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UCSF dental students' knowledge, attitudes, and intent to provide caries risk assessment and prevention counseling to children and adults

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UCSF dental students' knowledge, attitudes, and intent to provide caries risk assessment and prevention counseling to children and adults

by

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THESIS

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[redacted]

DEDICATION

I would like to dedicate this thesis to my parents, Ramanlal and Neela Naran. You have been my greatest support!

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UCSF dental students' knowledge, attitudes, and intent to provide caries risk assessment and prevention counseling to children and adults

Rasika Ramanlal Naran

Abstract

Objective: The goal of this study was to compare the knowledge and attitudes of UCSF dental students regarding caries risk assessment (CRA) and prevention counseling between the six different classes (D1, D2, D3, D4, ID3, and ID4). We also sought to compare the dental students' intentions to provide CRA, prevention counseling, and a dental home for different patient cohorts, from early childhood through elderly patients.

Methods: Our cross-sectional study design employed a 26-item survey to assess the knowledge and attitudes about CRA and prevention counseling of dental students at the University of California San Francisco, School of Dentistry. The six dental student classes participated in the survey during the summer and fall quarters in 2005.

Results: Overall, we achieved 90% (332/368) response. On knowledge-based questions, the D3 and D4 students scored about 70% correct responses. Students' confidence in performing CRA was not related to their knowledge. Across all patient age groups, D3 and D4 students were more willing to perform caries risk assessment than to provide a dental home. The D4 students were more willing than D3 students to perform CRA and offer a dental home for young children (< 6 years).

Conclusions: Risk assessment and screening to identify high-caries-risk individuals in need of early intervention is a new and developing concept. Increasing knowledge of caries risk assessment may improve dental students' preparedness and willingness to

provide dental care to young children. Results of our research study may inform future teaching of caries risk assessment and prevention counseling.

Barbara Gilbert
Chairperson of Committee

6/9/06
Date

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1. BACKGROUND AND SIGNIFICANCE

Much progress has been achieved in the prevention of dental caries over the past decades due to the presence of fluoride in drinking water, in dentifrices, and regular in-office fluoride treatments (Crall, 2003; Featherstone, 2003). Even with the incorporation of fluoride, however, dental caries still presents as the single most common chronic childhood disease, five times more common than asthma and seven times more common than hay fever (U.S. Department of Health and Human Services, May 2003). Of children ages 5 to 17 years, 58.6% have dental caries while only 11.1% have asthma (U.S. Department of Health and Human Services, May 2003). Greater efforts should therefore be taken to control this chronic and progressive disease process. Moreover, without intervention the prevalence and severity of caries increases as a child gets older. In 2002, the total spending on dental services in the US was estimated to be over $65 billion (Plans NAD, 2000). Moreover, the social impact of dental caries can be significant. More than 51 million school hours are lost each year to dental related illness (Adams and Benson, 1991). This figure suggests an equally striking number of work days missed by parents due to their child's dental illness. In addition, dental caries can affect the ability to eat, food choices, appearance, and communication, thereby decreasing the quality of life for children and adults (Hollister and Weintraub, 1993).

1.1 Dental caries

Dental caries is an infectious and transmissible disease process (Seow, 1998). The disease process is multi-factorial involving interaction between a causative agent (cariogenic bacteria), a substrate on which the bacteria can survive and cause disease

(dietary sugars), and a set of host factors (teeth, saliva) (Keyes, 1968). This interrelationship was first diagrammed by Paul Keyes and contains the dimension of time, i.e., an infection needs to be active over time to exert influence (Keyes, 1968). Without any one of these factors, there can be no dental caries.

Shortly after birth an oral ecosystem is established consisting of different kinds of bacteria (Carlsson *et al.*, 1975; Catalanotto *et al.*, 1975). The colonization of the mouth by these bacteria is by human transmission, mostly from mothers, fathers, and other caregivers to infants, and depends upon the quantity of these bacteria harbored by the caregiver (Berkowitz and Jones, 1985; Kohler and Bratthall, 1978; Li and Caufield, 1995). When dental caries occurs in children younger than 6 years of age it is called early childhood caries (ECC), previously termed "nursing caries" or "baby bottle tooth decay" (Drury *et al.*, 1999).

There is a large amount of evidence that the mutans streptococci group of bacteria have a central role in initiation of dental caries, although other bacteria have been implicated (Loesche, 1982). The bacteria adhere to the tooth due to their ability to produce glycans. Glycans produce a "sticky" film and thickens the plaque, aids in acid production, and increases sugar diffusion. The acids that the bacteria produce, particularly lactic acid, demineralize the tooth enamel, and ultimately lead to caries (Featherstone, 2000).

A carious lesion, when developing on smooth surface enamel, appears as a cone-shaped defect on radiographs. It looks wide at the tooth surface and becomes narrow towards the dentin-enamel junction (DEJ). From this point, the lesion can become wider again, and may extend to the pulp. Extension of the carious lesion past the DEJ, the

result of the early stages of demineralization, can be avoided by early diagnosis of the lesion is noted. While the outer surface of the tooth may remain intact, dental caries can affect enamel and dentin to a significant depth; therefore, early diagnosis of incipient decay is important.

1.2 Caries diagnosis

In regards to carious lesions, diagnosis implies detecting a carious lesion, estimating its depth and degree of demineralization, and making a decision about its activity. Dentists use various techniques to detect caries, the most common being visual, visual-tactile, and radiographic assessment. In order to deliver effective prevention, accurate diagnosis and monitoring of lesions over time is required ("Diagnosis and management of dental caries throughout life," 2001).

Visual inspection involves looking for signs of demineralization on the tooth surfaces, such as changes in color or cavitations. The tactile aspect of diagnosis involves using a fine tipped dental explorer or probe that is used to examine both the smooth and pitted surfaces of the tooth. Areas of roughness on smooth surfaces or penetration in the pits and fissures are abnormal. The radiographic technique makes use of the fact that demineralized lesions appear darker on exposed radiographic images. An NIH consensus conference concluded that studies of the reliability and reproducibility of these diagnostic methods were not strong and that the "current diagnostic practices are inadequate to achieve the next level of caries management, in which the non-cavitated lesions are identified early so that they can be managed by non-surgical methods" ("Diagnosis and

management of dental caries throughout life," 2001). Arresting dental caries depends entirely on early and accurate diagnosis.

1.3 Identifying caries with mutans streptococci

Salivary tests can be used to assess the presence of mutans streptococcus colonization, caries activity and to identify individuals with disease. Assessment of microorganisms in saliva is based on the findings that there is an association between types and numbers of bacteria in dental plaque and those in saliva (Schaeken *et al.*, 1987). Microbiological tests show a close associations between the current amount of bacterial pathogens and caries extent (Bowden, 1997). The determination of salivary mutans streptococci has been found to be beneficial for evaluation of an individual's caries risk, for demonstration of highly cariogenic infection, and for didactic purposes in health education (Larmas, 1993; Vehkalahti *et al.*, 1996). An important aspect of the predictive capacity of qualitative detection and quantitative description of mutans streptococci tests is that they have high "specificity." That is, the absence of a positive test for the presence of these organisms strongly predicts that the child's risk for future dental caries is low (Llena-Puy *et al.*, 2000; Petti and Hausen, 2000). "Sensitivity", expressed as specific levels of mutans streptococci, has shown to have a positive correlation to increased smooth surface caries (Sanchez-Perez and Acosta-Gio, 2001).

1.4 Caries Risk Assessment (CRA)

Risk is the probability that an event will occur. The term "risk factor" means an action or event that is related in some way to a future outcome. A risk factor can play an essential role in producing an occurrence of the disease, while risk indicators (related to

current disease) are helpful in identifying groups at risk but give little information about the causes of the disease since they lack temporal sequencing (Anderson, 2002; Burt, 2001). Caries risk at an individual level is the probability that one will develop dental decay or experience a health-status change contributing to caries development over a specific period (Anderson, 2002).

Risk assessments have long been used by the medical field for decades for multiple diseases processes and have proved to be beneficial in prevention and early detection of many life altering diseases. Dental caries is an infectious disease process and requires health care providers and dentists to change their approach in prevention and management of this disease. It has been proposed that clinicians redirect their management of dental caries from the "surgical approach" to a "medical prevention strategy" that focuses on early risk assessment of the mother and risk assessment of infants at 6 months of age (Stewart and Hale, 2003).

Caries risk assessment predicts if new carious lesions will develop, or if early lesions will continue to grow. Caries risk assessment encourages the treatment of the caries process itself instead of surgical treatment of cavities. A necessary first step in preventing dental caries in patients is to understand the caries risk. The risk of dental caries can be evaluated by analyzing and integrating several causative factors. These include caries experience (initial caries lesions and established and restored caries defects, secondary caries and present caries activity), fluoride use, extent of plaque present, diet, bacterial and salivary activity, and social and behavioral factors ("Clinical guideline on infant oral health care," 2004; Featherstone *et al.*, 2003; Reich *et al.*, 1999).

A new model for understanding the interactions of various factors in caries risk assessment was proposed and a graphical model, the Cariogram, was created to illustrate the fact that caries can be controlled by several different means. Though this computer program illustrates a possible overall caries risk scenario, it does not specify the particular number of cavities that will or will not occur in the future (Bratthall and Hansel Petersson, 2005).

Dentistry was slow to integrate caries risk assessments and prevention-based practice because these practices conflicted with the traditions of fee-for-service and procedure-oriented dental education (Hildebrandt, 1995). However, dental schools are starting to change, integrating caries risk assessment and disease management with patient care. A survey sent to United States' dental schools found that 34 out of 42 responding schools reported having a formal caries risk training program for the predoctoral students (Yorty and Brown, 1999). For many schools, caries risk assessment has been a part of their predoctoral didactic curriculum (Burgess, 1995; Dodds and Suddick, 1995; Hildebrandt, 1995; Stoddard, 1995) and some have incorporated it into clinical experience (Burgess, 1995; Dodds and Suddick, 1995). Wandera et. al. evaluated the effects of a predoctoral clinical educational program on preparation and beliefs of dental students related to infant oral health care (Wandera *et al.*, 1998). The two groups that were compared were those "Before YPPC" (Young Patient and Preventive Clinic) and "After YPPC" training. Significant differences were detected between the two groups regarding their feelings of preparation for examination of and procedures in children younger than 36 months and their beliefs regarding the appropriate age of the initial dental visit. The respondents who

received the YPPC training felt better prepared to evaluate caries risk (Wandera *et al.*, 1998).

Many caries risk assessment forms have been developed over the years. It has been suggested that a universal caries risk assessment form is inadequate to collect information for different age groups; therefore, multiple caries risk assessment forms should be available depending on age (Powell, 1998). Each age group--children, adults, and geriatric patients--may have its own set of risk variables. For example, caries risk for an elderly population may include xerostomic medications, a factor that may not be appropriate in a model for children (Powell, 1998).

In April 2002, a group of dental caries experts met and created a consensus statement regarding practice of caries prevention, risk assessment, and management (Featherstone *et al.*, 2003). This consensus statement included caries risk assessment forms for 0 to 5 years of age and one for at least 6 years of age (ie. school aged children and adults) (Appendix D). These recommendations and guidelines for children and adults are intended to be a "work in progress subject to improvement and modification as new information becomes available" (Featherstone *et al.*, 2003). It was recommended that these guidelines should be implemented as soon as possible for the improvement of oral health of children and adults in California.

For each patient, risk assessment allows for customization of a prevention program. A patient at low risk of developing caries will require a different prevention program than a high risk patient who may need more in-office treatment and different anti-bacterial therapeutics. It is important to remember, however, that caries risk does not remain

constant throughout life and may be modified with preventive intervention by both the patient and the dentist (Reich *et al.*, 1999).

1.5 Sociodemographic factors

Today, the incidence of dental caries in the elderly is increasing in the US and elsewhere as aging populations retain more of their dentition, making more tooth surfaces available for the disease processes (Anderson, 2002). Much progress has been made in child populations. However, the US Surgeon General's report shows that 45% of children ages 5 to 17 years have caries affected teeth, and the problem is particularly severe among children in specific populations (U.S. Department of Health and Human Services, May 2003). The greatest disease burden is disproportionately found in low-income and minority children; they are twice as likely to have dental caries and their cases are more likely to be left untreated than those of high-income families (U.S. Department of Health and Human Services, May 2003). More than a third (36.8%) of poor children ages 2 to 9 years have one or more teeth with untreated caries, and the poorer the child the more likely he or she will have caries (U.S. Department of Health and Human Services, May 2003). In addition, 75% of the dental caries in ages 2 to 5 years occurs in only 8% of children (Macek *et al.*, 2004) and 80% of dental caries in permanent teeth in ages 5 to 17 years occurs in only 25% of children (Kaste *et al.*, 1996).

The disparities in caries experience among children are also evident between races. Minority children of ages and all income levels have greater caries experience than their white peers (Vargas *et al.*, 1998). For example, 79% of Native American children between the ages of 2 and 5 years, 91% between 6 and 8 years, and 96% of 16 year olds have had caries (Vargas *et al.*, 1998). Mexican-American children 2 to 5 years old,

especially those from low-income households, are more likely than their white peers to have one or more carious lesions in primary teeth (Vargas *et al.*, 1998).

1.6 Recommendations by the American Academy of Pediatric Dentistry and the American Academy of Pediatrics

The American Academy of Pediatric Dentists (AAPD) has long recognized the detrimental effects dental decay can play on an individual's life and on society but had difficulty raising awareness in the public and other health care fields. The release of the Surgeon General's Report in May 2003 on the topic of oral health care successfully brought new attention to this long existing problem. A follow-up report, A National Call to Action to Promote Oral Health, proposed a collaboration between all health care providers to work together in promoting oral health, preventing disease, and participating in oral health care (U.S. Department of Health and Human Services, May 2003). Recently, with the support of the American Academy of Pediatrics (AAP), the AAPD made recommendations in performing caries risk assessment, anticipatory guidance, preventative strategies, and appropriate therapeutic interventions to be followed by providers in pediatric oral health.

One of the goals for early caries risk assessment is to screen for high risk individuals. Specifically, the AAPD and AAP's goal is to screen for parent-infant groups who are at risk of early childhood caries (ECC) and would benefit from early aggressive intervention ("Clinical guideline on infant oral health care," 2004). Some high risk groups include: 1) mothers with infants who have active decay; 2) children who sleep with a bottle containing cariogenic substances; 3) children who have obvious white-spot lesions present on teeth; 4) children who have low socio-economic status; and 5) children who

have special needs (American Academy of Pediatric Dentistry, 2002; Featherstone *et al.*, 2003).

Early intervention may prevent the need for later surgical intervention. In addition, anticipatory guidance is a valuable tool for dentists and other health professionals because it emphasizes prevention of dental problems rather than restorative care (Ramos-Gomez *et al.*, 2002). Anticipatory guidance is recommended for mothers during and after pregnancy, and for young patients ("Clinical guideline on infant oral health care," 2004). The AAPD and AAP recommend that every infant receives an oral health risk assessment from his/her primary care provider by 6 months of age. This initial visit should consist of: 1) assessing patient risk of developing oral disease; 2) providing education on infant oral health to mothers; and evaluating and optimizing fluoride exposure.

If an individual is assessed to be high risk, then a dental home should be established. The dental home is a specialized primary dental care provider within the philosophical complex of the medical home. Otherwise, for low risk children, the establishment of a dental home is recommended by 12 months of age ("Clinical guideline on infant oral health care," 2004).

The AAPD, AAP, and American Dental Association (ADA) guidance policies concur regarding timing of caries risk assessments, but differ in who will perform them. Whereas the AAP recommends that pediatricians receive training in caries risk assessment, screen toddlers, and refer at-risk children to dentists, the AAPD and ADA recommend that pediatricians refer all toddlers to dentists for screening. In a recent publication, Jones and Tomar conclude that "implementing the AAP recommendations will decrease untreated decay under most plausible scenarios, whereas switching to the

AAPD and ADA recommendations will increase the burden of disease if Medicaid dental capacity is limited" (Jones and Tomar, 2005).

Though the situation is slowly changing, most pediatricians have not been trained to perform caries risk assessments. In order to meet the AAP recommendations, medical schools and pediatric residencies need to incorporate caries risk assessments into the curricula. In the meantime, dentists and dental students should be knowledgeable in caries risk assessments and prevention counseling and be able to offer these services to referrals from pediatricians.

1.7 Relevant California demographics

With the new AAPD and AAP recommendations on infant oral health care, pediatric dentists may see an increase in the number of dental referrals. The results from a survey on the dental health of California children, using data from 1993 and 1994, indicate that 27% of preschool children have untreated decay, 55% of 6 to 8 year olds have untreated decay, up to 75% of minority high school students need dental care, and California's children, on average, have twice the national level of untreated tooth decay (Crall, 2003; DenBesten and Berkowitz, 2003). The California Smile Survey screened 10,949 kindergarten and 10,450 third grade children from February through June of 2005 (Dental Health Foundation, February 2006). Fifty-four percent of the kindergartners and 71% of the third grade children screened had a history of tooth decay; they had at least one tooth that was either decayed or had been filled because of tooth decay (Dental Health Foundation, February 2006). Dental caries is present nationwide, but the recent data shows there is a growing epidemic of early childhood caries (ECC) in the United States, especially California (Featherstone *et al.*, 2003).

Overall, the number of graduates from dental schools has declined significantly over the past 13 years (Valachovic, 2002). Dental schools have experienced reductions in class sizes and so have fewer dental students graduating; however, when comparing the number of general dentists to pediatric dentists, general dentists will always far exceed the number of pediatric dentists (Valachovic, 2002).

As of July 1, 2003, the US Census Bureau estimated 2.5 million children under the age of five living in California (United States Census Bureau, July 1 2003). The California Society of Pediatric Dentists reports 600 members, of which only 490 are active. That equals approximately one pediatric dentist to 5,000 children under the age of five in California. There are clearly not enough pediatric dentists to meet the needs of these children. In order to remedy this gross inadequacy, other dental professionals, such as general dentists, need to be knowledgeable in caries risk assessment and prevention counseling, as well as prepared for an increase in dental referrals from pediatricians.

1.8 Prevention of dental caries

Patients, health providers, and policymakers must view dental caries differently. Dental caries is a bacterially-based transmissible disease and prevention efforts should consequently be started early in life to decrease early colonization (Berkowitz and Jones, 1985; Kohler and Bratthall, 1978; Lowe and Lidner, 2004; Ramos-Gomez *et al.*, 2002). In addition, it is important that awareness in caries risk assessment and caries prevention increases in our dental schools. In a recent publication, 80% of students indicated they were likely to use the caries assessment tool (CAT) in their clinical practice (American Academy of Pediatric Dentistry, 2002; Nainar and Straffon, 2006). High students acceptability of the CAT indicates that it may educate pre-doctoral students regarding

caries risk assessment in children (Nainar and Straffon, 2006). In doing so, this may educate future general dentists in caring for young children. If general dentists feel comfortable and knowledgeable caring for children, access to dental care will increase. It is important to know if the students who are graduating from dental schools and planning to practice general dentistry within California have the necessary knowledge and willingness to perform caries risk assessments and prevention counseling, especially to high risk individuals, and particularly those who are children.

2. SPECIFIC AIMS

In a cross-sectional study, we tested the knowledge, attitudes, and intended behavior of dental students regarding caries risk assessment (CRA) and prevention counseling. The ultimate goal of this survey was to assess whether graduating dental students are knowledgeable and willing to perform CRA on children, adults, and the elderly. The specific aims of this study were:

1. To compare the knowledge, attitudes, and intended behavior of D1, D2, D3, D4, ID3 (International Dental Program), and ID4 dental students regarding CRA and prevention counseling on adults.
2. To compare the knowledge, attitudes, and intended behavior of D1, D2, D3, D4, ID3, and ID4 dental students regarding CRA and prevention counseling on adults to that on children.

3. HYPOTHESES

1. Dental classes with more caries risk assessment experience will have higher mean knowledge scores.
2. Confidence scores in the knowledge section will increase with seniority of dental classes (D1 to D4 and ID3 to ID4).
3. The greater the exposure to CRA, the greater students' attitudes in feeling competent to perform caries risk assessment for a particular age group.
4. Dental students will report feeling more competent in providing CRA and prevention counseling to adults than children.

4. METHODS AND MATERIALS

4.1 Risks and Benefits

The procedures, potential risks, and benefits of participating in this study were explained to the participants involved, and their informed consent was obtained. This study was approved by the Institutional Review Board of the University of California San Francisco.

4.2 Study Design

A cross-sectional study of students at the University of California San Francisco, School of Dentistry was conducted in the summer and fall quarters of 2005. Dental students from each of the six different dental school classes, including the international dental program (ID), were asked to complete a 26 item survey on their knowledge, attitudes, and behavior regarding CRA and prevention counseling. Upon completion of the survey, participants were reimbursed with a gift certificate.

4.3 Subject Selection

First year (D1) through fourth year (D4) dental students, as well international dental program students in their first year (ID3) and second year (ID4), who attended UCSF during the data collection process were eligible to participate. At the time of the study, there were 368 dental students enrolled at UCSF (Appendix A).

4.4 Subject Recruitment

At the beginning of a class session, the investigators gave an explanation of the study and dental students were given the opportunity to ask questions. The interested dental students signed the consent form (Appendix B) and completed the survey during their

break, at the beginning or end of a class session. Participating dental students were given an incentive of a $10 Starbucks gift card.

Data for the D3, ID3, D4 and ID4 dental classes were collected in the summer quarter of 2005 and in the fall quarter of 2005 for the D1 and D2 dental classes (Table 1). This schedule allowed for the measurement of differences between the classes based on educational experiences, with each class having relevant education of their prior year but before their next year's course work.

