

# RESEARCH

## California Dental Hygiene Educators' Perceptions of an Application of the ADHA Advanced Dental Hygiene Practitioner (ADHP) Model in Medical Settings

Lauren Smith MS, RDH; Margaret Walsh MS, MA, EdD, RDH

### Abstract

**Purpose:** To assess California dental hygiene educators' perceptions of an application of the American Dental Hygienists' Association's (ADHA) advanced dental hygiene practitioner model (ADHP) in medical settings where the advanced dental hygiene practitioner collaborates in medical settings with other health professionals to meet clients' oral health needs.

**Methods:** In 2014, 30 directors of California dental hygiene programs were contacted to participate in and distribute an online survey to their faculty. In order to capture non-respondents, 2 follow-up e-mails were sent. Descriptive analysis and cross-tabulations were analyzed using the online survey software program, Qualtrics™.

**Results:** The educator response rate was 18% (70/387). Nearly 90% of respondents supported the proposed application of the ADHA ADHP model and believed it would increase access to care and reduce oral health disparities. They also agreed with most of the proposed services, target populations and workplace settings. Slightly over half believed a master's degree was the appropriate educational level needed.

**Conclusion:** Among California dental hygiene educators responding to this survey, there was strong support for the proposed application of the ADHA model in medical settings. More research is needed among a larger sample of dental hygiene educators and clinicians, as well as among other health professionals such as physicians, nurses and dentists.

**Keywords:** advanced dental hygiene practitioner, dental hygienist, inter-professional collaboration, mid-level provider, mid-level oral health care provider, advanced dental therapist, dental therapist, dental hygiene therapist

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### INTRODUCTION

The February 2009 Institute of Medicine Workshop on the Oral Health Workforce in the U.S. highlighted interest in the development of new dental providers.<sup>1</sup> In 2004, the American Dental Hygienists' Association (ADHA) proposed an Advanced Dental Hygiene Practitioner (ADHP) Model, a mid-level oral health provider to help address oral health disparities in the U.S. by increasing access to care for underserved populations.<sup>2-11</sup> This ADHP Model requires a Master's level of education and is an overall model with competencies adopted by the ADHA Board of Trustees in 2008. This Model can be used in any state as a model, however, when it is taken to an institution of graduate education in a particular state then the educational institution defines the degree title and the state licensing boards defines the governing practice, supervision and setting for implementation of the model.<sup>11</sup>

To date, only the Advanced Dental Therapist (ADT) program in Normandale, Minnesota follows the ADHP

Model as recommended by the ADHA.<sup>2</sup> Developed in 2005, the ADT graduates earn a master's degree from Metropolitan State University that requires graduate learners to be dental hygienists who are licensed and actively practicing.<sup>11</sup> Minnesota also developed a Dental Therapist (DT) program based on a model set forth by Minnesota dentists, however, the DT graduates are not required to be licensed dental hygienists, or to earn a Masters degree.<sup>12</sup> Moreover, although Alaska, California and Maine have developed mid-level provider programs as alternative workforce models, their programs do not follow the ADHA Model.<sup>11-13</sup> Alaska's dental health aide therapist (DHAT) cannot provide dental hygiene services, and California's Registered Dental Hygienist in Alternative Practice (RDHAP) and Maine's dental hygiene therapist (DHT) are not at the Masters level. Moreover, the DHT in Maine works under direct, not general, supervision of a dentist.<sup>11</sup> Studies report medical practitioners do not feel prepared to provide oral disease prevention education and services,

and have little time to do so due to competing demands.<sup>14-21</sup> These findings suggest the need for an ADHP in medical settings. No studies, however, have been reported on the perceptions of California dental hygiene educators regarding establishing any type of ADHP educational program in California. In light of this gap, the authors posed the following research question: What are the perceptions of California dental hygiene educators regarding a proposed application of the ADHA ADHP Model where the ADHP would work in medical settings, under general supervision of a physician or dentist, to meet clients' oral disease prevention and management needs, and facilitating referral for dental care? To answer this question, California dental hygiene educators' perceptions of the proposed application of the ADHA ADHP Model in medical settings were assessed using a web-based survey.

