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Are dental hygiene faculty meeting suggested educational ADEA guidelines for dental hygiene faculty members?

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Are Dental Hygiene Faculty Meeting Suggested Educational ADEA Guidelines for Dental Hygiene Faculty Members?

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Dedication

This paper is lovingly dedicated to my husband Van. L. Sailo who has inspired me to pursue knowledge and has loved me through the entire process. I thank him for all of his support and love. This paper is also dedicated to dental hygiene faculty that make dental hygiene education a realization each and every day.

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Abstract

The ADEA has created policy and also suggested guidelines for dental hygiene faculty qualified to teach within dental hygiene education. Within the policy and guideline statements, the ADEA has included a background in education and specific degree levels for dental hygiene faculty that support educationally prepared faculty members. To determine if dental hygiene faculty are following the policy and guidelines suggested by the ADEA, a survey to collect data regarding type of degree and specific educational coursework was sent to dental hygiene program directors of dental hygiene programs across the United States. A total of 228 full time and part time dental hygiene faculty members (program directors, didactic, and clinical faculty) from 97 programs responded to the survey. Information regarding the type and level of degree, previous employment, and knowledge regarding ADEA suggested guidelines were collected. The results indicate that not all dental hygiene faculty members possess knowledge of ADEA suggested guidelines for qualified faculty members. Information regarding ADEA policy and suggested guidelines may be needed by dental hygiene faculty members through the ADEA organization and the dental hygiene department to meet the demand for educationally qualified dental hygiene faculty.

Introduction

The American Dental Hygienists Association (ADHA) has embraced and promoted domains for practice among registered dental hygienists (ADHA 2006). These domains include ethical values and professionalism, health promotion and community involvement, clinical skills, and professional growth and development. To become a registered dental hygienist and obtain a license to practice dental hygiene, the candidate must successfully complete graduation requirements from an accredited dental hygiene program offering an associate, baccalaureate, or masters level degree. The successful completion of the National Dental Hygiene Examination, Regional Clinical Board Examination, and, in most cases, a State Jurisprudence Examination, are other steps in the process of obtaining a license to practice dental hygiene.

Dental hygiene students are educated by dental hygiene faculty at accredited institutions of higher learning. Different agencies are involved with the formation, regulation, and the accreditation of dental hygiene programs. The American Dental Association (ADA), American Dental Education Association (ADEA), and the Commission on Dental Accreditation (CODA) are each involved in dental hygiene education. The state of Connecticut legally recognized dental hygiene skills in dental practice as early as 1907 and by 1935, a total of 34 other states followed. Although 'trained' in a vocational type of school since 1913, institutions of higher learning did not have accredited programs of dental hygiene until 1952 even though dental hygiene accreditation standards were developed and accepted by the ADA in 1947 (Haden, Morr, & Valachovic, 2001). Accreditation revisions have been made five times between 1969 and 2005 with the latest revision in 2007 (implemented in January 2009) (CODA, 2007).

The ADEA has suggested guidelines to assist in defining qualified dental hygiene faculty in accredited dental hygiene programs within the United States. The ADEA document 'Compendium of Curriculum Guidelines for Allied Dental Education Programs' states in the introduction that "these guidelines are intended as a curriculum development aid and are not official ADEA policy statements nor are they recommendations for restrictive requirements or as a mechanism to standardize allied dental education programs, and further, that the guidelines are intended for entry-level educational programs, regardless of level (Certificate, AS, or BS) or institutional setting (community college, university, dental school or academic health center)" (ADEA, 2005a p. 2-3). The 2005 ADEA document on curriculum guidelines suggests that dental hygiene faculty "should have sufficient knowledge in course subject and background in educational methods, testing, and measurement and evaluation" (ADEA, 2005 p. 19).

Still, the ADEA has made official policy statements on the qualifications for faculty within dental education which were approved by the House of Delegates in 2005. The statement on faculty qualification reads "recruit faculty who have backgrounds in and current knowledge of the subject areas they are teaching and, where appropriate, educational theory and methodology, curriculum development, and test construction, measurement, and evaluation" (ADEA, 2005b p. 791). This official ADEA statement applies to all dental education institutions.

The revised CODA document 'Accreditation Standards for Dental Hygiene Education Programs' statement on dental hygiene faculty states "the dental hygiene program must be staffed by a core of well-qualified full-time faculty who possess a baccalaureate or higher degree. Faculty providing didactic instruction must have earned

at least a baccalaureate degree or be currently enrolled in a baccalaureate degree program. All dental hygiene program faculty members must have current knowledge of the specific subjects they are teaching. All program faculty must have documented background in educational methodology consistent with teaching assignments" (CODA, 2007 p. 29). The statements from the ADEA and CODA are unclear regarding the background needed in educational methodology, however, college coursework in educational methods may fulfill the requirement, or some part of the requirement.

Dental hygiene faculty members very likely meet part of the guidelines, suggested by the ADEA, regarding sufficient, specific course knowledge in the field of dental hygiene by having completed an accredited dental hygiene program and by obtaining additional academic coursework. Dental hygiene faculty members very likely possess knowledge to teach dental hygiene coursework based on their practice of dental hygiene skills in a dental office or clinic over a number of years. Yet, the ADEA has suggested that dental hygiene faculty also possess sufficient course knowledge and a background in educational methodology. Further, the ADEA, along with ADA/CODA accreditation standards, has suggested guidelines that dental hygiene faculty should possess a background in specific areas that include educational methods, testing, and measurement and evaluation. The question arises, do dental hygiene faculty possess the skill, knowledge, and educational qualifications to teach dental hygiene? Are dental hygiene faculty educationally prepared to teach dental hygiene which is to include educational methods, testing and measurement, and evaluation as suggested by the ADEA?

Studies and discussions have been conducted to survey dental hygiene program directors concerning the shortage of qualified dental hygiene faculty and have found

applicants for dental hygiene faculty positions to be unqualified in either educational background and/or teaching background (ADHA 2006; Collins, Zinskie, Keskula, & Thompson, 2007; Majeski, 2004; Nunn et al., 2004; Ring 2002; Rowe, Massoumi, Hyde, & Weintraub, 2008). Has the educational background of current dental hygiene faculty been examined? Are dental hygiene faculty familiar with the educational expectations or qualifications for dental hygiene faculty members? Should educational qualifications for dental hygiene faculty have a place in dental hygiene education as dental hygiene faculty seek to make dental hygiene education effective? This study will examine the type of educational degree(s) and specific coursework in educational theory, educational methods, and educational measurement/evaluation current dental hygiene faculty members have and how this information correlates to well-qualified dental hygiene faculty as defined in ADEA suggested guidelines.

Dental schools have started to determine that broader teaching and educational skills and competencies are needed for faculty at schools of dentistry (Hand, 2006). Hand has suggested that dental school faculty need to identify areas of teaching and educational competence that would enable dental faculty to be more effective with skills and abilities necessary in dental education. Hand further suggests that different competencies are needed by the different types (clinical, academic, and scholar/research) of dental school faculty. Although dental hygiene faculty are not specifically mentioned, Hand suggests the identification of competencies for all dental educational institutions which could include dental hygiene faculty as well as dental school faculty.

Dental hygiene education could also benefit by realizing that certain educational guidelines are needed by dental hygiene faculty for effective student learning

experiences. The purpose of this paper is to examine the educational background, specific coursework, and knowledge dental hygiene faculty have of current ADEA educational guidelines. In addition, opinions of current dental hygiene faculty will be explored that indicate how educationally prepared dental hygiene faculty may or may not be to teach dental hygiene. The opinions expressed by dental hygiene faculty could indicate knowledge or agreement of ADEA suggested guidelines.

Could equally educationally prepared dental hygiene educators enhance student learning and align dental hygiene educational goals? Would dental hygiene faculty improve teaching skills by adopting the ADEA guidelines for all faculty? Does the literature indicate dental hygiene faculty are familiar with and agree on ADEA guidelines? Could having a background in educational methodologies improve teaching?

Dental education is in need of change (Haden et al., 2006; Pyle et al., 2006). The American Dental Education Association (ADEA) and the Commission on Change and Innovation in Dental Education (CCI) are working toward effective change in dental education. In the area of assessment, Haden et al. (2006) suggest that both summative and formative assessment are needed that are ongoing (not reserved at the conclusion), and further state that dialogue between faculty, students and administrators must take place for changes in dental education to occur. They recommend faculty development that is learner-centered, fosters change in curriculum, and assists faculty to reexamine teaching assumptions and practices.

Dental school faculty recruit 61 percent of the faculty through private practice (Hand, 2006; Chmar, Weaver, &Valachovic, 2006) and faculty recruited from private practice have very little experience with the processes, skills or abilities required for

success in the world of academia. No research has been conducted to determine if most dental hygiene faculty move into dental hygiene education from a private practice background. Consequently, dental hygiene faculty may have the same meager educational backgrounds/experience as dental school faculty.

Dental schools are just beginning to identify skills dental school faculty need to become effective educators (Hand, 2006). Dental hygiene faculty will need to also identify skills, abilities, and competencies required to produce effective dental hygiene educators who can enhance student learning. To make these changes, dental hygiene educators will need to collaborate on a local and national platform, but research must first be conducted to determine the extent of dental hygiene faculty educational backgrounds and the broad educational experience dental hygiene faculty may or may not possess.

Dental hygiene education uses administrative, didactic and clinical faculty to educate dental hygiene students. The ADEA suggested guidelines for dental hygiene faculty include all types of faculty in dental hygiene programs. Do all dental hygiene faculty have the same education? Do all dental hygiene faculty have knowledge in specific course content (subject appropriate)? Do all dental hygiene faculty have a background in educational methodology? These questions logically lead to the two major hypotheses of the study.

Hypotheses:

1. Dental hygiene faculty do not meet the recommended background in educational methodology as outlined by the ADEA guidelines for 'well qualified dental hygiene faculty.'

2. Dental hygiene faculty are unaware of the educational guidelines proposed by the ADEA.

List of Definitions

For purposes of this study, the following terms and definitions will be used.

Current educational levels: educational degree as indicated by level (associate degree, baccalaureate degree, masters degree, doctorate degree) and type (identification of major, e.g. dental hygiene, public health, education, etc.).

Background in educational methodology: coursework in education (methods, theory, measurement/evaluation) completed at the undergraduate or graduate level.

Clinical dental hygiene faculty: faculty members of an accredited dental hygiene program that provide instruction and education regarding the clinical and procedural dental hygiene skills within dental hygiene education.

Didactic dental hygiene faculty: faculty members of an accredited dental hygiene program that provide classroom lecture, materials, and activities pertaining to dental hygiene courses.