4.5 CRA and Prevention Counseling Survey

The survey questions were developed using the forms published by dental experts in the California Dental Association Journal (Featherstone *et al.*, 2003). It was pre-tested by pediatric dental residents in the spring of 2005 and postdoctoral students in the summer of 2005 at the University of California San Francisco, School of Dentistry. Based on the comments from the pre-testers and the study committee members, the survey was modified for improved clarity and validity. The survey (Appendix C) consisted of 26 questions on knowledge, attitudes, and intent to behave regarding CRA and prevention counseling. Specifically, we asked the following questions:

- Knowledge of CRA and prevention counseling (Questions #1-11)
- Confidence in answering the knowledge questions (Question #12)
- Attitudes about CRA and prevention counseling (Questions #13-19)
- Intended Behavior related questions (Questions #20-24)
- Field of dentistry the student wished to pursue (general, pediatric, other) (Question #25)
- Gender (Question #26)

4.6 4-Point Likert Scale

Likert-scale items are most often used to investigate how respondents rate a series of statements by having them circle or otherwise mark numbered categories. Likert-scale items are useful for gathering respondents' feelings, opinions, and attitudes on any topic. Typically, the numbered categories are on a continuum (very serious to not at all serious, very important to very unimportant, strongly like to strongly dislike, or strongly agree to strongly disagree).

For our study, a Likert scale was used for the six attitude questions. Possible options were strongly disagree, disagree, agree, and strongly agree; the absence of a neutral middle choice required respondents to express an opinion one way or the other.

4.7 Incorporation of CRA into UCSF Dental School Curriculum

UCSF School of Dentistry incorporated the teaching of CRA and the use of the form into its didactic curriculum and clinical programs in July 2003. Currently students are educated in methods for caries detection using radiography, and visual and tactile assessments. Dental students also learn CRA, caries prevention strategies, and non-surgical approaches to treating non-cavitated lesions (including antibacterial therapeutics (chlorhexidine gluconate), and topical fluorides (professionally applied foams and varnish, over-the-counter rinses, gels, dentifrices, and prescription topical fluoride gels and rinses)).

The exposure to CRA varies from year to year. The concept is initially introduced in the first year. In the second year, dental students enroll in a cariology course in which they learn the mechanisms of remineralization and demineralization. In the third and fourth years, dental students begin the clinical rotation in which CRA forms are

completed for every patient requiring new and periodic oral examinations. Consequently, fourth year dental students receive greater exposure to CRA and prevention counseling than first year dental students.

The ID students differ from the predoctoral dental students because ID students have received and completed dental training in another country. Though they are exposed to the same coursework as the predoctoral dental students at UCSF (Appendix A), it would be difficult to make comparisons between the two programs because they differ in dental education backgrounds.

4.8 Methods of data analysis

Completed surveys were coded and entered into an excel spreadsheet using built-in validation rules. Coding and data entry procedures were reviewed by the study statistician and corrected, when necessary, prior to completion and analysis. Any written comments or multiple answers to single-answer questions were not included in the results. Descriptive statistics were calculated for all variables.

The number of correct responses was cross-tabulated with classes D1 through D4, using the Mantel-Haenszel chi-square tests for trend. Similar analyses were performed for ID3 and ID4, and for the associations of class with other ordinal responses such as competence and importance ratings. In addition, Spearman rank correlations were calculated for associations among at least ordinally scaled variables, including self-rated confidence with number correct. Multiple regression was used to model the percent of correct responses in terms of class and confidence simultaneously. Importance and competence ratings for different patient age groups were cross-tabulated using the Wilcoxon-rank-sum test. Willingness to serve certain age groups was cross-tabulated

with classes D1 through D4, using the Mantel-Haenszel chi-square tests for trend. Competence in CRA or prevention counseling and willingness to serve certain age groups were cross-tabulated using Fisher's exact test. Importance and competence ratings and willingness to serve certain age groups were cross-tabulated with gender using Mantel-Haenszel chi-square tests with a Bonferroni correction to test for trend.

5. RESULTS

Of the 368 UCSF enrolled dental students, 332 (90%) participated in the surveys. Surveys were completed by 80 (99%) D1 students, 72 (90%) D2 students, 63 (77%) D3 students, 75 (95%) D4 students, 24 (100%) ID3 students, and 18 (75%) ID4 students (Table 1). Forty-two percent of the respondents were male and 58% were female. Sixty-eight percent of the dental students planned to practice general dentistry upon graduation, 7% pediatric dentistry, and 26% responded "other." All surveys were eligible and utilized for analyses. Survey responses were compared among the different classes.

Table 1: Data Collection Period for UCSF Dental Students

Class	Date of Survey Administration	# of Respondents
D1	10/06/05	80
D2	10/04/05	72
D3	9/07/05	63
D4	7/20/05	75
ID3	9/07/05	24
ID4	7/20/05	18

5.1 Knowledge

The mean correctly answered knowledge questions was 10.7 (62.7%) out of 17 total possible points for the 332 respondents. The mean confidence score was 6.1 out of 10 for the 332 respondents. The reported confidence score did increase for the students who were in school longer (D1<D2<D3 classes). The D4 class mean confidence score (7.0) was only 0.1 lower than that of the D3 class.

Table 2: Description of the UCSF Dental Students: Knowledge & Confidence Scores across Classes

	D1	D2	D3	D4	ID3	ID4	Total (Mean)
Mean Correct (*Total: 17 pts)	8.6	9.8	11.9	12.0	11.4	12.6	10.7
Percentage Correct	50.4	57.9	70.0	70.4	67.2	73.9	62.7
Reported Confidence Score	4.0	5.8	7.1	7.0	6.8	8.1	6.1
Number of Respondents	80	72	63	75	24	18	332

* Represents the total points possible when correctly answering the knowledge portion of the survey.

Figure 1 represents the number of correctly answered knowledge questions versus the level of confidence for all classes (N=332). The Pearson correlation was 0.38 with a 95% CI of 0.29 to 0.47; the Spearman rank correlation was 0.40 with a 95% CI of 0.30 to 0.48. Initially, we found a positive relationship between confidence scores and total knowledge scores; knowledge score increased with the confidence score (Figure 1). However, differences emerged when each class was analyzed separately (Figures 2-7). We found that the class significantly related to the number of correctly answered questions, but not the level of confidence. The size of the plotted circles in Figures 1-7 relate to the number of respondents (smaller circles indicate fewer people, while larger circles indicate more).

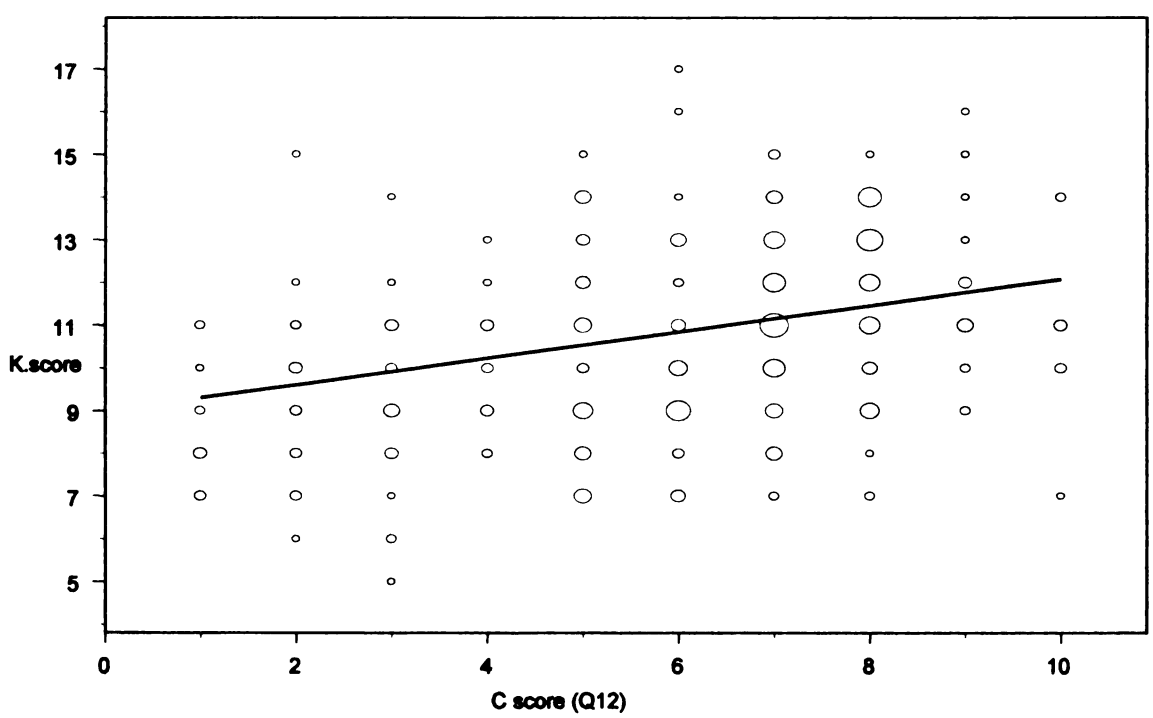


Figure 1. Correlation of knowledge (K) scores vs. confidence (C) scores for all classes (N=332)

For the D1 class, the Pearson correlation between knowledge score and confidence score is 0.03 with a 95% CI of -0.20 to 0.24. The Spearman correlation is 0.03 with a 95% CI of -0.19 to 0.25. There is no relationship between confidence and the number of correctly answered knowledge questions for the D1 class (Figure 2).

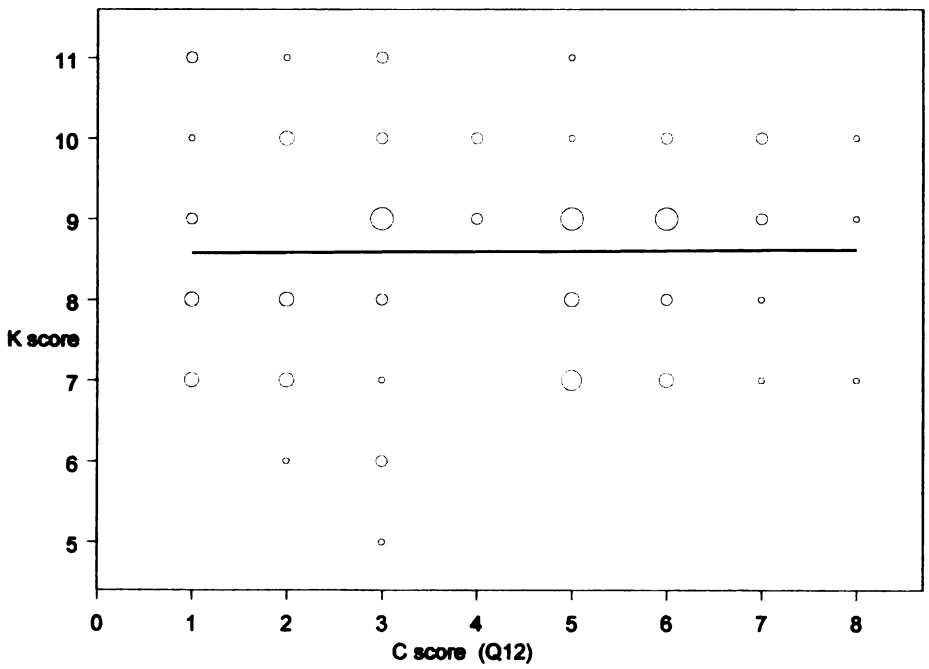


Figure 2. Correlation of knowledge (K) score vs confidence (C) score for D1 class (N= 80)

For the D2 class, the Pearson correlation between knowledge score and confidence score is 0.18 with a 95% CI of -0.05 to 0.39. The Spearman correlation is 0.13 with a 95% CI of -0.11 to 0.35. Though there is no significant relationship between confidence scores and the number of correctly answered knowledge questions, there is a suggestion of a very modest positive association (Figure 3).

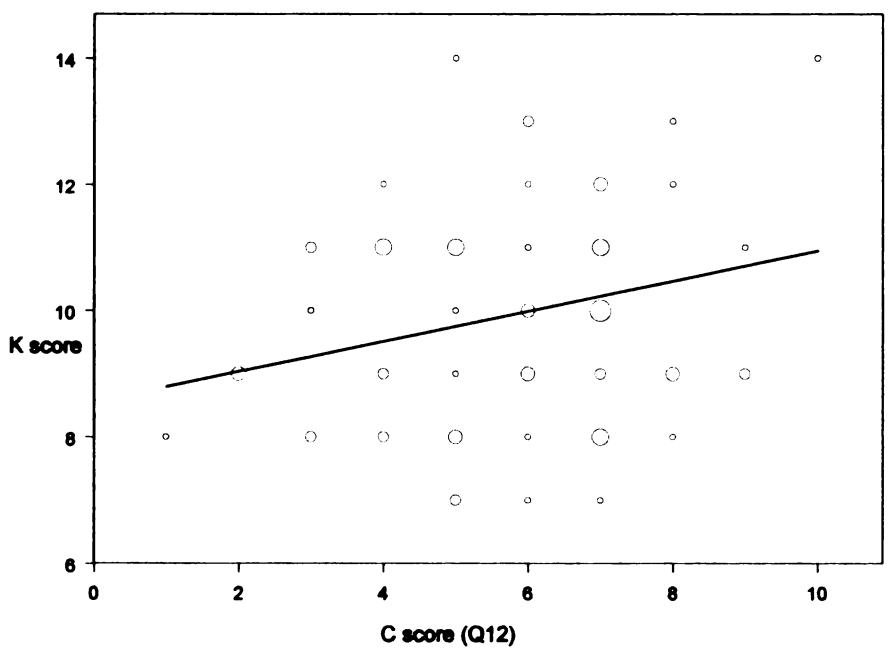


Figure 3. Correlation of knowledge (K) scores vs. confidence (C) scores for D2 class (N=72)

For the D3 class, the Pearson correlation between knowledge score and confidence score is 0.02 with a 95% CI of -0.23 to 0.26. The Spearman correlation is 0.12 with a 95% CI of -0.13 to 0.36. There is no significant relationship between the confidence score and the number of correctly answered knowledge questions (Figure 4).

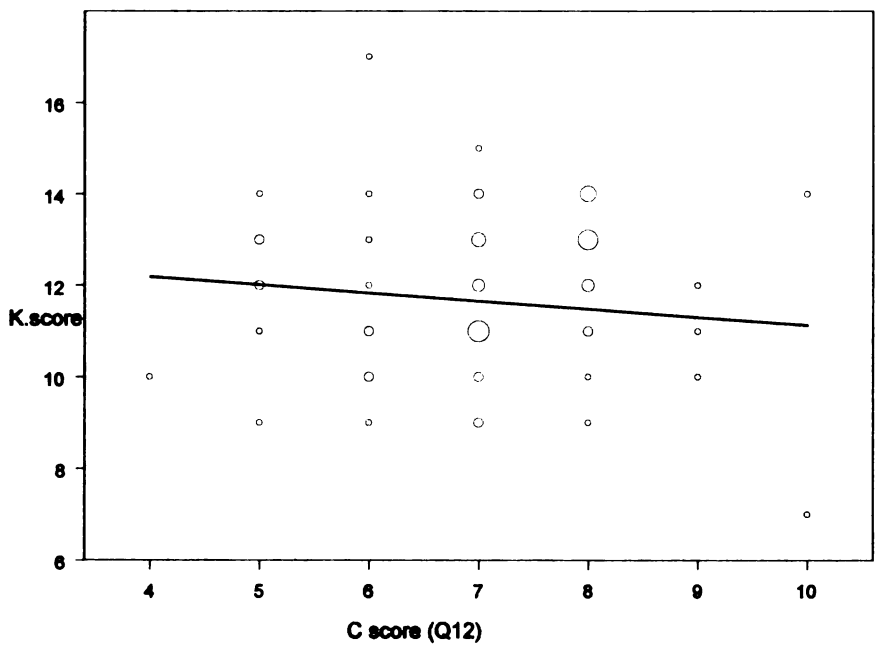


Figure 4. Correlation of knowledge (K) scores vs. confidence (C) scores for D3 class (N=63)

For the D4 class, the Pearson correlation between knowledge score and confidence score is -0.04 with a 95% CI of -0.26 to 0.19. The Spearman correlation is -0.01 with a 95% CI of -0.23 to 0.22. There is no significant relationship between the confidence score and the number of correctly answered knowledge questions (Figure 5).

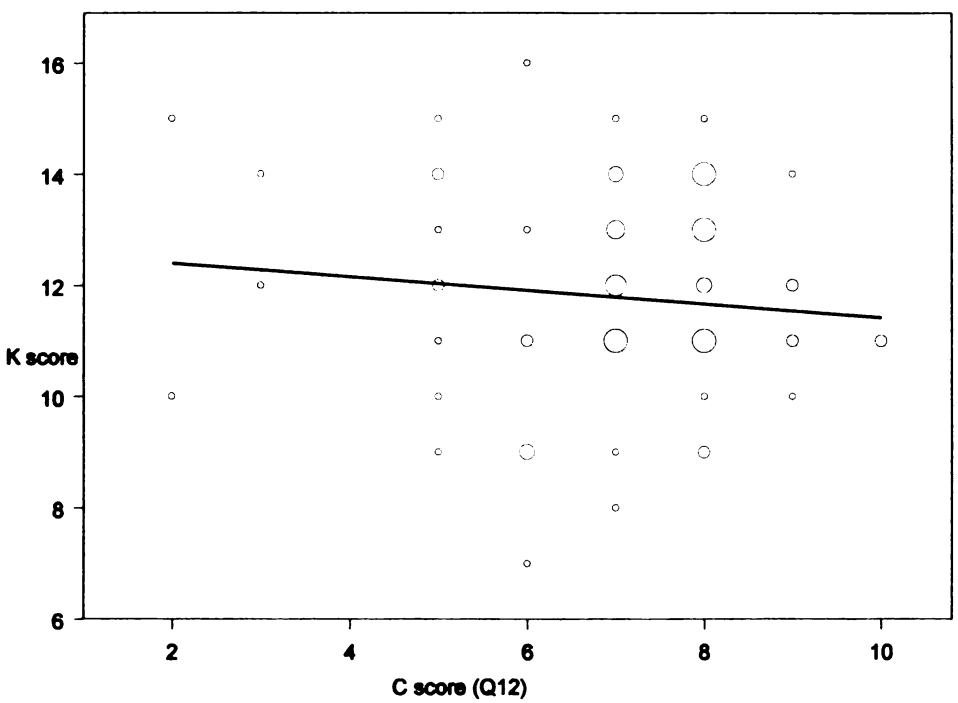
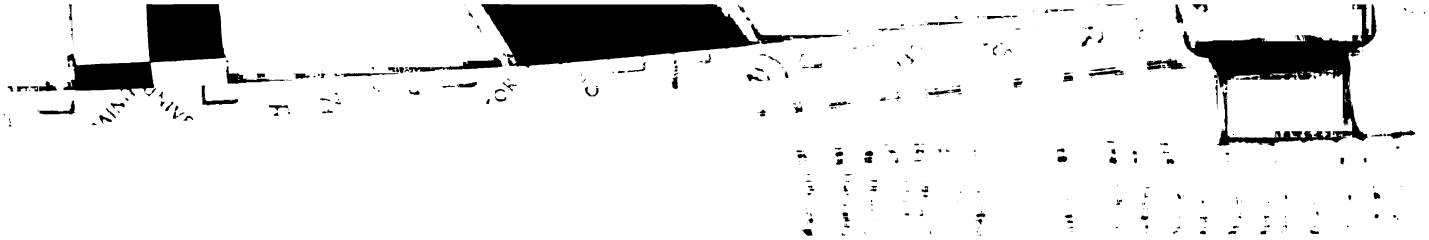


Figure 5. Correlation of knowledge (K) scores vs. confidence (C) scores for D4 class (N=75)



For the ID3 class, the Pearson correlation between knowledge score and confidence score is -0.20 with a 95% CI of -0.56 to 0.22. The Spearman correlation is -0.22 with a 95% CI of -0.57 to 0.21. There is no significant relationship between the confidence score and the number of correctly answered knowledge questions. However, there is a suggestion of a weak negative relationship (Figure 6).

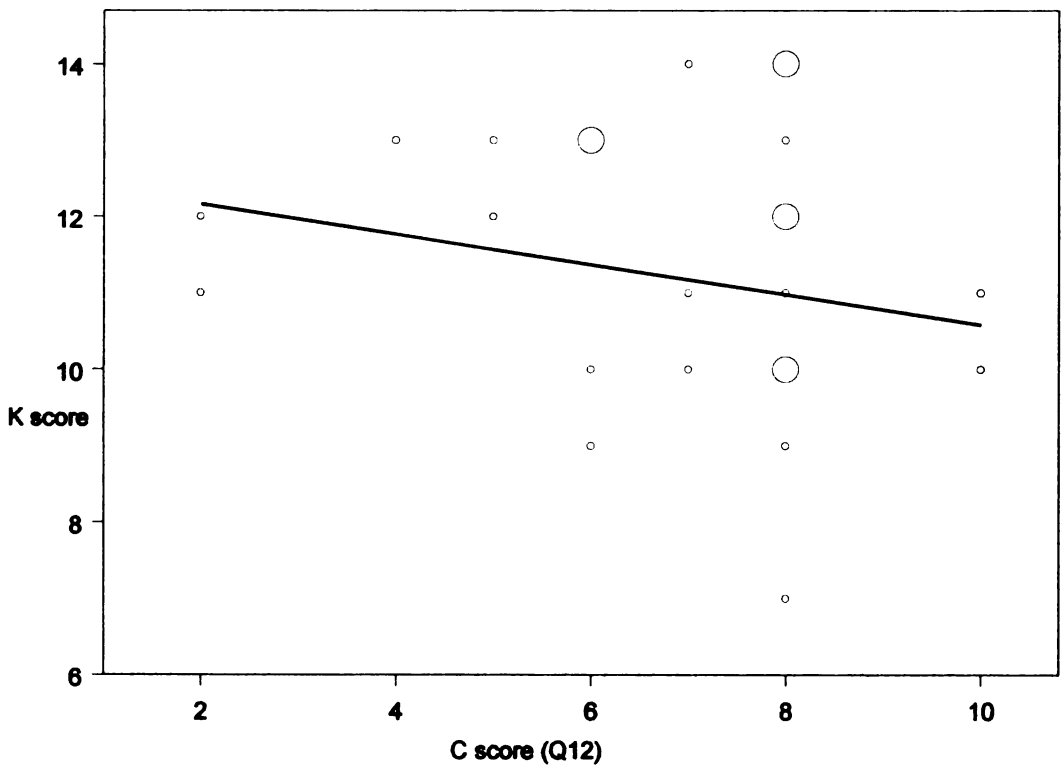


Figure 6. Correlation of knowledge (K) scores vs. confidence (C) scores for ID3 class (N=24)

For the ID4 class, the Pearson correlation between knowledge score and confidence score is -0.48 with a 95% CI of -0.78 to -0.02. The Spearman correlation is -0.56 with a 95% CI of -0.81 to -0.13. The Spearman correlation shows a moderate negative relationship between the confidence score and number of correctly answered knowledge question (Figure 7).