## **METHODS AND MATERIALS**

### **Application of the Model to Medical Settings**

The ADHA ADHP Model was applied to medical settings proposing that ADHP services would include conducting oral screenings, prescribing certain medications (i.e, fluorides, antimicrobials, systemic and local antibiotics and anti-fungals) and oral radiographs, providing interim therapeutic restorations, billing insurance directly, consulting with medical personnel regarding oral care for patients with special needs, providing dental hygiene care and referring clients as needed for dental treatment. The ADHP would work in collaboration with the medical team within medical settings under general supervision of a physician or dentist, to meet clients' oral disease prevention and management needs, and to facilitate referral for dental care. Settings proposed included hospitals, federally qualified health centers, medical clinics, public health settings, and long term care facilities. The ADHP would function as a link between medicine and dentistry, focusing on inter-professional collaboration and education to improve client oral health and general health outcomes.

### **Study Design and Population**

This study has a quantitative, cross-sectional survey research design that was approved by the Committee on Human Research at the University of California, San Francisco (UCSF). The study population is California dental hygiene educators employed in the accredited 30 California dental hygiene programs.

### **Inclusion Criteria**

Dental hygiene educator is defined as those individuals who currently teach in the 30 accredited

California dental hygiene programs consisting of dental hygienists, dentists, dental assistants and dental laboratory technicians.

### **Exclusion Criteria**

Excluded from the study population were non-dental professional dental hygiene educators in California who teach prerequisite courses needed for entry into the dental hygiene program, or dental hygiene educators who have recently retired.

### **Survey Pilot Testing**

The survey was developed using the Qualtrics system, a system to build, distribute and analyze online surveys, and was pilot tested for acceptability and feasibility among 19 dental hygienists including 7 dental hygiene faculty members, 2 current graduate learners in the UCSF dental hygiene master of science program and 5 past graduates of the same program. The survey was refined based on feedback. The final survey, which took approximately 5 minutes to complete, consisted of 20 items. Seven items addressed socio-demographics (age, gender, race/ethnicity, highest educational level, entry-level dental hygiene credential, year of graduation from dental hygiene entry-level program and highest level of education completed in dental hygiene). In addition, 5 separate items asked about ADHA membership, type of dental profession licensure, years teaching dental hygiene, type of teaching appointment, and state or national involvement in addressing either oral health disparities, access to care, or advancing the profession. Finally, 6 items assessed perceptions of the proposed application of the ADHA ADHP Model in medical settings, and 2 items assessed support of the ADHA's ADHP model in general. The items were measured using a mixture of multiple choice, Yes/No and 5-point Likert scale response options.

### **Recruitment and Informed Consent**

The California dental hygiene program directors or their administrative assistants were contacted by phone or email to determine the total number of dental hygiene educators in each accredited program. Subsequently, all 30 California dental hygiene program directors were e-mailed asking them to forward to their dental hygiene faculty an attached informed consent cover letter that explained the study purpose, risks and benefits, and provided a web link to access the survey online. Clicking on the survey link indicated informed consent to participate in the survey.

### **Procedures for Survey Administration**

Using an e-mail message, with a link to the 20-

item, self-administered confidential online survey, all dental hygiene educators in California who agreed to participate in the study returned the survey. Approximately 2 weeks later, dental hygiene directors again were sent a follow-up e-mail requesting them to forward the link to the survey and attached informed consent in an attempt to capture non-responders. Approximately 2 weeks later, a third and final request was sent to the dental hygiene directors requesting them to forward them survey link and the attached informed consent. As an incentive to participate, the names of all of the respondents were entered into a drawing for a \$150 gift card from the chain store Target, if they chose to provide their e-mail addresses.

