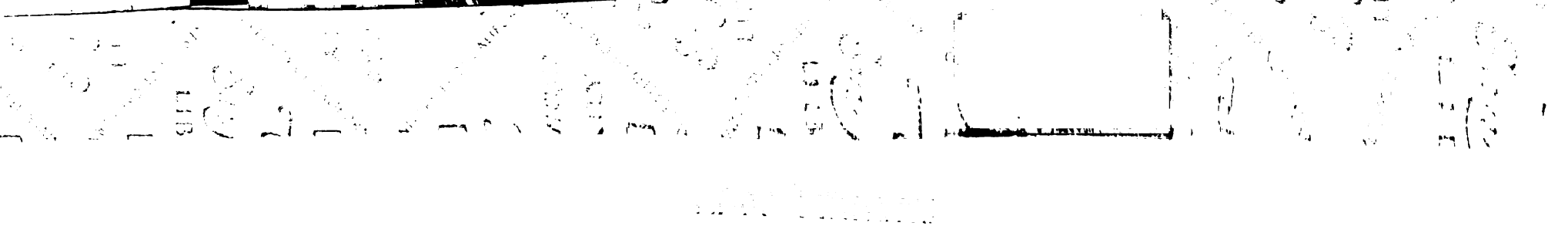
Table 4 describes tobacco-related training among U.S. pediatric dentists. Ten percent of the respondents had received formal training in tobacco-use prevention or cessation strategies. Of those who received training, most respondents obtained the instruction from their dental school curriculum (6.8%) and from continuing education courses (6.3%). Of those who had not received training, 70% of the respondents reported that they were willing to be trained.

Knowledge:

Correct responses were generally low to two true/false items assessing awareness of the extent of the problem of tobacco use among adolescents nationally. Only 36% correctly answered true to the statement: "About one out of three U.S. adolescents uses tobacco by age 18." In addition, 50% of the respondents selected the "do not know" answer choice for this item. Moreover, only 26% of respondents correctly answered false to the statement: "Less than 1,000 adolescents in the U.S. become regular smokers every day." In addition, more than half of the respondents selected the "do not know" option for this second item. Cumulatively for these knowledge questions, 31% answered both questions correctly. **Thus, hypothesis 1a stating that "less than half of the respondents would correctly answer all of the knowledge questions" was supported.**

Attitudes:

Table 5 shows that the respondents' perception of preparedness to perform tobacco- control behavior was generally low. Only 31% felt very well or well prepared to ask about tobacco use; 41% felt very well or well prepared to advise users to quit; and

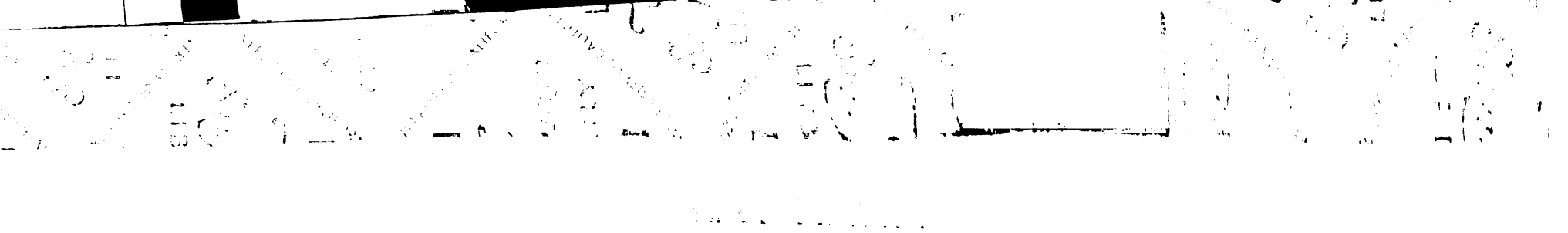


11% felt very well or well prepared to assist tobacco users with the quitting process. **Thus, hypothesis 1b stating that "at least half of the respondents would report feeling very well or well prepared to ask about tobacco use, to advise users to quit, and to assist tobacco users with the quitting process" was not supported.** Nevertheless, well over 50% had positive attitudes related to the role of the pediatric dentist in tobacco control.

