

## Identifying Barriers to Receiving Preventive Dental Services: Expanding Access to Preventive Dental Hygiene Services Through Affiliated Practice

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### Introduction

Achieving good oral health is dependent on understanding the importance of oral hygiene and following through with preventive oral health maintenance. However, geographic, economic and political factors also contribute to oral health status. Lack of access to oral health care affects many U.S. populations. More than half of American preschool children ages 2 through 5 have never been to a dentist.<sup>1</sup> In 2000, the Surgeon General's Report on Oral Health in America called for action to specifically address oral health care needs and disparities within the U.S.<sup>2</sup> Improving the oral health status of the U.S. population is a significant challenge to policymakers, health officials, dental educators and providers. One way to expand preventive dental services to underserved populations is by allowing registered dental hygienists to provide services in underserved communities without requiring the direct supervision of a licensed dentist.

In the spring of 2004, Arizona Governor Janet Napolitano signed HB 2194 into law, which created a new opportunity for children to access preventive dental services. This law allows dentists and dental hygienists to work in collaboration to increase access to preventive dental services through a non-traditional model called an affiliated practice relationship (APR). Later, in 2009, the age restriction for patients was lifted to allow all qualifying patients of any age (children, adults and seniors) to access preventive dental services from an affiliated practice dental hygienist.

A traditional dental service delivery model con-

### Abstract

**Purpose:** Minority children and children from lower income families are more likely to experience the burden of oral disease. Since oral disease reduces quality of life, it is a priority to utilize preventive dental services. The research questions ask if affiliated practice increases utilization of preventive dental services by underserved children from birth to 18 years of age, and what the barriers to receiving preventive dental services are and their level of importance.

**Methods:** A survey was administered to parents/guardians of patients from birth to 18 years of age who received preventive dental services from Catholic Healthcare West East Valley Children's Dental Clinic, an affiliated practice dental clinic in Chandler, Arizona. Thirty-four surveys were completed: 21 completed in English and 13 completed in Spanish. The data was analyzed to provide descriptive statistics and non-parametrically analyzed using the Friedman's, Kendall's W and Wilcoxon Signed Ranks Tests.

**Results:** The cost of preventive dental services is more important to this population than both convenience of appointment time and distance traveled. As the cost increases for preventive dental services, this population will utilize preventive dental services less frequently.

**Conclusion:** The study indicated that the increase of self-reported utilization of preventive dental services by underserved children, ranging in age from birth to 18 years old, in Arizona affiliated practice dental clinics, was primarily impacted by perceived reduced costs of receiving care. Funding efforts, reimbursement mechanisms and legislative policies should support this dental care delivery model to provide care to underserved children, adults and seniors throughout the U.S.

**Keywords:** Dental health services, health care disparities, oral hygiene, delivery of health care, health service accessibility, health care facilities, manpower, services, preventive dentistry

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sists of a dentist providing direct or general supervision of a dental hygienist and requires that a dentist examine patients before treatment is provided by a dental hygienist. The uniqueness of APR is that registered dental hygienists can provide care

in community-based settings without an exam by a dentist beforehand.<sup>3</sup> The Arizona Department of Health Services reports that APR allows greater access to preventive care for underserved patients at convenient locations and early referral for restorative services.<sup>3</sup> Preventive dental services that can be delivered in an APR include examination of the oral cavity, referrals, radiographs, fluoride treatments, prophylaxis, scaling, periodontal examination, dental sealants and oral health education. The Arizona Legislature and Arizona Board of Dental Examiners explain that persons who qualify to receive these preventive dental services from an affiliated practice dental hygienist must be one of the following:

- Enrolled in a federal, state, county or local health care program
- Participating in the national school meal program
- From a family with a household income that is less than 200% of the federal poverty guidelines<sup>4</sup>

A licensed dentist must see the patients within 12 months of initial treatment by the affiliated practice dental hygienist, before the dental hygienist can provide further treatment beyond the 1 year timeframe. As of April 19, 2011 there were only 42 affiliated practice dental hygienists in Arizona, therefore, few studies have been completed on affiliated practice dental hygiene as data is being gathered in other APR settings.