Administrative dental hygiene faculty: faculty members of an accredited dental hygiene program that direct, oversee, and organize the dental hygiene program, usually the dental hygiene program director.

ADEA: American Dental Education Association. A national organization that provides research and recommendations regarding dental education, advises on policy affecting dental education, and informs public policy concerning the nation's oral health.

ADEA suggested guidelines: not official policy statements, but a development aid to guide curriculum, course content, qualifications for faculty, and the development of new dental hygiene programs within dental hygiene education.

ADA: American Dental Association

CODA: The Commission of Dental Accreditation, an agency of the ADA that performs accreditation in dental education and is recognized by the United States Department of Education.

Educational methods (coursework): classroom lecture and activities to introduce and refine techniques used in teaching that promote learning and/or performance.

Educational theory (coursework): classroom lecture and activities that introduce relevant concepts, foundations, learning theories, instruction principles, and teaching models used in teaching.

Review of the Literature

Faculty within many healthcare professions such as medicine, dentistry, nursing, and dental hygiene programs provide instruction through a foundation that relies heavily on science. Prerequisite coursework in biology and chemistry are often required. Problem based learning and evidence based practices are often incorporated in healthcare education. Included with a foundation of science education are the skill intensive procedures within healthcare professions. With this blend of instruction, different types of faculty are needed to provide didactic (classroom and lecture) and clinical (hands on and procedural) instruction. Also, administrative faculty are needed to direct, oversee, and interface the healthcare program with the educational institution and often the community.

Social Learning Theory

Learning methods used to foster knowledge acquisition within dental hygiene education include social learning theory. The tenants of social learning theory begins with unlearned responses and behaviors, includes a process for changing responses and behaviors, and should result in changed responses and behaviors. Concepts that are used to predict changes in behavior include behavior potential, expectancy, and reinforcement value (Rotter, 1982). Social learning, according to Rotter, takes place in a meaningful environment and changes in responses and behavior occur on different levels at different times. Further, Rotter discusses the effects reinforcement has to direct goals that accompany changes in response and behavior.

The application of modeling also serves as a learning concept in dental hygiene education. As described before, clinical procedures are demonstrated by dental hygiene

faculty and repeated by students to assure learning. Observational learning as proposed by Bandura (1971, 1963) suggests that by observing others, behavior and performance have the potential for change, and that by obervation, learners have the potential to replicate acceptable performance that can be demonstrated in the future. In addition, observational learners can improve performance based on feedback that is informative.

Observational learning includes more than a conditioned response to an event. The process of observation by the learner incorporates a planned pattern of thinking toward action to reproduce the behavior (or performance) as observed. The process has value to the learner and motivation (reinforcement or feedback) guides the learner to produce improved performance through practice (Hilgard and Bower, 1975). Within dental and dental hygiene education, students are placed in an environment to observe clinical procedures from faculty and then perform these observed techniques with practice and guidance. As students move through dental and dental hygiene education to become skilled clinicians, observational learning is part of the education process.

Often in learning situations within dental hygiene education, clinical (procedural) instruction for dental procedures are modeled by an expert (faculty) and repeated by the novice (student). Modeling and social learning take place in a number of health care education areas (medical, nursing, dental, dental hygiene) where clinical procedures are demonstrated through a process with many, complicated steps. While observation and modeling is important to student learning, faculty also show a need to calibrate both the clinical technique and the didactic foundation students will observe. If faculty do not agree on clinical and didactic methods, students will not observe cohesive teaching techiques. When faculty collaborate together to regulate how clinical and didactic

instruction will be given, an agreement among faculty for consistent teaching methods may be observed in health care education. Collaboration could be seen as a foundation in which faculty agree on educational content and technique to deliver instruction. Collaboration and social learning work together to strengthen teaching consistency where faculty may exhibit goal directed, reinforced, educational methods.

Dental Hygiene Programs

A historical timeline of the profession indicates that dental hygiene has been in existence since 1913 when the first class of hygienists graduated from a 'course' in dental hygiene in Bridgeport, Connecticut (Darby, 1995; Wilkins, 2005; Nathe, 2005). From the beginning in 1913, there were numerous dental hygiene programs to educate students to become dental hygienists within the United States. In 2006, a total of 294 dental hygiene programs were recognized by the ADHA. Of these, 60 dental hygiene programs offer a bachelor degree, 17 offer a masters degree, and most offer an associate degree (ADHA, 2006). The ADHA indicates that seven percent of all dental hygiene programs are located in dental schools, 21% are located in universities, 14% are located in technical college/institutes, and six percent are located in vocational/academic medical centers. The majority (52%) of all dental hygiene programs are located in community/junior colleges (ADHA, 2006).

The demands of the dental hygiene curriculum require three basic types of faculty: administrative, didactic and clinical. Administrative faculty coordinate the program and interface with departmental faculty, institutional faculty, the students, and often chair the dental hygiene program. Didactic faculty develop materials, lecture, test, and provide classroom activities/assignments on dental hygiene coursework. Clinical

faculty provide the hands-on skills/techniques required of dental hygiene procedures. Dental hygiene faculty positions often include elements of administrative, didactic, and clinical skills and many dental hygiene faculty serve in all roles to a degree, yet, faculty are usually hired for a specific type of position.

Dental Hygiene Faculty

The general goal of dental hygiene faculty is to prepare dental hygiene students to successfully become dental hygienists after completing the scholastic and clinical requirements of a dental hygiene program. While dental hygiene faculty can agree on a general goal, there are numerous steps in the process where dental hygiene faculty must calibrate themselves with each other on several levels in order for the general goal to be reached. The calibration process should align the clinical and educational skills necessary for clinical, didactic, and administrative dental hygiene faculty to move toward consistent teaching. Faculty collaboration, as described by Austin and Baldwin (1992), is a cooperative endeavor that involves common goals, coordinated effort, and coordinated outcomes. Collaborative activities are not limited to education, but are applicable in business and health care. The definition is broad and vague to include the flexibility for each unique educational and workplace environment in which collaboration is needed.

Do dental hygiene faculty work in collaborative ways to teach dental hygiene students? Are all dental hygiene faculty members equally prepared to teach dental hygiene coursework and clinical skills? Would dental hygiene faculty possess consistent teaching skills if all faculty members had similar educational backgrounds? The ADEA (2005) has published recommended guidelines for dental hygiene faculty that could help

prepare dental hygiene faculty for their roles as educators. The guidelines suggest that course content in dental hygiene and a background in educational methodologies could better qualify dental hygiene faculty to teach dental hygiene students. A collaboration among dental hygiene faculty that aligns clinical skills, and specific knowledge in educational methods may strengthen how dental hygiene education is delivered. Through collaboration, consistent teaching methods may be achieved by dental hygiene faculty.

Dental Schools and Dental Education

Examples shown by previous studies indicate that dental school faculty are not always in agreement in their assessment of dental students' work in the clinical component as they study dentistry and its unique procedures (Lewis, Albino, Cunat, & Tedesco, 1982, Trotman, Haden, & Hendricson, 2007; Henzi, Davis, Jasinevicius, & Hendricson, 2007). Dental school faculty do not perceive dental education in the same ways or at the same level. Masella (2005) states that dental education and dental faculty have become somewhat outdated and that new approaches to dental education and perceptions of dental faculty need to change. Masella challenges the shibboleth (or commonplace ideas that become indisputable truths) among dental school faculty that 'only dentists truly understand dental education' (Masella, 2005 p. 1090) and suggests that the body of dental school faculty need to look within other disciplines, especially education and other sciences, to find answers toward working for change in dental education.

Dental schools have conducted studies to identify if faculty are able to agree on current knowledge in the subject area being taught. Dental schools are attempting to incorporate teaching methods recommended in education with the technical science of

the study of dentistry. A study by Marbach, Raphael, Janal, & Hirschkorn-Roth, (2003) was conducted using 20 dental school faculty to determine a correct diagnosis for the severity of bruxism (teeth grinding) on 29 sets of models. An initial test, and, three months later, a re-test were given to the dental school faculty. Of the 20 faculty, 75 percent reported having 'moderate experience' in diagnosing bruxism. The study by Marbach found that dental school faculty were correct only 48% of the time. This study indicated a need for the standardization of training to evaluate bruxism among dental school faculty. Developing competencies among dental educators for teaching consistency could be identified for many clinical teaching experiences. Dental hygiene faculty may face a similar situation in regard to the reliability of clinical judgments within dental hygiene education. Educational standards and training among dental hygiene faculty could drive dental hygiene education more consistently. Dental hygiene faculty, with the combined knowledge of clinical skills and educational methods, could more easily design the collaborative partnerships needed to achieve consistency in teaching methods.

To determine the consistency of dental school faculty to diagnose and plan treatment for periodontal (gum) disease, Lanning et al. (2005) presented information on three different cases of periodontal patients (characteristics varied). A total of 27 dental school faculty answered a 12 question survey to report the type, extent, and severity of the disease and what procedures would be recommended for each case. The results revealed differing answers among the faculty. The purpose of the study was not designed to determine which faculty would report the correct diagnosis and treatment, but to show that dental school faculty do not all reach the same conclusions about patient treatment.

"The impact of variation among clinical faculty on student performance remains unknown" (Lanning et al., 2005 p. 326) and that reliability and validity among faculty are important concepts in teaching methods especially as students learn to perform clinically. This study shows that calibration among dental school faculty could benefit the educational process through consistent evaluation methods.

A study by Lanning et al. (2006b) was conducted to determine if the accuracy and consistency of radiographic interpretation would improve among dental school clinical instructors after a training program was presented to faculty members. In this study, Lanning used dental hygiene faculty, periodontal faculty (periodontists and general dentists), and periodontal graduate students as participants. After a pretest, the participants were given instruction and a training program on radiographic findings and anatomic factors. Next, the participants were asked to determine the amount of bone loss for each radiograph and complete a post-test. Three months later, a presentation of the correct interpretation of the radiographs was given to the group and another post-test was given. The greatest improvement for the consistency and accuracy for interpreting radiographs proved to be in the category of no bone loss, less than 15% bone loss and 15-30% bone loss. The participants did not show improvement in the category of greater than 30% bone loss, before or after the instruction/training program. Lanning concluded "that accurate and consistent assessment of radiographs among clinical instructors is necessary for adequate evaluation of patient care, student performance and teaching effectiveness" (Lanning et al., p. 556). Lanning further states that faculty can benefit in some areas by training and reviewing skills together to improve accuracy and consistency.