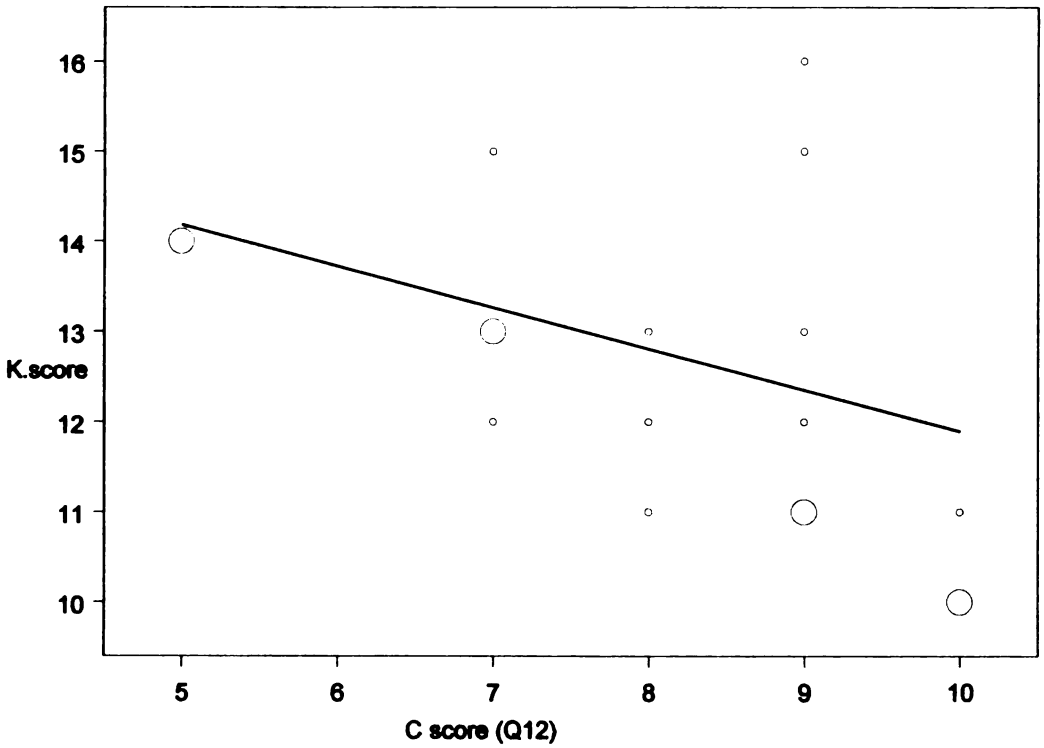
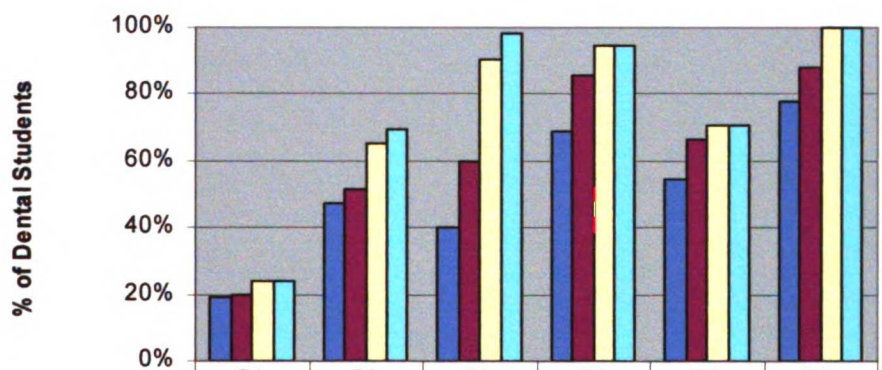


Figure 7. Correlation of knowledge (K) scores vs. confidence (C) scores for ID4 class (N=18)

5.2 Attitudes

A majority of dental students agreed or strongly agreed that CRA was important for all age groups. More than 25% of ID4 students disagreed or strongly disagreed that CRA was important in patients who are less than 5 years of age. There was no statistically significant mean difference between adults and the other age groups for the D1 versus D4 students and ID3 versus ID4 students (Table 5 and 6).

Eighty-one percent of D1 students, as opposed to 31.1% of D4 and 22.2% of ID4 students, disagreed or strongly disagreed that they felt competent in assessing caries risk in patients less than 5 years of age (Figure 8). An increasing trend of feeling competent to provide CRA for all age groups from D1 through D4 students ($p<0.001$, Table 3); and 12 to 17 age group and adults from ID3 through ID4 students ($p=0.01$, Table 4) was observed.



	D1	D2	D3	D4	ID3	ID4
Less than 5 Years of Age	19%	47%	40%	69%	54%	78%
5 to 11 Years of Age	20%	51%	60%	85%	67%	88%
12 to 17 Years of Age	24%	65%	90%	95%	71%	100%
Adults (18 and Older)	24%	70%	98%	95%	71%	100%

Figure 8. Competence in Assessing Caries Risk in Patients (Question #14)

Overall, more dental students felt competent in assessing caries risk on adult patients than patients less than five years of age (Figure 8). Statistically significant mean differences were found ($p < 0.001$, Table 5) between adults versus patients less than five years of age and 5 to 11 years of age by D1 versus D4 students. No statistically significant mean differences were found between adults and the 12 to 17 years of age for the D1 versus D4 students. No significant mean differences observed between adults and other age groups between ID3 versus ID4 students (Table 6).

Between class years, senior dental students (D4 and ID4) felt the most competent in making appropriate recommendations based on CRA in adults versus the other age groups and the D1 students felt the least competent (Figure 9). Statistically significant mean differences ($p<0.05$, Table 5) were found between adults versus each of the other three age groups (less than 5 years of age, 5 to 11 years of age, and 12 to 17 years of age) for the D1 versus D4 students.

An increasing trend of feeling competent in making appropriate recommendations based on CRA for all age groups from D1 through D4 students ($p<0.001$, Table 3); and less than five years of age from ID3 through ID4 students ($p=0.04$, Table 4) was observed.

No significant mean differences observed between adults and other age groups between ID3 versus ID4 students' competence in making appropriate recommendations on CRA (Table 6).

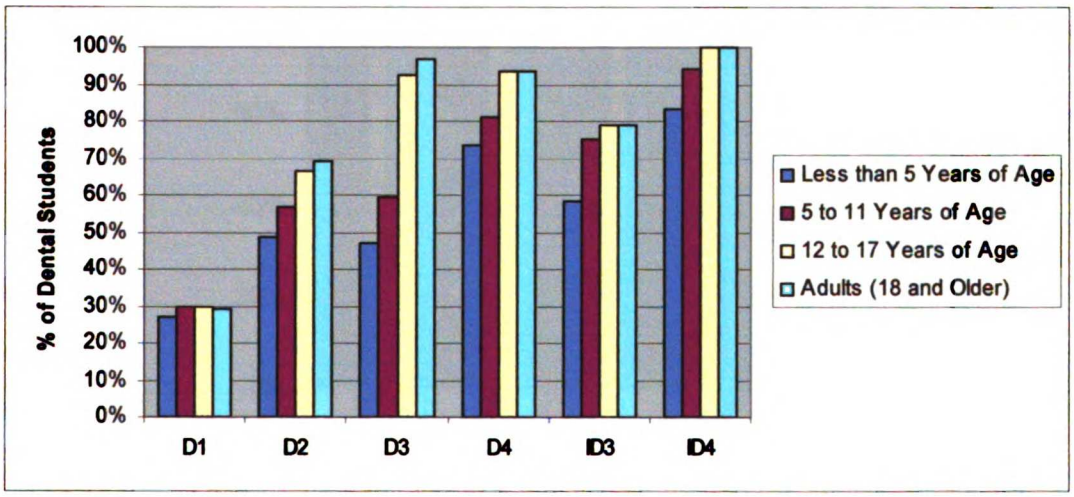
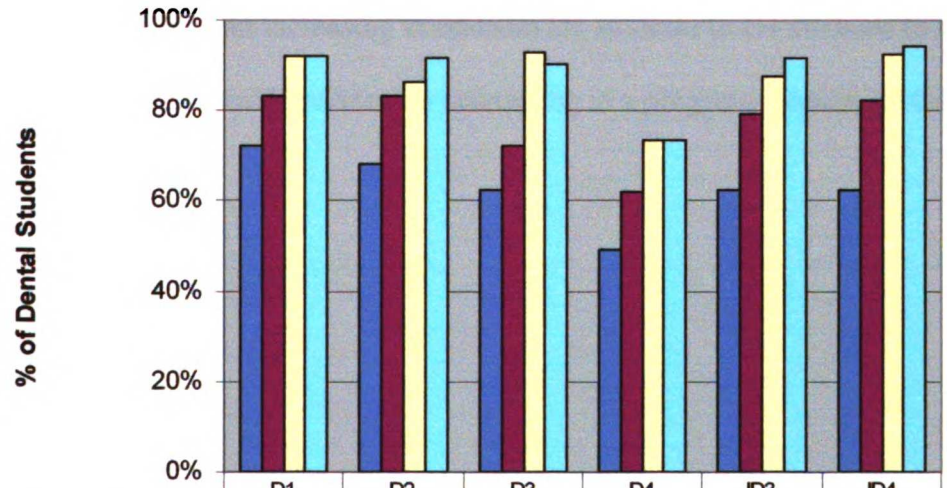


Figure 9. Competence in Making Appropriate Recommendations based on CRA (Question #15)

The majority of senior dental students (D4 and ID4) agreed it was important to offer bacterial testing to high caries risk patients (Figure 10). Statistically significant mean differences were found between adults versus each of the other two age groups: less than 5 years of age, and 5 to 11 years of age (p=0.04, Table 5) for the D1 versus D4 classes. Also, statistically significant mean differences were found between adults versus patients less than 5 years of age (p=0.04, Table 6) for the ID3 versus ID4 classes. An increasing trend of importance of offering bacterial testing to high risk individuals for less than 5 years of age (p<0.001), 5 to 11 years of age (p<0.001), and 12 to 17 years of age (p=0.05) from D1 through D4 students (Table 3); and adults from ID3 through ID4 students (p=0.01, Table 4) was observed.



	D1	D2	D3	D4	ID3	ID4
Less than 5 Years of Age	72%	68%	62%	49%	63%	63%
5 to 11 Years of Age	83%	83%	72%	62%	79%	82%
12 to 17 Years of Age	92%	86%	93%	73%	88%	92%
Adults (18 and Older)	92%	92%	90%	73%	92%	94%

Figure 10. Importance of Bacterial Testing to High Risk Patients (Question #16)

The D1 students felt the least competent in providing prevention counseling to all age groups. Statistically significant mean differences were found between adults versus each of the other two age groups: less than 5 years of age ($p=.04$, Table 5) and 5 to 11 years of age ($p=0.001$, Table 5) for the D1 versus D4 classes. No significant mean differences observed between adults and other age groups between ID3 versus ID4 students. (Table 6) An increasing trend of importance of offering bacterial testing to high risk individuals for less than 5 years of age ($p=0.005$), 5-11 years of age ($p<0.001$), 12 to 17 years of age ($p<0.001$), and adults ($p<0.001$) from D1 through D4 students (Table 3); and no trend from ID3 through ID4 was observed.

Ninety-four percent of students (314/332) reported prevention counseling is an important service that they can provide for patients. However, only 63% of students (208/332) felt competent to provide oral health prevention counseling to a pregnant woman. However, there is an increasing trend from D1 students to D4 students to feel competent to provide oral health prevention counseling to a pregnant woman ($p<0.001$, Table 3).

5.3 Intended Behavior (Willingness)

Participants were asked if they were planning to provide a dental home (defined as comprehensive oral health care including acute care and preventive services) to patients of different age groups. For the purpose of analysis, their response was interpreted as a measure of their willingness to provide a dental home. Eighteen percent reported they would provide a dental home to patients 1 to 2 years of age, 31% were willing to provide a dental home to patients 3 to 5 years of age, 53% were willing to provide a dental home to patients 6 to 11 years of age, 70% were willing to provide a dental home to patients 12 to 17 years of age, 88% were willing to provide a dental home to adults (18 to 65 years of age), and 57% were willing to provide a dental home to the elderly. Respondents were more willing to provide a dental home to adults. An increasing trend of willingness to provide a dental home for the 12 to 17 years of age from D1 through D4 students was observed (p=0.03, Table 3). In addition, the D4 students were more willing than the D1 students to provide a dental home to the 1 to 2 years of age group, but this was less than 30%.

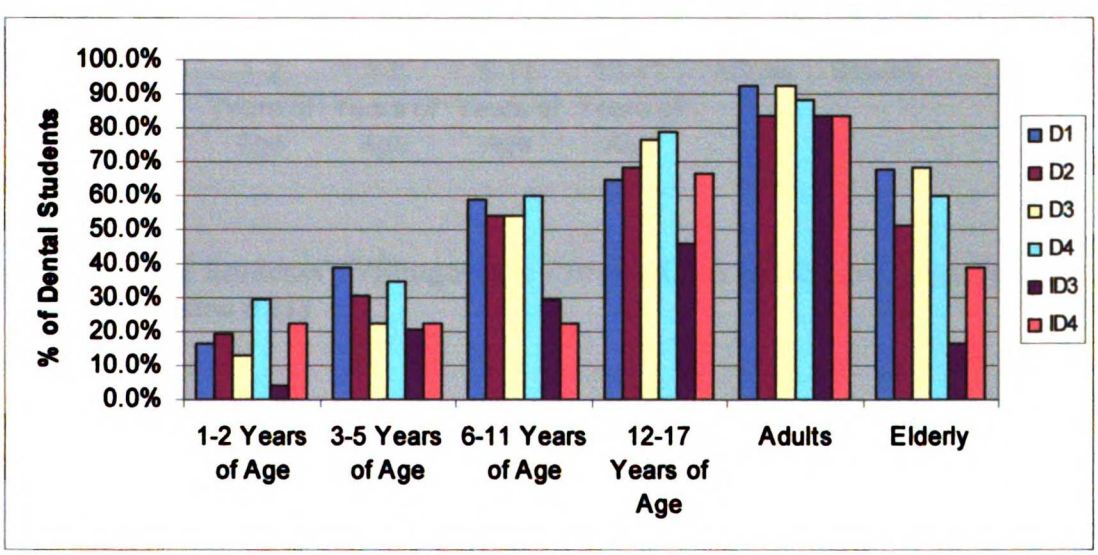


Figure 11. Dental Students' Willingness to Provide a Dental Home to Different Ages

Sixty-one percent of the dental students (N=332) were willing to provide CRA to the elderly patient group, 89% to the adult group, 79% to the 12 to 17 age group, 67% to the 6 to 11 years of age group, 48% to the 3 to 5 years of age group, and 35% to the 1 to 2 years of age group. Students were more willing to provide CRA to adults followed by the 12-17 years of age (Figure 12). Students were the least willing to provide CRA to patients younger than 12 years of age and older than 65 years of age. In addition, an increasing trend of willingness to provide CRA for 1-2 years of age ($p<0.001$, Table 3) and the elderly ($p=0.01$, Table 3) was observed from D1 through D4 students.

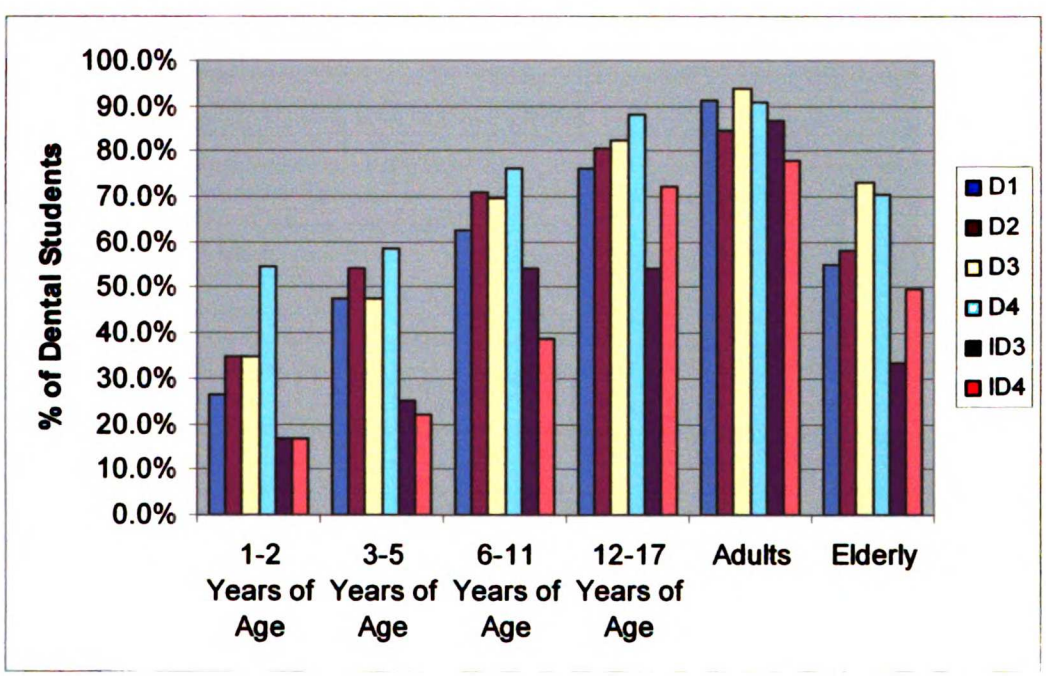


Figure 12. Dental Students' Willingness to Provide CRA to Different Age Groups (Question # 21)

Participants were asked if they were planning to provide prevention counseling to patients of different age groups. For the purpose of analysis, their response was interpreted as a measure of their willingness to provide prevention counseling. Sixty-two percent of the dental students were willing to provide prevention counseling to the elderly patient group, 88% to the adult group, 82% to the 12 to 17 years of age group, 71% to the 6 to 11 years of age group, 48% to the 3 to 5 years of age group, and 34% to the 1 to 2 years of age group. There were no significant differences between the D1 through D4 students across all age groups (Figure 13).

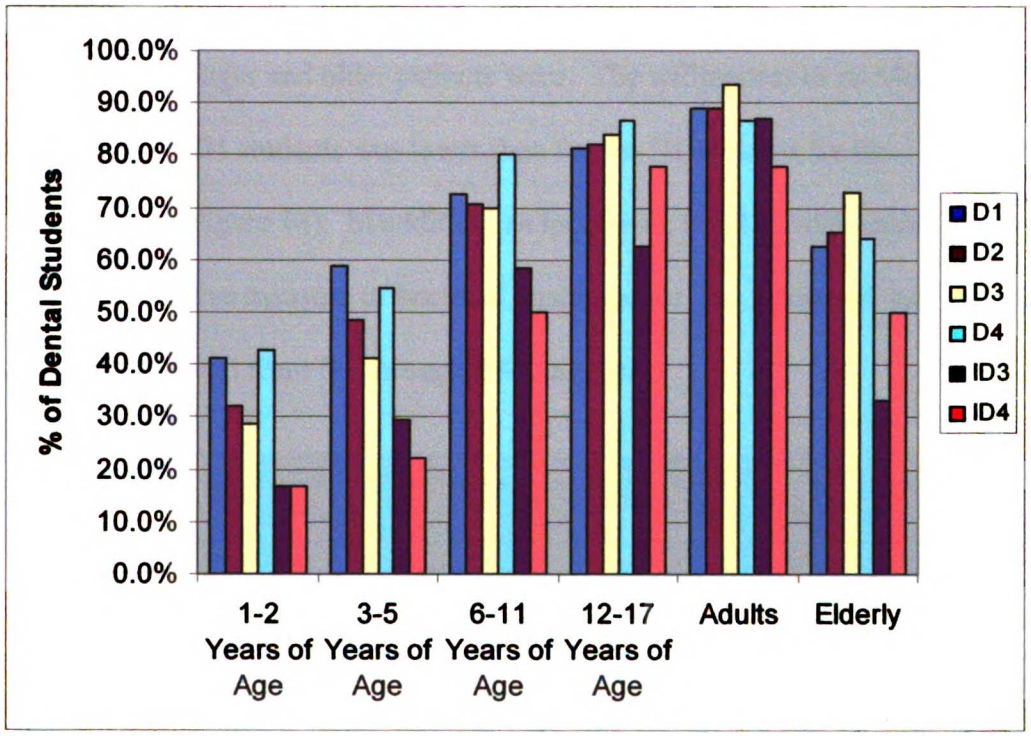


Figure 13. Dental Students' Willingness to Provide Prevention Counseling to Different Age Groups. (Question #22)

Participants were asked if they were planning to provide the option of quantitative measure of bacterial challenge to patients of different age groups. For the purpose of analysis, the response was interpreted as a measure of their willingness to provide the option of quantitative measure of bacterial challenge. Forty-five percent of the dental students were willing to provide the option of quantitative measure of bacterial challenge to the elderly patient group, 82% to the adult group, 66% to the 12 to 17 years of age group, 50% to the 6 to 11 years of age group, 27% to the 3 to 5 years of age group, and 19% to the 1 to 2 years of age group. Dental students were more willing to provide the option of qualitative measure of bacterial challenge to patients 18 to 65 years of age and less willing the younger and older patients were. The willingness to provide prevention counseling for the D4 students was lower than for the D1 students for the 12 to 17 years of age and adults (Figure 14). In addition, an increasing trend of willingness to provide option for quantitative measure of bacterial challenge for 3 to 5 years of age ($p=0.05$, Table 3) was observed from D1 through D4 students.