The research questions addressed in this study are:

- "What are the participant's perceptions of the utilization of preventive dental services by underserved children from birth to 18 years of age in affiliated practice given hypothetical costs?"
- "What are the barriers and the level of importance of these barriers that impede underserved populations from receiving preventive dental services?"

### **Burden of Dental Disease**

Good oral health is important because untreated oral disease can cause pain, "which can interfere with diet, nutrition, sleep, learning and other daily functions."<sup>2</sup> In 2000, the U.S. Surgeon General reported there was a large disparity in the oral health of U.S. citizens and that oral disease reduces quality of life by restricting activities at school, work and home.<sup>5</sup> Dental caries is one of the most common diseases among youth in the U.S. "Among 5 to 17-year-olds, dental caries are 5 times as common

as asthma, and 7 times as common as hay fever."<sup>2</sup> Findings from national surveys indicate that three-quarters of 17-year-olds have at least 1 cavity or filling and about one-fifth of adolescents have at least 1 untreated caries lesion or active tooth infection.<sup>6</sup>

The burden of dental disease is not equally distributed. Adolescents who live in families with an income near or below the federal poverty level are 3 times more likely to have untreated caries than adolescents who live in families with an income at least twice the federal poverty level.<sup>7</sup> Additionally, the burden of dental disease is mostly borne by children from lower income families and also by African American and Mexican adolescents.<sup>8</sup>

### **Barriers to Dental Services**

The inability to pay for dental services is a significant barrier to receiving oral health care.<sup>9</sup> Children who are enrolled in Medicaid also face several other barriers to receiving dental services, including limited English proficiency of parents, low reimbursement rates for providers, bureaucracy and lack of transportation.<sup>10</sup> Other barriers to utilization of preventive dental services include low education level of parents, individual cultural and environmental factors, parental and peer influences, individual attitudes and beliefs about dental care and parents' inability to take time off from work for their child's dental appointments.<sup>6</sup> An uneven distribution of practicing dentists and inconsistent and restrictive practice situations of registered dental hygienists are also major barriers to receiving dental services. Modifying practice restrictions and developing new practice models that allow registered dental hygienists to provide preventive services without direct supervision of a dentist begins to address improved distribution of dental manpower in previously underserved communities.

### **Trends in Dentistry**

In 2007, it was reported that as the population is increasing, the number of dentists entering the workforce is decreasing.<sup>11</sup> Although the number of dentists continues to decline, the number of dental hygienists is increasing. The number of dental hygiene educational programs has increased with an additional 131 programs since 1990 and a 25% increase in first year enrollment from 1998 to 2008.<sup>12</sup> As of December 2009, there was a record 309 entry-level dental hygiene educational programs.<sup>12</sup> Expanding the use of dental hygienists and other mid-level oral health care providers could possibly and most likely offset part of the workforce shortage of dentists and address some of the dental dis-

parities in the U.S.

Based on the extensive classroom and clinic instruction, continuing education and licensing requirements that dental hygienists are required to complete, one could advocate that, similar to registered nurses, registered dental hygienists are able to be self-regulated and provide preventive dental services in alternative settings with varied levels of supervision or no supervision. Since dental hygienists' education prepares them with the requisite knowledge and skills to be preventive oral health care professionals, it could be argued that it is appropriate to utilize the increasing dental hygiene workforce to offset dental disparities in the U.S.

### Model Effectiveness

Within the U.S. there are several successful models of less restrictive dental hygiene practices that increase access to dental services by increasing the points of entry into the oral health care system. Permitting dental hygienists to provide services with less restrictive supervision requirements is cost-effective and can increase access to care by reducing barriers. Compelling evidence suggests that services delivered by dental hygienists is cost-effective.<sup>14,15</sup> APR in Arizona is designed to reduce many of the main barriers to oral health care that cause disparities: cost, transportation and uneven distribution of dental care providers. Making care accessible and affordable is necessary if improvements in the dental care system are to be made.