Another study by Lanning et al. (2006a) was conducted to determine the accuracy and consistency among dental faculty using different types of radiographic viewing equipment. Dental school faculty were asked to examine 25 radiographs (x-ray film) for bone loss using one type of viewing equipment and complete a questionnaire. Four weeks later, the same 25 radiographs were examined by the dental school faculty on a different type of viewing equipment. More than 66% of faculty answered correctly using the different viewing equipment, yet the overall accuracy and consistency among faculty was not shown. Lanning concluded that accuracy and consistency among dental school faculty are needed for effective teaching and that training/educational sessions for dental school faculty can improve (in some areas) teaching consistancy.

While the results from the studies of Lanning et al (2006a; 2006b) demonstrate improved results only some of the time, the studies show that dental educators are attempting to identify educational methods for consistent teaching. Studies also show that students notice the inconsistencies of teaching among dental education faculty members (Henzi et al., 2006; Henzi et al., 2007; Masella, 2005; Schonwetter et al., 2006). Currently, the ADEA provides vague terminology for the educational requirements for dental school faculty. With vague ADEA educational requirements, interpretation for dental school faculty could be left to individual dental school programs to determine the educational requirements for dental school faculty. With 58 dental schools in the United States (ADA, 2009), the ADEA could play a role in developing clear educational requirements for dental school faculty, thus fostering consistent teaching methods.

In requiring consistent educational and pedagogical coursework for faculty within dental education, the clinical and didactic learning experiences of students would become more similar. Consistent teaching methods among faculty members can enhance student learning. As previously shown among dental school faculty, developing educational coursework requirements among dental school faculty for teaching consistency could be identified for many clinical and didactic teaching experiences within dental education. dental hygiene faculty may face a similar situation in regard to the reliability, accuracy, and consistency of clinical judgments and effective classroom instruction within dental hygiene education. Educational coursework among dental hygiene faculty could drive dental hygiene education toward consistent teaching methods.

Improving Dental Education

Student evaluation (reporting) could be perceived as another way for making educational improvements, redesigning material and developing subject matter for a course. Henzi, Davis, Jasinevicius, & Hendricson (2007) asked dental students to report strengths and weaknesses of the dental school curriculum. The study was conducted in 2002 and thirty percent of the dental schools in the United States (and one dental school in Canada) had a total of 281 second year dental students, 220 fourth year dental students, and 94 dental residents respond to the survey. The survey was not an evaluation, such as a course evaluation, but a mechanism for students to express with more detail their perceptions of dental school education as a whole. While some students reported on the strength of high quality and knowledgeable faculty, a greater number of students commented on the faculty who use outdated, poor teaching methods and the widespread perception of inconsistent assessment methods used for student performance. Also, class

disorganization, poor teaching methods and lack of quality instruction were reported by the students. A recurring theme in student comments emphasized the lack of calibration (consistency) among faculty on corrective feedback and grading.

In the discussion on the students' comments of dental education, Henzi et al. (2007) challenges dental school faculty to review student comments regarding the lack of organization in the classroom and clinical setting, the time being wasted to the detriment of learning, poor teaching, poor teaching materials, and lack of application to real world dental practice. Students reported these as areas for improvement. This study clearly shows that some dental students perceive dental faculty as having little teaching experience, and challenges dental school faculty to look for ways to improve educational methods used in dental education. In conclusion, Henzi suggests that student evaluations should be carefully and thoughtfully reviewed for recurring themes, and, improvements should be carefully designed to remedy gaps in dental education.

Henzi, Davis, Jasinevicius, & Hendricson (2006) also surveyed 655 dental students to discover perceptions students had regarding the clinical (not classroom) aspect of dental education. The questions Henzi et. al. (2006) used on the survey were based upon Heidenreich's research in 2000 that studied eleven recommended clinical teaching best practices used in teaching ambulatory medicine. These include orienting learners, prioritizing learners' needs, problem oriented learning, priming learners for tasks and activities, guiding learners with questions/prompts, teaching in the presence of the patient, focused teaching, modeling best patient care and professional behavior, using questions to teach, providing feedback, and student reflection. A majority of the students had observed that dental school faculty were using many of the best practices in clinical

teaching as suggested by Heidenreich. A noteable exception that students commented on was in the area of providing feedback. The findings reported that only 53% of the faculty provided feedback. This indicates 47% of faculty provided no feedback. The study also indicated that 27% of the students reported criticism from faculty that was inconsistent, insufficient and, at times, belittling. The use of questions to teach was very rarely used by faculty. Students also commented that using reflection to teach was never used by faculty. Henzi suggests that dental school faculty could benefit by using the educational methods framed by Heidenreich.

The recommended best practices used in clinical teaching by Heidenreich (2000) relate very closely with the nine events instructional events posed by Gagne and Medsker (1996). The clinical education provided by dental and dental hygiene faculty instruct students concerning the various steps involved with dental procedures include assessing student prior learning experiences, guiding students through new procedures, providing feedback for students, and informing students of expected outcomes. Students are asked to recall prior learning where dental procedures are similar, but expanded to produce desired performance. Guided learning instruction is given by faculty as students perform dental procedures, and faculty also provide feedback and assess student work at the end of the dental procedure in the form of grades and other evaluation mechanisms.

Faculty Development Programs

Faculty development can play a role in providing adequate training for faculty. Faculty development is used in various ways to provide new knowledge and information, new technology, clinical technique, or to hear from experts in particular fields and disciplines. Hendricson et al. (2007) has asked if faculty development programs truly

improve teaching effectiveness among dental school faculty. Faculty development is defined as a broad range of activities that renew or assist faculty in teaching roles and includes initiatives designed to improve performance among faculty in teaching, research, and administration. Hendricson et al. propose seven activities that foster faculty development: self-directed activities, shadowing exemplary teachers, videotaping while teaching and review/observation, participation in group lecture/activities, participation in workshops/seminars (brief duration), participation in fellowships (long duration), and participation in graduate programs in education or academic leadership.

Hendricson et al. (2007) also explore why faculty development is important for dental school faculty and state that many new dental school faculty have made dental education a second career in dentistry. In other words, many dental school faculty members become dental school faculty after working in private practice a number of years and then pursue a career in academia, thus extending a career in dentistry. While these new faculty members enter academia with competent clinical skills, educational and teaching experience are lacking. Many new dental school faculty remember the teaching methods used while they were students in dental school. Teaching methods of the past can become a point of reference for new dental school faculty just entering dental education. A good use of faculty development programs, therefore, would be to introduce all faculty to new educational methods and technology, discover strategies to teach problem-based learning, and incorporate evidence-based practice in dental education. Faculty development programs incorporating emerging and new educational methodologies would enable dental school faculty to change how dental education is delivered.

There are many reasons why faculty development can fail to accomplish desired outcomes, states Hendricson et al. (2007), but poor communication, lack of motivation, failure to prepare, and the lack of encouragement/rewards to accept new implementation are at the top of the list. Using an example of a faculty development program to implement problem-based learning into the curriculum, Hendricson states that solutions toward positive acceptance of planned curriculum change through faculty development include providing meaningful training to faculty, conducting and demonstrating needed changes are advantageous, and that the implementation process should be comprehensive and complete. Faculty development programs can become a tool for both dental school faculty and dental hygiene faculty to improve and enhance teaching and clinical skills, and ensure all faculty use a common teaching methodology within dental education.

Using faculty development programs to support dental school curriculum changes toward self-directed learning is one change some dental schools are instituting. Licari (2007) suggests that three stages are important for dental school faculty making changes toward teaching a new curriculum that include understanding the need for change, preparing faculty to teach differently, and preparing faculty to assess/evaluate new changes and new ways of learning. In addition to dental school faculty understanding the teaching environment in a new way, dental school faculty will need preparation to teach in a new/different way and Licari comments that early adopters among dental school faculty can assist other dental school faculty toward utilizing new teaching methods. Licari concludes that faculty development programs could further develop faculty with improved teaching and assessment skills, further, that the expanding role of faculty will need new educational methodologies to create a new learning

environment. Change in any educational environment may require educational skills that are not found among dental school faculty who do not have, or who lack, educational skill and experience. As the ADEA has suggested an educational background for faculty in dental education, dental school faculty may drive the teaching and curriculum changes needed in dental education. Dental hygiene faculty, who do not have or who lack educational skill and experience, could also encounter difficulties when making changes to dental hygiene curriculum, educational technology, and clinical assessments within dental hygiene education. In suggesting that dental hygiene faculty have backgrounds in educational methodology, technology, curriculum, and measurement/evaluation, the ADEA may be assisting faculty for future changes in dental education by encouraging faculty to possess educational coursework and skills.

Because the demands of maintaining a professional license (a pre-determined number of continuing professional education hours) while teaching at a dental or dental hygiene school, faculty development can, at times, be geared toward professional dental skills learning. According to Behar-Horenstein, Schneider-Mitchell, and Graff (2008), faculty development that is committed exclusively to improving teaching and learning are few in number. Further, Behar-Horenstein et al. (2008) suggests that dental school faculty teach how they were taught, not necessarily from a base of educational knowledge or evidence-based teaching practices. Behar-Horenstein et al. (2008) asked twelve dental school faculty to participate in a faculty development program taught by a professor from the College of Education within the university that addressed curriculum, instruction, assessment, critical thinking skills, learning styles, and how to use models of teaching to achieve desired outcomes. Faculty met two hours each week for six weeks. Each

participant was asked to keep a journal and comment in areas of new knowledge in teaching, changes made in teaching methods, planned change concerning future teaching methods, awareness, and challenges to learning while teaching. Participants were asked to compare what was learned during the seminar to current teaching methods. The journals were collected and the end of the six week period to be evaluated for principles participants learned and changes participants implemented to current teaching methods.

The comments in the participant journals from the study conducted by Behar-Horenstein et al. (2008) indicated that many of the participants had never taken courses in teaching. Participants also commented that the information learned about teaching styles, learning styles, teaching models, and prior learning encouraged participants to change teaching methods used in the past. Participants agreed that new and junior faculty could possibly enhance teaching skills by attending faculty development programs that focused on educational methodologies. Although dental hygiene faculty were not used in this study, dental hygiene faculty may benefit from faculty development programs that focus on educational methods to enhance teaching skills. Receiving instruction on educational methodologies is suggested by the ADEA for all types of dental school and dental hygiene faculty.