### Statistical Analyses

Frequencies of responses for each item were calculated using the Qualtrics data analysis system. Attitudes and services items were measured on 5-point Likert scales ranging from "Strongly Agree" to "Strongly Disagree." Proposed populations and settings were measured on a 5-point Likert scale ranging from "Extremely Appropriate" to "Extremely Inappropriate."

## RESULTS

Of the 30 programs contacted, 29 program directors reported the number of dental hygiene educators who taught in their dental hygiene program. Of the 387 eligible educator-respondents reported by the directors, 70 educators actually completed the survey for an 18% response rate. Most of the respondents were female (95%), between the ages of 45 to 64 years (74%), White, non-Hispanic (83%), had Master or Doctoral degrees (77%), graduated from either a Baccalaureate (46%) or Associate degree (49%) entry-level dental hygiene program, and graduated from their dental hygiene entry-level program between 1970 to 1989 (65%). Most were ADHA members (79%), were either an RDH (80%) or an RDHAP (17%), had taught dental hygiene for at least 11 years (65%), and were full-time educators (53%). About a third (32%) reported involvement in national or state activities to increase access to oral care.

### The ADHP Model

Most of the respondents had heard of the ADHA ADHP Model (77%), agreed with the proposed application of the model to medical settings (88%), and believed it would help increase access to care and decrease oral health disparities (88%). Slightly over half of the respondents (51%) believed a dedicated master's degree was the level of education needed, while just over one third (35%) believed the baccalaureate level plus an ADHP certificate was the edu-

cational level needed. The majority of respondents also agreed with the proposed services the ADHP would provide in medical settings (Table I). Other services they agreed with, but at a lower level were facilitating Denti-Cal enrollment, prescribing systemic antibiotics, systemic antifungals, and non-narcotic analgesics. Only about a third of the respondents supported the prescription of narcotic analgesics.

Moreover, most respondents also agreed with the proposed ADHP workplace settings of medical clinics (90%), hospitals (90%), Federally Qualified Health Centers (87%), Community medical clinics (97%), and public health settings (94%). Most also agreed with the proposed ADHP's target populations of children (96%), older adults (97%), low income, underserved patients (96%), medically compromised patients (96%), primary care patients (81%), medical specialty patients (84%), and all patients regardless of socio-economic status (84%). A little less than half (49%) agreed that emergency room patients were an appropriate target population for the proposed application of the ADHP Model.

## DISCUSSION

The current study assessed California dental hygiene educators' perceptions of an ADHP who would work in medical settings. Among the study population, almost all of the respondents supported the proposed modification of the ADHA ADHP Model to medical settings, and slightly over half agreed the level of education needed for the ADHP Model should be at the master's level. These findings are consistent with educational levels required for the ADHA ADHP, the Nurse Practitioner (NP) and the Clinical Nurse Specialist (CNS) models that require a master's degree.<sup>22,23</sup> The proposed ADHP services to be provided in medical settings were consistent with the NP model that allows explicit authority to diagnose, order tests, prescribe medications and refer patients as needed while working in collaboration with the medical team in a medical setting.<sup>22</sup> The proposed ADHP functionality was also consistent with those of the CNS model and includes major services related to expert clinical practice, education, research, consultation and clinical leadership.<sup>23</sup> Similar to the NP and CNS model, the proposed ADHP application to medical settings envisions an ADHP who would practice in medical settings focusing on inter-professional collaboration to improve oral health outcomes, especially for our most vulnerable populations - children, the elderly, the disabled, and many members of racial and ethnic minority groups.

The fact that most respondents believed that the application of the ADHP would help reduce oral health disparities and access to care issues is consistent with publications related to the need to ex-

Table I: Percentage (number) of California Dental Hygiene Educator Respondents Who Agreed, Had No Opinion or Disagreed with Proposed Services to be Performed by the ADHP in Medical Settings (n=70)