Catholic Healthcare West (CHW) East Valley Children's Dental Clinic, an affiliated practice dental clinic, has demonstrated being more cost-effective and able to offer services at lower costs compared to traditional dental care models. This is due to lower overhead costs, community partnerships and resource sharing. An affiliated practice dental hygienist's salary is less costly compared to that of a dentist's, and dental services are limited to prevention so a smaller staff is needed, fewer instruments and equipment are required and malpractice insurance fees are lower. Additionally, grant funding, Medicaid reimbursement and partnerships with non-profit and community organizations that contribute resources allow affiliated practice dental clinics to be cost effective.

From August 2008 to May 2009, the CHW East Valley Children's Dental Clinic collected data regarding cost efficacy. It was determined, with the clinic open 2 to 3 days per week and treating 60 patients per month, the clinic expenses were \$8,466 per month considering costs of equipment depreciation, disposable supplies, salaries and rent. Table

Table I: Potential Affiliated Practice Dental Clinic Partners

Type of Organization	Example
State or County Government	<ul style="list-style-type: none"> <li>• Women, Infant, Children (W.I.C.)</li> <li>• Elementary Schools</li> <li>• Head Start</li> <li>• Correctional Facilities</li> </ul>
Nonprofit Organizations	<ul style="list-style-type: none"> <li>• Boys &amp; Girls Club</li> <li>• Hospitals</li> <li>• Y.M.C.A.</li> <li>• Homeless Shelters</li> <li>• Child Crisis Centers</li> <li>• Orphanages</li> </ul>
Profit Organizations	<ul style="list-style-type: none"> <li>• Senior Residence Community</li> <li>• Assisted Living</li> <li>• Nursing Homes</li> <li>• Child Day Care Facilities</li> </ul>
Private Practice Offices	<ul style="list-style-type: none"> <li>• Dentists</li> <li>• Pediatricians</li> <li>• Family Physicians</li> </ul>
Clinics	<ul style="list-style-type: none"> <li>• Community Health Centers</li> <li>• Federally Qualified Health Center</li> <li>• Indian Health Services Clinics</li> </ul>

I depicts several different potential partnering community organizations that could collaborate with an affiliated practice dental hygienist to offer preventive services in areas of the greatest need and maintain cost-effectiveness. Improving the cost-effectiveness of services offered to underserved communities, increasing access to care, containing fees and referring more patients to dentists for earlier restorative treatment are goals for less restrictive practice situations and position dental hygienists to contribute to the solutions that address oral health care needs in the U.S.<sup>14,15</sup>

### Methods and Materials

To answer the research questions for this study, a survey was created that measured the perceived utilization of affiliated practice dental clinics by underserved populations and the barriers and the level of importance of these barriers that impede underserved populations from receiving dental services. This survey was created by the authors and was not based on an existing survey instrument. There were no measures taken to ensure the survey was reliable. A pilot test was completed to ensure the survey was valid. The pilot test consisted of administering the survey to parents/guardians at the Maricopa County Head Start oral health-screening event before their children received oral screenings. Fifty-four surveys were completed: 17 were completed in English and 23 in Spanish. After the pilot test, the survey ques-

tions were reviewed and revised to be more concise and suitable for the population's literacy level.

The survey items were designed to assess the impact of fees on the utilization of affiliated practice dental clinics. Items 2, 3 and 4 of the survey assess whether a preventive dental service was available for children and how likely the parent/guardian would be to utilize this service if it cost \$0, \$20 or \$150. The fee level of \$0 was based on feedback from the population explaining that any charge for oral health care could not be afforded. The fee level of \$20 was based on the approximate supply cost for the affiliated practice dental clinic to treat a patient. The fee level of \$150 was based on the usual and customary fee for preventive services at local dental offices. The available responses to these survey items were presented in a 4-point Likert scale, where 1=not likely, 2=somewhat likely, 3=likely and 4=very likely. Items 2a, 3a and 4a of the survey asked how frequently (0 to 6 months, 7 to 12 months, 1 to 5 years or more than 5 years) the parent/guardian would have their child utilize preventive dental services at each cost level, \$0, \$20 and \$150. Survey items 5a, 5b and 5c assess the importance of barriers to receiving dental services, such as cost, distance and appointment time. These survey items were designed with available responses presented in a 10-point numerical Likert scale, where 10 represents being most important and 1 represents being the least important. Additional survey items were included in the survey to aid in the internal process evaluation of the affiliated practice dental clinic operations, which falls outside the scope of this study. Data from these survey items did not apply to this research and was not included in the results of this research.