Faculty Credentialing

A case for promoting faculty credentialing within dental schools has been seen in the literature. Valenza, George, and O'Neill (2005) use information stated in a 1996 Federal Bulletin, and the Joint Commission to decribe credentialing as a process of obtaining, verifying and assessing the qualifications of health care practitioners. Medical professionals who work and provide care in hospitals and large clinics commonly

undergo credentialing procedures. Recently medical school faculty members have begun the credentialing process for faculty with teaching responsibilities. Dental schools in the United States are starting to adopt a similar credentialing process for dental school faculty (Valenza et al. 2005; Myers & Yoon, 2006). The credentialing for faculty at dental schools can apply to the verification of a professional license, areas of speciality, specific professional training/technique, and education. Valenza suggests that the need for credentialing among dental school faculty arises from the 2004 CODA standards that 'ensure the quality and continuous improvement of dental education that reflect the evolving practice of dentistry' and, further, 'a defined evaluation process must exist that ensures objective measurement of the performance of each faculty member' (as cited in Valenza, 2005 p. 871). In addition to describing a model for credentialing at a dental school, Valenza describes the redentialing process and concludes by stating that a reliable credentialing process improves quality assurance and risk management programs in keeping accurate records of faculty qualifications. By having a credentialing system and process in place, dental school education could easily ensure the qualifications of dental school faculty in areas of professional license and education. Credentialing could be a planned mechanism in demonstrating qualified dental faculty are filling dental school faculty positions.

To discover the extent to which United States dental schools are using a credentialing process, Myers and Yoon (2006) conducted a study to determine the use of credentialing. In the study, credentialing was defined as 'a complete review and verification of all credentials and specific skills faculty possess in order to determine if they will be authorized to teach, supervise, or practice such skills' (Myers & Yoon, 2006

p. 637). Survey questions included the presence of a credentialing process, length of time credentialing process has been in place, intervals of re-credentialing, who directs credentialing activity, types of data collected, who verifies information, and whether or not credentialing is an important activity. Of the 55 dental schools in the United States, 46 (84%) responded to the survey. Only 46% of the 46 dental schools surveyed conduct a credentialing process of the faculty (54% do not). Eleven different items were presented that may require credentialing which included educational background and licensure. Of dental schools that use credentialing, 95% check the professional license of faculty and 86% check the educational background of the faculty. Although the survey did ask about the educational background of the dental school faculty, the survey did not ask specific questions concerning the criteria used to educationally credential dental school faculty. Surprisingly, 66% of the dental schools did not verify the accuracy of information collected. Those responding to the survey all agreed that credentialing was important for dental school faculty.

In keeping with ADEA suggestions for qualified faculty members, credentialing could be seen as a mechanism to support the documentation of professional license and education of faculty members. Dental hygiene school were not used in the study by Myers and Yoon (2006). The credentialing of educational background, as reported and studied here is defined as the 'relevant educational background verified by copies of diplomas, letters from professional schools, residency, or postdoctoral programs and previous academic and/or hospital appointments' (Myers & Yoon, p. 640). With 51% of dental school faculty coming from private practice (Chmar et al., 2008) how do the

ADEA suggestions of educational methodology, curriculum, and measurement/evaluation fit into the educational category?

Educational Competency for Dental Faculty

Dental school faculty are beginning to look at educational competency among faculty through faculty development, faculty mentoring, and other activities to strengthen teaching methods (Trotman, Haden, & Hendricson, 2007, Hendricson et al., 2007, Hand, 2006). The identification of competencies for effective dental school faculty as suggested by Hand (2006) include some of Boyer's (1990) priorities of the professoriate namely; teaching, discovery, integration, and application. Hand recalls the ADEA's suggested guidelines for dental faculty to have current knowledge of subject areas with the addition of educational theory, methodology, curriculum development, test construction, measurement and evaluation but realizes that the way to obtaining these necessary skills have not been identified. In Hand's study, a modified Delphi technique with 22 dental education experts (dental school deans, faculty development officers, and ADEA officers) to participate as a panel to identify competencies important to clinical teachers, clinical scholars, and research scholars among dental school faculty. Within the scholarship of teaching, 83 competencies were listed and ranked and among these were identification of learner needs, providing content that builds on previous knowledge, content sequence, develop methods for the calibration of instructors, application of instructional design and others. Fifty-six competencies were listed and ranked within the scholarship of discovery such as, formulating research questions, designing research studies, writing grant proposals, conducting research, evaluating findings, and publishing

research results. The scholarship of application and integration were not included in Hand's study.

In order for dental hygiene education to be effective, dental hygiene faculty must strive to be consistent and accurate in teaching methods. In the clinical realm of dental hygiene education, objectivity must meet with some level of consistency to be accurate. Much of the learning done in the clinical aspect of dental hygiene education is achieved by modeling and observation (a dental hygiene procedure is demonstrated by faculty and the student must closely copy what was shown). Consistency and accuracy among dental hygiene faculty is important to provide students quality education through improved and effective teaching methods. Dental hygiene faculty with a background in educational methodology, as suggested by the ADEA, may contribute to the educational process of providing dental hygiene education that has consistent teaching methods. Within the dental community, a discussion toward change in dental curriculum are posed. There are many within the dental community that advocate change in dental education for the academic and clinical aspects of dentistry. The branches of dental education include dental (training of dentists), dental hygiene, and other allied dental educational programs. Three major concerns to drive changes in dental educational curriculum include; dental education that has become too expensive, the dissatisfied consumers of dental education (the students), and that dental education has become convoluted (Pyle, et al 2006). Pyle et al. (2006) describes convoluted in these terms: "The curricula of dental education have been characterized as overcrowded, unmanageable, inflexible, disjointed, irrelevant, and lacking in effective connectivity among basic science and clinical science applications" (Pyle et al., 2006 p. 922). An overhaul of a dated dental educational system

is needed. In order for changes to take place in dental and dental hygiene education, faculty need to be involved in the changes ahead.

Specifically, dental hygiene faculty could be involved in the entire process of change that is needed in dental hygiene education. Dental hygiene faculty could model faculty involvement after the human resource development model of organizational change as suggested by Swanson and Holton (2001) to include; analysis, design, development, implementation, and evaluation. The analysis of educational and clinical requirements to teach dental hygiene, the specific design of qualifications for teaching dental hygiene, the development of a model to align all current dental hygiene faculty educationally and clinically, the implementation of reaching all dental hygiene faculty in dental hygiene education and the evaluation to assure all dental hygiene faculty meet the same criteria for teaching dental hygiene could be performed within the dental hygiene educational environment with assistance of the ADEA or CODA.

According to Hand (2006), competencies for effective dental faculty, in the areas of teaching and research, are lacking. Hand included clinical instructors (non tenured), clinical scholars (tenure track), and research-intensive scholars (tenure track) types of dental faculty in the study and applied Boyer's (1990) scholarship of discovery and learning toward competencies in dental education. In the study, Hand discovers that competencies for dental faculty have not always been attempted and it is unlikely that dental faculty have training in areas to produce effective dental educators. Hand suggests that a first step in the process would be to identify competencies dental faculty should possess. Another step would be providing ways for the dental faculty to receive additional professional development to acquire the competencies. Further, Hand suggests

that in establishing competencies for dental faculty, educational institutions may use the competencies to assess and identify competency gaps which can drive educational plans for faculty development. While the study included competencies to consider for teaching, Hand implicates a future direction to identify competencies for service and clinical care using a similar process.

A reason to identify competencies for dental faculty, Hand (2006) observes, stems from the observation of where dental schools are recruiting dental faculty. Hand uses the study conducted by Chmar, Weaver, & Valachovic, (2006) which found that 61% of all dental school faculty are recruited from private practice (with little or no educational experience), 16% from advanced educational programs, 14% from another dental school, 7% among dental school graduates, and 2% from the uniformed services. Chmar et al. (2008) conducted a second survey of dental school faculty in the 2005-2006 academic year which found that 51% of dental school faculty were recruited from private practice. Chmar found that there has been an increase of new dental school faculty recruited from postdoctoral educational programs (18% in 2005 and 21% in 2006), an encouraging sign. Still, the top three factors in the difficulty of recruiting dental school faculty are lack of response to position announcement, salary limitations, and meeting the requirements of the position.

Since many dental school faculty come from a private practice background with little to no educational experience, dental education has the responsibility to provide a process to drive dental school faculty toward educational competence. Developing educational and clinical competencies that contain specific content assist in producing dental school faculty that possess educational skills to teach in dental education.

While ADEA guidelines challenge dental schools to "recruit faculty who have backgrounds in current knowledge of the subject area they are teaching, and, where appropriate, educational theory and methodology, curriculum development, and test construction, measurement and evaluation" (ADEA, 2005b p. 791), Hand (2006) suggests that the specific knowledge and skills necessary to meet this goal have not been identified. Further, Hand proposes that competencies for dental faculty will attempt to meet these goals. Hand also suggests that the ADEA could play a coordinating role in creating faculty competencies.

Future directions that Hand (2006) implies from the study and survey are developing assessment instrument(s) to identify gaps in competencies for faculty, identifying professional programs/activities for widest gaps, seek ADEA involvement for coordination and further development of competencies, and to identify competencies for service and clinical care using a similar process. Because the community of dental school faculty possess a wide variety of clinical expertise and educational backgrounds, Hand believes that dental school faculty should be part of the process for developing a model for qualified, effective dental school faculty. Suggestions made by Hand could be used in all allied dental health educational programs such as dental hygiene.

An analysis may be needed to determine from what areas dental hygiene faculty are recruited as dental school faculty have already conducted. The educational level, type of education, clinical experience, and educational experience should also be included to determine specific educational requirements for effective dental hygiene faculty. The first step in this process will be to assess the current educational status of dental hygiene faculty to move forward in the design of clear educational competencies. Once

educational requirements are established, plans may be developed to adopt educational requirements to strengthen teaching in dental hygiene education. Specific educational requirements in educational coursework could work to strengthen teaching in dental hygiene education.

Institutions of dental education exist in environments that hold them accountable for student learning, academic performance, and, to a certain extent, community health care needs (Tedesco & Ferrillo, 2002). Establishing competencies for both the clinical and didactic components of dental hygiene education help to show that accountability to educational stakeholders; the students, other faculty members, and administration. Students in dental hygiene education need dental hygiene faculty that are competent to teach, faculty members need an approach toward collaborative teaching methods, and administration needs well qualified dental hygiene faculty members in dental hygiene education.

Collaboration activities are used in the educational setting, but are not limited to education. Austin and Baldwin (1992) state that business, health care, and public policy use collaboration in a number of different settings. Further, that rapidly changing environments, technology and increasingly specialized knowledge help lay a foundation for an increased need to work collaboratively. Using collaboration activities to develop dental hygiene faculty members toward educational preparedness in dental hygiene education may expose gaps among dental hygiene faculty members that need educational coursework as suggested by the ADEA.

In order for dental hygiene faculty to work together collaboratively, changes must take place among the faculty, administration, and within the educational discipline.

Farmer (1990) has suggested three conditions essential for this type of change; a condition of trust, committed leadership, and effective planning. To implement change, Farmer poses participation, education, incremental steps, and preparation, among others, as steps toward change.