Table 5 also presents descriptive data related to positive attitudes toward tobacco control in our study sample. For example, about 70% of respondents strongly agreed/ agreed that it is a pediatric dentist's responsibility to convince patients, who use tobacco, to stop. Over 75% strongly agreed/agreed that it is a pediatric dentist's responsibility to help patients who wish to stop using tobacco to accomplish this goal. Most respondents (85%) strongly agreed or agreed it is important for a pediatric dentist to ask adolescent patients about tobacco use, and 75% strongly agreed/agreed that it is important for a pediatric dentist to encourage adolescent non-users to remain tobacco-free. However, 74% of respondents believed most adolescents will not give up tobacco use even if their pediatric dentist tells them to do so.

Barriers:

Table 6 presents the overall data related to barriers to providing tobacco control services to adolescent patients. Overall, significant barriers to providing tobacco control services for respondents include not knowing what to say (47%), and not knowing where to send patients for counseling (45%). Lack of adequate reimbursement (4%), not feeling this is appropriate for pediatric dentists (6%), and lack of time (8%), represented the least significant barriers.



Behavior:

Table 7 presents the overall data related to tobacco assessment and treatment behaviors among U.S. pediatric dentists.

A relatively large proportion (40%) does not routinely identify tobacco users. When asked in the past 3 months, what percent did respondents ask whether or not patients smoke, 33% reported not asking at all. Similarly, 43% of respondents did not ask at all about smokeless tobacco use. When asked in the past 3 months, what percent did respondents advise known users to stop smoking, 28% reported advising their patients 91-100% of the time. For known smokeless tobacco users, 26% reported advising their patients 91-100% of the time.

In the area of specific tobacco prevention services, 20% of respondents always/often ask all adolescent patients about tobacco use, and 21% always/often encourage non-users to remain tobacco free. Documentation of tobacco use in the chart was generally low, with only 13% of respondents recording tobacco use by all adolescent patients. Overall, of those respondents who never provide these services, a large majority of pediatric dentists were willing to do so, with 88% of respondents willing to ask about tobacco use, and 79% willing to encourage non-users to remain tobacco free.

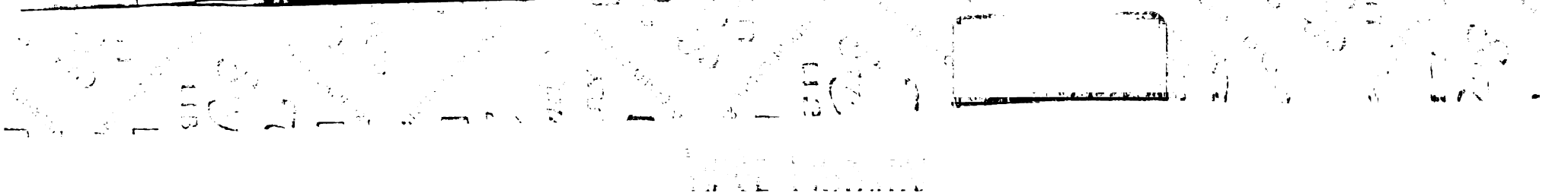
For tobacco cessation activities, less than half of the respondents reported always/often asking and advising patients to quit, and only 22% always/often discussed strategies to quit. Active intervention was significantly low among pediatric dentists: only 10% always/often refer patients to cessation programs, and 5% provide follow-up with those trying to quit. **Thus, hypothesis 1c stating that "less than half would report they always/often ask their adolescent patients about tobacco use, advise users to quit,**

and/or assist them with the quitting process" was supported. However, of those respondents who did not engage in tobacco cessation activities, 83% were willing to discuss quitting strategies, and about 75% were willing to refer patients to cessation programs and to consistently follow up with those patients who were undergoing the quitting process.

Specific Aim 2: To identify predictors of recommended tobacco-related behavior among U.S. pediatric dentists.

Table 8 delineates the relationship between feeling prepared to provide tobacco control services with the likelihood of actually performing the behavior. Respondents who felt prepared to ask about tobacco use were 56 times more likely to engage in this activity. Furthermore, those who felt prepared to advise their patients about tobacco control were 4 times more likely to do so. Those who felt adequately prepared to assist their patients with tobacco cessation were almost 4 times more likely to engage in this activity. **Thus, hypothesis 2 stating that "pediatric dentists who report feeling prepared to ask, advise, or assist tobacco users in their practices will be significantly more likely to do so compared to those who report feeling less prepared to perform these behaviors" was supported.**

Specific Aim 3: To compare U.S. pediatric dentists' tobacco-related attitudes, barriers, and behaviors in 2006 with those reported in 1999 to assess changes over time.