Both the Northern Arizona University (NAU) and CHW Institutional Review Boards (IRB) approved this study. Additionally, both the NAU and CHW IRB did not require the participant's signature for entry into the study because subject identifiers were not collected. Instead, parents/guardians surveyed were given information about the research study in the form of an invitation to participate. The invitation to participate in the survey explained the voluntary nature of the subject's participation, purpose of the project, procedures, confidentiality, lack of compensation and cost, and benefits and risks of participating in the survey. Because this research project involved Spanish-speaking respondents, both institutions, NAU and CHW, required the invitation to participate and survey to be translated into Spanish. The NAU invitation to participate form was translated into Spanish by the NAU IRB. The CHW invitation to participate form was translated into Spanish by a certified translator at CyraCom Transparent Language Services.

Table II: Dollar Value of Services Provided at CHW East Valley Children's Dental Clinic

Service Provided	Dollar Value (\$)
Cancer Screening	25
Caries Risk Assessment	0
Oral Evaluation	82
Periodic Oral Evaluation	41
Oral Evaluation for Children 1 & 2 Years of Age	50
Radiographs:	
4 Bitewing	50
2 Occlusal	64
Full Mouth Series	107
Fluoride Varnish	20
Child Prophylaxis	54
Sealants	39/tooth
Therapeutic Rx Fluoride Toothpaste	10
Chlorhexidine	16
Oral Health Education	8
Nutritional Counseling	0
Referral	0
Goodie Bag with toothbrush, toothpaste and educational materials	5
Asepsis	15

Patients seen at the CHW East Valley Children's Dental Clinic are not charged a fee for the services they receive and Medicaid is not billed for reimbursement. However, the Medicaid fee schedule is used to determine the dollar value of the services provided from the clinic (Table II). From the clinic opening on August 1, 2008 to March 30, 2011, there have been 450 patient visits and \$276,442 worth of services provided at no charge. Depending upon patient age and treatment needs, the dollar value of services provided per child ranges from \$85 to \$496.

In the fall of 2008, the survey was administered to 34 parents/guardians of patients from birth to 18 years of age who received preventive dental services from CHW East Valley Children's Dental Clinic (Figure 1). The survey was offered to parents/guardians who attended the clinic during the month of November in 2008. Two parents/guardians declined to complete the survey due to literacy issues. The survey response rate was 94% as 34 out of 36 parents/guardians that were asked to complete the survey agreed to do so. This location and population were chosen for this study because it is representative of underserved populations in Arizona. The responses from the survey were en-

Table III: Descriptive Statistics of Barriers to Receiving Preventive Dental Care

Survey Item	Responses									
	Least Important					Most Important				
	1	2	3	4	5	6	7	8	9	10
Q5a. Cost of services	0	0	0	1	9	0	4	1	3	16
Percentages	0	0	0	2.9%	26.5%	0	11.8%	2.9%	8.8%	47.1%
Q5b. Convenience of appointment time	1	1	4	2	7	2	2	7	4	4
Percentages	2.9%	2.9%	11.8%	5.9%	20.6%	5.9%	5.9%	20.6%	11.8%	11.8%
Q5c. Distance traveled to receive services	2	0	4	3	5	2	4	5	3	6
Percentages	5.9%	0	11.8%	8.8%	14.7%	5.9%	11.8%	14.7%	8.8%	17.6%

tered into a Microsoft Office Excel 2003 spreadsheet. The data was then analyzed in SPSS 15.0 for Windows statistical software.