Because dental hygiene faculty often work in isolation, efforts toward collaboration would connect the faculty in a professional and educational direction. Possible outcomes would include faculty cohesiveness within singular institutions and throughout dental hygiene programs in the United States. The collective educational efforts provided by cohesive dental hygiene faculty could further enhance learning for dental hygiene students. A framework is needed to identify how educationally prepared dental hygiene faculty currently are and if the suggested ADEA guidelines could assist in this process. A plan for making dental hygiene faculty aware of ADEA guidelines could effect change. This effort will involve all dental hygiene faculty at all levels. No research studies have been conducted on the educational levels, specific educational coursework, or knowledge of ADEA suggested guidelines for dental hygiene faculty.

Need for specific education courses

The need for change in curriculum for many dental, and allied health professions are well documented (Lanning et al., 2006a; Lewis et al.,1982; Hand, 2006; Pyle et al., 2006; Tedesco & Ferrillo, 2002; ADEA, 2006). This change involves the two unique educational experiences of health care professions: the didactic and clinical aspects (Majeski, 2006). Several changes need to be made which include changes to the curriculum structure, the cost of professional education, specific ways of educating

students through the academic and clinical process (Pyle et al., 2006), accountability to higher education, consumers and students, integrating technology to the educational process, and the challenge to develop faculty at a competent level (Hand, 2006; Pyle et al., 2006).

The Association of American Medical Colleges (AAMC) has produced a report on the state of medical education and findings indicate a need for a major overhaul in health professions education (AAMC, 2004). The system and process for medical education and core clinical disciplines date back to the 1950s. The AAMC further stated that while changes have been made to the academic portion of medical education in the first two years of medicine, the education students receive during the last two years (heavily clinical) is inadequate. Part of the problem, according to the AAMC, lies with faculty reluctance to change clinical education and that the assessment of clinical skills is generally considered inadequate.

A number of suggestions by the AAMC were made to enhance the education of medical students. The importance of 'developing and supporting effective teachers of medicine' was a clear goal (AAMC, 2004, p. 8). Although no descriptive steps were mentioned for how to develop and support medical faculty, faculty development was mentioned. The report further suggested that medical schools 'should require faculty members to complete periodic program orienting that contain the goals and objectives of the educational program as a whole, and those of specific student learning experiences in which they participate' (AAMC, 2004, p. 10). This report might suggest that medical faculty are in need of regular input that pertain to the goals and competencies for clinical teaching to keep medical education congruent and adequate.

Dental hygiene education, as part of the health professions category, will also have to determine if specific academic and clinical education will have to change in the future. The process and theory of how dental hygiene students are educated will need inspection to determine if the processes in place currently are adequate for dental hygiene education. Dental hygiene educators will have to determine if a new or different way of educating dental hygiene students will meet the goals of core competencies for graduation, satisfy higher education standards, and enhance student learning. If change is needed in the educational process, educators will also need to change. Would dental hygiene faculty who are knowledgeable in educational methodology be better equipped to make these changes in dental hygiene education? Do ADEA suggested guidelines for dental hygiene faculty support faculty to be able to make these changes?

The Liaison Commission on Medical Education (LCME), an accrediting body that functions with the American Medical Association and the AAMC, has reported on the functions and structure of a medical school with criteria for medical education. The development of standards for medical education by the LCME address medical school faculty. While the report documents the need for specific numbers of and educational level of medical school faculty, the LCME suggest that members of the faculty must be effective teachers. Educational requirements include curriculum design and development, curriculum evaluation, methods of instruction, course planning, program evaluation, and student evaluation. Faculty should also serve as role models for the students and provide insight into contemporary methods of providing patient care. Compliance with these standards include ‘documented participation of faculty in professional development activities related specifically to teaching and evaluation,

attendance at regional or national meetings on educational affairs, and, evidence that faculty members' knowledge of their discipline is current' (LCME, 2004, p. 24). This report demonstrates the need for medical school faculty to remain current not only in their professional competence as a physician (with the regulations in place for continuing education requirements to hold a license to practice), but also continuing requirements in the educational realm to support their credentials as medical school educators. Faculty of dental hygiene programs must be eligible for retaining a dental hygiene license to practice, but dental hygiene faculty have no requirements to support continuing education in regard to the 'educational' aspect of the position except in the case of unclear suggested ADEA guidelines.

Nursing and dental hygiene have been linked as healthcare professionals over a long period of time. Common ties between nursing and dental hygiene are educational entry levels, types of degrees offered, theory of practice, trends and issues in curriculum expansion, and faculty shortages (Henson, 2005; Spielman, Fulmer, Eisenberg, & Alfano, 2005). Dental hygiene draws many educational models from nursing including a framework for the development of various degrees and different levels of clinicians. The Nurse Practitioner educational model has become a 'blueprint' for the creation of the Advanced Dental Hygiene Practitioner (ADHP) that will require a masters degree (ADHA, 2006; Bernie, 2005; Henson, 2005; Majeski, 2006; Ring, 2004).

The nursing profession has recently identified the need for competencies among nursing faculty and nurse educators (Davis, Stullenbarger, Dearman, & Kelley, 2005). An article by Davis et al. (2005) examining competencies for nurse educators propsed by

the Southern Regional Educational Board (SREB) and the Council on Collegiate Education give reasons to valadate the proposed competencies. A proposed model for developing criteria and competencies for nurse educators involves a 2-level certification. Level One certification recognizes entry-level nurse educator competencies and require a masters or doctorate level in nursing. Level-Two certification focuses on leadership in developing, maintaining, and improving nursing educational programs.

The 35 competencies for nurse educators were developed by a SREB ad hoc committee of eight nurse educators representing all levels of nursing education within the SREB states (16 states and the District of Columbia). According to SREB, the 35 competencies indicted for nurse educators included 21 comptenceies listed in the teaching domain. The 35 competencies also included nine competencies listed in the scholar domain, and seven competencies listed in the collaborator domain. The 21 teaching domain included defining instructional objectives and content consistent with overall curricular goals, organizing content and learning experiences according to accepted principles of learning, designing instructional strategies, learning materials and educational technology to achieve learning goals, prescribing appropriate teaching/learning interventions based on analyses of learners' needs, using appropriate evaluation instruments to assess learning and achievement of goals and using information from program evaluations in planning instruction and improving the process. These competencies were framed to align the nursing educator model that includes the role of teacher, scholar and collaborator.

SREB conducted survey research to validate the 35 nursing educator competencies among the 550 nursing program administrators within the 16 states (and the

Discrict of Columbia) in February 2002 and received a 45% return rate. The nursing program administrators offered 141 additional statements concerning nurse educators and the role as teacher. These statements were reviewed by the SREB task force and determined to be covered by the original competency statements. The agreement of the nursing program administrators validated the competencies in the study even further. Nursing program administrators further suggested that the nurse educator competencies could be extended to other groups of nursing faculty and educators (as in hospitals and community agencies) outside nursing education. The study was prompted by a severe shortage of nurse educators in the southern region with the need to develop well qualified nursing faculty for rapidly expanding nursing programs. Davis et al. (2005) agree that competencies for nurse educators are needed and that nurse educators in possession of the SREB certification will have the skill sets needed to demonstrate consistent education in nursing.

Of nursing faculty making the transition from nursing employment to nursing education and academia, Beres (2006) has suggested that nurses with teaching experience in the private sector, through community public health programs or hospital education programs, have an easier transition into nursing education. Beres further suggests that replacing vacancies within nursing education with nurses that possess clinical skills, but lack educational theory, curriculum development, teaching evaluation and technology could adversely affect the future of nursing education, and faculty that lack educational skills will find the transition into nursing academia harder. The National League for Nursing has collaborated with Applied Measurement Professionals, Beres states, to develop a Nurse Educator Certification Examination and these partners are examining

criteria nursing faculty should possess in nursing educational programs. The certification for nursing educators puts nursing faculty on an equal footing in terms of qualifications to teach and provides a strong framework for strengthening the educational standards of nursing education.

Faculty Shortage in Dental Hygiene

A nursing faculty shortage prompted the need to examine competencies for nursing faculty. Faculty shortages are also evident in dental hygiene education (ADHA, 2006; Collins, Zinskie, Keskula, & Thompson, 2007; Haden et al., 2001; Henson, 2005; Majeski 2004; Nathe, 2005; Nunn et al., 2004; Ring, 2002) and the number of students in dental hygiene programs continues to increase and the number of dental hygiene programs continues to increase (Brown, Wagner, Mikkelsen, & Munson, 2005, Newman, 2004). The need for dental hygiene faculty will most likely increase. A survey of dental hygiene program directors across the United States was conducted by the ADHA in 2006 to learn more about dental hygiene programs, employment for dental hygiene graduates, types of dental hygiene students and insights about dental hygiene as a profession. Concerning dental hygiene programs, the recruitment of qualified faculty was reported as a problem among ninety-one percent of dental hygiene program directors. Among reasons for the difficulty to recruit faculty to fill current vacancies in dental hygiene programs, few qualified candidates received 52% of the responses, and candidates lack required academic qualifications received 24% of the responses. Eighteen percent of dental hygiene program directors reported no qualified candidates to fill faculty vacancies within dental hygiene programs (ADHA, 2006). With faculty shortages in dental hygiene education and candidates applying to dental hygiene faculty positions who lack, or do not

have, educational qualifications, dental hygiene program directors and other dental hygiene faculty along with CODA and the ADEA could play an important part in developing educational qualifications for dental hygiene faculty. On one level, the ADEA has assisted dental hygiene programs in making suggested educational guidelines concerning dental hygiene faculty.

To ensure support for the educational framework for dental hygiene faculty, requirements or competencies for dental hygiene faculty will most likely be needed as evidenced from other professions (dental, medical, and nursing) that are identifying the same need for faculty/educator competencies and/or certification. In addition, the suggested guidelines by the ADEA for dental hygiene faculty will need to become more recognized at each dental hygiene program among all dental hygiene faculty. The ADEA will need to more clearly define what suggested educational guidelines are for dental hygiene faculty, and, dental hygiene faculty will need to be more aware of ADEA educational guidelines to determine if the guidelines are those that develop well qualified dental hygiene faculty. Awareness of the ADEA educational guidelines will need to occur on a local and national level (and also on an individual level) within dental hygiene programs in the United States.

