



Increasing Dental Care for Very Young Children: What Can Training Accomplish?

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ABSTRACT Too few dental providers feel comfortable or are keen on seeing young children in their practices, and training in oral health has generally ignored the dental component of early childhood. Evaluation of California's \$7 million First Smiles showed increased knowledge and skills among 3,369 dental professionals trained. Positive practice changes included increasing willingness to see more 1-5 aged children, including special needs; seeing children for a first visit by age 1; and conferring with a pregnant patient's medical provider.

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Dental caries is the most prevalent chronic disease of children, especially among low-income families, despite the fact that tooth decay is largely preventable through regular dental checkups, the use of fluoride and sealants, and appropriate diet and oral health care.¹ While research is ongoing, periodontal infection has also been associated with adverse pregnancy outcome and maternal oral flora is one of the greatest predictors of the oral flora of her offspring.²

Children with compromised immunity or cognitive or other developmental and physical conditions, with limited ability to cooperate with preventive oral health practices, may be especially vulnerable to the effects of oral diseases and at higher risk for complications.³

Severe dental caries is a particular problem in young children because of

the difficulty in managing them in a dental office, or requiring expensive treatment in an operating room, and the multiple visits necessary to treat them.

Despite a recommendation by the American Academy of Pediatrics, American Dental Association, and the American Academy of Pediatric Dentists that children receive a first oral health visit by age 1, in California, in 2005, more than one-third (34.3 percent) of children age 5 and under had never had a dental visit. (The figure rises to 37.2 percent for those between 100 percent to 200 percent of the poverty level.⁴)

Child health professionals can play a significant role in reducing the burden of this disease if they have adequate training and support to do so.

However, training in oral health of young children continues to be an important need for both medical and dental pro-

viders, and, has, with a few exceptions, generally ignored the dental component of early childhood.⁵ Further, U.S. dental schools may not be adequately addressing the prenatal to 5-year old age group in the didactic and clinical portions of their curricula.

This study examined the impact of California’s \$7 million “First Smiles” training program conducted statewide by the California Dental Association Foundation (CDAF) and Dental Health Foundation (DHF) in 2004-2008. The goal of the program was to increase access to quality oral health education and preventive services for children aged newborn to 5, particularly low-income and children with disabilities and other special health care needs, by expanding the number of dental and medical providers willing to provide services to this population; and to increase the capability of community-based organizations that typically serve families with the highest risk for oral disease, such as Head Start, to provide anticipatory oral health guidance to parents. This paper focuses primarily on the results of the training for dental professionals.

Background

First 5 California, a state program to serve children aged newborn to 5 funded from a voter-approved tax on the sale of tobacco products, launched an Early Childhood Oral Health Initiative in 2004 of which First Smiles was the major component. The initiative was based on recognition of the link between a child’s oral health and their overall health, and the critical gap in access to services for many low-income families related to providers’ knowledge, attitudes, and involvement.

A multidisciplinary Scientific Advisory Committee, SAC, of 15 experts in children’s oral health was convened and guided the project. To standardize the training, key messages the SAC reached consensus on were piloted among a

TABLE 1

Project Goals for Reaching Providers With Education and Training			
	Dental Professionals	Medical Professionals	
	Dentists, dental hygienists, and dental assistants	Primary care providers (pediatricians, family practice, OB-GYNs, pediatric nurse practitioners)	Medical residents
Education	75% (34,097)	50% (7,174)	50% (1,238)
Training	30% (13,683) (92% reached as of February 2008)	20% (2,900) (100% reached as of December 2007)	50% (495) (100% reached as of December 2007)