Attitudes

We compared the results from the 1999 study by Ryan[9] with those of our 2006 study, and found an increase in positive attitudes toward tobacco use prevention and cessation. Compared to the respondents in the 1999 study[9], a larger percentage of respondents in 2006 strongly agreed or agreed that it is a pediatric dentist's responsibility to help patients stop their tobacco use. Moreover, a larger proportion of respondents in the Yee (2006) study agreed that it is important for them to ask patients about tobacco use and to encourage non-users to remain tobacco free.

Barriers

In addition, between 1999 and 2006, perception of barriers to providing tobacco control services for adolescent patients have changed. Ryan et al. (1999)[9] reported that strong barriers, in descending order, were: 1) being unsuccessful in providing these services in the past; 2) believing that most adolescent patients do not use tobacco; 3) feeling that patients are resistant to cessation services; and 4) not knowing where to send patients for counseling. In 2006, however, we found barriers to providing tobacco control services, in descending order, to be: 1) not knowing what to say; 2) not knowing where to send patients for counseling; 3) feeling patients are resistant to cessation services; and 4) feeling ineffective in helping patients to quit tobacco use

Behaviors

When comparing tobacco control behaviors reported in 1999 with those reported in 2006, we found a smaller percentage reported in 2006 that they asked about tobacco use (20% in 2006 vs. 24% in 1999), documented tobacco users in the chart (33% in 2006 vs. 51% in 1999), advised users to quit (38% in 2006 vs. 72% in 1999), discussed quitting

strategies (22% in 2006 vs. 24% in 1999), and encouraged to set a quit date (8% in 2006 vs. 15% in 1999). Many fewer respondents followed up with those patients who were trying to quit (5% in 2006 vs. 9% in 1999). In 2006, however, compared to 1999, there was a slight increase in the percentage of those who referred patients to cessation programs (10% in 2006 vs. 8% in 1999).

As a result of comparing data from the Ryan study in 1999 with our study in 2006, many statistically significant differences were observed. **Thus, the hypothesis from specific aim 3 stating that "there would be no significant change in attitudes, barriers, and behaviors related to tobacco control among the nation's pediatric dentists from 1999 to 2006" was not supported.**

E. Discussion

In 2006, we surveyed U.S. pediatric dentists' knowledge, attitudes, and behaviors related to tobacco control activities in their dental practices. We also compared our findings related to attitudes and behaviors with those reported by Ryan in 1999[9]. Our 82% response rate was higher than the 65% reported by Ryan, as well as the 44%, 61%, and 30% reported for other similar surveys in the literature, respectively.[9,14,15,16]

Although our 2006 findings indicate low knowledge levels about general adolescent tobacco use, pediatric dentists held positive attitudes about intervening with their adolescent patients. For example, over 75% agreed that it is a pediatric dentist's responsibility to help patients who wish to stop using tobacco and 85% agreed it is important for a pediatric dentist to ask adolescent patients about tobacco use. In addition, only 2% of pediatric dentists reported current tobacco use. Thus, they serve as role models by not using tobacco and urging staff members who use tobacco to stop.

Ryan (1999) also reported that pediatric dentists demonstrated low knowledge in the prevalence of tobacco use by adolescents.[9] Compared to the findings of Ryan, however, there has been an increase in positive attitudes toward tobacco control in pediatric dental settings from 1999 to 2006. For example, a higher percentage of respondents in 2006 agreed it is their responsibility to help with tobacco use prevention and cessation compared to those in 1999. Nevertheless, the percentage of survey respondents reporting office policies that banned tobacco use by patients, parents, guardians, caregivers, and staff remained constant at 99%.

Despite positive attitudes reported in 2006, routine documentation of tobacco use status in the charts of adolescent patients has decreased from 27% in 1999 to 13% in

2006. In addition, we found that the behaviors of asking, advising, and assisting have all decreased from 1999 to 2006. This discrepancy may be due to the fact that Ryan collected 15% of her data by telephone interview of non-responders to mailed questionnaires, whereas our data was collected entirely by mailed questionnaires. Respondents may have over reported their tobacco control activity due to wanting to please the investigator in a person to person telephone conversation. Perhaps the mailed survey obtained more accurate information due to a feeling of enhanced confidentiality and lack of social and professional obligation on the part of the responder to inflate performance of behavior. Moreover, this decrease also may be due to the increased reports of strong barriers to providing tobacco control services. For example, report of not knowing what to say (2006) and the feeling that patients are resistant to cessation services as a strong barrier increased from 7% in 1999 to 47% in 2006. Moreover, the barrier of not knowing where to send patients for counseling almost doubled from 1999 to 2006. This shift may be related to the low level of preparedness reported by respondents in the current 2006 study. Thus, training programs are needed to provide pediatric dentists with the knowledge and skills to engage in tobacco prevention and cessation counseling. Although many pediatric dentists had not received formal instruction in tobacco cessation counseling, results from the 1999 study conducted by Ryan and from our 2006 study indicated that most (70%) were willing to undergo training.