Q #1	Statement	Agree*		No Opinion		Disagree*	
		Percent	(n)**	Percent	(n)**	Percent	(n)**
A	Meets with medical personnel to consult regarding oral care for patients with special needs	96	(65)	3	(2)	1	(1)
B	Provides in-service group education for medical personnel on the oral/systemic health link	97	(66)	3	(2)	0	(0)
C	Conducts oral screenings	99	(67)	0	(0)	1	(1)
D	Refers patients for needed dental evaluation	97	(65)	0	(0)	3	(2)
E	Acts as the patient oral care liaison between medical and dental settings	97	(66)	1	(1)	1	(1)
F	Facilitates Denti-Cal enrollment	66	(45)	26	(18)	7	(5)
G	Prescribes oral radiographs	93	(63)	1	(1)	6	(4)
H	Prescribes fluorides and antimicrobials	96	(65)	1	(1)	3	(2)
I	Prescribes systemic antibiotics	73	(49)	4	(3)	22	(15)
J	Prescribes local antibiotics	88	(59)	1	(1)	10	(7)
K	Provides interim therapeutic restorations	81	(55)	6	(4)	13	(9)
L	Prescribes systemic antifungals	63	(43)	10	(7)	27	(18)
M	Prescribes local antifungals	82	(56)	4	(3)	13	(9)
N	Provides preventive oral healthcare services	97	(66)	1	(1)	1	(1)
O	Prescribes non-narcotic analgesics	70	(48)	9	(6)	21	(14)
P	Prescribes narcotic analgesics	37	(25)	19	(13)	44	(30)
Q	Bills insurers directly	81	(55)	13	(9)	6	(4)
R	Bills patients directly	78	(53)	16	(11)	6	(4)

\*Agree includes those that selected "strongly agree" and "somewhat agree" and disagree includes those that selected "strongly disagree" and "somewhat disagree"

\*\*n varies due to missing data

pand the role of dental hygienists and reports of general support among dental hygienists for a mid-level oral health care provider to help meet the oral health needs of the public.<sup>24</sup>

In addition, most of the study respondents agreed with the services the proposed ADHP would provide, except for the prescription of narcotic analgesics. This finding is not surprising considering reports of increased drug-seeking behavior in patients and the rising epidemic of prescription opioid dependency.<sup>25</sup> Two of the proposed services interim therapeutic restorations and prescription of radiographs are currently being studied in the pilot study Health Workforce Pilot Project (HWPP) authorized by the California Office of Statewide Planning and Development (OSHPD). This project is designated as HWPP #172 and is entitled the "Virtual Dental Home" (VDH).<sup>26,27</sup> The VDH allows RDHs, RDHAPs and registered den-

tal assistants (RDA) to place interim therapeutic restorations (ITR) and decide which radiographs to take in order to facilitate an oral evaluation by a dentist under a special exemption under California law. Patient treatment started in January, 2011 and the locations for treatment by the RDHs, RDHAPs and RDAs include Head Start programs, elementary schools and long term care facilities. The dentists in the program are remote and use telehealth technology to communicate between the dentists in private and community clinics with the providers in the different settings. Preliminary findings indicate a high satisfaction rate among patients and site administrators, and cost effectiveness compared to Denti-Cal.<sup>26,27</sup> Moreover, none of the procedures performed have had adverse outcomes.<sup>27</sup>

The VDH is an important model and patients have benefitted from the opportunity to receive many



services. Since it is reasonable to think that patients and medical staff in medical settings would also benefit from the proposed application of the ADHA ADHP Model within medical settings, a pilot project is needed to test its acceptability and feasibility to implement. Studies indicate that many medical staff are not comfortable providing orally-related treatments due to lack of knowledge, training and time, nor are they aware of the bidirectional relationship between oral and systemic health, such as that between diabetes and periodontal diseases.<sup>28</sup>