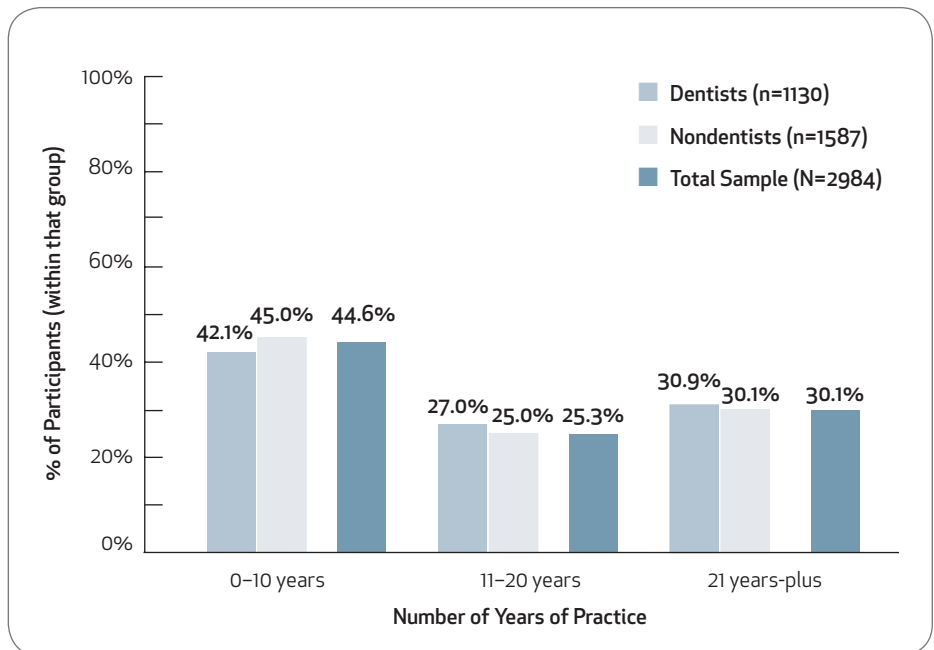


FIGURE 1. Dental professionals’ years in practice.

group of 300 dentists in May 2004 as the curriculum was being developed. The curriculum was tailored as necessary for both medical and dental professionals and field tested and revised before implementation.

Program Goals

First Smiles was expected to reach 75 percent of California’s dental providers and 50 percent of the state’s primary care providers with education; and 30 percent of the dental and 20 percent of the medical providers with training as shown in TABLE 1.

The expected program outcomes included provider knowledge gain, increased skills concerning oral health of children aged newborn to 5, and adoption of desired practice changes, such as willingness to see children at younger ages, and longer-term system changes.

Training Strategies

Education and training for the dental professionals were offered in a variety of formats, including two-hour (e.g., at local dental society dinners) and four-

hour (e.g., at major meetings and conferences) in-person trainings, two-hour Web cast training sessions, and modules for distance learning. In some cases, joint training was offered for dental and medical providers. Educational strategies included dissemination of journal articles, some commissioned by this project, policy briefs, and newsletters. The project also served as a resource for disseminating new and emerging research by posting the latest scientific information on its Web site.

Method

Data Sources

The data for the study came primarily from about 14 evaluation instruments uniquely created for this project. These included participants' initial and follow-up surveys with the course post-test imbedded; a trainer feedback survey about the ease of use and effectiveness of the curriculum and course materials for participant learning; a local dental society survey to assess awareness about the program and perceptions about its usefulness; and a local First 5 commission survey to determine familiarity with the project and involvement in funding of local oral health strategies. Post-training telephone interviews with a representative sample of dentists and parent focus groups were also used to inform the evaluation.

The five California dental schools responded to a curricula survey in baseline 2004-05 and follow-up in 2007-08 academic years concerning the age newborn to 5 curriculum content. A representative sample of U.S. dental schools was analyzed during the same periods for comparison. The U.S. sample was selected systematically from the 47 non-California dental schools in sequences separated by an interval of one with the following other considerations: additional schools

TABLE 2

Pediatric Patient Mix in the Dental Practices

Survey Question	M	SD	n
<i>Regarding all the children ages 0 – 18 in your practice, approximately what percentage is made up of the following children?</i>			
a) Children ages 0 to 5	21.1%	24.40	2,599
b) Children receiving Medi-Cal, Healthy Families, Healthy Kids or other public program benefits	20.8%	31.88	2,557
c) Children from families who are agricultural/farmworkers	10.0%	19.40	2,424
d) Children with disabilities or other special health care needs	5.3%	9.89	2,550

selected based on previous contact with this project; familiarity of the evaluator with the school; and availability of complete contact information on Web site. Names of schools were drawn until a sample size of half (23) of the non-California schools was selected. A total of 21 (91 percent) completed surveys were received, representing 45 percent of the U.S. dental schools outside of California. The 21 dental schools in the initial survey sample were sent the follow-up survey in November 2007 and 20 (95 percent) responded.