While ADEA guidelines call on dental schools to "recruit faculty who have backgrounds in current knowledge of the subject area they are teaching, and, where appropriate, educational theory and methodology, curriculum development, and test construction, measurement and evaluation" (ADEA, 2005b p. 791). Hand (2006) suggests that the specific knowledge and skills necessary to meet this goal have not been identified. Further, Hand proposes that competencies which are anchored to educational

methods and theory that examine the need for consistent teaching are needed among dental faculty while attempting to meet educational guidelines suggested by the ADEA. Hand also suggests that the ADEA could play a coordinating role in creating faculty competencies with dental faculty and that the ADEA could also provide professional workshops for dental faculty that promote educational competency.

Future directions that Hand (2006) implies from the study and survey include developing assessment instrument(s) to identify gaps in competencies for faculty, creating professional programs/activities to identify widest gaps, seeking ADEA involvement for the coordination and further development of competencies, and identifying competencies that address service and clinical care using a similar process. Because the community of dental school faculty possess a wide variety of clinical expertise and educational backgrounds, Hand believes that dental school faculty should be part of the process for developing a model for qualified, effective dental school faculty. The suggestions made by Hand regarding educational competency for dental education and dental school faculty members could be applied to dental hygiene education and dental hygiene faculty members.

Within dental hygiene education, a similar experience may be occurring with regard to the recruitment of dental hygiene faculty. Directors of dental hygiene programs have identified faculty shortages within dental hygiene programs and will have to examine where dental hygiene faculty are being recruited from (now and in the future) and what, if any, competencies will be needed among dental hygiene faculty to ensure effective dental hygiene education is being provided by qualified faculty. At this time,

the literature does not offer information about the educational background of dental hygiene faculty or from where dental hygiene faculty are being recruited.

Dental hygiene education is skill intensive. Dental hygiene faculty members have received skill intensive education and have practiced as a dental hygienist before becoming dental hygiene faculty members (a prerequisite of faculty positions). Many dental hygiene faculty members may have clinical skill and expertise, but lack teaching skill or educational coursework. Many have written about research concerning dental faculty as dental clinicians with little teaching experience or knowledge of how to teach (Chmar, Weaver, & Valachovic, 2008; Hendricson et al., 2007; Henzi, Davis, Jasinevicius, & Hendricson, 2007; Trotman, Haden, & Hendricson, 2007; Roth 2007, Masella 2005).

Subject Matter Experts (SME's) are defined as those having technical skill, knowledge, and/or expertise in a certain area (Dick, Carey, & Carey, 2005; Williams, 2001). In dental hygiene education, dental hygiene faculty are similar to SME's while teaching clinical and didactic aspects in dental hygiene coursework. Many dental hygiene faculty have clinical dental hygiene skills, but may not have knowledge regarding the educational methods of instruction to teach dental hygiene clinical skills and didactic coursework. Williams writes that SME's, while having skill, knowledge, and expertise may not have the skill, knowledge and expertise to teach. Williams cites ineffective instruction, learner overload, and a lack of adult learner principles as reasons for the inability of SME's to perform successfully as teachers and trainers. Williams suggests that SME's need experience, formal education, and adult education or training and development to be effective in educational and training arenas. Further, Williams

states that because SME's without adult educational learning principles are being used, more research is needed to determine the effects and outcomes of how SME's without learning principles affect adult learners. Dental hygiene faculty members will need to decide if clinical expertise alone is enough to deliver effective dental hygiene education, or if educational coursework is needed by dental hygiene faculty to support and deliver quality instruction. Dental hygiene faculty members, the ADHA, and the ADEA will have to determine together if ADEA suggested educational guidelines for dental hygiene faculty improve and strengthen dental hygiene education.

ADEA Guidelines for Dental Hygiene Faculty

The ADEA has suggested guidelines concerning dental hygiene faculty contained within the curriculum guidelines for allied dental education programs (ADEA, 2005). The guidelines state, ‘faculty should have sufficient knowledge and experience with current standards of dental hygiene practice, the appropriate level of education, and background in educational methods, testing and measurement and evaluation. Support, participation and integration of the basic and dental science faculty should be encouraged ' (ADEA, 2005 p 19). The Accreditation Standards for Dental Hygiene Education Programs by the Commission on Dental Accreditation (CODA) in association with the American Dental Association (ADA) has also set forth policy for the accreditation process for dental hygiene programs. Concerning dental hygiene faculty, ‘the dental hygiene program must be staffed by a core of well-qualified full-time faculty who possess a baccalaureate or higher degree. All dental hygiene program faculty members must have current knowledge of the specific subjects they are teaching. All program

faculty must have documented background in educational methodology consistent with teaching assignments' (CODA, 2007 p. 29).

Within the statement of general policy, the Commission on Dental Accreditation Standards for Dental Hygiene Education Programs "evaluates dental hygiene program goals and objectives, supports continuing evaluation of and improvements in dental hygiene education programs through institutional self-evaluation, encourages innovations in program design based on sound educational principles, and provides consultation in initial and ongoing program development" (CODA, 2007 p. 7). Further, the Commission "recognizes academic freedom and allows institutions considerable flexibility in structuring their educational programs" (CODA, 2007 p. 7). The ADEA has suggested principles for accreditation within dental education. Among the suggested principles the ADEA offers regarding accreditation is this principle; "accreditation must require the development of clearly defined goals and objectives" (ADEA, 2007 p. 934). Although CODA must allow for flexibility with educational programs, the ADEA advises clarity. The ADEA suggests that a dental education program with clearly defined goals and objectives, can be supported by the accreditation process, educational quality is assured, and validation becomes apparent.

Requiring certain educational methodologies for dental hygiene faculty members might be well received by the various accrediting bodies (for instance the ADEA and CODA) as innovation. Dental hygiene faculty with coursework in education might also be aligned with the educational goals and objectives of dental hygiene programs and institutions of higher learning. Faculty of dental hygiene programs with similar educational knowledge would give credibility to and validate dental hygiene education.

To create a model for well qualified dental hygiene faculty using suggested ADEA guidelines, flexibility in the system would allow dental hygiene leaders and faculty to define the competencies and educational background needed by dental hygiene faculty that demonstrate a consistent process of dental hygiene education. These consistent educational requirements could be shown to enhance effective teaching methods within dental hygiene education.

Research has been conducted in dental hygiene education to determine behaviors that enhance clinical teaching. One such study by Kiser, Wilder, Flemming, and George (2006) showed that faculty who participate in clinical practice, whether in a faculty practice or private practice apart from the educational institution, are deemed (by dental hygiene program directors) to enhance the competency of teaching dental hygiene clinical skills. Kiser et al. (2006) surveyed dental hygiene program directors to assess how many dental hygiene faculty were required to work in a practice type setting in addition to the duties in education as dental hygiene faculty. The survey included demographics of the dental hygiene faculty in the following areas; institutional setting, faculty of 9-10 month and 12 month positions, requirement to practice, and, reasons for non practice. The survey also asked for agreement or disagreement on statements relating to faculty practice in the clinical setting. The conclusion of the survey showed that dental hygiene faculty may enhance clinical teaching when providing direct patient care in a clinical practice setting. The survey also showed that less than 15 percent of the dental hygiene programs required faculty to participate in clinical practice even though most dental hygiene program directors thought clinical practice might improve clinical teaching. Kiser et al. (2006) found more than 50% of dental hygiene faculty members

(both required and non required) were participating in clinical practice. While Kiser et al. (2006) observed dental hygiene faculty that work in clinical practice improve clinical teaching within dental hygiene education, further studies will be needed to discover specific practices that enhance didactic instruction within dental hygiene education. A broad spectrum of competencies, skills and educational requirements for dental hygiene faculty will be needed to define improvements for both the didactic and clinical components of dental hygiene education.

The students of dental hygiene programs can also be a group from which to draw ideas for effective clinical and classroom teaching in dental hygiene education. Student observations and evaluations could play a role in identifying and determining the skills and educational methods dental hygiene faculty need. A study by Schonwetter et al. (2006) begins by saying "effective teaching is critical for student learning, especially in professional fields such as dental hygiene (and dentistry), yet, these are often taught by clinicians who, for the most part, have limited or no prior formal teaching training" (Schonwetter et al,. 2006 p. 624). A goal of the Schonwetter et al. (2006) study was to discover effective teaching methods in dental education in both the classroom and in clinical teaching. Fifty dental hygiene students and 125 dental students were surveyed to identify effective teaching behaviors as perceived by the students. Surprisingly, individual rapport and organization were ranked highest by students and not, necessarily, clinical competence. Schonwetter et al. (2006) noted that the differences between dental hygiene students and dental students may have had some impact on survey results, and that the students inability to define ‘effective teaching qualities’ may also have had an impact on the study. The aspects of looking at both clinical and classroom faculty may

have confused the students with different perceptions for faculty effectiveness. The study conducted by Schonwetter et al. (2006) can illustrate the need to draw from all stakeholders in dental education, and this includes students.

With the current dental hygiene educator shortage, Nunn et al. (2004) suggests that the solution to the allied dental faculty (which includes dental hygiene) shortage must involve not making the problem worse with heavier workloads for existing faculty, or to hire faculty with minimal educational requirements. These solutions may create an even more significant problem that would prove detrimental to the quality of allied dental health education. Nunn et al. (2004) has suggested a database to track current faculty and to provide for future faculty shortages by keeping the database current to fill faculty shortages with well prepared educators. If clinical and educational requirements for dental hygiene faculty, created by dental hygiene faculty with the ADEA, ADA, and CODA were clearly developed, the database could reflect well prepared dental hygiene faculty to fill faculty vacancies. A central database with consistent information for the clinical and educational requirements could enhance the placement of qualified educationally prepared dental hygiene faculty.

The dental hygiene faculty shortage puts into sharp focus the need for dental hygiene faculty that possess the clinical and educational skills needed to become dental hygiene faculty members. Majeski (2006) has done research on the dental hygiene faculty shortage and discovered from dental hygiene program directors that dental hygiene education needs solid dental hygiene educators. Dental hygiene faculty share much in common, but education includes additional knowledge and skills sets that one does not learn in entry-level (two year Associate degree type) dental hygiene programs.

The realization that many dental hygiene educators do not possess either a required level of degree, or aspects of the degree that address educational methodologies, assessment and evaluation creates a gap in the educational goals within dental hygiene education. Further, Majeski (2006) states that the profession of dental hygiene will need to design programs that will prepare future dental hygiene faculty and promote dental hygiene education as a career. Having clear clinical and educational requirements for current and potential dental hygiene faculty members in place could guide the direction of preparing current and future dental hygiene faculty.