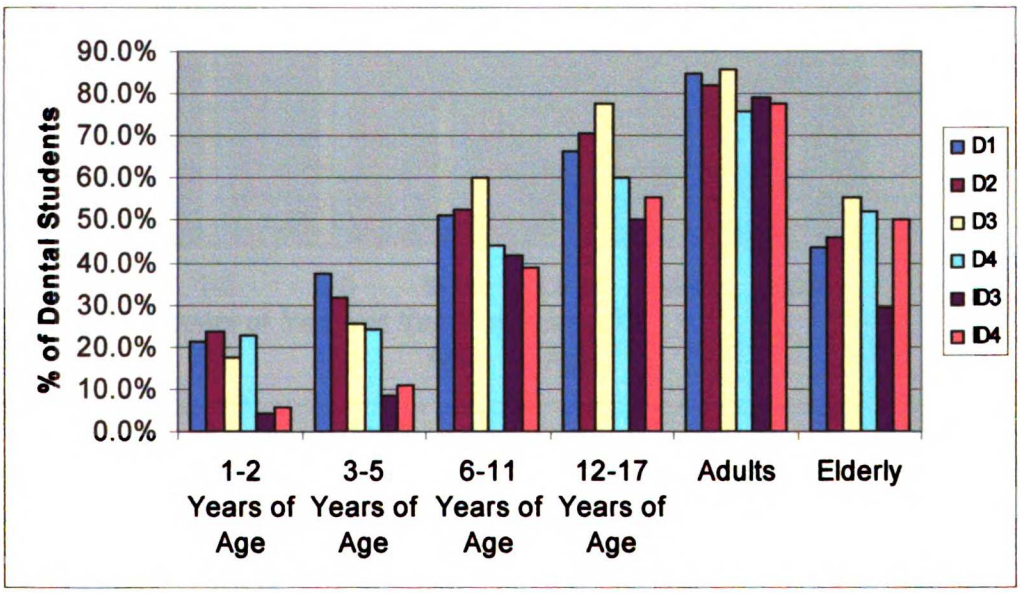


Figure 14. Dental Students' Willingness to Provide the Option of Qualitative Measure of Bacterial Challenge to Different Age Groups. (Question #23)

Participants were asked if they would rather refer dental care for patients of different age groups. For the purpose of analysis, their response was interpreted as a measure of their willingness to refer dental care. Twenty-nine percent of the dental students were willing to refer dental care for the elderly patient group, 23% to the adult group, 11% to the 12 to 17 years of age group, 20% to the 6 to 11 years of age group, 48% to the 3 to 5 years of age group, and 61% to the 1 to 2 years of age group. Students were more willing to refer dental care for patients 5 years old and younger. Greater percentage of D4 students were more willing than D1 students to refer dental care for patients 1 to 2 years of age and 3 to 5 years of age (Figure 15).

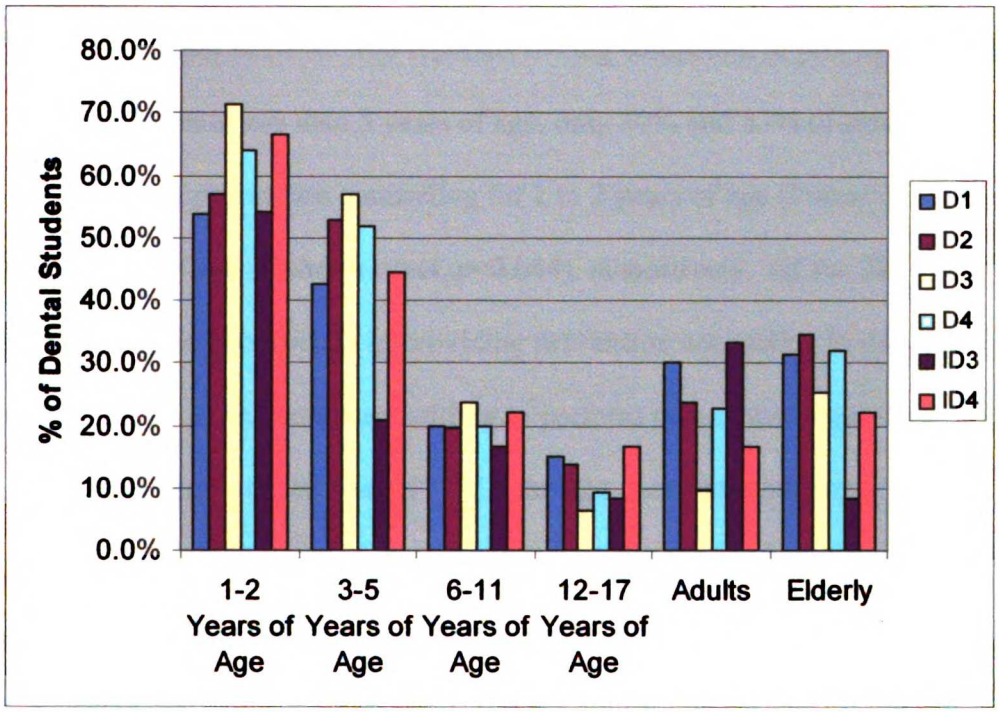


Figure 15. Dental Students' Willingness to Refer Different Age Groups (Question # 24)

5.4 Attitude and Intended Behavior in Assessing Caries Risk and Prevention Counseling

Of the 152 dental students who reported feeling competent in assessing caries risk for patients less than 5 years of age, only 36% and 49% of students were willing to perform CRA for 1 to 2 years of age and 3 to 5 years of age, respectively. Of the 227 dental students who reported feeling competent in assessing caries risk for patients 12 to 17 years of age, a majority of students (83%) were willing to perform CRA to that age group (Fisher's exact, p=0.034). Of the 235 dental students who reported feeling competent in assessing caries risk for adult patients, a majority of students (90%) were willing to perform CRA to that age group.

Of the 192 dental students who reported feeling competent in providing prevention counseling to patients less than 5 years of age, only 39% and 53% of students were willing to perform prevention counseling for 1 to 2 years of age (Fisher's exact, p=0.025) and 3 to 5 years of age (Fisher's exact, p=0.044), respectively. Of the 224 dental students who reported feeling competent in providing prevention counseling to patients 5 to 11 years of age, 75% of students were willing to perform prevention counseling to the 6 to 11 age group (Fisher's exact, p=0.017). Of the 224 dental students who reported feeling competent in providing prevention counseling to patients 5 to 11 years of age, 75% of students were willing to perform prevention counseling to the 6 to 11 years of age (Fisher's exact, p=0.017). Of the 282 dental students who reported feeling competent in providing prevention counseling to patients 12-17 years of age and adults, 81% and 88% of students were willing to perform prevention counseling to patients 12-17 years of age and adults, respectively.

5.5 Gender

When analyzed for gender differences, there were no differences between males and females for a majority of the questions. The only significant difference observed after a Bonferroni correction was an increasing trend of importance in females of offering bacterial testing to high risk individuals to the 12 to 17 age group (MH $p<0.001$) and adults (MH $p<0.001$).

6. DISCUSSION

The goal of this study was to compare the knowledge and attitudes of UCSF dental students regarding CRA and prevention counseling between the six different classes. We also sought to compare the dental students' intentions to provide CRA, prevention counseling, and a dental home for different patient cohorts, from early childhood through advance age. The ultimate goal was to educate patients through prevention counseling and help prevent children and adults from dental caries. In order to be successful in reaching this goal, dentists will need to be educated on CRA and prevention counseling for all different age groups.

6.1 Knowledge

We found the more senior dental students (D4 and ID4) scored higher in the knowledge section of the survey. A positive association between knowledge and class year was found. The D3 and D4 students scored answered 70% correctly on the 17 item test. The ID4 students had the highest score (74%). A comparison of aggregate dental students' knowledge to their confidence in answering the questions revealed a positive correlation initially; dental students who scored higher in knowledge also had higher confidence levels. This was not the case, however, when knowledge scores and confidence scores were analyzed across different classes. The apparent association of confidence with number correct appears to be due only to confounding by dental class. Both accuracy and confidence increase as students advance through dental school, but within each class confidence and knowledge do not appear to be substantially correlated, and in some cases may be negatively correlated. The real association with knowledge

therefore appears to be class, not confidence. It is important to note that D1 students answered 50% of the questions correctly. Therefore, the knowledge section of this survey may not have been able to detect differences in improvement greater than 50% between D1 and other dental students.

6.2 Attitudes

More than 90% of dental students reported that CRA is important for all the age groups. Not all the dental students however reported confidence in CRA for all age groups. The dental students felt the least confident in assessing caries risk for patients less than 5 years of age, and felt the most confident with the adult age group (>18 years of age). This is probably due to the dental school's post graduate pediatric residency, which receives the younger and more challenging children. The pre-doctoral dental students during their pediatric dentistry rotation may see only the more cooperative patients, which tend to be the older children (greater than 5 years of age). In addition, dental students who start seeing patients in the third year begin by first providing dental care to adults; initial exposure to this age group may lead to increased confidence in assessing caries risk in adults.

While 90% of the D4 and 95% of the D3 classes felt competent in making appropriate recommendations based on CRA to the adult group. Perceived competence for the D2 and D1 classes was lower (70% and 30%, respectively). A possible explanation is the D3 and D4 classes are actually applying their knowledge to patients in the dental clinic while the D2 students have yet to enter the clinic. The D1 students had no education in CRA and bacterial testing at the time of the survey (Appendix C). Regarding the international

dental program, 100% of the ID4 and about 79% of the ID3 students felt competent in assessing caries risk to the adult group. The ID3 and ID4 students felt the least competent in assessing caries risk for the less than five years age group. At the time of the survey, the ID3 students had been enrolled for only two and a half months and had not yet taken the CRA and cariology courses. Conversely, the D3 students at the time of the survey had taken the CRA and cariology courses. This discrepancy in exposure may explain the higher perceived competence of D3 students compared to that of ID3 students.

A majority of dental students agreed it is important to offer a bacterial test to a patient at high risk for caries. More dental students would offer the test to the adult group than to both patients less than five years of age and to the 5 to 11 age group. Interestingly, more of the D1 students would offer the bacterial test to all age groups than the D4 dental students (D1>D2>D3>D4). The ID4 students, however, were more likely to offer a patient who is at high risk for caries a bacterial test than the ID3 students.

About 88% of all dental students reported that prevention counseling was an important service that they could provide. A majority of dental students felt competent to provide prevention counseling to patients, with the ID4, D4 and D3 students reporting the highest feelings of competence. However, this confidence mirrored the age of the patient in all dental classes; approximately 53% of the D3, 25% of the D4, 41% of the ID3, and 35% of the ID4 students did not feel competent in prevention counseling for patients less than five years of age. This is quite alarming, especially if we hope to provide CRA to these children along with educating parents through prevention counseling. If dentists

do not feel competent in providing information that that the high risk patients need, the patient's oral health and overall health will ultimately suffer.

6.3 Intended Behavior (Willingness)

The majority of dental students believed that CRA and prevention counseling is important in all age groups. Surprisingly, we find that attitudes and beliefs do not coincide with intended practices. More students were more willing to provide a dental home to adults than both younger and older age groups. More D4 students (29%) were willing than D1 students (16%) to provide a dental home to the 1 to 2 years of age group (Figure 9). The difference is almost two-fold, however, the overall percentage is very low. It is even more surprising that less than half of the students who felt competent in providing CRA were willing to provide CRA service. With the current recommendations made by the AAP and AAPD to have children 1 year of age to find a dental home, more pediatricians will refer children to dentists. Therefore, the low willingness to provide a dental home is very striking, especially when the need to treat these patients is very high. Interestingly, we found that the willingness to provide a dental home also changes when the adult group is divided into two groups: adult and elderly. Fewer dental students in all classes are willing to provide a dental home to the elderly. A possible explanation could be a lack of adequate educational experiences for dental students in dealing with the elderly and very young children.

Students were more willing to provide CRA to adults followed by the patients 12 to 17 years of age. Students were less willing to provide CRA to patients younger than 12 years of age and older than 65 years of age. The D4 students (55%) were more willing

than the D1 students to provide CRA to the 1 to 2 years of age group. This may show that the longer the time spent in dental school the more knowledge a dental student may accumulate in treating children. In terms of prevention counseling, the D4 students were more willing to provide this service to the patients 12 to 65 years of age and less willing the older or younger patients were.

Slightly more D1 (85%) students were willing to provide the option of quantitative measure of bacterial challenge to adults than D4 (76%) students. This is also true for the 3 to 5 years of age group, 6 to 11 years of age group, and 12 to 17 years of age group. The 1 to 2 year old patients had the lowest percentages. When asked which age group the dental student would rather refer, the 1 to 2 age group was far more selected than any other age group by the D4 (64%) and ID4 (54%) dental students.

The response rate of this study was high (90%). The study design enabled us to observe differences in dental classes related to knowledge, attitudes, and intended behavior, similar to the information a longitudinal study would provide. The use of data from only one dental school reduced the possible confounding effect of differences in dental curriculum and teaching styles related to CRA among the D1- D4 students.

Because the sample was a convenience sample of dental students willing to take the survey for a small reimbursement, the study was limited by a potential bias. The high response rate suggests this bias was minimal. Comparisons between the pre-doctoral and international dental students were difficult, due to the small number of international dental students. It is important to note that many of the international dental students were not present at the time the survey was distributed. The international dental program consisted of 48 foreign trained dentists; we did not know their education and experiences

in CRA prior to their enrollment at UCSF, and this information was not ascertained in this study. This was a cross-sectional, not a longitudinal study, and we assessed a cohort of students at a single point in time. To make comparisons among classes, we assumed that each class of UCSF students was similar and that the exposure to CRA did not vary over time but was consistent for each dental class.

Our self-reported survey data could not be validated in the study's timeframe: we assessed intent to practice. This survey could be validated if given to the students after graduation, when they had the opportunity to perform CRA in their dental practices.

We acknowledge that there are many topics required that should be focused thoroughly in the dental school curriculum. Dental students are constrained by time to become experts in all disciplines within a four year program, especially in a university that offers a pediatric residency program and other post-doctoral programs. However, due to the overwhelming need for dental care in the less than 5 years of age and elderly population groups, dental schools should teach students to feel competent in assessing CRA for all age groups. Educating dental students on caries prevention will help them become better providers to the general population. Dental schools with postgraduate programs should expose pre-doctoral students to the younger patient population and place strong emphasis on CRA and prevention counseling to parents and age-appropriate patients.

7. CONCLUSION

Risk assessment and screening to identify high caries risk individuals in need of early intervention is a new and developing concept. Increasing knowledge of CRA may improve dental students' preparedness and willingness to provide prevention and treatment of dental caries to young children and the elderly. Results of our study may inform future teaching of CRA and prevention counseling. The specific aims of the project were met in the following way:

- The knowledge, attitudes, and intended behavior of D1, D2, D3, D4, ID3, and ID4 dental students regarding CRA and prevention counseling on adults was compared to that on children. This was accomplished by administering a survey to dental students attending a dental school in California.

The following hypotheses were validated by this research.

1. Dental classes with more CRA experience had higher mean knowledge scores.
2. Confidence scores in the knowledge section increased with increasing year.
3. Dental classes with more CRA exposure felt more competent in performing CRA for different age groups. This was statistically significant in the following instances only:
    a. ID4 students vs. ID3 students for all age groups
    b. For patients 5 to 11 years of age and 12 to 17 years of age in the pre-doctoral dental program (D1, D2, D3, D4)
4. Dental students reported feeling more competent in providing CRA and prevention counseling to adults than children.

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APPENDICES

APPENDIX A: UCSF Dental School Curriculum

	D1	D2		
Summer				
Fall	**PRDS 116** Lecture Eakle/Featherstone • Caries Diagnosis MID **PCC 117** Lecture/Clinic Lee/Pollick • Diet, Plaque • CAMBRA DMFT	**DS 126A** Lecture Featherstone/Ryder • Caries Risk Assessment • Cariology Case Studies **DS 126B**		
Winter	**Sc Method 118** Lecture/Lab Pollick Collection and Analysis of Data **PCC 117** Lecture/Clinic Lee/Pollick • Plaque Assessment OH Skills Achievement	**PCC 129** Lecture/Lab Pollick • Spit Test, CAMBRA, • Slot Prep, Baseline Tx Pln		
Spring	**DS 117** Lecture Featherstone • Demineralisation, Saliva • Caries, Bactieriology	**PCC 129** Clinic Rotation Pollick • Cambra • Spit Test (Pt)		

	D1	D2	D3	
Summer				
Fall	**PRDS 116** Lecture Eakle/Featherstone • Caries Diagnosis MID **PCC 117** Lecture/Clinic Lee/Pollick • Diet, Plaque • CAMBRA DMFT	**DS 126A** Lecture Featherstone/Ryder • Caries Risk Assessment • Cariology Case Studies **DS 126B**	**PCC 136** Lecture S. Lee CAMBRA **PCC 139** Clinic S. Lee • CAMBRA CE	
Winter	**Sc Method 118** Lecture/Lab Pollick Collection and Analysis of Data **PCC 117** Lecture/Clinic Lee/Pollick • Plaque Assessment OH Skills Achievement	**PCC 129** Lecture/Lab Pollick • Spit Test, CAMBRA, • Slot Prep, Baseline Tx Pln		
Spring	**DS 117** Lecture Featherstone • Demineralisation, Saliva • Caries, Bactieriology	**PCC 129** Clinic Rotation Pollick • Cambra • Spit Test (Pt)		

	D1	D2	D3	D4
Summer				**PCC 146** Lecture Jenson **PCC149** Clinic Kirkland • Outcomes of Treatment Assessment
Fall	**PRDS 116** Lecture- Eakle/Featherstone • Caries Diagnosis, MID **PCC 117** Lecture/Clinic Lee/Pollick • Diet, Plaque, CAMBRA, DMFT	**DS 126A** Lecture- Featherstone/Ryder • Caries Risk Assessment • Cariology Case Studies **DS 126B**	**PCC 136** Lecture- S. Lee CAMBRA **PCC 139** Clinic- S. Lee • CAMBRA CE	
Winter	**Sc Method 118** Lecture/Lab Pollick Collection and Analysis of Data **PCC 117** Lecture/Clinic Lee/Pollick • Plaque Assessment, OH Skills Achievement	**PCC 129** Lecture/Lab Pollick • Spit Test, CAMBRA, • Slot Prep, Baseline Tx Pln		
Spring	**DS 117** Lecture Featherstone • Demineralisation, Saliva • Caries, Bactieriology	**PCC 129** Clinic Rotation Pollick • Cambra • Spit Test (Pt)		

	ID3			
Summer	**PCC136** Lecture Eakle/Bird/Featherstone Cambra **DS117** Lecture Featherstone Cariology			
Fall				
Winter				
Spring				

	ID3	ID 4		
Summer	**PCC136** Lecture Eakle/Bird/Featherstone Cambra **DS117** Lecture Featherstone Cariology	**PCC 146** Lecture Jenson **PCC106** Clinic Kirkland • Outcomes of Treatment Assessment		
Fall	**DS 126A** Lecture Featherstone • Caries Risk Assessment • Cariology • Case Studies **PCC 106** Clinic Kirkland CAMBRA CE			
Winter	**Sc Method 118** Lecture/Lab			
Spring				

Appendix B: UCSF Dental Student Informed Consent

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
CONSENT TO BE A RESEARCH SUBJECT
Assessing Caries Risk Assessment and Prevention Counseling

A. PURPOSE AND BACKGROUND

Rasika Naran, DDS and Barbara Gerbert, PhD in the Divisions of Pediatric Dentistry and Behavioral Sciences, respectively, are conducting a research study to assess the knowledge, attitudes, and behavior of dental students in caries risk assessment and prevention counseling. You are being asked to participate in this study because you are a dental student attending UCSF.

B. PROCEDURES

If you agree to be in the study, the following will occur:

1. You will complete a confidential 26 item written survey that contains a series of questions on knowledge, attitudes, and behavior regarding caries risk assessment and prevention counseling.
2. This survey will be conducted at UCSF Dental School and will take approximately 10 minutes to complete.

C. RISKS/DISCOMFORTS

Confidentiality: Participation in research may involve a loss of privacy; however, your records will be handled as confidentially as possible. After the data have been collected and analyzed, the documents will be destroyed. No individual identities will be used in any reports or publications that may result from this study. Your responses will not affect your performance or grade in any class.

D. BENEFITS

The information that you provide will address knowledge, attitudes, and behavior of caries risk assessment and prevention counseling on adults and children. It may help serve as a review for board exams.

E. COSTS

There will be no costs to you as a result of taking part in this study.

F. PAYMENT

There will be a $10 gift certificate given to all dental students who participate in this study by completing the survey.

G. QUESTIONS

You have talked to Dr. Naran or Dr. Gerbert about this study and have had your questions answered. If you have further questions, you may call Dr. Naran at (415) 502-7290.

If you have any comments or concerns about participation in this study, you should first talk with the researchers. If for some reason you do not wish to do this, you may contact the Committee on Human Research, which is concerned with the protection of volunteers in research projects. You may reach the committee office between 8:00am and 5:00pm, Monday through Friday, by calling (415) 476-1814, or by writing: Committee on Human Research, Box 0962, University of California, San Francisco, San Francisco, CA 94143.

H. Consent

You will be given a copy of this consent form to keep.

PARTICIPATION IN RESEARCH IS VOLUNTARY. You are free to decline participation in this study. Your decision as to whether or not to participate will have no influence on your present or future status at UCSF.

If you agree to participate you should sign below.

_____ _____

Date Signature of Participant

_____ _____

Date Signature of Person Obtaining Consent

Appendix C: Caries Risk Assessment (CRA) and Prevention Counseling Survey

Caries Risk Assessment Survey

Date_____

Please circle the year in which you are currently enrolled:

D1 D2 D3 D4 IDP3 IDP4

Part I

1. The two major groups of bacteria that contribute to high risk of caries are mutans streptococci and lactobacilli species.

   True False

2. Chlorhexidine gluconate, 0.12%, is available as an anti-bacterial mouth rinse and is more effective against the lactobacilli organism than mutans streptococci.