Data Collection And Analysis

The training participants, dental and medical providers, completed the survey/post-test ("survey") immediately after participating in a training session (referred to as "the initial survey"). They completed a similar survey/post-test approximately six months later (called the "follow-up survey.") The initial survey was completed onsite immediately after the training session and collected by program trainers according to the authors' instructions, and mailed to them in self-addressed, prepaid mailers. The authors faxed or emailed the follow-up survey to participants who supplied the required contact information on their initial survey. (While dentists were the most likely to supply such information, a fax number, about one-third of all surveys were missing the information and no follow-up was possible). When e-mail-

ing proved far less effective, the authors sent the follow-up survey only by fax.

Detailed coding schemes and Excel spreadsheets were created for the surveys and data entry staff were trained in their use. Standard data security measures were taken. The written provider surveys were logged in as they arrived and the data were entered into the spreadsheets for analysis. The data were cleaned and statistical analysis performed using SPSS Version 15.0. To avoid alpha level inflation in sets of related analyses, a Bonferroni correction was made. Summaries of findings from the telephone interviews and other qualitative data sources were prepared in structured formats from written notes, coded, and analyzed for content.

Study Limitations

The study used a post-test-only design to demonstrate knowledge gain (as opposed to knowledge increase), a suitable design when there is no available comparison group and no pretest data. The design requires identification of items on a post-test that were included in the curriculum, which this study met. Pretests can add to project expense and cost valuable instructional time. Trainers and the SAC were concerned that taking additional time away from delivering the course (especially the shorter course) to require participants to complete a pretest was impractical and would have limited

TABLE 3

Initial Post-test Results of Dental Providers, Total Sample

Survey Question	% Correct on Initial Survey		
	In-Person 2-Hour (n=1410*)	In-Person 4-Hour (n=1258*)	Online (n=123*)
TRUE / FALSE			
a) Age for infant's first dental visit	91.4	93.1	91.9
b) Behavioral issues in treating children with special needs	42.1	44.9	39.0
c) Medi-Cal/Healthy Families reimbursement	80.2	82.8	84.6
d) Role of xylitol gum	92.6	92.5	95.9
e) Remineralization with fluoride varnish	96.2	94.6	95.9
Total average score for true/false	80.5	81.6	81.5
Average # of true/false items correct	4.0	4.1	4.1
MULTIPLE-CHOICE			
1. Risk factors associated with early childhood caries	77.9	80.2	86.9
2. Pathological factors in caries balance equation	75.7	81.1	81.3
3. Protective factors in caries balance equation	68.1	76.6	70.7
4. Most prevalent unmet need in children with special needs	92.3	95.2	97.6
Total average score for multiple choice	78.5	83.3	84.2
Average # of multiple choice items correct	3.1	3.3	3.4
Total test score (all items combined)	79.6	82.3	82.7

*Sample size is after excluding those cases with eight or more blank post-test responses on the initial survey.

value-added information about knowledge gain that wasn't already intuitively known. State First 5 staff agreed that the course post-test results would be the indicator for knowledge gain, and six months later used as the indicator for knowledge retention.

Findings

Program Reach

During the course of the four-year program, First Smiles provided training to 15,230 healthcare professionals (75 percent as dental providers), and 883 staff from participating community agencies, meeting close to 100 percent of the target training goal. The dataset for this study consisted of the 3,369 dental professionals who attended one

of the training courses and completed an initial survey between January 2005 and October 2007. Approximately 10 percent of these providers also returned a follow-up survey that could be matched to their initial survey.

The Study Sample

Of those who specified their profession (13 percent did not do so), dentists comprised about 35 percent of the sample and allied dental professionals (hygienists and assistants) represented 44 percent. Dental residents and dental office staff made up the remaining 8 percent. Seven of 10 course participants were women, which would be expected with such a high percentage of allied dental participants.

First Smiles drew a diverse participa-

tion of dentists ethnically and racially (probably reflecting the wide reach the program attempted to achieve). While somewhat the same proportion of black dentists attended a training as practice in California, there were nearly twice the proportion of Hispanic and more than twice the proportion of Asian dentist participants than represented among the state's dentist population. (Compared to the physician respondents, dentists were much more likely to identify their gender and race/ethnicity.)

A broad range of years (less than 1 year to 56 years) of practice was represented in the sample, with those professionals practicing for relatively fewer years outnumbering those who had been in practice for relatively more years. Close to half (44.6

percent) of the dental respondents were in practice for 10 years or less, with the remainder about equally divided between 11-20 years, and more than 21 years in practice. The number of years practicing their profession was substantially the same for dentists and allied staff (FIGURE 1).