Compared to the findings of a national survey conducted by Dolan and colleagues in 1997,[14] however, our (2006) findings indicate an increase from 2% (Dolan et al., 1997) to 19% (2006) in tobacco-related "asking" behavior and an increase from 9% (Dolan et

al. 1997) to 22% (2006) in "assisting" behavior reported by pediatric dentists.[14] This increase may be attributed to the adoption of a Policy on Tobacco Use by the AAPD in 2000.[17] Dolan et al., however, reported in 1997 that 79% of pediatric dentists advised patients to quit, compared to our finding of 38% in 2006.[14] This discrepancy may be explained by that the fact that they report the percentage who reported they "ever" advised patients who use tobacco to quit, whereas we report the percentage of pediatric dentists who reported they "always or often" advised patients who used tobacco to quit. Moreover, we surveyed more pediatric dentists (1,292) than Dolan and colleagues (586), and that may have affected our results as well.[14]

Our findings are consistent with those of a 2005 study of patient report of physician and general dentist tobacco cessation counseling.[3] Findings from that study revealed that 16.4% of patients received tobacco cessation advice from a physician, while only 11.6% reported receiving similar advice from a general dentist.[3] These counseling rates fall substantially below the U.S. Department of the Healthy People 2010 goal to increase, to at least 85%, the proportion of dentists who advise cessation. [18]

One limitation of our study, however, is that the data are based on self-reported responses. Due to the feeling of obligation to provide these services as health care professionals, pediatric dentists may have overestimated their actual performance when reporting their tobacco-related activities. Moreover, since the study only included AAPD members, membership bias may be present in the sample. Pediatric dentists who join the AAPD may be more likely to perform tobacco cessation behaviors than those who are not members.

The AAPD may need to take a more active role in encouraging pediatric dentists to become the primary leaders in informing adolescents about tobacco. Secondly, the AAPD may need to initiate an active campaign to have each dental school include course information on tobacco, its effects on health, and methods to assist patients to cease smoking.

Future studies should be conducted to assess trends in tobacco control services and to monitor what progress U.S. pediatric dentists are making in this area. Continued research can also gauge the efficacy of established tobacco control programs and to determine what areas of improvement are necessary to further enhance these types of programs.

F. Conclusion

Based on the results of our study, the following conclusions are offered.

1. Tobacco cessation activities are not a routine part of the pediatric dental practice.
2. There has also been an overall decrease in pediatric dentists' tobacco-control behaviors from 1999 to 2006.
3. This decrease in reported tobacco-control behaviors appears to be due to increased feelings of lack preparedness. An established tobacco-control protocol in pediatric dental residency programs is needed.
4. Continuing education training programs also are needed to enhance knowledge and skills related to treatment of tobacco use, and dependence among pediatric dental practitioners.
5. Most pediatric dentists are receptive to such training programs.
6. Overall, attitudes toward tobacco control in pediatric dental settings have become more positive over the past 6 years regarding tobacco control.
7. Once training programs for the treatment of tobacco use and dependence are implemented, periodic studies in the future are needed to assess if these programs are effective, and to identify improvements needed to enhance the training experience.

Table 1. Comparison of Demographics of Study Samples: Ryan (1999) and Yee (2006)

(N= 1,292)

Demographic Items	Ryan 1999	Yee 2006	**OR (95% CI)**
Mean Age	**44**	**43**	
Gender:			
Male (%)	**75**	**63**	**0.60-0.66***
Female (%)	**25**	**37**	**0.34-0.40***
Average year graduated	**1980**	**1990**	
Ethnic Group:			
White/Caucasian	**86**	**66**	**0.63-0.69***
Hispanic/Latino	**3**	**17**	**0.15-0.19***
Asian/Pacific Islander	**6**	**8.3**	**0.07-0.10***
Black/African American	**2**	**6.8**	**0.06-0.08***
Native American	**0.5**	**1.8**	**0.01-0.03***
Other	**1.8**	**0.2**	**0.00-0.00***