   True **False**

3. The caries risk assessment form is the same for 6 year-olds as it is for adults (>18 years old).

   True False

4. The caries risk assessment form is the same for children under the age of 5 years and for adults (>18 years old).

   True **False**

5. Caries is a transmissible disease.

   True False

6. Which of the following is one of the effective ways that research suggests we can inhibit the transfer of cariogenic bacteria from mother to child? **(Circle only one)**

   a) To stop the mother from feeding the child
   b) To have the mother brush with a mint flavored toothpaste once a day
   c) For the baby to chew xylitol gum from 6 months of age
   d) Have the mother rinse with 0.05% sodium fluoride twice daily for three years
   e) **Have the mother chew on xylitol gum three times a day from when the baby is 6 months old to a year of age**

7. Children with one or more frank cavities are considered to be which of the following? **(Circle only one)**

   a) low caries risk
   b) moderate caries risk
   c) **high caries risk**
   d) cannot determine risk until caries risk assessment is performed

8. Which of the following are considered high risk factors for a 4 year old? **(Circle all that apply)**

   a) **Presence of a space maintainer**
   b) **Taking medication for asthma**
   c) **Presence of two white spot lesions**
   d) **Mother has three untreated cavities in her mouth**
   e) Child lives in fluoridated community
   f) Mother chews xylitol chewing gum
   g) Child goes to sleep with a bottle that is filled with water

9. If an adult patient has exposed root surfaces, the exposed root surface is classified as which of the following? **(Circle only one)**

   a) low caries risk factor
   b) **moderate caries risk factor**
   c) high caries risk factor

10. A patient with Sjogren's disease is considered to be in which of the following risk factor groups? **(Circle only one)**

    a) low caries risk factor
    b) moderate caries risk factor
    c) **high caries risk factor**

11. To determine caries risk for an individual, which of the following needs to be taken into consideration? **(Circle only one)**

    a) clinical judgment
    b) protective factors
    c) risk factors
    d) **all of the above**
    e) none of the above

12. For the first 11 questions, overall how confident are you with your answers on a scale of 1 to 10 with 10 being extremely confident and 1 being not at all confident? **(Circle only one)**

1	2	3	4	5	6	7	8	9	10
Not at all Confident									Extremely Confident

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CRA Survey
CHR Approval # H2582-26364-01

Part II **Please circle <u>one number</u> for each item**	Strongly Disagree	Disagree	Agree	Strongly Agree
13. **Caries risk assessment is important for patients who are:**				
Less than 5 years of age	1	2	3	4
5 to 11 years of age	1	2	3	4
12 to 17 years of age	1	2	3	4
Adults	1	2	3	4
14. **I feel competent assessing caries risk for patients:**				
Less than 5 years of age	1	2	3	4
5 to 11 years of age	1	2	3	4
12 to 17 years of age	1	2	3	4
Adults	1	2	3	4
15. **I feel competent in making appropriate recommendations based on caries risk assessment on individuals:**				
Less than 5 years of age	1	2	3	4
5 to 11 years of age	1	2	3	4
12 to 17 years of age	1	2	3	4
Adults	1	2	3	4
16. **When I find an individual who is at high risk for caries, it is important to offer the patient a bacterial test, if they are:**				
Less than 5 years of age	1	2	3	4
5 to 11 years of age	1	2	3	4
12 to 17 years of age	1	2	3	4
Adults	1	2	3	4
17. **I feel competent to provide prevention counseling to patients who are:**				
Less than 5 years of age	1	2	3	4
5 to 11 years of age	1	2	3	4
12 to 17 years of age	1	2	3	4
Adults	1	2	3	4
18. **I feel prevention counseling is an important service that I can provide for patients.**	1	2	3	4
19. **I feel competent to provide oral health prevention counseling to a pregnant woman.**	1	2	3	4

Part III

Please circle each group that applies separately, to help us interpret your responses.

20. I am planning to provide a dental home (comprehensive oral health care including acute care and preventive services) to the following patient groups:

    a) 1-2 years of age
    b) 3-5 years of age
    c) 6 to 11 years of age
    d) 12 to 17 years of age
    e) Adults (18-65 years of age)
    f) Elderly (66+ years of age)

21. I am willing to provide caries risk assessment to the following patient groups:

    a. 1-2 years of age
    b) 3-5 years of age
    c) 6 to 11 years of age
    d) 12 to 17 years of age
    e) Adults (18-65 years of age)
    f) Elderly (66+ years of age)

22. I plan to provide prevention counseling to the following patient groups:

    a) 1-2 years of age
    b) 3-5 years of age
    c) 6 to 11 years of age
    d) 12 to 17 years of age
    e) Adults (18-65 years of age)
    f) Elderly (66+ years of age)

23. I plan to provide the option of quantitative measure of bacterial challenge to the following patient groups:

    a) 1-2 years of age
    b) 3-5 years of age
    c) 6 to 11 years of age
    d) 12 to 17 years of age
    e) Adults (18-65 years of age)
    f) Elderly (66+ years of age)

24. I would rather refer dental care in the following patient groups:

    a) 1-2 years of age
    b) 3-5 years of age
    c) 6 to 11 years of age
    d) 12 to 17 years of age
    e) Adults (18-65 years of age)
    f) Elderly (66+ years of age)

25. What is your gender?

    a) Male
    b) Female

26. What type of dentistry do you plan to practice? **(Circle only one)**

    a) general dentistry
    b) pediatric dentistry
    c) other dental specialty

APPENDIX D: Caries Risk Assessment Forms published in the California Dental Association Journal March 2003

CARIES RISK ASSESSMENT FORM FOR AGE 0 TO 5 YEARS

Instructions on reverse

Patient Name:_____ **I.D. #** _____ **Age** ____ **Date** _____

Initial/baseline exam date_____ **Recall/POE date**_____

Respond to each question in sections 1, 2, and 3 with a check mark in the yes or no column			**Notes**
	Yes	**No**	
1. High Risk Factors**			
(a) Mother or primary caregiver has had active dental decay in the past 12 months			
(b) Child sleeps with a bottle, or nurses on demand			
(c) Bottle contains fluids other than milk or water			
(d) Obvious white spots, decalcifications, or obvious decay are present on the child's teeth			
(e) Recent dental restorations completed (less than two years)			
(f) Child's gums bleed easily and/or plaque is obvious on the teeth			
(g) Frequent (greater than three times) between meal snacks of sugars/cooked starch			
(h) Appliances present, fixed or removable: e.g., space maintainers, obturators, etc.			
(i) Visually inadequate saliva flow (measuring saliva flow with young children is not possible)			
(j) Saliva-reducing factors are present, including:			
1. hyposalivatory medications (i.e., some for asthma or hyperactivity)			
2. medical (cancer treatment) or genetic factors			
(k) Child has developmental problems			
2. Protective Factors			
(a) Lives in fluoridated community			
(b) Mother or caregiver cleans child's teeth twice a day with fluoridated toothpaste (small amount)			type _____
(c) Child has had a dental exam combined with oral hygiene instruction for the parent/caregiver			type _____
(d) Salivary flow visually adequate			
(e) Mother or caregiver with moderate to high ms counts use xylitol gum or lozenges (4x per day)			Type _____ and %_____
(f) Mother/caregiver has no caries activity			

****If yes to any of 1 (a) – (g), perform bacterial culture on mother or caregiver***	**High Count* Date: _____**	**Moderate Count* Date: _____**	**Low Count* Date: _____**	
(a) Mutans streptococci				(Place a check in the box below the count)
(b) Lactobacillus				(Place a check in the box below the count)
Child's caries risk status	**High**	**Moderate**	**Low**	**Circle High, Moderate or Low**

Recommendations given: yes_____ **no:** _____ Date given:_____ or Date follow up:_____

* indicates that test descriptions for these procedures are on the following pages

CARIES RISK ASSESSMENT FORM FOR CHILDREN AGE 0 TO 5 YEARS

Instructions

1. Respond to questions 1(a) through 1(j) and 2(a) through 2(f) with yes or no answers. You can make special notations such as the number of caries present, the severity of the lack of oral hygiene, the brand of fluorides used, the type of bottle contents used, the type of snacks eaten, or the names of medications/drugs that may be causing dry mouth.
2. If the answer to any question in section 1 is yes for children old enough to spit (probably 4 or 5 years old), then a bacterial culture (**CRT bacteria test***) should be taken, as described below. For children not old enough to spit (3 years or younger), the bacterial levels of the parent/caregiver should be used as a rough estimate of the child's likely bacterial challenge. Saliva samples are taken from the mother or caregiver using the **CRT bacteria test*** (Vivadent) – see below. Children age 0 to 3 years are difficult to culture reliably in the fashion described below. However, an approximate indication for the child can be obtained by using a cotton swab to sample the surfaces of all teeth and gums in the mouth, thoroughly dispersing the sample in about 1-2 ml of water, and coating this on the test media strips as described below for saliva samples. Make an overall judgment as to whether the child is at high, medium, or low risk depending on the balance between the pathological factors (section 1) and the protective factors (section 2). **Note! Determining the caries risk for an individual child requires evaluating the number and severity of the risk factors. Certainly, a child with caries presently or in the recent past is at high risk for future caries. A patient with low bacterial levels would need to have several other risk factors present to be considered at moderate risk. Some clinical judgment is needed while also considering the protective factors to determining the risk. Note! Children with developmental problems or low socioeconomic status are automatically at high risk.** Place the completed form in the patient's chart.
3. Provide the parent/caregiver with recommendations based on your clinical observations and the responses to the questions and discuss strategies for caries control and management. Give the parent/caregiver the sheet that explains how caries happens and the sheet with your recommendations. Copy the recommendations and place in the patient's chart.
4. Inform the parent/caregiver of the results of any tests. Showing the parent the bacteria grown from their mouth (CRT test result*) can be a good motivator, so have the culture tube handy at the next visit (or schedule one for this purpose – the culture keeps satisfactorily for some weeks), or give/send them a picture. If the parent/caregiver has high cariogenic bacterial counts, then work with them and their own dentist to bring them to low caries risk and get their caries under control to eliminate this source of infection and re-infection for the child.
5. After the parent/caregiver/child has been following your recommendations for three to six months, have them back to re-assess how well they are doing. Ask them if they are following your instructions – how often. If the bacterial levels were moderate or high initially, repeat the bacterial culture to see if bacterial levels have been reduced. Make changes in your recommendations or reinforce protocol if results are not as good as desired or the patient is not compliant.

*Test procedures — Caries Bacteria Testing

***Bacterial testing:* CRT bacteria test:** In the United States, the currently available chairside test for cariogenic bacterial challenge is the Caries Risk Test (CRT) marketed by Vivadent (Amherst, N.Y.). It is sufficiently sensitive to provide a level of low, medium, or high cariogenic bacterial challenge. It can also be used as a motivational tool for patient compliance with an antibacterial regimen. Other bacterial test kits will likely be available in the near future. The following is the procedure for administering the CRT test. Results are available after 48 hours.

The kit comes with two-sided selective media sticks that assess mutans streptococci on the blue side and lactobacilli on the green side.

a) Remove the selective media stick from the culture tube. Peel off the plastic sheet covering each side of the stick.

b) Pour the collected saliva over the media on each side until it is entirely wet.

c) Place one of the sodium bicarbonate tablets (included with the kit) in the bottom of the tube.

d) Replace the media stick in the culture tube, screw the lid on, and label the tube with the patient's name, registration number, and date. Place the tube in the incubator at 37 degrees Celsius for 48 hours. Incubators suitable for a dental office are also sold by the company.

e) Collect the tube after 48 hours and compare the densities of bacterial colonies with the pictures provided in the kit indicating relative bacterial levels. The dark blue agar is selective for mutans streptococci, and the light green agar is selective for lactobacilli. Record the level of bacterial challenge in the patient's chart as low, medium, or high.

PARENT/CAREGIVER RECOMMENDATIONS FOR CONTROL OF DENTAL DECAY IN CHILDREN 0 TO 5 YEARS

Daily Oral Hygiene/Fluoride Treatment (These procedures reduce the bacteria in the mouth and provide a small amount of fluoride to guard against further tooth decay, as well as to repair early decayed areas)

_____ wipe baby's teeth with a small smear of fluoride toothpaste on a soft cloth (for babies)

_____ brush child's teeth with a fluoride-containing toothpaste (small smear or pea-sized amount) twice daily (for children old enough to have their teeth brushed by parent or caregiver)

_____ selective daily flossing of areas with early caries (white patches)

_____ other_____

Diet (The most important thing is to reduce the number of between-meal sweet snacks that contain carbohydrates, especially sugars. Substitution by snacks rich in protein, such as cheese, will also help)

_____ OK as is

_____ limit bottle/nursing (to avoid prolonged contact of milk with teeth)

_____ replace juice or sweet liquids in the bottle with water

_____ limit snacking (particularly sweets)

_____ replace high carbohydrate snacks with cheese and protein snacks

_____ other_____

Xylitol (Xylitol is a sweetener that the bacteria cannot feed on. It limits the transfer of decay-causing bacteria from parent/caregiver to baby/toddler. Parents/caregivers with dental decay place their children at high risk. Parent/caregiver requires antibacterial treatment [see below]. Using xylitol-containing chewing gum or mints/lozenges is a way that parents/caregivers of high-risk children can reduce the transfer of decay-causing bacteria. This is most effective when used starting shortly after the child's birth.)

_____ Parents of children 3 and younger with high bacterial levels should use xylitol mints or xylitol gum 3-4 times daily

Antibacterial rinse (parents/caregivers)

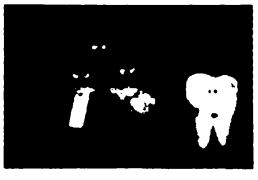
_____ Parents/caregivers of children 3 years and younger with high bacterial levels should rinse with 10 ml of chlorhexidine gluconate 0.12% (***Periogard, Peridex, Oral Rx*** by prescription only). Rinse at bedtime for 1 minute 1X/day for 2 weeks. Stop for two months. Repeat rinsing for 2 weeks.

Practitioner signature _____ Date: _____

Parent/caregiver signature _____ Date: _____

PATIENT INFORMATION ON TOOTH DECAY

How Tooth Decay Happens



Tooth decay is caused by certain types of bacteria (mutans streptococci and lactobacilli) that live in your mouth. When they attach themselves to the teeth and multiply in dental plaque, they can do damage. The bacteria feed on what you eat, especially sugars (including fruit sugars) and cooked starch (bread, potatoes, rice, pasta, etc.). Within about five minutes after you eat or drink, the bacteria begin producing acids as a byproduct of their digesting your food. Those acids can penetrate into the hard substance of the tooth and dissolve some of the minerals (calcium and phosphate). If the acid attacks are infrequent and of short duration, your saliva can help to repair the damage by neutralizing the acids and supplying minerals and fluoride that can replace those lost from the tooth. However if your mouth is dry, you have many of these bacteria, or you snack frequently; then the tooth mineral lost by attacks of acids is too great and cannot be repaired. This is the start of tooth decay and leads to cavities.

Methods of Controlling Tooth Decay

Diet: Reducing the number of sugary and starchy foods, snacks, drinks, or candies can help reduce the development of tooth decay. That does not mean you can never eat these types of foods, but you should limit their consumption particularly when eaten between main meals. A good rule is three meals per day and no more than three snacks per day.

Fluorides: Fluorides help make teeth more resistant to being dissolved by bacterial acids. Fluorides are available from a variety of sources such as drinking water, toothpaste, over-the-counter rinses, and products prescribed by your dentist such as brush-on gels used at home or gels and foams applied in the dental office. Daily use is very important to help protect against the acid attacks.

Plaque removal: Removing the plaque from your teeth on a daily basis is helpful in controlling tooth decay. Plaque can be difficult to remove from some parts of your mouth, especially between the teeth and in grooves on the biting surfaces of back teeth. If you have an appliance such as an orthodontic retainer or partial denture, remove it before brushing your teeth. Brush all surfaces of the appliance also.

Saliva: Saliva is critical for controlling tooth decay. It neutralizes acids and provides minerals and proteins that protect the teeth. If you cannot brush after a meal or snack, you can chew some sugar-free gum. This will stimulate the flow of saliva to help neutralize acids and bring lost minerals back to the teeth. Sugar-free candy or mints could also be used, but some of these contain acids themselves. These acids will not cause tooth decay, but they can slowly dissolve the enamel surface over time (a process called erosion). Some sugar-free gums are designed to help fight tooth decay and are particularly useful if you have a dry mouth (many medications can cause a dry mouth). Some gums contain baking soda, which neutralizes the acids produced by the bacteria in plaque. Gum that contains xylitol as its first listed ingredient is the gum of choice. If you have a dry mouth, you could also fill a drinking bottle with water and add a couple teaspoons of baking soda for each 8 ounces of water and swish with it frequently throughout the day. Toothpastes containing baking soda are also available from several companies.

Antibacterial mouthrinses: Rinses that your dentist can prescribe are able to reduce the number of bacteria that cause tooth decay and can be useful in patients at high risk for tooth decay.

Sealants: Sealants are plastic coatings bonded to the biting surfaces of back teeth to protect the deep grooves from decay. In some people, the grooves on the surfaces of the teeth are too narrow and deep to clean with a toothbrush, so they may decay in spite of your best efforts. Sealants are an excellent preventive measure for children and young adults at risk for this type of decay.

CARIES RISK ASSESSMENT FORM FOR CHILDREN 6 YEARS AND OLDER/ADULTS

Instructions on reverse

Patient Name:_____ **I.D. #** _____ **Age** ____ **Date** _____

Initial/baseline exam date_____ **Recall/POE date**_____

Respond to each question in sections 1, 2, and 3 with a check mark in the yes or no column			**Notes**
	Yes	**No**	
1. High Risk Factors**			
(a) Visible cavitation (canous) or caries into dentin by radiograph			
(b) Caries restored in past three years			
(c) Readily visible heavy plaque on teeth			
(d) Frequent (greater than three times daily) between meal snacks of sugars/cooked starch			
(e) **Saliva-reducing factors:**			
1. Hyposalivatory medications			
2. Radiation to head and neck			
3. Systemic reasons, e.g. Sjogren's			
(f*) Visually inadequate saliva flow. (If yes, measure) less than 0.7 ml/min by test= low salivary flow or dry mouth			Amount: _____ ml/min
(g) Appliances present, fixed or removable, e.g. orthodontic brackets/bands/retainer or removable partial denture(s)			
2. Moderate Risk Factors			
(a) Exposed roots			
(b) Deep pits & fissures/developmental defects			
(c) Interproximal enamel lesions/radiolucencies			
(d) Other white spot lesions or occlusal discoloration			
(e) Uses recreational drugs			
3. Protective Factors			
(a) Lives /works/school in fluoridated community			
(b) Uses fluoride toothpaste daily			type _____
(c) Uses fluoride mouthwash/rinse/gel daily			type _____
(d*) Salivary flow visually adequate >1 ml/min by test			
(e) Uses xylitol gum or mints 4 x day			Type _____ and % xylitol_____
(f) Mother/caregiver has no caries activity			Brand _____ Frequency_____

****If yes to 1 (a) or any two of 1 (b)-(g), perform bacterial culture***	**High Count Date:** ____	**Moderate Count Date:** ____	**Low Count Date:** ____	
(a) Mutans streptococci				(Place a check in the box below the count)
(b) Lactobacillus				(Place a check in the box below the count)
Caries risk overall* (see over)	**High**	**Moderate**	**Low**	**Circle High, Moderate or Low**

Recommendations given: yes____ **no:** ____ Date given:____ or Date follow up:____

* Indicates that test descriptions for these procedures are on the following pages

CARIES RISK ASSESSMENT FORM FOR CHILDREN AGE 6 YEARS AND OLDER/ADULTS

Instructions

1. Respond to questions 1, 2, and 3 with yes or no answers. You can make special notations such as the number of caries present, the severity of the lack of oral hygiene, the brand of fluorides used, the type of snacks eaten, or the names of medications/drugs that are causing dry mouth.
2. If the answer is yes to question 1(a) or any two of questions 1(b) through 1(g), then a bacterial culture should be taken using the **CRT bacteria test*** (Vivadent) – see below. Make an overall judgment as to whether the patient is at high, medium, or low risk depending on the balance between the pathological factors (sections 1 and 2) and the protective factors (section 3). **Note! Determining the caries risk for an individual requires evaluating the number and severity of the risk factors. Certainly, an individual with caries presently or in the recent past is at high risk for future caries. A patient with low bacterial levels would need to have several other risk factors present to be considered at moderate risk. Some clinical judgment is needed while also considering the protective factors to determining the risk. Note!** Children with developmental problems or low socioeconomic status are automatically at high risk. Place the completed form in the patient chart.
3. Provide the patient with recommendations based on your clinical observations and the responses to the questions and discuss strategies for caries control and management. Give the patient the sheet that explains how caries happens and the sheet with your recommendations. Copy the recommendations for the patient chart.
4. Inform the patient of the results of any test results. Showing the patient the bacteria grown from their mouth (CRT test result*) can be a good motivator, so have the culture tube handy at the next visit (or schedule one for this purpose – the culture keeps satisfactorily for some weeks), or give/send them a picture.
5. After the patient has been following your recommendations for three to six months, have the patient back to re-assess how well he or she is doing. Ask if he or she is following your instructions – how often. If the bacterial levels were moderate or high initially, repeat the bacterial culture to see if bacterial levels have been reduced. Make changes in your recommendations or reinforce protocol if results are not as good as desired or the patient is not compliant.

*Test procedures – Saliva Flow Rate and Caries Bacteria Testing

*1. **Saliva flow rate:** Have the patient chew a paraffin pellet (included with the CRT test – see below) for three to five minutes and spit all saliva generated into a cup. At the end of the three to five minutes, measure the amount of saliva (in milliliters) and divide that amount by time to determine the ml/minute of stimulated salivary flow. A flow rate of 1 ml/min and above is considered normal. A level of 0.7 ml/min is low, and anything at 0.5 ml/min or less is dry, indicating a high-risk situation. Investigation of the reason for the low flow rate is an important step in the patient treatment.

*2. **Bacterial testing: CRT bacteria test:** In the United States, the currently available chairside test for cariogenic bacterial challenge is the Caries Risk Test (CRT) marketed by Vivadent (Amherst, N.Y.). It is sufficiently sensitive to provide a level of low, medium, or high cariogenic bacterial challenge. It can also be used as a motivational tool for patient compliance with an antibacterial regimen. Other bacterial test kits will likely be available in the near future. The following is the procedure for administering the currently available CRT test. Results are available after 48 hours.