Pediatric Patient Profile

The authors asked about certain characteristics of the pediatric patient mix in these dental offices. The average percentage of respondents' practices devoted to children aged newborn to 5 and to children receiving some form of public benefits were each approximately 21 percent. On average, only 10 percent of their practice was made up of children from farmworker families (a population of special interest to the project funder) and only about 5 percent of children with disabilities or other special needs (TABLE 2).

Knowledge Gain and Retention

All of the training participants exhibited a great deal of knowledge in most areas of the curriculum content (80 percent average correct post-test scores). Dental providers, as well as medical providers, did least well in understanding that there is no general difference in the behavioral issues of children aged newborn to 5 with special needs versus all children of that age group. They also did slightly less well in identifying the protective factors in the caries balance equation (TABLE 3). With all of the post-test items combined, those who took the four-hour and online course performed significantly better ($p < .005$) than the two-hour group.

As expected, there was a general trend for course participants to lose some information over the six-month follow-up period, regardless of the length of course. The different dental profes-

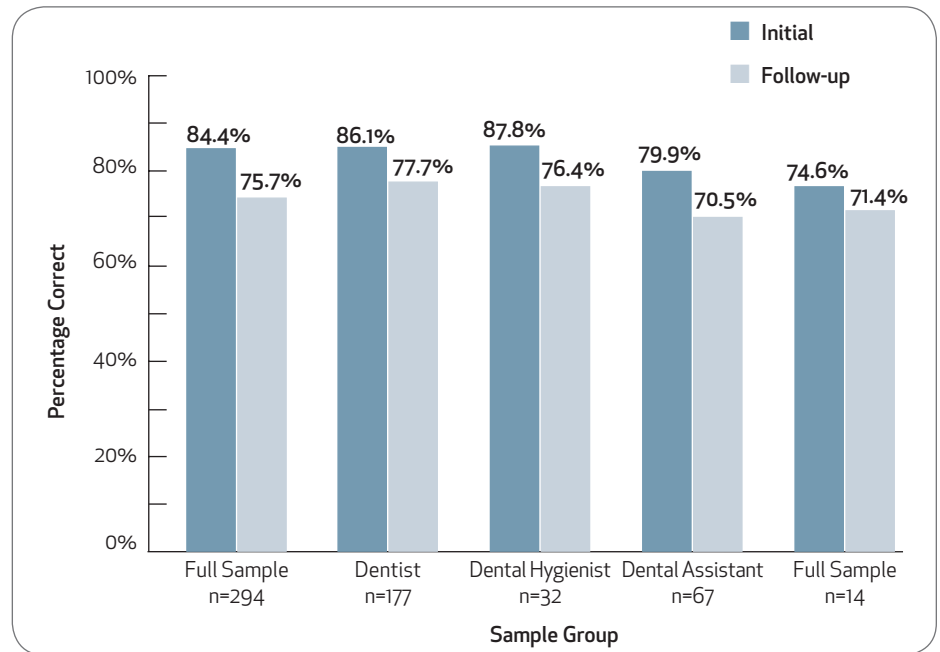


FIGURE 2. Dental post-test questions correct, initially and at six months.

sions differed significantly on total test performance; hygienists and dentists did not differ from each other but they performed significantly better than dental assistants as shown in FIGURE 2.

Satisfaction with the Training

Overall, the dental participants were very satisfied with the course. They reported being very likely to recommend the course to colleagues (six months later more than half, 56.5 percent, had done so) and anticipated being able to apply information they learned in their practices. They also expected to use the course materials. The follow-up telephone interviews with general dentists also affirmed the value of the training as shown in TABLE 4.

Dental professionals who took the training made use of a variety of resources to stay current on issues related to young children's oral health. The most common methods utilized were reading journal articles (74 percent of the respondents) and attending conferences and workshops on the topics (TABLE 5).

Self-perceived Skill Improvement

Overall, the dental providers agreed that the course increased their skills after training (TABLE 6). The highest degree of perceived increase was in learning how to communicate with parents, followed by performing a knee-to-knee exam; the lowest increase reported was in learning how to bill and get reimbursed for procedures.

To examine possible gender differences in the ability to handle very young children after taking the course, this skill (item "d" in TABLE 6) was analyzed separately. Based on responses from the initial surveys, female and male general dentists did not differ significantly in the skill of managing the behavior of young children in a dental practice.