*** Denotes statistically significant difference at p< 0.05**

Table 2. Comparison of Practice Characteristics of Study Samples: Ryan (1999) and Yee (2006)

Practice Characteristic	Ryan 1999	Yee 2006	OR (95% CI)
% currently providing patient care	99	92	0.91-0.94*
Type of practice:			
Solo (%)	53	35	0.32-0.38*
Group (%)	43	55	0.52-0.58*
Other (%)	4	10	0.08-0.12*
Location of practice (%):			
Urban (pop.≥ 300,000)	44	30	0.28-0.33*
Suburban (> 2,500 but < 300,000)	55	69	0.67-0.72*
Rural (≤ 2,500)	1	1	0.01-0.02

*** Denotes statistically significant difference at p< 0.05**

Table 3. Comparison of Tobacco-related Characteristics of Pediatric Dentists and Their Practices: Ryan (1999) and Yee (2006)

Tobacco-related Characteristic	Ryan (1999) %	Yee (2006) %	OR (95% CI)
Current tobacco use:			
Cigarettes	2	2	0.01-0.03
Cigars	9	2	0.01-0.03*
Pipes	1	1	0.01-0.02
Smokeless Tobacco	1	1	0.01-0.02
Former tobacco use:			
Cigarettes	17	15	0.13-0.17
Cigars	4	26	0.24-0.28*
Pipes	7	4	0.03-0.05*
Smokeless Tobacco	1	2	0.01-0.03
Office Tobacco Policy:			
No tobacco use by patients & parents	99	99	0.98-0.99
No tobacco use by staff	98	99	0.98-0.99
****Responsible for Asking:**			
		Of those who ask, N= 595	
Pediatric Dentist	67	77	0.75-0.79*
Hygienist	34	52	0.49-0.55*
Dental Assistant	28	36	0.33-0.39*
Health History Form	15	21	0.19-0.23*
No one person	13	8	0.07-0.10*
Receptionist	2	1	0.01-0.03

***Denotes statistically significant difference at $p < 0.05$**

****Response options not mutually exclusive**

Table 4. Comparison of Training Characteristics among Respondents: Ryan (1999) & Yee (2006)

Training & Preparedness Characteristic	Ryan (1999) %	Yee (2006) %	OR (95% CI)
Prior Training:			
Training in tobacco use prevention or cessation	**12**	**10**	**0.08-0.12**
Willingness for First training			
Willing to be trained (among untrained)	**70**	**70**	**0.68-0.73**

Table 5. Comparison of Feelings of Preparedness & Responses to Attitude Items among U.S. Pediatric Dentists Surveyed in 1999 and 2006

Feel Very Well/ Well Prepared to:	**Ryan (1999) %**	**Yee (2006) %**	**95% CI**
Ask about tobacco use	**69**	**31**	**0.29-0.34***
Advise users to quit	**64**	**41**	**0.38-0.44***
Assist users with quitting	**17**	**11**	**0.09-0.13***
Attitude Items Strongly Agreed/Agreed that:	**%**	**%**	
The pediatric dentist should set a good example by not using tobacco	**91**	**100**	**1.0-1.0***
It is important for a pediatric dentist to ask adolescent patients about tobacco use	**65**	**85**	**0.83-0.87***
It is important for a pediatric dentist to encourage adolescent non-users to remain tobacco free	**76**	**85**	**0.83-0.87***
It is a pediatric dentist's responsibility to help patients who wish to stop using tobacco to accomplish this	**55**	**80**	**0.78-0.82***
Most adolescents will not give up tobacco use even if their pediatric dentist tells them to	**63**	**74**	**0.72-0.76***
It is a pediatric dentist's responsibility to convince patients who use tobacco to stop	**54**	**73**	**0.71-0.75***
Pediatric dentists should be more active than they have been in speaking before lay groups about tobacco use	**42**	**68**	**0.66-0.71***
Most adolescent tobacco users have a hard time quitting because they are addicted to nicotine	**53**	**25**	**0.23-0.27***

***Denotes statistically significant difference at $p < 0.05$**

Table 6. Comparison of Reported Barriers to Providing Tobacco Control Services to Adolescent Patients among U.S. Pediatric Dentists Surveyed in 1999 and 2006 (response options: not a barrier [NB], somewhat of a barrier [SB], strong barrier [SGB])