Moreover, in another study regarding emergency department dental visits, researchers concluded that emergency departments are an important point of care for dental-related complaints and recommended that emergency department staff be trained in triage, diagnosis, basic treatment and the provision of follow-up care for dental concerns.<sup>29,30</sup> Emergency departments could be another site for integration of the ADHP although less than half of the respondents in this study agreed emergency department patients were an appropriate target population for the proposed application of the ADHP within medical settings. Other researchers also have called for dentists or other "oral health experts" to be integrated into hospitals settings.<sup>31</sup> The ADHP could be more cost effective and valuable than dentists because of the ADHP's intense focus on oral disease prevention and health promotion, especially with additional education at the master's level. Our study respondents agreed that the ADHP could directly provide those services listed in this study including dental referral when needed in the medical setting, collaboration with and education of medical staff to increase awareness and knowledge of the oral/systemic health link among medical health care providers. Most of the respondents agreed with the workplace settings for this application of the ADHA ADHP Model as well. Therefore, we recommend that in addition to further research regarding acceptance of this application of the ADHP model in medical settings among dental professionals (educators and clinicians), that perceptions of medical professionals also be assessed.

Most of the study respondents agreed with the patient populations targeted by the proposed ADHP model. The one exception was emergency room patients. This finding was surprising considering the number of studies of emergency room visits that are due to dental concerns,<sup>32-37</sup> and the findings of a recent study by the American Dental Association (ADA). These latter findings indicate that over 4 million emergency department visits occurred in the U.S. from 2008 to 2010 involving the diagnosis of a dental condition which was slightly over 1% of all emergency department visits occurring in the entire U.S. These emergency department visits for dental conditions cost \$2.7 billion over a 3-year period.<sup>32</sup>

With estimates of approximately one-third of the population not receiving regular dental care,<sup>38,39</sup> the large number of emergency departments visits due to dental concerns supports the need for the ADHP as an oral health mid-level provider. It is reasonable to think that an ADHP could be a major asset to the public and the medical community.

This study has several limitations. First, due to the low response rate, it cannot be assumed that the findings are representative of the population of dental hygiene educators in California or elsewhere. The low response rate may be explained by the timing of the survey distribution (around spring break for some programs), how busy the dental hygiene program directors and faculty were, lack of interest in the topic, or the need to rely on dental hygiene directors to send out the survey as e-mail addresses for faculty were not available.

Another important limitation was the failure to include an item asking respondents about what level of supervision, if any, should be required for the ADHP in medical settings and by whom, with response items listing different levels of supervision and appropriate supervisors from which to choose. This information may have affected the level of support for the proposed model.

Finally, although respondents were asked about a proposed list of services for the ADHP, such as prescribing certain medications and referring patients as needed, no questions were asked about explicit diagnostic authority, a function to be expected of a practitioner with a broad scope of practice while liaising and working in collaboration with medical and dental teams. Darby and Walsh have proposed a human needs conceptual model to define the dental hygiene process of care (assessment of 8 human needs related to dental hygiene, diagnosis of deficits in these needs, planning goals to meet the deficits, implementation, evaluation of goals met, partially met, or unmet and documentation of outcomes) that is based on human need theory related to oral disease prevention, management and health promotion.<sup>40</sup> In this model, they define a dental hygiene diagnosis as a clinical decision made by a dental hygienist that identifies an actual or potential human need deficit that the dental hygienist is educated and licensed to treat and/or refer for care. This diagnostic approach defines the scope of dental hygiene practice broadly and clearly distinguishes a dental hygiene diagnosis from a dental diagnosis.

## CONCLUSION

The majority of California dental hygiene educators who participated in the study supported the concept of an ADHP who would work in medical settings providing oral health disease prevention, management

and professional referrals for a variety of populations, including children, older adults, the medically compromised, and low-income underserved individuals. Additional research on perceptions of this application of the ADHA ADHP in other populations, such as clinical dental hygienists, other dental professionals, and medical health care providers, is needed. Such a role for the ADHP could provide a cost-effective bridge between medicine and dentistry to increase access to care, prevent oral disease, and promote oral and overall health.

Lauren Smith MS, RDH, is in Clinical Practice, Danville and Palo Alto, California. Margaret Walsh, MS, MA, EdD, RDH, is Professor Emerita, Director of the Master of Science Degree Program in Dental Hygiene, Department of Preventive and Restorative Dental Sciences, University of California San Francisco.

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