Except for the skill in knowing when to treat and when to refer an oral health problem (item "b" in TABLE 6), an analysis of variance revealed that dental participants perceived significantly less skill change due to taking the course when they were asked about this again six months later.

TABLE 4

Dentists' Feedback About the Training Six Months Later



- "The course helped me a lot with technique."
- "I've implemented the fluoride varnish procedure described at the training."
- "I was already seeing young kids but the course definitely improved the quality of care I provide."
- "I feel so much more comfortable with being able to see younger children."
- "I learned that kids need to come in at a younger age than I previously thought."
- "The information about disabilities and special needs made me more comfortable with being able to see these children."
- "Now I can explain to parents why it's important to bring them in early."
- "I don't see any new children in my older practice but I opened a new practice where I accept children 0-5."

a relationship with when children were first seen. Analysis of variance revealed that female dentists reported typically starting to see children at a significantly younger age than their male colleagues (TABLE 8). General dentists who had been in practice longer was correlated to seeing children at older ages at their first visit ($r=.101, p<.01$), suggesting that younger dentists were more likely to take patients at younger ages.

Frequency of Performing Procedures and Role Delegation

There was considerable variation in the frequency with which preventive procedures were performed by the dental providers for children newborn to 5, and pregnant women/new mothers. The procedures that tended to be performed quite frequently, as reported by the total sample, were discussion of infant feeding and nutrition counseling. Six months after the training, there were statistically significant ($p<.006$) increases in four procedures: for children newborn to 5, participants more frequently applied fluoride varnish and discussed an infant's bottle or breast feeding practices. For pregnant patients, dentists discussed breast feeding practices and recommended xylitol gum more often (TABLE 9). The gender differences were not significant when examined to see whether female and male general dentists might serve pregnant patients differently relative to the frequency of coordinating their care or consulting with their obstetrical provider.

Six months after receiving the training, 8.3 percent of the dental providers whose offices placed sealants and 8.7 percent of those who applied topical fluoride reported increasing delegation of these procedures as a result of what they learned at the course, thereby allowing the dentists to see more patients. Other role changes

TABLE 5

Type of Resources Utilized by Dental Providers Since Training

Survey Question	n
What resources have you utilized in the last six months to stay updated on oral health issues related to children 0-5?	
Read professional journals on the topic	226
Attend conference or workshop on the topic	124
First Smiles (this project's) Web site	96
Other Web-based educational sites and materials	74
Other (what?)	22
Discussion/consults with other dentists	5
By training or being in residency training	4
Los Angeles POHAP (Pediatric Oral Health Assessment Project)	2
Unable to determine	2

Note. Because survey questions allowed for the respondent to check more than one choice, no percentages were computed).

Practice Behavior Changes

Age at First Visit

Although one-third of the total sample of general dentists reported they typically started seeing children at age 3 (with female general dentists significantly more likely than their male colleagues to see children at younger ages), only 14.5 percent saw them as early as the first birthday as recommended by the American Dental Association and American Academy of Pediatrics. Six

months after taking the course, however, all general dentists, without regard to gender, whose initial and follow-up surveys could be matched appeared to be seeing children at younger ages.

At the time of follow-up, 28.4 percent, up from 22.8 percent initially, indicated that they saw children for a first appointment at age 1, a 24.6 percent change (TABLE 7).

Years in practice, a proxy measure for dentists' age, and gender were examined at the time of training to see if there was

TABLE 6

Increase in Self-perceived Skill Level Among Dental Providers, Initial and Six Months

Survey Question	Initial Survey				Follow-up Survey			
	M	SD	n*	Already Had Skill n**	M	SD	n*	Already Had Skill n**
<i>Specifically with regard to children 0-5, to what extent did this course increase your skills in:</i>								
a) Performing a knee-to-knee exam	2.48	.62	209	61 (20.7%)	2.21	.70	209	62 (20.4%)
b) Knowing when to treat and when to refer an oral health problem	2.35	.67	196	61 (20.7%)	2.25	.64	196	65 (21.5%)
c) Knowing how to treat a problem I identify	2.31	.66	208	46 (15.6%)	2.13	.64	208	62 (20.5%)
d) Managing behavior of very young children	2.26	.70	210	55 (18.6%)	2.10	.67	210	54 (17.8%)
e) Providing education and other anticipatory guidance to parents	2.49	.58	221	42 (14.5%)	2.36	.66	221	44 (14.5%)
f) Learning how to bill and get reimbursed for procedures	2.12	.76	223	33 (11.6%)	1.71	.69	223	36 (12.0%)
g) Organizing the dental office for success	2.16	.71	212	39 (13.8%)	1.90	.64	212	40 (13.6%)