One way of integrating educational guidelines for dental hygiene faculty is to investigate goals and objectives for change in dental education. The ADEA has developed the Commission on Change and Innovation in Dental Education (CCI). The CCI (Pyle et al.,2006) has started to identify ways the dental education environment will need to change to meet the competencies in place for newly graduating dentists who are entering practice. To meet these goals, CCI has identified principles to shape the dental education environment to include critical thinking, life long and self-directed learning, humanistic environment, scientific discovery and the integration of knowledge, evidence-based oral health care, assessment, faculty development, and the concept of the health care team. In looking more closely at faculty development, the CCI (Haden et al.,2006) has suggested that the teacher-learner role must change and self-assessment for faculty will have to include change and innovation in the knowledge, skills, attitudes and values of the faculty. These changes, that the CCI refer to, may lie in teaching competencies for dental faculty. The ADEA and the CCI may have the role of working together to identify and determine teaching competencies for dental and dental hygiene faculty. The

CCI (Pyle et al., 2006) has outlined a case for making changes in dental education that extends to dental hygiene education.

There are strategies for change within education that Farmer (1990) suggests, will improve the process toward change. There are different roles to be filled as the process of change moves forward, that, beyond the catalyst (inertia), the change agent must find support from others for solutions, process help, resource links, and confidence builders. Changes within dental hygiene education would involve dental hygiene faculty members that become the catalyst (and part of the change) of change rather than having change forced on dental hygiene education from a outward source. The ADHA and ADEA, in strength and number, could serve to help the change process. The ADHA and/or ADEA could serve as a large resource linker for the change process.

Next, Farmer (1990) suggests that a supportive environment is needed for the change process to move forward. The internal environment is involved in the change process because the external environment is a force that can alter change, but cannot necessarily be controlled. The process of change for the internal environment is not an easy one, yet Farmer describes it as crucial. Agreement among dental hygiene faculty will play a vital component toward educational guidelines, because, as Farmer suggests, people make changes, not organizations.

A condition of trust, committed leadership, and effective planning, are three essential conditions, Farmer (1990), proposes for change. Open dialogue must occur between dental hygiene faculty on an institutional level within the department, which builds to the next level of communication, that of institution-to-institution, and finally, coordination on a national level. All levels (the department, the institution and the

organization)will need to become part of the arena for an atmosphere of trust. Dental hygiene faculty will need to commit to making effective change for effective educational outcomes, but leading the change process should start at some level. The CCI and the ADEA have started the process through dialogue and through published articles, but a clear leadership role must be a focal point for change to occur. Effective planning will evolve through many processes and plans initiated at the beginning may not look the same as the plans that are accepted at the end of the change process. Committed leadership from dental hygiene faculty, the ADEA, and perhaps CODA should take effective planning seriously to complete all steps in the change process.

As shown here, many different, yet connected, groups (ADHA, ADEA, CCI, all dental hygiene faculty) will have to work together to bring about a change in dental hygiene faculty educational preparedness within dental hygiene education. Austin and Baldwin (1992) state that faculty collaboration can enhance the model of quality of teaching and scholarship and is not limited only to education. Business, health care, and public policy are suggested by Austin as working together in collaborative efforts. Dental hygiene education combines the educational and health care facets of this model. A collaborative effort will be needed to make change happen. Further, that dental hygiene faculty could collaborate with, and draw from the experience of other allied health professions that are in the process of establishing (or have already completed) faculty educational guidelines.

Methodology

Research Design

The study was conducted using ex post facto research of the nonexperimental quantitative type. Ex post facto research studies variables which exist or occur in a natural setting. In ex post facto research, variables are not changes, only observed and compared to other existing variables. Ex post facto research also examines possible relationships and correlations among existing variables (Wiersma and Jurs, 2005).

The population for the study included all dental hygiene faculty within the United States. A purposive sample was used as this research attempts to investigate a population having a common place of employment (dental hygiene faculty that work in dental hygiene educational settings), and similar roles (providing dental hygiene education). A survey was used to examine whether and how dental hygiene faculty are meeting suggested ADEA educational guidelines, and to determine the demographics and educational levels of dental hygiene faculty.

A complete listing of dental hygiene programs found in the United States is located on the ADHA website. The ADHA list includes the physical address, name of the program director, phone numbers and, in some cases, email addresses for the program director. Websites are also given for the school/university. There were 289 programs listed in the 2007 ADHA document. Between five and twenty faculty (full time and part time) were located at each program, depending on the size of the program. A majority of the information contained in the ADHA document was submitted between 2004-2007. Seven submissions of information were from 2003 and two submissions of information

were from 2001. The official date of the document used in this research was dated January 23, 2008.

Procedure

Survey research has been utilized in dental hygiene research with success (ADEA, 2006; ADHA, 2006; Brown et al.,2005; Collins et al., 2007; Kiser et al., 2006; Schonwetter et al., 2006; Nunn et al., 2004). Most of the survey research within dental hygiene is directed toward dental hygiene program directors (ADHA, 2006; Kiser et al., 2006; Nunn et al., 2004). The reasons for sending a survey to only dental hygiene program directors could be time and cost efficiency, the general common knowledge program directors have concerning dental hygiene faculty, and the length of time and experience in education. In addition, dental hygiene program directors themselves conduct, or are part of, most of the research activity in dental hygiene. The official ADHA listing includes the address of only dental hygiene directors (as contact persons) which could represent a major factor to primarily including only dental hygiene directors in research.

The reasons for sending a survey to all dental hygiene faculty in the sample size for this research aligns with guidelines the ADEA has suggested for all dental hygiene faculty. To observe if all dental hygiene faculty have knowledge of ADEA suggested guidelines, the research involved all dental hygiene faculty. Receiving responses directly from all dental hygiene faculty collects accurate data to discover possible gaps between dental hygiene faculty degree type and level, and specific recommendations in educational subject matter posed by the ADEA. The guidelines suggested by the ADEA for well-qualified faculty pertain to all faculty in dental hygiene programs and therefore

the research includes all dental hygiene faculty members.

The survey was designed to determine faculty members' educational backgrounds and knowledge of ADEA. An online survey format was used because faculty members were distributed across the country and because most dental hygiene programs were located within an educational system with easy access to the internet. By using this data collection method, the cost and time associated with the research was greatly reduced. With survey tools, the compilation of data is time saving (Wiersma and Jurs, 2005).

The survey was sent online to dental hygiene program directors who took the survey themselves and also sent the survey link to all of the dental hygiene faculty at their institution. The 2007 document from the ADHA contains email information for the program directors in dental hygiene education but does not list all faculty members. Because there was no current listing or database for all dental hygiene faculty available at the time of the study, dental hygiene program directors had the task of sending the survey from the researcher to all dental hygiene faculty members in the program as done in past research (Collins et al., 2007).

The survey collected demographic data on educational background, previous employment, type of position and location of institution (rural, urban, suburban). The inclusion of demographic data on levels and types of educational background of dental hygiene faculty may help drive the need to establish educational guidelines for dental hygiene faculty. The collection of data concerning previous work experiences of dental hygiene faculty can also be used to show that there may be a lack of/abundance of educational experience. Questions about degree levels and degree types, together with questions regarding certain educational coursework, were used bring ADEA guidelines

into sharper focus. These findings could also be directed toward the need for educational guidelines among dental hygiene faculty. Also, the survey explored the attitudes dental hygiene faculty exhibit toward educational guidelines for dental hygiene faculty within dental hygiene education.

Wiersma and Jurs (2005) state that survey questions should be directly tied to the actual research being conducted, that questions be clear (definitions provided as needed), that one concept ties into one question, that leading questions are avoided, and that questions be kept short and simple. The question formats used in the survey wer short answer (as in demographic questions), Likert-type scale opinion, and open-ended.

One of the goals in conducting a survey of educational backgrounds and knowledge of ADEA guidelines among dental hygiene faculty is to observe, on an individual level, where dental hygiene faculty fall within the suggested ADEA guidelines. In observing the educational backgrounds for specific coursework in education among dental hygiene faculty against suggestions the ADEA has made regarding the educational qualifications for dental hygiene faculty, gaps may appear and improvement may be needed. According to Swanson and Holton (1996) performance improvement occurs on three levels: the individual, the process, and the organization. To address the issue of performance improvement, questions pertaining to evaluation were included in the survey.

Survey Distribution

An online survey was sent to the directors of dental hygiene programs within the United States to determine the educational levels, specific educational coursework, knowledge of ADEA suggested guidelines, and beliefs about educational preparedness

among dental hygiene faculty members. The survey was intended to reach all dental hygiene faculty members in all dental hygiene programs in the United States. Survey questions were formulated to easily compile answers for analysis. Survey Gizmo ® was selected as the tool to distribute and format the online survey for the ease of answer selection and compiling the data once received. Online survey research was chosen as the best method to reach dental hygiene faculty throughout the United States and to collect data needed to answer the research questions posed in this study.

The American Dental Hygiene Association (ADHA) was contacted for the master email address listing of dental hygiene directors. Consent to conduct research from the ADHA was requested. On January 23, 2008, permission was granted and obtained to use the ADHA email list of dental hygiene program directors for a six month time period.

Information contained on the ADHA dental hygiene program directors email list included all 294 dental hygiene programs within the United States in 2007. The name of the institution, physical/mailing address, phone number of the department, name of the dental hygiene program director, email address of dental hygiene program director, and program fax number were available on the master list. The website address for each institution and type of dental hygiene degree offered were also included. The date information was last submitted from each program was also contained in the ADHA document.

The ADHA email list of dental hygiene directors was incomplete as some of the dental hygiene program directors did not indicate an email address for point of contact. Some of the information for dental hygiene directors was dated, the oldest information having a date of October 2003. For email addresses not included on the ADHA list, or

for old submission dates, institutional websites were researched to obtain current email addresses for the dental hygiene program director by faculty directory, or by departmental directory. Ten of the 294 dental hygiene programs had program director email addresses that were unobtainable through institutional or departmental websites.

The survey was sent to the IRB department of James Madison University and approved on February 26, 2008 . To ensure that potential responders could receive the email that contained the link to a survey, the survey was pilot tested. Permission to pilot test the link to the survey was granted by Virginia Western Community College (Roanoke, Virginia). Seven responses were obtained from the pilot test. With the successful launch of the pilot test to assure the link was working and responses to the link were being received and recorded, the survey was ready to send to all dental hygiene programs in the United States.

An introductory letter was sent via email stating the intent and reason for the survey. A link to the survey was provided in the email. By using the survey link contained within the introductory email letter, responders were consenting to the survey. As an additional opt out, responders could decide not to participate in the survey, once inside in the survey, by not completing the survey.

Because the ADHA email list contained the addresses of only dental hygiene directors and not other dental hygiene faculty, the introductory letter and survey link was sent exclusively to dental hygiene program directors. The introductory letter requested dental hygiene program directors to participate by responding to the survey by answering the survey questions. In addition, dental hygiene program directors were asked to

forward the letter and survey link to all dental hygiene faculty within the dental hygiene program.