The kit comes with two-sided selective media sticks that assess mutans streptococci on the blue side and lactobacilli on the green side.

a) Remove the selective media stick from the culture tube. Peel off the plastic cover sheet from each side of the stick.

b) Pour the collected saliva over the media on each side until it is entirely wet.

c) Place one of the sodium bicarbonate tablets (included with the kit) in the bottom of the tube.

d) Replace the media stick in the culture tube, screw the lid on, and label the tube with the patient's name, registration number, and date. Place the tube in the incubator at 37 degrees Celsius for 48 hours. Incubators suitable for a dental office are also sold by the company.

e) Collect the tube after 48 hours and compare the densities of bacterial colonies with the pictures provided in the kit indicating relative bacterial levels. The dark blue agar is selective for mutans streptococci and the light green agar is selective for lactobacilli. Record the level of bacterial challenge in the patient's chart as low, medium, or high.

PATIENT RECOMMENDATIONS FOR CONTROL OF DENTAL DECAY (AGES 6 AND OLDER/ADULT)

Daily Oral Hygiene (Aimed at reducing the overall bacteria in the mouth, especially at sites likely to decay. Choose the recommendations based on the danger sites and the condition of the mouth)

___ brush twice daily (with fluoride toothpaste, all patients) ___ floss daily

___ interproximal brush ___Stimudents ___ toothpick ___Superfloss

___ other: _____

Diet (The most important thing is to reduce the number of between meal sweet snacks that contain carbohydrates, especially sugars. Substitution by snacks rich in protein, such as cheese will also help)

___ OK as is ___limit snacking ___ limit sodas ___ other _____

Fluorides (All patients should use a fluoride toothpaste twice daily. Additional fluoride products should be added, depending on whether the risk level is medium or high. These fluoride products must be used daily to be effective)

___ fluoride-containing toothpaste 2X/day (all patients regardless of caries risk status)

___ fluoride rinse (0.05% NaF, ***Act*** or ***Fluorigard***) 1X or 2X/day (use in addition to toothpaste. Patients at medium risk should rinse in the morning or last thing at night. For high risk patients use twice a day, once in the morning and once last thing at night. Continue long term with older patients or those who need or want extra protection)

___ ***Prevident*** "brush-on" nightly, **OR** ___ gel (***Prevident***) in custom tray 10 min./night (For high-risk patients, especially those with low saliva flow, or root caries, or active cavities. Continue until the risk status is lowered, then revert to fluoride as above)

___ fluoride lozenges (***Lozi-Flur or Fluor-a-day***) 1X/day (use for high-risk patients with with low saliva flow, such as radiation xerostomia. By dissolving in the mouth, these lozenges provide a concentrated fluoride reservoir to protect against mineral loss and to enhance repair by remineralization. Dissolve slowly in mouth by holding the lozenge in a convenient place)

Sugar-free gum/mints (recommend for high risk patients, especially those with low saliva flow, and/or those who need to reduce in between meal snacking. The gums or mints that contain xylitol also have an antibacterial effect against the decay-causing bacteria. Preferably use a xylitol-containing gum.)

___ Chew after meals when you cannot brush (xylitol preferred). ___ Use Xylitol mints 3-4 times daily.

Antibacterial rinse

___ Chlorhexidine gluconate, 0.12% (***Periogard, Peridex, Oral Rx***, available on prescription). Rinse with 10 ml at bedtime for 1 minute, 1X/day for 2 weeks. Stop for two months. Repeat rinsing for 2 weeks. Use fluoride rinse (see above) every day during the weeks in between.

For dry mouth

___ baking soda tooth paste with fluoride ___ baking soda gym – ***Dental Care Gum*** (Arm & Hammer. It contains baking soda and xylitol) or similar product. Chew frequently throughout the day.

___ rinse frequently with baking soda suspension during the day (fill sports water bottle with water and add 2 teaspoons of baking soda for each 8 oz. of water.)

Practitioner signature _____ Date: _____

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TABLES

TABLE 3. CROSS-TABULATION BY CLASS VALUES for D1, D2, D3 and D4 classes

13a. Cross-tabulation of class with 13a (Caries risk assessment is important for patients who are less than 5 yrs)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value*
NEWCLASS	D1	3 (3.8%)	7 (8.9%)	31 (39.2%)	38 (48.1%)	79 (27.3%)	MH X2(1)=1.8	0.1745
	D2	4 (5.6%)	1 (1.4%)	21 (29.2%)	46 (63.9%)	72 (24.9%)		
	D3	4 (6.3%)	1 (1.6%)	22 (34.9%)	36 (57.1%)	63 (21.8%)		
	D4	3 (4.0%)	1 (1.3%)	25 (33.3%)	46 (61.3%)	75 (26.0%)		
	Total	14 (4.8%)	10 (3.5%)	99 (34.3%)	166 (57.4%)	289 (100.0%)		

13b. Cross-tabulation of class with Q13b (Caries risk assessment is important for patients who are 6-11 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	2 (2.5%)	1 (1.3%)	22 (27.5%)	55 (68.8%)	80 (27.8%)	MH X2(1)=0.4	0.5106
	D2	2 (2.8%)	2 (2.8%)	10 (14.1%)	57 (80.3%)	71 (24.7%)		
	D3	0 (0.0%)	1 (1.6%)	13 (21.0%)	48 (77.4%)	62 (21.5%)		
	D4	2 (2.7%)	0 (0.0%)	18 (24.0%)	55 (73.3%)	75 (26.0%)		
	Total	6 (2.1%)	4 (1.4%)	63 (21.9%)	215 (74.7%)	288 (100.0%)		

13c. Cross-tabulation of class with Q13c (Caries risk assessment is important for patients who are 12-17 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	2 (2.5%)	1 (1.3%)	22 (27.5%)	55 (68.8%)	80 (27.7%)	MH X2(1)=2.1	0.1501
	D2	1 (1.4%)	0 (0.0%)	16 (22.2%)	55 (76.4%)	72 (24.9%)		
	D3	0 (0.0%)	0 (0.0%)	8 (12.9%)	54 (87.1%)	62 (21.5%)		
	D4	2 (2.7%)	0 (0.0%)	15 (20.0%)	58 (77.3%)	75 (26.0%)		
	Total	5 (1.7%)	1 (0.3%)	61 (21.1%)	222 (76.8%)	289 (100.0%)		

13d. Cross-tabulation of class with Q13d (Caries risk assessment is important for patients who are adults)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	0 (0.0%)	4 (5.0%)	26 (32.5%)	50 (62.5%)	80 (27.7%)	MH X2(1)=0.1	0.7326
	D2	1 (1.4%)	3 (4.2%)	22 (30.6%)	46 (63.9%)	72 (24.9%)		
	D3	0 (0.0%)	0 (0.0%)	16 (25.8%)	46 (74.2%)	62 (21.5%)		
	D4	2 (2.7%)	3 (4.0%)	21 (28.0%)	49 (65.3%)	75 (26.0%)		
	Total	3 (1.0%)	10 (3.5%)	85 (29.4%)	191 (66.1%)	289 (100.0%)		

14a. Cross-tabulation of class with Q14a (I feel competent assessing caries risk for patients less than 5 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	33 (41.3%)	32 (40.0%)	13 (16.3%)	2 (2.5%)	80 (27.8%)	MH X2(1)=54.3	<.0001
	D2	9 (12.5%)	29 (40.3%)	31 (43.1%)	3 (4.2%)	72 (25.0%)		
	D3	7 (11.3%)	30 (48.4%)	18 (29.0%)	7 (11.3%)	62 (21.5%)		
	D4	2 (2.7%)	21 (28.4%)	33 (44.6%)	18 (24.3%)	74 (25.7%)		
	Total	51 (17.7%)	112 (38.9%)	95 (33.0%)	30 (10.4%)	288 (100.0%)		

14b. Cross-tabulation of class with Q14b (I feel competent assessing caries risk for patients who are 6-11 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	33 (41.3%)	31 (38.8%)	12 (15.0%)	4 (5.0%)	80 (27.7%)	MH X2(1)=75.4	<.0001
	D2	7 (9.7%)	28 (38.9%)	32 (44.4%)	5 (6.9%)	72 (24.9%)		
	D3	4 (6.5%)	21 (33.9%)	27 (43.5%)	10 (16.1%)	62 (21.5%)		
	D4	2 (2.7%)	9 (12.0%)	41 (54.7%)	23 (30.7%)	75 (26.0%)		
	Total	46 (15.9%)	89 (30.8%)	112 (38.8%)	42 (14.5%)	289 (100.0%)		

14c. Cross-tabulation of class with Q14c (I feel competent assessing caries risk for patients who are 12-17 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	34 (42.5%)	27 (33.8%)	13 (16.3%)	6 (7.5%)	80 (27.7%)	MH X2(1)=106.6	<.0001
	D2	6 (8.3%)	19 (26.4%)	35 (48.6%)	12 (16.7%)	72 (24.9%)		
	D3	1 (1.6%)	5 (8.1%)	30 (48.4%)	26 (41.9%)	62 (21.5%)		
	D4	2 (2.7%)	2 (2.7%)	27 (36.0%)	44 (58.7%)	75 (26.0%)		
	Total	43 (14.9%)	53 (18.3%)	105 (36.3%)	88 (30.4%)	289 (100.0%)		

* Mantel-Haenszel Chi-Square

14d. Cross-tabulation of class with Q14d(I feel competent assessing caries risk for patients who are adults)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value*
NEWCLASS	D1	33 (41.3%)	28 (35.0%)	13 (16.3%)	6 (7.5%)	80 (27.7%)	MH X2(1)=117.5	<.0001
	D2	5 (6.9%)	17 (23.6%)	37 (51.4%)	13 (18.1%)	72 (24.9%)		
	D3	0 (0.0%)	1 (1.6%)	27 (43.5%)	34 (54.8%)	62 (21.5%)		
	D4	2 (2.7%)	2 (2.7%)	22 (29.3%)	49 (65.3%)	75 (26.0%)		
	Total	40 (13.8%)	48 (16.6%)	99 (34.3%)	102 (35.3%)	289 (100.0%)		

15a. Cross-tabulation of class with Q15a (I feel competent in making appropriate recommendations based on caries risk assessment on individuals less than 5 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	29 (36.3%)	30 (37.5%)	19 (23.8%)	2 (2.5%)	80 (27.7%)	MH X2(1)=45.2	<.0001
	D2	6 (8.3%)	31 (43.1%)	29 (40.3%)	6 (8.3%)	72 (24.9%)		
	D3	6 (9.7%)	27 (43.5%)	16 (25.8%)	13 (21.0%)	62 (21.5%)		
	D4	5 (6.7%)	15 (20.0%)	34 (45.3%)	21 (28.0%)	75 (26.0%)		
	Total	46 (15.9%)	103 (35.6%)	98 (33.9%)	42 (14.5%)	289 (100.0%)		

15b. Cross-tabulation of class with Q15b (I feel competent in making appropriate recommendations based on caries risk assessment on individuals 6-11 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	29 (36.3%)	27 (33.8%)	20 (25.0%)	4 (5.0%)	80 (27.7%)	MH X2(1)=60.3	<.0001
	D2	5 (6.9%)	26 (36.1%)	34 (47.2%)	7 (9.7%)	72 (24.9%)		
	D3	4 (6.5%)	21 (33.9%)	22 (35.5%)	15 (24.2%)	62 (21.5%)		
	D4	2 (2.7%)	12 (16.0%)	32 (42.7%)	29 (38.7%)	75 (26.0%)		
	Total	40 (13.8%)	86 (29.8%)	108 (37.4%)	55 (19.0%)	289 (100.0%)		

15c. Cross-tabulation of class with Q15c.(I feel competent in making appropriate recommendations based on caries risk assessment on individuals 12-17 yrs of age)

RowVar	Ro Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	29 (36.3%)	27 (33.8%)	16 (20.0%)	8 (10.0%)	80 (27.6%)	MH X2(1)=90.0	<.0001
	D2	4 (5.6%)	20 (27.8%)	35 (48.6%)	13 (18.1%)	72 (24.8%)		
	D3	1 (1.6%)	4 (6.3%)	29 (46.0%)	29 (46.0%)	63 (21.7%)		
	D4	2 (2.7%)	3 (4.0%)	29 (38.7%)	41 (54.7%)	75 (25.9%)		
	Total	36 (12.4%)	54 (18.6%)	109 (37.6%)	91 (31.4%)	290 (100.0%)		

15d. Cross-tabulation of class with Q15d.(I feel competent in making appropriate recommendations based on caries risk assessment on individuals who are adults)

RowVar	Ro Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	29 (36.3%)	28 (35.0%)	15 (18.8%)	8 (10.0%)	80 (27.7%)	MH X2(1)=96.5	<.0001
	D2	4 (5.6%)	18 (25.0%)	34 (47.2%)	16 (22.2%)	72 (24.9%)		
	D3	0 (0.0%)	2 (3.2%)	27 (43.5%)	33 (53.2%)	62 (21.5%)		
	D4	2 (2.7%)	2 (2.7%)	28 (37.3%)	43 (57.3%)	75 (26.0%)		
	Total	35 (12.1%)	50 (17.3%)	104 (36.0%)	100 (34.6%)	289 (100.0%)		

16a. Cross-tabulation of class with Q16a (When I find an individual who is at high risk for caries, it is important to offer the patient a bacterial test, if they are less than 5 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	2 (2.5%)	20 (25.0%)	34 (42.5%)	24 (30.0%)	80 (27.8%)	MH X2(1)=12.5	0.0004
	D2	5 (6.9%)	18 (25.0%)	29 (40.3%)	20 (27.8%)	72 (25.0%)		
	D3	8 (13.1%)	15 (24.6%)	20 (32.8%)	18 (29.5%)	61 (21.2%)		
	D4	11 (14.7%)	27 (36.0%)	27 (36.0%)	10 (13.3%)	75 (26.0%)		
	Total	26 (9.0%)	80 (27.8%)	110 (38.2%)	72 (25.0%)	288 (100.0%)		

16b. Cross-tabulation of class with Q16b (When I find an individual who is at high risk for caries, it is important to offer the patient a bacterial test, if they are 6-11 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	1 (1.3%)	12 (15.0%)	40 (50.0%)	27 (33.8%)	80 (27.8%)	MH X2(1)=11.4	0.0007
	D2	3 (4.2%)	9 (12.5%)	36 (50.0%)	24 (33.3%)	72 (25.0%)		
	D3	5 (8.2%)	12 (19.7%)	22 (36.1%)	22 (36.1%)	61 (21.2%)		
	D4	10 (13.3%)	17 (22.7%)	33 (44.0%)	15 (20.0%)	75 (26.0%)		
	Total	19 (6.6%)	50 (17.4%)	131 (45.5%)	88 (30.6%)	288 (100.0%)		

* Mantel-Haenszel Chi-Square

16c. Cross-tabulation of class with Q16c (When I find an individual who is at high risk for caries, it is important to offer the patient a bacterial test, if they are 12-17 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value*
NEWCLASS	D1	0 (0.0%)	6 (7.5%)	40 (50.0%)	34 (42.5%)	80 (27.7%)	MH X2(1)=3.9	0.0497
	D2	3 (4.2%)	7 (9.7%)	33 (45.8%)	29 (40.3%)	72 (24.9%)		
	D3	3 (4.8%)	2 (3.2%)	27 (43.5%)	30 (48.4%)	62 (21.5%)		
	D4	9 (12.0%)	11 (14.7%)	23 (30.7%)	32 (42.7%)	75 (26.0%)		
	Total	15 (5.2%)	26 (9.0%)	123 (42.6%)	125 (43.3%)	289 (100.0%)		

16d. Cross-tabulation of class with Q16d (When I find an individual who is at high risk for caries, it is important to offer the patient a bacterial test, if they are adults)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	0 (0.0%)	6 (7.5%)	39 (48.8%)	35 (43.8%)	80 (27.7%)	MH X2(1)=2.4	0.1247
	D2	1 (1.4%)	5 (6.9%)	35 (48.6%)	31 (43.1%)	72 (24.9%)		
	D3	3 (4.8%)	3 (4.8%)	19 (30.6%)	37 (59.7%)	62 (21.5%)		
	D4	8 (10.7%)	12 (16.0%)	18 (24.0%)	37 (49.3%)	75 (26.0%)		
	Total	12 (4.2%)	26 (9.0%)	111 (38.4%)	140 (48.4%)	289 (100.0%)		

17a. Cross-tabulation of class with Q17a (I feel competent to provide prevention counseling to patients who are less than 5 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	18 (22.5%)	22 (27.5%)	24 (30.0%)	16 (20.0%)	80 (27.8%)	MH X2(1)=12.1	0.0005
	D2	9 (12.5%)	22 (30.6%)	34 (47.2%)	7 (9.7%)	72 (25.0%)		
	D3	9 (14.8%)	22 (36.1%)	15 (24.6%)	15 (24.6%)	61 (21.2%)		
	D4	3 (4.0%)	16 (21.3%)	32 (42.7%)	24 (32.0%)	75 (26.0%)		
	Total	39 (13.5%)	82 (28.5%)	105 (36.5%)	62 (21.5%)	288 (100.0%)		

17b. Cross-tabulation of class with Q17b (I feel competent to provide prevention counseling to patients who are 6-11 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	16 (20.0%)	17 (21.3%)	23 (28.8%)	24 (30.0%)	80 (27.9%)	MH X2(1)=13.1	0.0003
	D2	7 (9.9%)	11 (15.5%)	36 (50.7%)	17 (23.9%)	71 (24.7%)		
	D3	4 (6.6%)	15 (24.6%)	21 (34.4%)	21 (34.4%)	61 (21.3%)		
	D4	2 (2.7%)	7 (9.3%)	37 (49.3%)	29 (38.7%)	75 (26.1%)		
	Total	29 (10.1%)	50 (17.4%)	117 (40.8%)	91 (31.7%)	287 (100.0%)		

17c. Cross-tabulation of class with Q17c (I feel competent to provide prevention counseling to patients who are 12-17 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	16 (20.0%)	13 (16.3%)	25 (31.3%)	26 (32.5%)	80 (27.7%)	MH X2(1)=34.8	<.0001
	D2	6 (8.3%)	6 (8.3%)	39 (54.2%)	21 (29.2%)	72 (24.9%)		
	D3	1 (1.6%)	2 (3.2%)	24 (38.7%)	35 (56.5%)	62 (21.5%)		
	D4	2 (2.7%)	1 (1.3%)	27 (36.0%)	45 (60.0%)	75 (26.0%)		
	Total	25 (8.7%)	22 (7.6%)	115 (39.8%)	127 (43.9%)	289 (100.0%)		

17d. Cross-tabulation of class with Q17d (I feel competent to provide prevention counseling to patients who adults)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	16 (20.0%)	13 (16.3%)	26 (32.5%)	25 (31.3%)	80 (27.7%)	MH X2(1)=38.3	<.0001
	D2	5 (6.9%)	7 (9.7%)	35 (48.6%)	25 (34.7%)	72 (24.9%)		
	D3	0 (0.0%)	0 (0.0%)	22 (35.5%)	40 (64.5%)	62 (21.5%)		
	D4	2 (2.7%)	2 (2.7%)	25 (33.3%)	46 (61.3%)	75 (26.0%)		
	Total	23 (8.0%)	22 (7.6%)	108 (37.4%)	136 (47.1%)	289 (100.0%)		

18. Cross-tabulation of class with Q18 (I feel prevention counseling is an important service that I can provide for patients)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	D1	6 (7.5%)	3 (3.8%)	16 (20.0%)	55 (68.8%)	80 (27.6%)	MH X2(1)=3.2	0.0750
	D2	4 (5.6%)	1 (1.4%)	25 (34.7%)	42 (58.3%)	72 (24.8%)		
	D3	0 (0.0%)	1 (1.6%)	18 (28.6%)	44 (69.8%)	63 (21.7%)		
	D4	2 (2.7%)	0 (0.0%)	20 (26.7%)	53 (70.7%)	75 (25.9%)		
	Total	12 (4.1%)	5 (1.7%)	79 (27.2%)	194 (66.9%)	290 (100.0%)		

* Mantel-Haenszel Chi-Square

19. Cross-tabulation of class with Q19 (I feel competent to provide oral health prevention counseling to a pregnant woman)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value*
NEWCLASS	D1	22 (27.5%)	27 (33.8%)	16 (20.0%)	15 (18.8%)	80 (27.6%)	MH X2(1)=22.9	<.0001
	D2	6 (8.3%)	24 (33.3%)	28 (38.9%)	14 (19.4%)	72 (24.8%)		
	D3	3 (4.8%)	19 (30.2%)	25 (39.7%)	16 (25.4%)	63 (21.7%)		
	D4	2 (2.7%)	16 (21.3%)	36 (48.0%)	21 (28.0%)	75 (25.9%)		
	Total	33 (11.4%)	86 (29.7%)	105 (36.2%)	66 (22.8%)	290 (100.0%)		

20a. Cross-tabulation of class with Q20a (I am planning to provide a dental home to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	67 (83.8%)	13 (16.3%)	80 (27.6%)	MH X2(1)=2.7	0.0984
	D2	58 (80.6%)	14 (19.4%)	72 (24.8%)		
	D3	55 (87.3%)	8 (12.7%)	63 (21.7%)		
	D4	53 (70.7%)	22 (29.3%)	75 (25.9%)		
	Total	233 (80.3%)	57 (19.7%)	290 (100.0%)		

20b. Cross-tabulation of class with Q20b (I am planning to provide a dental home to the patients 3-5 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	49 (61.3%)	31 (38.8%)	80 (27.6%)	MH X2(1)=0.7	0.4024
	D2	50 (69.4%)	22 (30.6%)	72 (24.8%)		
	D3	49 (77.8%)	14 (22.2%)	63 (21.7%)		
	D4	49 (65.3%)	26 (34.7%)	75 (25.9%)		
	Total	197 (67.9%)	93 (32.1%)	290 (100.0%)		

20c. Cross-tabulation of class with Q20c (I am planning to provide a dental home to the patients 6-11 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	33 (41.3%)	47 (58.8%)	80 (27.6%)	MH X2(1)=0.0	0.8911
	D2	33 (45.8%)	39 (54.2%)	72 (24.8%)		
	D3	29 (46.0%)	34 (54.0%)	63 (21.7%)		
	D4	30 (40.0%)	45 (60.0%)	75 (25.9%)		
	Total	125 (43.1%)	165 (56.9%)	290 (100.0%)		