	Ryan 1999			Yee 2006		
Barrier Items	**NB %**	**SB %**	**SGB %**	**NB %**	**SB %**	**SGB %**
Don't know what to say	60	33	7	30	23	47
Don't know where to send patients for counseling	32	44	25	37	17	45
Feel patients are resistant to cessation services	25	52	27	16	42	43
Don't feel like I can effectively help patients quit using tobacco	35	46	19	28	30	42
Most of my adolescent patients do not use tobacco	48	24	28	58	20	21
Lack of time	50	37	13	60	32	8
Have been unsuccessful in providing these services in past	67	27	36	71	22	7
Don't feel this is appropriate for a pediatric dentist	71	22	7	84	10	6
Lack of adequate reimbursement	65	23	12	36	60	4
Did not occur to me to provide these services	59	31	10	36	60	4
Don't have materials to hand out	46	39	15	27	70	2

Table 7. Comparison of Tobacco Assessment and Treatment Behaviors among U.S. Pediatric Dentists Surveyed in 1999 and 2006 (Always & Often response options were combined)

Behavior Items	Always & Often 1999 %	Always & Often 2006 %	95% CI
Ask all adolescent patients if they use about tobacco	24	20	0.18-0.22*
Encourage non-users to remain tobacco free	32	21	0.19-0.23*
Document tobacco users in chart	51	33	0.30-0.36*
Document all adolescent patients' tobacco use	27	13	0.11-0.15*
Have tobacco use prevention educational materials in reception area	24	15	0.13-0.17*
Advise tobacco users to quit	72	38	0.35-0.41*
Discuss strategies to quit	24	22	0.20-0.24
Provide educational/self-help materials	22	13	0.11-0.15*
Refer to cessation programs	8	10	0.08-0.10
Encourage to set a quit date	15	8	0.07-0.10*
Follow up with those trying to quit	9	5	0.04-0.06*
Recommend nicotine transdermal patch	6	3	0.02-0.04*
Recommend nicotine gum	6	3	0.02-0.04*

***Denotes statistically significant difference at $p < 0.05$**

Table 8. Relationships of Feeling Prepared to Provide Tobacco Control Services with Reported Tobacco Control Behaviors among 2006 Sample of U.S. pediatric dentists

Behavior	% Prepared	% Unprepared	OR[+]	95% CI*
Ask (N=1292)	55	2	56	34-97
Advise (N=1292)	57	23	4.3	3.4-5.6
Assist (N=1292)	53	24	3.5	2.4-5.2

[+]OR=odds ratio

*CI= confidence interval

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UCSF
Department of Growth & Development
School of Dentistry
University of California, San Francisco
Pediatric Dentistry

Dear ,

Greetings! I am a pediatric dental resident at the University of California, San Francisco and a student in the Pediatric Dentistry Masters Degree Program in the Department of Orofacial Sciences. As a part of our research requirement, I am conducting a comparative study to determine any trends that may have occurred in the practices, attitudes, and knowledge of tobacco control activities among pediatric dentists nationwide. A similar study was carried out by Dr. Ryan and colleagues in 1999 and I believe it is important to reassess the current level of tobacco prevention and cessation activities undertaken by pediatric dentists in their private practices to determine if any changes have occurred in the last six years. Tobacco use has been called a pediatric disease since smoking and smokeless tobacco use are nearly always begun, developed, and established during adolescence.

Because you are a member of the AAPD, I am asking for your much appreciated time in filling out and returning the enclosed questionnaire, which will take about twenty minutes to complete.

Confidentiality: Your responses will be kept as confidential as possible. Study information will be coded and kept in locked files. Only study personnel will have access to these files. Confidential identifiers will be purged from the files once they are no longer needed. No individual identities will be used on any reports or publications resulting from this study.

Risks: The main risk to you is loss of confidentiality; however, we will strongly endeavor to protect you from this risk since your returned questionnaire will be kept very confidential. Some of the survey questions may make you feel uncomfortable, but you may decline to answer any questions to which you do not wish to respond. You may also be inconvenienced by taking the time to answer the questionnaire.

Benefits: There will be no direct benefit to you from completing this questionnaire. The anticipated benefit of this study is a better understanding and awareness of the knowledge, attitudes, and practices of pediatric dentists related to tobacco use prevention and cessation.

Payment: There will be no payment or cost to you for participation in this study.