## Results

Thirty-four surveys were completed: 21 completed in English and 13 completed in Spanish. Both of the research questions were answered through descriptive statistics and statistical analysis of the survey responses (Tables III, IV). With the use of descriptive statistics and non-parametric statistical tests, it was determined that the CHW East Valley Children’s Dental Clinic increased utilization of preventive dental services for underserved children from birth to 18 years of age. It was also determined that cost compared to distance or convenience of appointment time was the most important barrier impeding this underserved population from receiving preventive dental services. Further, the data showed there is a strong likelihood that affiliated practice dental clinics are more utilized due to the reduced cost of preventive dental services.

Regarding barriers to receiving preventive dental services, descriptive statistics of the responses show that approximately 47% of respondents ranked the cost of services as being most important. More than 11% ranked the convenience of appointment time as being the most important. Approximately 17% ranked the distance traveled to receive services as being the most important factor (Table III).

According to the Friedman Test results for survey items pertaining to the barriers of the cost of services, convenience of appointment time and distance traveled for services ( $\chi^2(2) = 14.04, p < 0.05$ ), there were significant differences in the level of importance of the 3 barriers to care. Kendall’s coefficient of concordance ( $W(2) = 0.206, p < 0.05$ ) also indicates relatively strong differences among the 3 barriers to care.

Figure 1: CHW East Valley Children’s Dental Clinic



Results from the Wilcoxon Test reveal that the cost of preventive dental services is more important to this population than both convenience of appointment time ( $z = -3.087, p < 0.05$ ) and distance traveled ( $z = -3.011, p < 0.05$ ). Additionally, this population reports there is no significant difference in importance between convenience of appointment time and distance traveled ( $z = 0.000, p > 0.05$ ).

Table IV outlines the descriptive statistics, which revealed that approximately 91% of respondents said they were likely or very likely to utilize a free preventive dental service for their children. More than 76% said they were likely or very likely to utilize a preventive dental service for their children that cost \$20. Less than 9% said they were likely

Table IV: Descriptive Statistics of the Cost of Preventive Dental Services and Frequency of Utilization

Survey Item	Responses				
Q1. How long ago was your child's last dental cleaning?	0 to 6 Months	7 to 12 Months	1 to 5 Years	>5 years	Never (1st)
Number of Respondents	18	2	9	2	3
Percentages	52.9%	5.9%	26.5%	5.9%	8.8%
Q2. If a Free preventive dental service (dental cleaning, fluoride, sealants) was available for your children, how likely would you be to utilize this service?	Not Likely	Somewhat Likely	Likely	Very Likely	
Number of Respondents	0	3	8	23	
Percentages	0.0%	8.8%	23.5%	67.6%	
Q2a. How frequently would you bring your child back to receive preventive dental care from this service?	0 to 6 Months	7 to 12 Months	1 to 5 Years	>5 years	
Number of Respondents	28	5	1	0	
Percentages	82.4%	14.7%	2.9%	0.0%	
Q3. If the same preventive service (dental cleaning, fluoride, sealants) was available to your children for a fee of \$20, how likely would you be to utilize this service?	Not Likely	Somewhat Likely	Likely	Very Likely	
Number of Respondents	0	8	15	11	
Percentages	0.0%	23.5%	44.1%	32.3%	
Q3a. How frequently would you bring your child back to receive preventive dental care from this service?	0 to 6 Months	7 to 12 Months	1 to 5 Years	>5 years	
Number of Respondents	24	8	2	0	
Percentages	70.6%	23.5%	5.8%	0.0%	
Q4. If the same preventive service (dental cleaning, fluoride, sealants) was available to your children ONLY THROUGH A DENTIST, for a fee of \$150, how likely would you be to utilize this service?	Not Likely	Somewhat Likely	Likely	Very Likely	
Number of Respondents	13	18	2	1	
Percentages	38.2%	52.9%	5.8%	2.9%	
Q4a. How frequently would you bring your child back to receive preventive dental care from this service?	0 to 6 Months	7 to 12 Months	1 to 5 Years	>5 years	
Number of Respondents	11	9	12	2	
Percentages	32.3%	26.5%	35.3%	5.8%	

or very likely to utilize a preventive dental service for their children that was available only through a dentist and cost \$150. These preliminary data suggest that, as the cost of preventive dental services increases, this population is less likely to utilize preventive dental services.