Note. Item mean scores reflect the following response choices: 1 = *very little*, 2 = *some*, and 3 = *a great deal*. * The total number of participants providing follow-up surveys that could be matched to the initial survey was 311. However, the sample size for valid (nonmissing) responses varied from question to question. **Those who indicated "very little because I already had this skill" were withheld from the computation.

that occurred with less frequency were delegation of doing *Streptococcus mutans* testing and performing coronal polishing.

Willingness to See Young Patients

One of the key goals for this program was an increase in workforce capacity for seeing more children age newborn to 5, and identifying what it would take to facilitate this. Approximately half of the general and pediatric dentists indicated they were likely or very likely to increase the number of very young children in their practice as a result of taking the course.

Six months after the training, 16 percent (25 of 156) of the general dentists reported they were seeing more children aged newborn to 5 specifically due to taking the course, an important increase but not at the level they anticipated right after attending a training. Six (5.9 percent) of the 102 dentists interviewed after training reported they had increased the number of children age newborn to 5 in their practice specifically due to taking the course. An additional 63 (62 percent)

TABLE 7

Age of Child Accepted by General Dentists, Initial and Follow-up

Survey Question	Matched Surveys (n = 169)				
	Initial		Follow-up		% Change
	n	%	n	%	
<i>At what age do you typically start to see young children in your practice?</i>					
1	37	22.8	48	28.4	+24.6
2	35	20.7	33	19.5	-5.8
3	55	32.5	54	32.0	-1.5
4	20	11.8	15	8.9	-24.6
5	10	5.9	9	5.3	-10.2
6	4	2.4	2	1.2	-50.0
No Response	7	4.1	7	4.1	0.0

TABLE 8

Gender Differences for General Dentists for Age of First Visit (N=1,124)

Question	Female			Male		
	M	SD	n	M	SD	n
<i>At what age do you typically start to see young children in your practice?</i>						
From 1 year of age to 8 years of age	2.69 ^a	1.26	591	3.11 ^a	1.57	533

^aF(1, 1123) = 25.91, p < .05.

TABLE 9

Frequency of Performing Procedures at Time of Training and Follow-up

Survey Question	Initial Survey			Follow-up Survey		
	Never or Almost Never	Occasionally	Always or Almost Always	Never or Almost Never	Occasionally	Always or Almost Always
<i>How frequently do you or another member of the dental team ordinarily perform the following in your practice?</i>						
For children 0 to 5						
a) Apply fluoride varnish	106 37.9%	87 31.1%	87 31.1%	55 19.4%	106 37.3%	123 43.3%
b) Provide nutrition counseling to parent / caregiver	26 9.3%	112 39.9%	143 50.9%	22 7.6%	91 31.3%	178 61.2%
c) Discuss an infant's bottle or breastfeeding practices	36 13.0%	96 34.8%	144 52.2%	24 8.3%	80 27.6%	186 64.1%
d) Coordinate care or consult with a child's medical provider	104 37.4%	121 43.5%	53 19.1%	104 36.1%	144 50.0%	40 13.9%
e) Inquire about the oral health of the child's mother or caregiver	68 24.2%	115 40.9%	98 34.9%	44 15.3%	126 43.9%	117 40.8%
For pregnant women / new mothers						
f) Perform saliva testing	263 94.3%	13 4.7%	3 1.1%	262 92.6%	15 5.3%	6 2.1%
g) Discuss breastfeeding practices	157 56.3%	76 27.2%	46 16.5%	124 43.5%	97 34.0%	64 22.5%
h) Coordinate care or consult with a pregnant patient's medical provider	162 58.1%	92 33.0%	25 9.0%	162 57.0%	94 33.1%	28 9.9%
i) Recommend xylitol gum	143 51.8%	78 28.3%	55 19.9%	75 26.3%	126 44.2%	84 29.5%

Note. The total sample size for the matched initial and the follow-up surveys was 311. However, the number of valid responses ranged from 276 to 291.

dentists reported there had been a slight increase in the number of these children in their practice but not necessarily due to the course; they described general pediatric practice-building activities or usual patient attrition as the reasons, not a change in the overall ratio of young children to other patients in the practice. Three (2.9 percent) of the interviewed dentists reported increasing the number of children age newborn to 5 with disabilities or other special needs as a direct result of taking the course, describing increased confidence and comfort level with such children.