Voluntary nature: Completion of this questionnaire is voluntary. The alternative is to not fill out and return the questionnaire.

Consent: Your return of the questionnaire will be understood to mean that you consent to participate.

For any questions regarding this study, you may contact Dr. Cynthia Yee by calling: (415) 939-4371. You may also submit any inquires in writing to cynthia_yee@hotmail.com or by sending correspondence to UCSF, Division of Pediatric Dentistry, 707 Parnassus Avenue, Box 0753, San Francisco, CA 94143.

If for any reason you do not wish to contact Dr. Yee, you may contact the Committee on Human Research, which is concerned with protection of volunteers in research projects. You may reach the committee office between 8:00am to 5:00pm Pacific Standard Time by calling (415) 476-1814, or by writing to the committee at 3333 California Street, Suite 315, University of California, San Francisco, SF, CA 94118.

Thank you very much for your time and cooperation in completing and returning this questionnaire.

Sincerely,

Cynthia Yee, D.D.S.

ID# _____

UCSF

Division of Pediatric Dentistry

Confidential Survey

In this survey, tobacco users are defined as smokers (cigarettes, pipes, or cigars) or smokeless tobacco users (oral snuff or chewing tobacco). Please check the box related to your response, or fill in the blank where indicated.

1. Do you currently provide clinical patient care? (check one)

☐ Yes ☐ No (If no, please stop and return survey)

2. Average # of days in practice per week:

_____

3. Number of patients you see in a typical day

(estimate): _____

4. Number of adolescent patients (defined as ages 11-17) you see in a typical day:

_____

5. Your primary practice is (>50% of time):

☐ solo ☐ group ☐ academic ☐ hospital ☐ public health

☐ military ☐ other:_____ (check one)

6. Location of your primary practice (check one):

☐ urban (pop. ≥ 300,000)

☐ suburban (> 2,500 but < 300,000)

☐ rural (≤ 2,500)

7. Is tobacco use allowed anywhere in your office:

a) By staff members (check 1) ☐ Yes ☐ No

b) By patients or parents (check1) ☐ Yes ☐ No

8. Which of the following describes your use of the listed products most closely?

Product	Current daily user	Current occasional user	Former user	Experimented with	Never Used
Cigarettes	☐	☐	☐	☐	☐
Pipes	☐	☐	☐	☐	☐
Cigars	☐	☐	☐	☐	☐
Smokeless Tobacco	☐	☐	☐	☐	☐

9. How do you identify users in your practice? (Check all that apply)

☐ I look for oral symptoms
☐ I ask patients about their tobacco use
☐ I detect tobacco odor
☐ I ask parents about their children's tobacco use
☐ I ask about tobacco on health hx form
☐ I am alerted by parents of tobacco users
☐ I do not identify tobacco users
☐ Other (specify): _____

10. In the past 3 months, approximately what percent of adolescent patients did you ask whether or not they:

Smoke:
☐ 91-100% ☐ 75-90% ☐ 51-74% ☐25-50% ☐ 11-24%
☐ 1-10% ☐ None

Use smokeless tobacco:
☐ 91-100% ☐ 75-90% ☐ 51-74% ☐25-50%
☐ 11-24% ☐ 1-10% ☐ None

11. Who in your office is responsible for asking about tobacco use? (Check all that apply)

☐ Dentist ☐ Dental Assistant ☐ Hygienist
☐ Receptionist ☐ Health History Form ☐ No one person
☐ We do not ask

12. In the past 3 months, of your patients who reported tobacco use, what percent did you advise to stop?

Of those who reported smoking:
☐ 91-100% ☐ 75-90% ☐ 51-74% ☐25-50%
☐ 11-24% ☐ 1-10% ☐ None
☐ No patients reported smoking

Of those who reported smokeless tobacco use:
☐ 91-100% ☐ 75-90% ☐ 51-74% ☐25-50%
☐ 11-24% ☐ 1-10% ☐ None
☐ No patients reported smokeless tobacco use

13. Please estimate how often you provide the following services to your adolescent patients. If you never provide these services, please Indicate if you are willing to provide them to your adolescent patients.