20d. Cross-tabulation of class with Q20d (I am planning to provide a dental home to the patients 12-17 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	28 (35.0%)	52 (65.0%)	80 (27.6%)	MH X2(1)=4.5	0.0348
	D2	23 (31.9%)	49 (68.1%)	72 (24.8%)		
	D3	15 (23.8%)	48 (76.2%)	63 (21.7%)		
	D4	16 (21.3%)	59 (78.7%)	75 (25.9%)		
	Total	82 (28.3%)	208 (71.7%)	290 (100.0%)		

20e. Cross-tabulation of class with Q20e (I am planning to provide a dental home to the adults)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	6 (7.5%)	74 (92.5%)	80 (27.6%)	MH X2(1)=0.1	0.7048
	D2	12 (16.7%)	60 (83.3%)	72 (24.8%)		
	D3	5 (7.9%)	58 (92.1%)	63 (21.7%)		
	D4	9 (12.0%)	66 (88.0%)	75 (25.9%)		
	Total	32 (11.0%)	258 (89.0%)	290 (100.0%)		

20f. Cross-tabulation of class with Q20f (I am planning to provide a dental home to the elderly)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	26 (32.5%)	54 (67.5%)	80 (27.6%)	MH X2(1)=0.1	0.7452
	D2	35 (48.6%)	37 (51.4%)	72 (24.8%)		
	D3	20 (31.7%)	43 (68.3%)	63 (21.7%)		
	D4	30 (40.0%)	45 (60.0%)	75 (25.9%)		
	Total	111 (38.3%)	179 (61.7%)	290 (100.0%)		

21a. Cross-tabulation of class with Q21a (I am willing to provide caries risk assessment to patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	59 (73.8%)	21 (26.3%)	80 (27.6%)	MH X2(1)=12.1	0.0005
	D2	47 (65.3%)	25 (34.7%)	72 (24.8%)		
	D3	41 (65.1%)	22 (34.9%)	63 (21.7%)		
	D4	34 (45.3%)	41 (54.7%)	75 (25.9%)		
	Total	181 (62.4%)	109 (37.6%)	290 (100.0%)		

* Mantel-Haenszel Chi-Square

21b. Cross-tabulation of class with Q21b (I am willing to provide caries risk assessment to patients 3-5 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value*
NEWCLASS	D1	42 (52.5%)	38 (47.5%)	80 (27.6%)	MH X2(1)=1.2	0.2718
	D2	33 (45.8%)	39 (54.2%)	72 (24.8%)		
	D3	33 (52.4%)	30 (47.6%)	63 (21.7%)		
	D4	31 (41.3%)	44 (58.7%)	75 (25.9%)		
	Total	139 (47.9%)	151 (52.1%)	290 (100.0%)		

21c. Cross-tabulation of class with Q21c (I am willing to provide caries risk assessment to patients 6-11 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	30 (37.5%)	50 (62.5%)	80 (27.6%)	MH X2(1)=2.9	0.0880
	D2	21 (29.2%)	51 (70.8%)	72 (24.8%)		
	D3	19 (30.2%)	44 (69.8%)	63 (21.7%)		
	D4	18 (24.0%)	57 (76.0%)	75 (25.9%)		
	Total	88 (30.3%)	202 (69.7%)	290 (100.0%)		

21d. Cross-tabulation of class with Q21d (I am willing to provide caries risk assessment to patients 12-17 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	19 (23.8%)	61 (76.3%)	80 (27.6%)	MH X2(1)=3.6	0.0586
	D2	14 (19.4%)	58 (80.6%)	72 (24.8%)		
	D3	11 (17.5%)	52 (82.5%)	63 (21.7%)		
	D4	9 (12.0%)	66 (88.0%)	75 (25.9%)		
	Total	53 (18.3%)	237 (81.7%)	290 (100.0%)		

21e. Cross-tabulation of class with Q21e (I am willing to provide caries risk assessment to adults)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	7 (8.9%)	72 (91.1%)	79 (27.3%)	MH X2(1)=0.2	0.6767
	D2	11 (15.3%)	61 (84.7%)	72 (24.9%)		
	D3	4 (6.3%)	59 (93.7%)	63 (21.8%)		
	D4	7 (9.3%)	68 (90.7%)	75 (26.0%)		
	Total	29 (10.0%)	260 (90.0%)	289 (100.0%)		

21f. Cross-tabulation of class with Q21f (I am willing to provide caries risk assessment to the elderly)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	36 (45.0%)	44 (55.0%)	80 (27.6%)	MH X2(1)=6.1	0.0139
	D2	30 (41.7%)	42 (58.3%)	72 (24.8%)		
	D3	17 (27.0%)	46 (73.0%)	63 (21.7%)		
	D4	22 (29.3%)	53 (70.7%)	75 (25.9%)		
	Total	105 (36.2%)	185 (63.8%)	290 (100.0%)		

22a. Cross-tabulation of class with Q22a (I plan to provide prevention counseling to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	47 (58.8%)	33 (41.3%)	80 (27.6%)	MH X2(1)=0.0	0.9673
	D2	49 (68.1%)	23 (31.9%)	72 (24.8%)		
	D3	45 (71.4%)	18 (28.6%)	63 (21.7%)		
	D4	43 (57.3%)	32 (42.7%)	75 (25.9%)		
	Total	184 (63.4%)	106 (36.6%)	290 (100.0%)		

22b. Cross-tabulation of class with Q22b (I plan to provide prevention counseling to the patients 3-5 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	33 (41.3%)	47 (58.8%)	80 (27.6%)	MH X2(1)=0.6	0.4535
	D2	37 (51.4%)	35 (48.6%)	72 (24.8%)		
	D3	37 (58.7%)	26 (41.3%)	63 (21.7%)		
	D4	34 (45.3%)	41 (54.7%)	75 (25.9%)		
	Total	141 (48.6%)	149 (51.4%)	290 (100.0%)		

22c. Cross-tabulation of class with Q22c (I plan to provide prevention counseling to the patients 6-11 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	22 (27.5%)	58 (72.5%)	80 (27.6%)	MH X2(1)=0.9	0.3363
	D2	21 (29.2%)	51 (70.8%)	72 (24.8%)		
	D3	19 (30.2%)	44 (69.8%)	63 (21.7%)		
	D4	15 (20.0%)	60 (80.0%)	75 (25.9%)		
	Total	77 (26.6%)	213 (73.4%)	290 (100.0%)		

* Mantel-Haenszel Chi-Square

22d. Cross-tabulation of class with Q22d (I plan to provide prevention counseling to the patients 12-17 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value*
NEWCLASS	D1	15 (18.8%)	65 (81.3%)	80 (27.6%)	MH X2(1)=0.9	0.3351
	D2	13 (18.1%)	59 (81.9%)	72 (24.8%)		
	D3	10 (15.9%)	53 (84.1%)	63 (21.7%)		
	D4	10 (13.3%)	65 (86.7%)	75 (25.9%)		
	Total	48 (16.6%)	242 (83.4%)	290 (100.0%)		

22e. Cross-tabulation of class with Q22e (I plan to provide prevention counseling to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	9 (11.3%)	71 (88.8%)	80 (27.7%)	MH X2(1)=0.0	0.8896
	D2	8 (11.1%)	64 (88.9%)	72 (24.9%)		
	D3	4 (6.5%)	58 (93.5%)	62 (21.5%)		
	D4	10 (13.3%)	65 (86.7%)	75 (26.0%)		
	Total	31 (10.7%)	258 (89.3%)	289 (100.0%)		

22f. Cross-tabulation of class with Q22f (I plan to provide prevention counseling to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	30 (37.5%)	50 (62.5%)	80 (27.6%)	MH X2(1)=0.2	0.6353
	D2	25 (34.7%)	47 (65.3%)	72 (24.8%)		
	D3	17 (27.0%)	46 (73.0%)	63 (21.7%)		
	D4	27 (36.0%)	48 (64.0%)	75 (25.9%)		
	Total	99 (34.1%)	191 (65.9%)	290 (100.0%)		

23a. Cross-tabulation of class with Q23a (I plan to provide the option of quantitative measure of bacterial challenge to patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	63 (78.8%)	17 (21.3%)	80 (27.6%)	MH X2(1)=0.0	0.9568
	D2	55 (76.4%)	17 (23.6%)	72 (24.8%)		
	D3	52 (82.5%)	11 (17.5%)	63 (21.7%)		
	D4	58 (77.3%)	17 (22.7%)	75 (25.9%)		
	Total	228 (78.6%)	62 (21.4%)	290 (100.0%)		

23b. Cross-tabulation of class with Q23b (I plan to provide the option of quantitative measure of bacterial challenge to patients 3-5 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	50 (62.5%)	30 (37.5%)	80 (27.7%)	MH X2(1)=3.9	0.0482
	D2	49 (68.1%)	23 (31.9%)	72 (24.9%)		
	D3	46 (74.2%)	16 (25.8%)	62 (21.5%)		
	D4	57 (76.0%)	18 (24.0%)	75 (26.0%)		
	Total	202 (69.9%)	87 (30.1%)	289 (100.0%)		

23c. Cross-tabulation of class with Q23c (I plan to provide the option of quantitative measure of bacterial challenge to patients 6-11 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	39 (48.8%)	41 (51.3%)	80 (27.6%)	MH X2(1)=0.4	0.5538
	D2	34 (47.2%)	38 (52.8%)	72 (24.8%)		
	D3	25 (39.7%)	38 (60.3%)	63 (21.7%)		
	D4	42 (56.0%)	33 (44.0%)	75 (25.9%)		
	Total	140 (48.3%)	150 (51.7%)	290 (100.0%)		

23d. Cross-tabulation of class with Q23d (I plan to provide the option of quantitative measure of bacterial challenge to patients 12-17 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	27 (33.8%)	53 (66.3%)	80 (27.6%)	MH X2(1)=0.3	0.5978
	D2	21 (29.2%)	51 (70.8%)	72 (24.8%)		
	D3	14 (22.2%)	49 (77.8%)	63 (21.7%)		
	D4	30 (40.0%)	45 (60.0%)	75 (25.9%)		
	Total	92 (31.7%)	198 (68.3%)	290 (100.0%)		

23e. Cross-tabulation of class with Q23e (I plan to provide the option of quantitative measure of bacterial challenge to adults)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	12 (15.0%)	68 (85.0%)	80 (27.6%)	MH X2(1)=1.5	0.2230
	D2	13 (18.1%)	59 (81.9%)	72 (24.8%)		
	D3	9 (14.3%)	54 (85.7%)	63 (21.7%)		
	D4	18 (24.0%)	57 (76.0%)	75 (25.9%)		
	Total	52 (17.9%)	238 (82.1%)	290 (100.0%)		

* Mantel-Haenszel Chi-Square

23f. Cross-tabulation of class with Q23f (I plan to provide the option of quantitative measure of bacterial challenge to the elderly)

RowVar	Row Val	0	1	Total	Statistic	P-Value*
NEWCLASS	D1	45 (56.3%)	35 (43.8%)	80 (27.6%)	MH X2(1)=1.7	0.1883
	D2	39 (54.2%)	33 (45.8%)	72 (24.8%)		
	D3	28 (44.4%)	35 (55.6%)	63 (21.7%)		
	D4	36 (48.0%)	39 (52.0%)	75 (25.9%)		
	Total	148 (51.0%)	142 (49.0%)	290 (100.0%)		

24a. Cross-tabulation of class with Q24a (I would rather refer dental care for patients who are 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	37 (46.3%)	43 (53.8%)	80 (27.6%)	MH X2(1)=3.1	0.0781
	D2	31 (43.1%)	41 (56.9%)	72 (24.8%)		
	D3	18 (28.6%)	45 (71.4%)	63 (21.7%)		
	D4	27 (36.0%)	48 (64.0%)	75 (25.9%)		
	Total	113 (39.0%)	177 (61.0%)	290 (100.0%)		

24b. Cross-tabulation of class with Q24b (I would rather refer dental care for patients who are 3-5 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	46 (57.5%)	34 (42.5%)	80 (27.6%)	MH X2(1)=1.7	0.1986
	D2	34 (47.2%)	38 (52.8%)	72 (24.8%)		
	D3	27 (42.9%)	36 (57.1%)	63 (21.7%)		
	D4	36 (48.0%)	39 (52.0%)	75 (25.9%)		
	Total	143 (49.3%)	147 (50.7%)	290 (100.0%)		

24c. Cross-tabulation of class with Q24c (I would rather refer dental care for patients who are 6-11 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	64 (80.0%)	16 (20.0%)	80 (27.6%)	MH X2(1)=0.0	0.8517
	D2	58 (80.6%)	14 (19.4%)	72 (24.8%)		
	D3	48 (76.2%)	15 (23.8%)	63 (21.7%)		
	D4	60 (80.0%)	15 (20.0%)	75 (25.9%)		
	Total	230 (79.3%)	60 (20.7%)	290 (100.0%)		

24d. Cross-tabulation of class with Q24d (I would rather refer dental care for patients who are 12-17 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	68 (85.0%)	12 (15.0%)	80 (27.6%)	MH X2(1)=2.2	0.1418
	D2	62 (86.1%)	10 (13.9%)	72 (24.8%)		
	D3	59 (93.7%)	4 (6.3%)	63 (21.7%)		
	D4	68 (90.7%)	7 (9.3%)	75 (25.9%)		
	Total	257 (88.6%)	33 (11.4%)	290 (100.0%)		

24e. Cross-tabulation of class with Q24e (I would rather refer dental care for patients who are adults)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	56 (70.0%)	24 (30.0%)	80 (27.6%)	MH X2(1)=2.7	0.1001
	D2	55 (76.4%)	17 (23.6%)	72 (24.8%)		
	D3	57 (90.5%)	6 (9.5%)	63 (21.7%)		
	D4	58 (77.3%)	17 (22.7%)	75 (25.9%)		
	Total	226 (77.9%)	64 (22.1%)	290 (100.0%)		

24f. Cross-tabulation of class with Q24f (I would rather refer dental care for elderly patients)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	D1	55 (68.8%)	25 (31.3%)	80 (27.6%)	MH X2(1)=0.1	0.8016
	D2	47 (65.3%)	25 (34.7%)	72 (24.8%)		
	D3	47 (74.6%)	16 (25.4%)	63 (21.7%)		
	D4	51 (68.0%)	24 (32.0%)	75 (25.9%)		
	Total	200 (69.0%)	90 (31.0%)	290 (100.0%)		

* Mantel-Haenszel Chi-Square

TABLE 4. CROSS-TABULATION BY CLASS VALUES for ID3 and ID4 classes

13a. Cross-tabulation of class with Q13a (Caries risk assessment is important for patients who are less than 5 yrs)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value*
NEWCLASS	ID3	1 (4.2%)	2 (8.3%)	8 (33.3%)	13 (54.2%)	24 (58.5%)	MH X2(1)=0.9	0.3323
	ID4	0 (0.0%)	5 (29.4%)	5 (29.4%)	7 (41.2%)	17 (41.5%)		
	Total	1 (2.4%)	7 (17.1%)	13 (31.7%)	20 (48.8%)	41 (100.0%)		

13b. Cross-tabulation of class with Q13b (Caries risk assessment is important for patients who are 6-11 yrs of age)

RowVar	Row Val	1	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	4 (16.7%)	19 (79.2%)	24 (58.5%)	MH X2(1)=0.1	0.7641
	ID4	0 (0.0%)	4 (23.5%)	13 (76.5%)	17 (41.5%)		
	Total	1 (2.4%)	8 (19.5%)	32 (78.0%)	41 (100.0%)		

13c. Cross-tabulation of class with Q13c (Caries risk assessment is important for patients who 12-17 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	0 (0.0%)	7 (29.2%)	16 (66.7%)	24 (58.5%)	MH X2(1)=0.3	0.5590
	ID4	0 (0.0%)	1 (5.9%)	3 (17.6%)	13 (76.5%)	17 (41.5%)		
	Total	1 (2.4%)	1 (2.4%)	10 (24.4%)	29 (70.7%)	41 (100.0%)		

13d. Cross-tabulation of class with Q13d (Caries risk assessment is important for patients who are adults)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	0 (0.0%)	9 (37.5%)	14 (58.3%)	24 (57.1%)	MH X2(1)=0.0	1.0000
	ID4	1 (5.6%)	1 (5.6%)	4 (22.2%)	12 (66.7%)	18 (42.9%)		
	Total	2 (4.8%)	1 (2.4%)	13 (31.0%)	26 (61.9%)	42 (100.0%)		

14a. Cross-tabulation of class with Q14a (I feel competent assessing caries risk for patients who less than 5 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	10 (41.7%)	9 (37.5%)	4 (16.7%)	24 (57.1%)	MH X2(1)=2.5	0.1161
	ID4	0 (0.0%)	4 (22.2%)	9 (50.0%)	5 (27.8%)	18 (42.9%)		
	Total	1 (2.4%)	14 (33.3%)	18 (42.9%)	9 (21.4%)	42 (100.0%)		

14b. Cross-tabulation of class with Q14b (I feel competent assessing caries risk for patients who are 6-11 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	2 (8.3%)	6 (25.0%)	8 (33.3%)	8 (33.3%)	24 (58.5%)	MH X2(1)=2.4	0.1216
	ID4	0 (0.0%)	2 (11.8%)	7 (41.2%)	8 (47.1%)	17 (41.5%)		
	Total	2 (4.9%)	8 (19.5%)	15 (36.6%)	16 (39.0%)	41 (100.0%)		

14c. Cross-tabulation of class with Q14c (I feel competent assessing caries risk for patients who are 12-17 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	2 (8.3%)	5 (20.8%)	10 (41.7%)	7 (29.2%)	24 (58.5%)	MH X2(1)=6.3	0.0120
	ID4	0 (0.0%)	0 (0.0%)	7 (41.2%)	10 (58.8%)	17 (41.5%)		
	Total	2 (4.9%)	5 (12.2%)	17 (41.5%)	17 (41.5%)	41 (100.0%)		

14d. Cross-tabulation of class with Q14d (I feel competent assessing caries risk for patients who are adults)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	2 (8.3%)	5 (20.8%)	9 (37.5%)	8 (33.3%)	24 (58.5%)	MH X2(1)=6.4	0.0115
	ID4	0 (0.0%)	0 (0.0%)	6 (35.3%)	11 (64.7%)	17 (41.5%)		
	Total	2 (4.9%)	5 (12.2%)	15 (36.6%)	19 (46.3%)	41 (100.0%)		

15a. Cross-tabulation of class with Q15a (I feel competent in making appropriate recommendations based on caries risk assessment on individuals less than 5 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	9 (37.5%)	10 (41.7%)	4 (16.7%)	24 (57.1%)	MH X2(1)=4.2	0.0414
	ID4	0 (0.0%)	3 (16.7%)	8 (44.4%)	7 (38.9%)	18 (42.9%)		
	Total	1 (2.4%)	12 (28.6%)	18 (42.9%)	11 (26.2%)	42 (100.0%)		

15b. Cross-tabulation of class with Q15b (I feel competent in making appropriate recommendations based on caries risk assessment on individuals 6-11 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	5 (20.8%)	10 (41.7%)	8 (33.3%)	24 (58.5%)	MH X2(1)=1.6	0.2031
	ID4	0 (0.0%)	1 (5.9%)	9 (52.9%)	7 (41.2%)	17 (41.5%)		
	Total	1 (2.4%)	6 (14.6%)	19 (46.3%)	15 (36.6%)	41 (100.0%)		

* Mantel-Haenszel Chi-Square

15c. Cross-tabulation of class with Q15c (I feel competent in making appropriate recommendations based on caries risk assessment on individuals 12-17 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value*
NEWCLASS	ID3	1 (4.2%)	4 (16.7%)	11 (45.8%)	8 (33.3%)	24 (58.5%)	MH X2(1)=2.8	0.0961
	ID4	0 (0.0%)	0 (0.0%)	9 (52.9%)	8 (47.1%)	17 (41.5%)		
	Total	1 (2.4%)	4 (9.8%)	20 (48.8%)	16 (39.0%)	41 (100.0%)		

15d. Cross-tabulation of class with Q15d (I feel competent in making appropriate recommendations based on caries risk assessment on adults)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	4 (16.7%)	12 (50.0%)	7 (29.2%)	24 (58.5%)	MH X2(1)=3.5	0.0620
	ID4	0 (0.0%)	0 (0.0%)	9 (52.9%)	8 (47.1%)	17 (41.5%)		
	Total	1 (2.4%)	4 (9.8%)	21 (51.2%)	15 (36.6%)	41 (100.0%)		

16a. Cross-tabulation of class with Q16a (When I find an individual who is at high risk for caries, it is important to offer the patient a bacterial test, if they are less than 5 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	3 (12.5%)	6 (25.0%)	10 (41.7%)	5 (20.8%)	24 (60.0%)	MH X2(1)=0.0	0.9452
	ID4	2 (12.5%)	4 (25.0%)	7 (43.8%)	3 (18.8%)	16 (40.0%)		
	Total	5 (12.5%)	10 (25.0%)	17 (42.5%)	8 (20.0%)	40 (100.0%)		

16b. Cross-tabulation of class with Q16b (When I find an individual who is at high risk for caries, it is important to offer the patient a bacterial test, if they are 6-11 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	2 (8.3%)	3 (12.5%)	12 (50.0%)	7 (29.2%)	24 (58.5%)	MH X2(1)=0.2	0.6869
	ID4	2 (11.8%)	1 (5.9%)	7 (41.2%)	7 (41.2%)	17 (41.5%)		
	Total	4 (9.8%)	4 (9.8%)	19 (46.3%)	14 (34.1%)	41 (100.0%)		

16c. Cross-tabulation of class with Q16c (When I find an individual who is at high risk for caries, it is important to offer the patient a bacterial test, if they are 12-17 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	2 (8.3%)	13 (54.2%)	8 (33.3%)	24 (58.5%)	MH X2(1)=1.3	0.2559
	ID4	1 (5.9%)	2 (11.8%)	2 (11.8%)	12 (70.6%)	17 (41.5%)		
	Total	2 (4.9%)	4 (9.8%)	15 (36.6%)	20 (48.8%)	41 (100.0%)		