Descriptive statistics additionally revealed that approximately 82% of the respondents would bring their child back to a free preventive dental service to receive regular preventive dental care every 0 to 6 months. More than 70% would bring their child back to a preventive dental service that cost \$20 to receive regular preventive dental care every 0 to 6 months. Less than 33% would bring their child back

to a preventive dental service that was available only through a dentist and cost \$150 to receive regular preventive dental care every 0 to 6 months.

As the cost increased from \$0 to \$20, the responses remained mostly unchanged and indicated respondents would bring their child back to a preventive dental service to receive regular preventive dental care every 0 to 6 months. However, when the cost increased to \$150, the respondents' replies changed to indicate they would not bring their child back as frequently. These data suggest that as the cost of preventive dental services increases, the frequency of utilization of these dental services decreases.

In order to determine if these answers were statistically significant, the Friedman Test and Kendall's W Test were initially performed, then followed up with a Wilcoxon Test to determine individual differences. The Friedman Test revealed significance (0.000) and the Kendall coefficient of concordance ( $W(2) = 0.820, p < 0.05$ ) indicates fairly strong agreement among the replies of all 34 respondents regarding their likelihood of utilizing preventive dental services for \$0, \$20 and \$150. Follow-up pairwise comparisons conducted using a Wilcoxon Test revealed that, as the cost for preventive dental services increased from \$0 ( $z = -3.690, p < 0.05$ ) to \$20 ( $z = -4.815, p < 0.05$ ) and to \$150 ( $z = -4.959, p < 0.05$ ), responses changed significantly from very likely, to likely and to somewhat likely that they would utilize the preventive dental service.

The Friedman Test was significant ( $\chi^2(2) = 28.33, p < 0.05$ ), and the Kendall coefficient of concordance (0.417) indicates neutral agreement among the replies of all 34 respondents regarding their frequency of return visits to receive preventive services at \$0, \$20 and \$150. Follow-up pairwise comparisons conducted using a Wilcoxon Test showed that as the cost of preventive services increased from \$0 to \$150 ( $z = -3.836, p < 0.05$ ), and \$20 to \$150 ( $z = -3.678, p < 0.05$ ), responses changed significantly from returning for preventive dental services every 0 to 6 months when the cost is \$0 or \$20 to returning for preventive dental services every 7 to 12 months when the cost is \$150. However, as cost increased \$0 to \$20 ( $z = -1.890, p > 0.05$ ), the responses did not change significantly. The reported frequency of return for preventive dental services remained at 0 to 6 months.

## Discussion

The respondents of the survey report cost of preventive dental services has much more of an impact on their children receiving preventive dental services than both convenience of appointment time and distance traveled. This study shows that as the cost increases for preventive dental services, people of underserved populations report they are less likely to utilize these dental services. There was a significant difference in respondents' responses about the frequency of their visits based on cost. As cost continues to increase, people of underserved populations report they are also less likely to return frequently to receive follow-up or maintenance preventive dental services.

As the cost for preventive dental services increased from \$0 to \$20 to \$150, there was a significant difference in the responses to utilizing a preventive dental service. At the cost of \$0, the

respondents reported they are very likely to utilize preventive dental services. At the cost of \$20 the respondents reported they are likely to utilize dental services. At the cost of \$150 the respondents reported they are somewhat likely to utilize preventive dental services. As the cost increased from \$0 to \$20 there was no significant difference in response to frequency of return visits. Respondents indicated that whether the cost of receiving preventive dental services was \$0 or \$20 they would return in 0 to 6 months for continued care. However, as the cost increases from \$0 to \$150 and from \$20 to \$150, the responses changed significantly from returning for preventive dental services in 0 to 6 months to 7 to 12 months. Thus, it was found that the parents/guardians of this affiliated practice dental clinic reported they would increase utilization of preventive dental services for their children due to reduced costs of services.