Female general dentists were significantly ($F(1, 1120)=18.89, p<.05$) more likely than males to say they were would see more children age newborn to 5;

dentists in practice for longer periods of time (and presumably older) indicated they were *likely* to not increase the number of children this age in their practices. However, six months later there were no significant differences in either gender or years in practice when it came to intended and *actual* experience.

The barriers to taking more very young children were fairly evenly divided among three reasons shown in **FIGURE 3**. Personal life issues were described as nearing retirement, cutting back hours, coming back from/about to go on maternity leave and so forth. "Other" comments were of two types: parent resistance to bringing in children so young and the dentist preferring an adult population ("my patients are growing old with me").

What it Takes for Dentists to See More Newborns to Age 5 Children

More than half of the dentists said more training for staff, primarily in providing parent education and managing children's behavior, would make a difference in their willingness to see very young children (a dentist stated, "Take 25 years off my age and maybe I'd do it") (**TABLE 10**). More training needed regarding clinical skills included the knee-to-knee exam, oral sedation, sealants, and fluoride varnish. Examples of "other" training needs included risk assessment, oral health instruction for parents/caregivers and motivational training for the dentist to want to see young children. About 41 percent said having higher reimbursement for procedures (including those not currently covered)

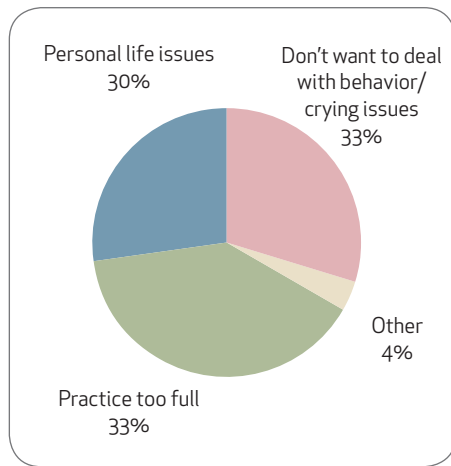


FIGURE 3. Main reasons for dentists not taking more children 0-5 (telephone interviews, n=102)

was necessary, citing parent education and fluoride varnish most often. Examples of “other” procedures were visual exam consults, recall X-rays, and ART (alternative [or atraumatic] restorative treatment).

Risk Assessment

More than one-third of all dentists at follow-up reported they always performed a formal oral health risk assessment on new patients aged newborn to 5 (TABLE 11). However, while close to two-thirds (63.2 percent) of the pediatric dentists reported always performing risk assessment, general dentists were more inconsistent, with a little over a quarter (28.6 percent) of them reporting regularly performing risk assessment. (On the other hand, 40 percent of the medical providers at follow-up reported always doing a formal oral health risk assessment on new patients aged newborn to 5.)

Referrals From Physicians to Dentists

There were also positive, though not statistically significant, changes in the oral health practices of primary care providers at follow-up as a result of the training. With regard to pregnant women, 51.7 percent of the primary care providers reported always or almost always referring these patients to a dentist, up

TABLE 10

What Dental Providers Said it Would Take to See More Children 0-5, Initial Survey

What would it take for you to see more (or any) children 0 to 5 in your practice?

Strategy	Number and Percent Agreeing	Response When Specified	n
More training for the staff	1,298 (55%)	Managing behavior	126
		Clinical skills	63
		Billing	21
		Parent education	129
		This type of course	85
Higher reimbursement for procedures	890 (41%)	Fluoride varnish	55
		Saliva testing	12
		Parent education	80
		Exam/prophy	13
		Sedation/anesthesia	4
		Dental sealants	7
		Other	60

from 18.5 percent who initially reported doing so. The medical providers also increased their frequency of always or almost always coordinating care with a pregnant patient’s dental provider.

Dental School Curricula

One of the indicators for systems change this project hoped to influence was California dental schools increasing the percentage of curriculum focus on children age newborn to 5, including children with special needs. At baseline, two of the schools reported that 30 percent to 39 percent of the pediatric portion of the general dentistry curricula focused on the newborn to 5 age group, one school reported 20 percent to 29 percent pediatric focus, and two schools reported less than 10 percent. Three years later the overall pediatric curricula focus on newborn to age 5 children increased with two schools reporting more than 40 percent; however, three schools, one more than at baseline, reported less than 10 percent focus on this age group. Also at the time of follow-up, the percentages of didactic pediatric curriculum and clinical experience focused

on newborn to age 5 had lessened slightly.