16d. Cross-tabulation of class with Q16d (When I find an individual who is at high risk for caries, it is important to offer the patient a bacterial test, if they are adults)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	1 (4.2%)	14 (58.3%)	8 (33.3%)	24 (58.5%)	MH X2(1)=6.1	0.0133
	ID4	0 (0.0%)	1 (5.9%)	2 (11.8%)	14 (82.4%)	17 (41.5%)		
	Total	1 (2.4%)	2 (4.9%)	16 (39.0%)	22 (53.7%)	41 (100.0%)		

17a. Cross-tabulation of class with Q17a (I feel competent to provide prevention counseling to patients who are less than 5 yrs)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	3 (12.5%)	7 (29.2%)	9 (37.5%)	5 (20.8%)	24 (58.5%)	MH X2(1)=0.3	0.6119
	ID4	2 (11.8%)	4 (23.5%)	6 (35.3%)	5 (29.4%)	17 (41.5%)		
	Total	5 (12.2%)	11 (26.8%)	15 (36.6%)	10 (24.4%)	41 (100.0%)		

17b. Cross-tabulation of class with Q17b (I feel competent to provide prevention counseling to patients who are 6-11 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	3 (12.5%)	11 (45.8%)	9 (37.5%)	24 (58.5%)	MH X2(1)=1.6	0.2010
	ID4	0 (0.0%)	1 (5.9%)	7 (41.2%)	9 (52.9%)	17 (41.5%)		
	Total	1 (2.4%)	4 (9.8%)	18 (43.9%)	18 (43.9%)	41 (100.0%)		

17c. Cross-tabulation of class with Q17c (I feel competent to provide prevention counseling to patients who are 12-17 yrs of age)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	0 (0.0%)	11 (45.8%)	12 (50.0%)	24 (57.1%)	MH X2(1)=1.4	0.2323
	ID4	0 (0.0%)	1 (5.6%)	4 (22.2%)	13 (72.2%)	18 (42.9%)		
	Total	1 (2.4%)	1 (2.4%)	15 (35.7%)	25 (59.5%)	42 (100.0%)		

* Mantel-Haenszel Chi-Square

17d. Cross-tabulation of class with Q17d (I feel competent to provide prevention counseling to patients who are adults)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value*
NEWCLASS	ID3	1 (4.2%)	1 (4.2%)	9 (37.5%)	13 (54.2%)	24 (58.5%)	MH X2(1)=3.7	0.0554
	ID4	0 (0.0%)	0 (0.0%)	3 (17.6%)	14 (82.4%)	17 (41.5%)		
	Total	1 (2.4%)	1 (2.4%)	12 (29.3%)	27 (65.9%)	41 (100.0%)		

18. Cross-tabulation of class with Q18 (I feel prevention counseling is an important service that I can provide for patients)

RowVar	Row Val	1	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	4 (16.7%)	19 (79.2%)	24 (57.1%)	MH X2(1)=0.1	0.7043
	ID4	0 (0.0%)	4 (22.2%)	14 (77.8%)	18 (42.9%)		
	Total	1 (2.4%)	8 (19.0%)	33 (78.6%)	42 (100.0%)		

19. Cross-tabulation of class with Q19 (I feel competent to provide oral health prevention counseling to a pregnant woman)

RowVar	Row Val	1	2	3	4	Total	Statistic	P-Value
NEWCLASS	ID3	1 (4.2%)	3 (12.5%)	11 (45.8%)	9 (37.5%)	24 (57.1%)	MH X2(1)=3.5	0.0605
	ID4	0 (0.0%)	1 (5.6%)	5 (27.8%)	12 (66.7%)	18 (42.9%)		
	Total	1 (2.4%)	4 (9.5%)	16 (38.1%)	21 (50.0%)	42 (100.0%)		

20a. Cross-tabulation of class with Q20a (I am planning to provide a dental home to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	23 (95.8%)	1 (4.2%)	24 (57.1%)	MH X2(1)=3.1	0.0773
	ID4	14 (77.8%)	4 (22.2%)	18 (42.9%)		
	Total	37 (88.1%)	5 (11.9%)	42 (100.0%)		

20b. Cross-tabulation of class with Q20b (I am planning to provide a dental home to the patients 3-5 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	19 (79.2%)	5 (20.8%)	24 (57.1%)	MH X2(1)=0.0	0.9146
	ID4	14 (77.8%)	4 (22.2%)	18 (42.9%)		
	Total	33 (78.6%)	9 (21.4%)	42 (100.0%)		

20c. Cross-tabulation of class with Q20c (I am planning to provide a dental home to the patients 6-11 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	17 (70.8%)	7 (29.2%)	24 (57.1%)	MH X2(1)=0.3	0.6167
	ID4	14 (77.8%)	4 (22.2%)	18 (42.9%)		
	Total	31 (73.8%)	11 (26.2%)	42 (100.0%)		

20d. Cross-tabulation of class with Q20d (I am planning to provide a dental home to the patients 12-17 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	13 (54.2%)	11 (45.8%)	24 (57.1%)	MH X2(1)=1.8	0.1847
	ID4	6 (33.3%)	12 (66.7%)	18 (42.9%)		
	Total	19 (45.2%)	23 (54.8%)	42 (100.0%)		

20e. Cross-tabulation of class with Q20e (I am planning to provide a dental home to adults)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	4 (16.7%)	20 (83.3%)	24 (57.1%)	MH X2(1)=0.0	1.0000
	ID4	3 (16.7%)	15 (83.3%)	18 (42.9%)		
	Total	7 (16.7%)	35 (83.3%)	42 (100.0%)		

20f. Cross-tabulation of class with Q20f (I am planning to provide a dental home to the elderly)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	20 (83.3%)	4 (16.7%)	24 (57.1%)	MH X2(1)=2.6	0.1093
	ID4	11 (61.1%)	7 (38.9%)	18 (42.9%)		
	Total	31 (73.8%)	11 (26.2%)	42 (100.0%)		

21a. Cross-tabulation of class with Q21a (I am willing to provide caries risk assessment to patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	20 (83.3%)	4 (16.7%)	24 (57.1%)	MH X2(1)=0.0	1.0000
	ID4	15 (83.3%)	3 (16.7%)	18 (42.9%)		
	Total	35 (83.3%)	7 (16.7%)	42 (100.0%)		

* Mantel-Haenszel Chi-Square

21b. Cross-tabulation of class with Q21b (I am willing to provide caries risk assessment to patients 3-5 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value*
NEWCLASS	ID3	18 (75.0%)	6 (25.0%)	24 (57.1%)	MH X2(1)=0.0	0.8363
	ID4	14 (77.8%)	4 (22.2%)	18 (42.9%)		
	Total	32 (76.2%)	10 (23.8%)	42 (100.0%)		

21c. Cross-tabulation of class with Q21c (I am willing to provide caries risk assessment to patients 6-11 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	11 (45.8%)	13 (54.2%)	24 (57.1%)	MH X2(1)=0.9	0.3324
	ID4	11 (61.1%)	7 (38.9%)	18 (42.9%)		
	Total	22 (52.4%)	20 (47.6%)	42 (100.0%)		

21d. Cross-tabulation of class with Q21d (I am willing to provide caries risk assessment to patients 12-17 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	11 (45.8%)	13 (54.2%)	24 (57.1%)	MH X2(1)=1.4	0.2387
	ID4	5 (27.8%)	13 (72.2%)	18 (42.9%)		
	Total	16 (38.1%)	26 (61.9%)	42 (100.0%)		

21e. Cross-tabulation of class with Q21e (I am willing to provide caries risk assessment to adults)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	3 (13.0%)	20 (87.0%)	23 (56.1%)	MH X2(1)=0.6	0.4439
	ID4	4 (22.2%)	14 (77.8%)	18 (43.9%)		
	Total	7 (17.1%)	34 (82.9%)	41 (100.0%)		

21f. Cross-tabulation of class with Q21f (I am willing to provide caries risk assessment to elderly patients)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	16 (66.7%)	8 (33.3%)	24 (57.1%)	MH X2(1)=1.2	0.2820
	ID4	9 (50.0%)	9 (50.0%)	18 (42.9%)		
	Total	25 (59.5%)	17 (40.5%)	42 (100.0%)		

22a. Cross-tabulation of class with Q22a (I plan to provide prevention counseling to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	20 (83.3%)	4 (16.7%)	24 (57.1%)	MH X2(1)=0.0	1.0000
	ID4	15 (83.3%)	3 (16.7%)	18 (42.9%)		
	Total	35 (83.3%)	7 (16.7%)	42 (100.0%)		

22b. Cross-tabulation of class with Q22b (I plan to provide prevention counseling to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	17 (70.8%)	7 (29.2%)	24 (57.1%)	MH X2(1)=0.3	0.6167
	ID4	14 (77.8%)	4 (22.2%)	18 (42.9%)		
	Total	31 (73.8%)	11 (26.2%)	42 (100.0%)		

22c. Cross-tabulation of class with Q22c (I plan to provide prevention counseling to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	10 (41.7%)	14 (58.3%)	24 (57.1%)	MH X2(1)=0.3	0.5957
	ID4	9 (50.0%)	9 (50.0%)	18 (42.9%)		
	Total	19 (45.2%)	23 (54.8%)	42 (100.0%)		

22d. Cross-tabulation of class with Q22d (I plan to provide prevention counseling to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	9 (37.5%)	15 (62.5%)	24 (57.1%)	MH X2(1)=1.1	0.2950
	ID4	4 (22.2%)	14 (77.8%)	18 (42.9%)		
	Total	13 (31.0%)	29 (69.0%)	42 (100.0%)		

22e. Cross-tabulation of class with Q22e (I plan to provide prevention counseling to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	5 (20.8%)	19 (79.2%)	24 (57.1%)	MH X2(1)=0.0	0.9146
	ID4	4 (22.2%)	14 (77.8%)	18 (42.9%)		
	Total	9 (21.4%)	33 (78.6%)	42 (100.0%)		

* Mantel-Haenszel Chi-Square

22f. Cross-tabulation of class with Q22f (I plan to provide prevention counseling to the patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value*
NEWCLASS	ID3	17 (70.8%)	7 (29.2%)	24 (57.1%)	MH X2(1)=1.8	0.1740
	ID4	9 (50.0%)	9 (50.0%)	18 (42.9%)		
	Total	26 (61.9%)	16 (38.1%)	42 (100.0%)		

23a. Cross-tabulation of class with Q23a (I plan to provide the option of quantitative measure of bacterial challenge to patients 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	23 (95.8%)	1 (4.2%)	24 (57.1%)	MH X2(1)=0.0	0.8363
	ID4	17 (94.4%)	1 (5.6%)	18 (42.9%)		
	Total	40 (95.2%)	2 (4.8%)	42 (100.0%)		

23b. Cross-tabulation of class with Q23b (I plan to provide the option of quantitative measure of bacterial challenge to patients 3-5 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	22 (91.7%)	2 (8.3%)	24 (57.1%)	MH X2(1)=0.1	0.7643
	ID4	16 (88.9%)	2 (11.1%)	18 (42.9%)		
	Total	38 (90.5%)	4 (9.5%)	42 (100.0%)		

23c. Cross-tabulation of class with Q23c (I plan to provide the option of quantitative measure of bacterial challenge to patients 6-11 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	14 (58.3%)	10 (41.7%)	24 (57.1%)	MH X2(1)=0.0	0.8577
	ID4	11 (61.1%)	7 (38.9%)	18 (42.9%)		
	Total	25 (59.5%)	17 (40.5%)	42 (100.0%)		

23d. Cross-tabulation of class with Q23d (I plan to provide the option of quantitative measure of bacterial challenge to patients 12-17 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	12 (50.0%)	12 (50.0%)	24 (57.1%)	MH X2(1)=0.1	0.7245
	ID4	8 (44.4%)	10 (55.6%)	18 (42.9%)		
	Total	20 (47.6%)	22 (52.4%)	42 (100.0%)		

23e. Cross-tabulation of class with Q23e (I plan to provide the option of quantitative measure of bacterial challenge to adults)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	6 (25.0%)	18 (75.0%)	24 (57.1%)	MH X2(1)=0.4	0.5199
	ID4	3 (16.7%)	15 (83.3%)	18 (42.9%)		
	Total	9 (21.4%)	33 (78.6%)	42 (100.0%)		

23f. Cross-tabulation of class with Q23f (I plan to provide the option of quantitative measure of bacterial challenge to the elderly)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	20 (83.3%)	4 (16.7%)	24 (57.1%)	MH X2(1)=0.7	0.3909
	ID4	13 (72.2%)	5 (27.8%)	18 (42.9%)		
	Total	33 (78.6%)	9 (21.4%)	42 (100.0%)		

24a. Cross-tabulation of class with Q24a (I would rather refer dental care for patients who are 1-2 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	11 (45.8%)	13 (54.2%)	24 (57.1%)	MH X2(1)=0.7	0.4197
	ID4	6 (33.3%)	12 (66.7%)	18 (42.9%)		
	Total	17 (40.5%)	25 (59.5%)	42 (100.0%)		

24b. Cross-tabulation of class with Q24b (I would rather refer dental care for patients who are 3-5 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	19 (79.2%)	5 (20.8%)	24 (57.1%)	MH X2(1)=2.6	0.1056
	ID4	10 (55.6%)	8 (44.4%)	18 (42.9%)		
	Total	29 (69.0%)	13 (31.0%)	42 (100.0%)		

* Mantel-Haenszel Chi-Square

24c. Cross-tabulation of class with Q24c. (I would rather refer dental care for patients who are 6-11 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value*
NEWCLASS	ID3	20 (83.3%)	4 (16.7%)	24 (57.1%)	MH X2(1)=0.2	0.6539
	ID4	14 (77.8%)	4 (22.2%)	18 (42.9%)		
	Total	34 (81.0%)	8 (19.0%)	42 (100.0%)		

24d. Cross-tabulation of class with Q24d (I would rather refer dental care for patients who are 12-17 yrs of age)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	22 (91.7%)	2 (8.3%)	24 (57.1%)	MH X2(1)=0.7	0.4148
	ID4	15 (83.3%)	3 (16.7%)	18 (42.9%)		
	Total	37 (88.1%)	5 (11.9%)	42 (100.0%)		

24e. Cross-tabulation of class with Q24e (I would rather refer dental care for patients who are adults)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	16 (66.7%)	8 (33.3%)	24 (57.1%)	MH X2(1)=1.4	0.2297
	ID4	15 (83.3%)	3 (16.7%)	18 (42.9%)		
	Total	31 (73.8%)	11 (26.2%)	42 (100.0%)		

24f. Cross-tabulation of class with Q24f (I would rather refer dental care for elderly patients)

RowVar	Row Val	0	1	Total	Statistic	P-Value
NEWCLASS	ID3	22 (91.7%)	2 (8.3%)	24 (57.1%)	MH X2(1)=1.6	0.2085
	ID4	14 (77.8%)	4 (22.2%)	18 (42.9%)		
	Total	36 (85.7%)	6 (14.3%)	42 (100.0%)		

* Mantel-Haenszel Chi-Square

Table 5. Univariate summary statistics of the difference between adults versus each of the three child age ranges by D1 vs D4 for Q13-Q17.

Variable	New class	N	Mean	Median	SD	Median 95% CI Lower	Median 95% CI Upper	Min	Max	Mann-Whitney P-Value
DIFF_Q13DA	D1	79	0.3	0.0	1.0	0.0	0.0	-2.0	3.0	0.0814
	D4	75	0.0	0.0	0.7	0.0	0.0	-2.0	3.0	
	.									
DIFF_Q13DB	D1	80	-0.1	0.0	0.8	0.0	0.0	-2.0	3.0	0.7816
	D4	75	-0.1	0.0	0.5	0.0	0.0	-2.0	1.0	
	.									
DIFF_Q13DC	D1	80	-0.1	0.0	0.7	0.0	0.0	-2.0	3.0	0.4435
	D4	75	-0.2	0.0	0.5	0.0	0.0	-2.0	1.0	
	.									
DIFF_Q14DA	D1	80	0.1	0.0	0.5	0.0	0.0	-1.0	2.0	<.0001
	D4	74	0.7	0.5	0.7	0.0	1.0	0.0	2.0	
	.									
DIFF_Q14DB	D1	80	0.1	0.0	0.4	0.0	0.0	-1.0	2.0	<.0001
	D4	75	0.4	0.0	0.6	0.0	1.0	0.0	2.0	
	.									
DIFF_Q14DC	D1	80	0.0	0.0	0.1	0.0	0.0	0.0	1.0	0.0826
	D4	75	0.1	0.0	0.3	0.0	0.0	0.0	1.0	
	.									
DIFF_Q15DA	D1	80	0.1	0.0	0.4	0.0	0.0	-1.0	2.0	<.0001
	D4	75	0.5	0.0	0.8	0.0	0.0	0.0	3.0	
	.									
DIFF_Q15DB	D1	80	0.0	0.0	0.3	0.0	0.0	-1.0	1.0	0.0007
	D4	75	0.3	0.0	0.6	0.0	0.0	0.0	2.0	
	.									
DIFF_Q15DC	D1	80	-0.0	0.0	0.1	0.0	0.0	-1.0	0.0	0.0426
	D4	75	0.0	0.0	0.2	0.0	0.0	0.0	1.0	
	.									
DIFF_Q16DA	D1	80	0.4	0.0	0.8	0.0	0.0	-2.0	2.0	0.0402
	D4	75	0.6	0.0	0.8	0.0	1.0	-1.0	3.0	
	.									
DIFF_Q16DB	D1	80	0.2	0.0	0.7	0.0	0.0	-2.0	2.0	0.0407
	D4	75	0.4	0.0	0.7	0.0	0.0	-1.0	2.0	

Variable	New class	N	Mean	Median	SD	Median 95% CI Lower	Median 95% CI Upper	Min	Max	Mann-Whitney P-Value
	.									
DIFF_Q16DC	D1	80	0.0	0.0	0.3	0.0	0.0	-1.0	1.0	0.1688
	D4	75	0.1	0.0	0.4	0.0	0.0	-1.0	1.0	
	.									
DIFF_Q17DA	D1	80	0.3	0.0	0.7	0.0	0.0	-2.0	3.0	0.0406
	D4	75	0.5	0.0	0.8	0.0	1.0	-1.0	3.0	
	.									
DIFF_Q17DB	D1	80	0.1	0.0	0.5	0.0	0.0	-2.0	2.0	0.0097
	D4	75	0.3	0.0	0.6	0.0	0.0	-1.0	2.0	
	.									
DIFF_Q17DC	D1	80	-0.0	0.0	0.3	0.0	0.0	-1.0	1.0	0.7164
	D4	75	0.0	0.0	0.2	0.0	0.0	-1.0	1.0	
	.									

Table 6. Univariate summary statistics of the difference between adults versus each of the three child age ranges by ID3 vs ID4 for Q13-Q17.

Variable	New class	N	Mean	Median	SD	Median 95% CI Lower	Median 95% CI Upper	Min	Max	Mann-Whitney P-Value
DIFF_Q13DA	ID3	24	0.1	0.0	0.7	0.0	0.0	-1.0	2.0	0.2118
	ID4	17	0.4	0.0	1.3	0.0	1.0	-3.0	2.0	
	.									
DIFF_Q13DB	ID3	24	-0.2	0.0	0.4	0.0	0.0	-1.0	0.0	0.7200
	ID4	17	-0.2	0.0	0.9	0.0	0.0	-3.0	1.0	
	.									
DIFF_Q13DC	ID3	24	-0.1	0.0	0.3	0.0	0.0	-1.0	0.0	0.4296
	ID4	17	-0.2	0.0	0.5	0.0	0.0	-1.0	1.0	
	.									
DIFF_Q14DA	ID3	24	0.3	0.0	0.6	0.0	1.0	-1.0	2.0	0.1833
	ID4	17	0.6	0.0	0.7	0.0	1.0	0.0	2.0	
	.									
DIFF_Q14DB	ID3	24	0.0	0.0	0.4	0.0	0.0	-1.0	1.0	0.0623
	ID4	17	0.3	0.0	0.5	0.0	1.0	0.0	1.0	
	.									
DIFF_Q14DC	ID3	24	0.0	0.0	0.2	0.0	0.0	0.0	1.0	0.8315
	ID4	17	0.1	0.0	0.2	0.0	0.0	0.0	1.0	
	.									
DIFF_Q15DA	ID3	24	0.3	0.0	0.6	0.0	1.0	-1.0	2.0	0.5479
	ID4	17	0.2	0.0	0.7	0.0	0.0	-1.0	2.0	
	.									
DIFF_Q15DB	ID3	24	0.0	0.0	0.3	0.0	0.0	-1.0	1.0	0.2473
	ID4	17	0.1	0.0	0.3	0.0	0.0	0.0	1.0	
	.									
DIFF_Q15DC	ID3	24	-0.0	0.0	0.2	0.0	0.0	-1.0	0.0	0.4283
	ID4	17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	.									
DIFF_Q16DA	ID3	24	0.5	0.0	0.9	0.0	1.0	0.0	3.0	0.0428
	ID4	15	1.1	1.0	1.0	0.0	2.0	0.0	3.0	
	.									
DIFF_Q16DB	ID3	24	0.2	0.0	0.6	0.0	0.0	-1.0	2.0	0.0912
	ID4	16	0.7	0.0	1.0	0.0	1.0	0.0	3.0	

Variable	New class	N	Mean	Median	SD	Median 95% CI Lower	Median 95% CI Upper	Min	Max	Mann-Whitney P-Value
	.									
DIFF_Q16DC	ID3	24	0.0	0.0	0.4	0.0	0.0	-1.0	1.0	0.2132
	ID4	16	0.4	0.0	0.9	0.0	0.0	0.0	3.0	
	.									
DIFF_Q17DA	ID3	24	0.8	0.5	1.0	0.0	1.0	-1.0	3.0	0.3992
	ID4	17	1.0	1.0	1.0	0.0	1.0	0.0	3.0	
	.									
DIFF_Q17DB	ID3	24	0.3	0.0	0.7	0.0	0.0	-1.0	2.0	0.3442
	ID4	17	0.4	0.0	0.5	0.0	1.0	0.0	1.0	
	.									
DIFF_Q17DC	ID3	24	0.0	0.0	0.3	0.0	0.0	-1.0	1.0	0.2473
	ID4	17	0.1	0.0	0.3	0.0	0.0	0.0	1.0	
	.									

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