	Always	Often	Sometimes	Never	If never, are you willing to:
Ask about tobacco use	☐	☐	☐	☐	☐
Encourage non-users to remain tobacco free	☐	☐	☐	☐	☐
Have tobacco use prevention educational materials available in your reception area	☐	☐	☐	☐	☐

14. Please estimate how often you provide the following services to your adolescent patients who use tobacco. If you never provide these services, please indicate if you are willing to provide them to your adolescent patients who use tobacco

	Always	Often	Sometimes	Never	If never, are you willing to:
Advise them to quit	☐	☐	☐	☐	☐
Discuss strategies to quit	☐	☐	☐	☐	☐
Encourage them to set quit date	☐	☐	☐	☐	☐
Provide educational materials/ self-help	☐	☐	☐	☐	☐
Recommend nicotine gum	☐	☐	☐	☐	☐
Recommend nicotine transdermal patch	☐	☐	☐	☐	☐
Refer them to cessation programs	☐	☐	☐	☐	☐
Provide follow up for those trying to quit	☐	☐	☐	☐	☐

15. Do you routinely document your adolescent patients' tobacco use status in their dental charts:

	Always	Usually	Sometimes	Never
For tobacco users	☐	☐	☐	☐
For all adolescent Patients	☐	☐	☐	☐

16 How much of a barrier do you think each of the following is, or would be, for you with regard to helping your adolescent patients stop tobacco use?

	Not a barrier	Somewhat of a barrier	A strong barrier
Lack of time	☐	☐	☐
Lack of adequate reimbursement	☐	☐	☐
Don't feel like I can effectively help patients quit using tobacco	☐	☐	☐
Feel patients are resistant to cessation services	☐	☐	☐
Don't know what to say	☐	☐	☐
Don't have materials to hand out	☐	☐	☐
Don't know where to send patients for counseling	☐	☐	☐
Most of my adolescent patients do not use tobacco	☐	☐	☐
Don't feel this is appropriate for a pediatric dentist	☐	☐	☐
Did not occur to me to provide these Services	☐	☐	☐
Have been unsuccessful in providing these services in past	☐	☐	☐

17. Have you received formal training in tobacco use prevention or cessation intervention strategies?

☐ Yes (answer "a" and "b") ☐ No (skip to #18)

a. If yes, estimate total number of hours:_____

b. How did you receive this training? (check all that apply)

☐ continuing education course
☐ organized study club
☐ pediatric dentistry residency training
☐ dental school curriculum
☐ pharmaceutical company program
☐ other (specify)_____

18. Would you be willing to receive tobacco use prevention and cessation training?

☐ Yes (answer "a") ☐ No (skip to #19)

a. If yes, indicate what you would be willing to do: (check all that apply)

☐ attend a continuing education course on the subject
☐ attend a pharmaceutical company program
☐ other (specify) _____

19. Please indicate how well prepared you feel to do the following for your adolescent patients:

	Very well prepared	Well prepared	Minimally prepared	Unprepared
Ask about tobacco use	☐	☐	☐	☐
Advise users to quit	☐	☐	☐	☐
Assist users with quitting process	☐	☐	☐	☐

For #20-21, please check the box next to your response.

20. About one out of three U.S. adolescents uses tobacco by age 18:

☐ True ☐ False ☐ Don't know

21. Less than 1,000 adolescents in the U.S. become regular smokers every day:

☐ True ☐ False ☐ Don't know

22. Please check the box below the response that best indicates your agreement with the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
It is a pediatric dentist's responsibility to convince patients who use tobacco to stop	☐	☐	☐	☐	☐
It is a pediatric dentist's responsibility to help patients who wish to stop using tobacco to accomplish this	☐	☐	☐	☐	☐
The pediatric dentist should set a good example by not using tobacco	☐	☐	☐	☐	☐
Most adolescents will not give up tobacco use even if their pediatric dentist tells them to	☐	☐	☐	☐	☐
Most adolescent tobacco users have a hard time quitting because they are addicted to nicotine	☐	☐	☐	☐	☐
Pediatric dentists should be more active than they have been in speaking before lay groups about tobacco use	☐	☐	☐	☐	☐
It is important for a pediatric dentist to ask adolescent patients about tobacco use	☐	☐	☐	☐	☐
It is important for a pediatric dentist to encourage adolescent non-users to remain tobacco free	☐	☐	☐	☐	☐

23. Age _____

24. Sex ☐ Female ☐ Male

25. Year graduated from residency _____

26. Do you consider yourself:

☐ Asian/ Pacific Islander ☐ Black/ African American
☐ Hispanic/ Latino ☐ White/ Caucasian
☐ Native American ☐ Other _____

Thank you for participating. Please return the survey in the postage-paid envelope provided.