California dental schools’ focus on children aged newborn to 5 did not appear to be much different than other dental schools in the nation according to the comparative analysis of nearly half of the other U.S. dental schools.

Discussion

First Smiles attracted a more diverse group of dentists than generally practice in California, participant characteristics that have the potential of influencing future practice behaviors and increasing the impact of the training. Having trained a large group of general dentists with fewer years in practice, for example, may have the payoff of a longer time span for implementing new knowledge and skills. And, having trained a relatively large group of female dentists who see children at younger ages and at least indicate a willingness to see more appears also to be beneficial.

First Smiles was effective in increasing dental professionals’ knowledge, skills and practice behaviors associated with providing oral health services to children age

TABLE 11

Dentists' Frequency of Conducting Formal Risk Assessment at Follow-Up

Survey Question	All Dentists (n=182)		General Dentists (n=154)		Pediatric Dentists (n=19)		Other Dental Specialty (n=4)	
	n	%	n	%	n	%	n	%
<i>How often do you do a formal oral health risk assessment on new patients aged 0 – 5?</i>								
Never	35	19.2	31	20.1	2	10.5	1	25.0
Seldom	23	12.6	20	13.0	3	15.8	–	–
Sometimes	47	25.8	45	29.2	2	10.5	–	–
Always	62	34.1	44	28.6	12	63.2	2	50.0
No response/missing data	15	8.2	14	9.1	–	–	1	25.0

newborn to 5. Participants gained knowledge particularly in areas of the curricula as age of recommended first visit, role of xylitol gum and remineralization with fluoride varnish. The statewide training program also offered a model for bringing medical and dental providers together, a collaboration that can result in important clinical care outcomes for children.

While dental providers recognized dental care as the leading unmet health care need for children with special needs, they did not seem to understand that the behavioral issues for these children are generally the same as for the newborn to age 5 population. Training related to children with special needs continues to be a high priority as dentists need assurance of their ability to integrate these children into their practice.

It is significant that the highest degree of skill increase reported by all participants was in the area of communicating with parents. Since parents are the gatekeepers of children's health and educating them about ways to prevent early childhood caries in dental settings is "frequently an exercise in overt persuasion," increased skills in parent counseling and anticipatory guidance is likely to lead to improvements in children's oral health.⁶

Because general dentists encounter pregnant women and new mothers in their practices, they have a unique opportunity to ask about and look for

indications of dental disease and other oral health conditions as early as the prenatal period provided they are sufficiently aware and trained to do so. The medical-dental collaboration, evidenced by medical providers increasing "always or almost always" referring pregnant women to a dentist and coordinating/consulting with the dental provider, and dentists increasingly conferring with a pregnant patient's medical provider, is promising.

Changes in behavior are made slowly and in small steps. It has been observed that a generational shift is underway on professional recommendations for dental care so that the idea of a "first dental visit at the first birthday" is still widely unexpected and questioned by many who advise parents and caregivers, including dental professionals.⁵ The fact that 15 percent of the general dentists reported seeing more newborns to age 5 children six months after training due to taking the course was a very positive program outcome.

It may not be realistic to think that a two-hour or a four-hour course would have a greater measurable impact than that on this program goal. Other factors such as low reimbursement rates and client behaviors (appointment keeping and timeliness) are likelier to have a far greater influence on provider willingness to see children age newborn to 5, particularly those on some form of public assistance

such as Medicaid, but were beyond the scope of this program to affect.⁷

Long-term systems change will need to come from the institutions that educate dental professionals. Many general dentists are not comfortable treating young children, and classroom and chairside education focusing on newborn to age 5 at the predoctoral level varies. Overall, California dental schools do not currently direct a high percentage of their general didactic or clinical experience curricula on the newborn to 5 age group. The exposure dental students have to very young patients with disabilities and other special needs is even lower.

While the California schools varied in experience, and First Smiles might have influenced some of the more recent curricula updates and age focus, overall it appears the exposure dental students get to this young age group, particularly children with special needs, is still relatively small compared to their exposure to older children and adult patients. ■■■■

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