Further research to evaluate the affect of affiliated practice dental clinics on the utilization of preventive dental services is needed. A deeper analysis and completion of a comparative study would be the next step. It is suggested that measuring the frequency at which patients return to an affiliated practice dental clinic to receive preventive dental services be compared to the frequency at which patients receive services from a traditional dental care model before coming to the affiliated practice dental clinic.

Future research should also evaluate other barriers to receiving preventive dental care, besides those of cost, transportation and appointment time. A few barriers to further research could include lack of providing underserved patients with dignity, respect, professionalism and cultural sensitivity. The tone, mood and attitude of personal interactions between dental professionals and underserved patients should be explored to determine if negative interaction might also be a major barrier to receiving preventive dental services.

Also recommended for future research is the number and types of preventive services that were provided prior to and after affiliated practice laws were passed. This research focus would address the National Dental Hygiene Research Agenda of identifying how public policies impact the delivery, utilization and access to care.<sup>16</sup> Future research on how the legislative changes surrounding affiliated practice impact health care access and inequalities would address the National Dental Hygiene Research Agenda of investigating how alternative models can reduce health care inequalities.<sup>16</sup>

Upon review of the limitations of this study a

critique of the methods and statistical analysis can be offered. The method for this study was to collect data with the use of a survey that was created by the authors and there is no evidence to support that the survey questions were reliable. A reliability test would need to be completed in order to determine whether the results are consistent multiple times and across time. The same survey would need to be administered to the same sample on 2 different occasions. Additionally, the study's small sample size (n=34) provides a limitation to generalizing the results to a larger population.

## Conclusion

This study indicated that affiliated practice dental clinics could increase utilization of preventive dental services by underserved children. The survey respondents reported increased utilization of preventive dental services for underserved children in Arizona primarily due to the reduced cost of receiving care at an affiliated practice dental clinic. This study also indicated that cost, when compared to convenience of appointment time and distance traveled for care, is the most important barrier to receiving preventive dental services for underserved children. As the cost of preventive dental services increases, the respondents reported being less likely to utilize the preventive dental services and less likely to return as frequently for follow-up or maintenance preventive dental services.

Improving the oral health status of the U.S. population is a significant challenge for policymakers, health officials, dental educators and oral health care providers. The legislative approval of less restrictive supervision requirements for dental hygienists, such as the APR, is key to reducing patient costs, eliminating barriers to care and alleviating uneven distribution of dental professionals, thereby increasing patient utilization of preventive dental services. Because providing preventive treatment is less costly than restorative treatment, community based oral health

prevention programs should be encouraged and supported.<sup>17</sup> "Both the public and health care professionals, in looking for ways to solve the inefficiencies and inequalities in health care delivery, have begun to question the overly restrictive laws governing the dental hygiene profession."<sup>13</sup> Lifting restrictive supervision requirements of dental hygiene practice nationally could expand the entry points for delivery of dental services, and increase referrals to dentists for services that fall outside the scope of a dental hygienist's practice. Now is the time to tackle the issues of access to oral health services and disease disparity. There is evidence supporting the need for a new delivery model and the effectiveness of APR. Policy makers and health care professionals are encouraged to support the national lifting of restrictive supervision requirements from dental hygiene practice in order to increase access to preventive dental services for underserved populations.

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## Disclosure

Michelle L. Gross-Panico is a contracted Affiliated Practice dental hygienist with Catholic Healthcare West, Chandler Regional Hospital. Since the summer of 2005, she has worked to create and develop the third Affiliated Practice dental clinic in Arizona, Catholic Healthcare West East Valley Children's Dental Clinic.

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