Although the introductory letter and survey link were sent only to dental hygiene directors, the survey needed to reach as many dental hygiene faculty members as possible. For this reason, an effort was made to reach all directors and ask them to please forward the email to their faculty. Past research involving dental hygiene programs have involved dental hygiene directors exclusively (ADHA, 2006; Nunn et al.,2004; Kiser et al., 2006). A study by Collins et al. (2007) surveyed all full time dental hygiene faculty of dental hygiene programs offering a Baccalaureate degree (35 such dental hygiene programs in 2004) and used dental hygiene program directors to pass the survey link to all dental hygiene faculty with success. For the research of this study, an attempt was made to contact all dental hygiene faculty (part-time and full-time) of all dental hygiene programs in the United States.

The survey was launched on April 9, 2008 and sent to dental hygiene program directors within the United States. The survey was entitled "Dental Hygiene Faculty Education Survey' (now referred to in this paper as 'the survey'). The survey is included in Appendix A.

The researcher encountered problems when attempting to obtain email addresses for some program directors. Specifically, the email addresses for ten dental hygiene directors could not be accessed through the institutional website. For these exceptions, a copy of the introductory letter and the survey link was sent through the postal system to the physical address of each dental hygiene program director as listed on the ADHA master list. Instructions in the letter asked dental hygiene directors to access the link to

participate as directors and then pass the link on to all dental hygiene faculty members. The letters were mailed on April 9, 2008.

On May 2, 2008, the same introductory letter and survey link were sent by email to the dental hygiene program directors once again. This was a follow up to the initial sending of the letter and link to remind dental hygiene program directors to participate in the survey and to send the link to all dental hygiene faculty. This second introductory letter and link were sent to remind non-responders of the survey, to encourage participation, and to collect as much information as possible for the study.

The 'Dental Hygiene Faculty Education Survey' was initially sent April 9, 2008 and respondents were able to participate until May 30, 2008 when the survey was closed. The 52 day period gave responders ample time to complete the survey. Since the introductory letter and the link to the survey were sent by email to dental hygiene program directors only, this time period gave extra time for dental hygiene directors to send the survey link to all dental hygiene faculty in each particular dental hygiene program. Giving sufficient time for dental hygiene faculty to respond to the survey may have assisted in increasing survey responses.

Survey Design

The ADEA has recommended certain guidelines for the qualifications of dental hygiene faculty at accredited dental hygiene educational institutions across the United States. In general, all dental hygiene faculty must possess a dental hygiene license to practice in the state where the dental hygiene program is located. Dental hygiene faculty should have at least three years experience as a practicing dental hygienist.

The ADEA further determines that dental hygiene faculty have ‘the appropriate level of education, and background in educational methods, testing, measurement and evaluation' (ADEA, 2005b p. 793). Guidelines for the suggested educational level, and a background in educational methods, testing, measurement and evaluation apply to both clinical and didactic dental hygiene faculty.

Many of the suggested guidelines that have been established by the ADEA lack definition. Dental hygiene faculty should have an ‘appropriate level of education’ as defined by the ADEA, but it is unclear exactly what constitutes an appropriate education level and whether faculty members possess it.

In each of the suggested ADEA guidelines for dental hygiene faculty, for both clinical and didactic faculty, an ‘appropriate level and background’ in educational methods, testing, measurement and evaluation is established. The exact dimensions of how much and at what level in educational methods, testing, measurement, and evaluation courses, seminars, or degree is not defined. Yet, dental hygiene faculty should have a background in educational methods, testing, measurement and evaluation.

Survey Questions

A survey was created to investigate how closely dental hygiene faculty's specific educational coursework aligned with the ADEA guidelines for dental hygiene faculty. Included in the survey were questions regarding knowledge dental hygiene faculty members had concerning ADEA guidelines. Responders to the survey were asked how specific coursework addressed institutional and departmental job requirements. Other questions in the survey asked dental hygiene faculty members their beliefs concerning

educational preparedness to teach dental hygiene as didactic, or clinical dental hygiene faculty members.

The 56-question survey contained 36 multiple choice questions and 19 Likert scale type questions. The survey also contained one fill-in-the-blank question. Categories for questions included demographics, faculty position/job type, level of education, specific coursework, course requirements for work at the institution, course requirements for work in the dental hygiene program department, knowledge of ADEA guidelines, and preparedness to teach dental hygiene.

Question Categories

Demographics

Demographic questions concerning geographic location of dental hygiene faculty members was required in the research to determine the location of the various programs and potential differences in educational requirements. To provide anonymity, Regional Board selection was established. Each state has a licensing board within the state that provides dental hygiene licenses. Within dental hygiene, groups of states join together to cover a number of states that allow reciprocity (licenses that convert more easily from one state to another), otherwise known as a Regional Board. States grouped together in this way have wider state-to-state recognition. For example, the NERB (North East Regional Board) covers states from Maine to Ohio to Maryland and all states in between. Responders were asked to choose the Regional Board area for the location of the dental hygiene program. In this way, respondents could give a general location of the dental

hygiene program without being specific. By asking respondents to provide a location, the responses could be tracked for dental hygiene faculty members across the United States.

Another demographic question related to the population size of the community around the institutional setting. Respondents were asked to describe the area around the institution as rural, suburban, or urban. This question was included to investigate whether a correlation existed between location and educational qualifications of dental hygiene faculty members. Often, dental hygiene faculty with higher educational levels live in or near cities.

Faculty Position/Job type

Different types of faculty are used within a dental hygiene program. These types of faculty are administrative, didactic, and clinical. Depending on the dental hygiene program, other types of faculty may be used. Those responding to the survey were asked about the job title/description held. Many dental hygiene faculty serve in more than one capacity in the department and so respondents were asked to choose a faculty type where more than 50 percent of work time was being spent. This question more accurately defined what type of faculty was responding to the survey. By separating the various dental hygiene faculty members with regard to position, it is easier to determine which faculty have specific coursework in educational theory, educational methods, and educational measurement/evaluation. This study investigated whether there was a correlation between the type of dental hygiene faculty, the level of education, and specific coursework.

Dental hygiene programs hire part time and full time faculty members. Full-time dental hygiene faculty may be more aware of the ADEA education guidelines. Dental

hygiene faculty members that work part time in dental hygiene education (who may or may not hold other employment) may not be aware of specific coursework in education recommended by the ADEA. Respondents were asked to indicate whether they were full or part time faculty members in order to ascertain whether there was a correlation between employment status and knowledge of ADEA suggested guidelines.

To further investigate dental hygiene faculty member's preparedness to teach dental hygiene, respondents were asked about employment prior to becoming dental hygiene educators. As Chmar (2006) found among dental school faculty in 2004, sixty-one percent of dental educators (dental school faculty) came from a non-educational employment background (directly from private practice as a dentist). Dental hygiene faculty may indicate a similar trend. The survey was designed to investigate whether previous employment was correlated with education level, type of coursework, and type of degree held by dental hygiene faculty members.

Educational Degree/Level of Faculty

Faculty within dental hygiene programs that directly teach dental hygiene subjects (not subjects such as nutrition or pharmacology) require faculty members to hold a degree in dental hygiene and have work experience as a dental hygienist. The level and types of degrees that dental hygiene faculty members possess are varied. The survey asked respondents to answer questions that addressed the type and level of degree(s) held by dental hygiene faculty members. The survey attempted to observe the educational levels of dental hygiene faculty members in the discipline of dental hygiene and how closely ADEA guidelines were followed.

In addition, questions were provided to determine the kind of degrees earned by survey respondents. All dental hygiene faculty must hold a degree in dental hygiene and therefore, dental hygiene was listed as a type of degree. A dental hygiene degree was listed in the Associate, Bachelor, and Masters degree options. A doctorate degree in dental hygiene does not exist presently. A degree in education was also listed in degree category. Dental hygiene faculty members may be found to hold various degrees in Education since being employed in education, specifically dental hygiene education. Degree categories also included Health Science and Public Health as other possible degrees dental hygiene faculty members could possess. The category of 'other' was included for degrees not listed within the category listing. A category for 'N/A' (non applicable) was included to indicate not having a degree by type or level. Questions about the educational levels and types of degree(s) were included to check for a correlation between education levels and faculty members' knowledge of ADEA guidelines, and knowledge of institutional/departmental work guidelines.

Specific Educational Coursework

Questions were also posed to determine specific educational coursework taken by dental hygiene faculty members. The ADEA recommended guidelines for well qualified dental hygiene faculty specifically include coursework in educational methods, educational testing, and educational measurement/evaluation. Questions investigated the quantity and kind of educational coursework taken by dental hygiene faculty members; specifically whether they had taken courses in educational methods, educational theory, and educational measurement/evaluation. In addition, respondents were asked to indicate

whether education coursework was taken at the undergraduate or graduate level, and whether the coursework was completed or currently underway.

Institutional Work Requirements Related to Coursework

As a condition of employment, individual institutions require faculty members of dental hygiene to have specific educational qualifications. Institutions of higher learning often require faculty members to have a prescribed number of hours of field-based experience in the discipline in order to teach a particular subject. The survey asked respondents to answer questions about work requirements the institution may have (or not have) within the particular position as dental hygiene faculty member. In this context, dental hygiene faculty members were asked to respond to questions in the categories of educational methods, educational theory, and educational measurement/evaluation as related to employment at the *institutional level*. Respondents were asked if specific coursework was required by the institution, strongly suggested by the institution, or not required by the institution in regard to the current position as a dental hygiene faculty member. The question also included a 'do not know' as a possible answer for respondents unfamiliar with institutional requirements for the position.

Departmental Work Requirements Related to Coursework

To determine the difference between work requirements of the institution and work requirements of the department for respondents, the same questions were asked regarding specific coursework for educational theory, educational methods, and educational measurement/evaluation regarding employment within the dental hygiene department. The respondents were asked to think of educational coursework requirements as related to the *department level*, specifically within the dental hygiene

department. Again, respondents were asked if specific coursework was required for the position, strongly suggested for the position, or not required for the position. The response of 'do not know' was also applied to each question in this category for respondents unfamiliar with specific requirements by the department.

Questions pertaining to both the institution and the department were framed to separate possible educational institutional academic requirements for faculty, and possible academic requirements for faculty within the dental hygiene department of the institution. The possibility that institutional and departmental requirements for employment may differ was answered by separating these two categories. Again, the response of ‘don’t know’ was included in each category for respondents unfamiliar with the answer to this questions in each of these categories.

Faculty Knowledge of ADEA Suggested Guidelines

Two questions were included to ask respondents about their familiarity with the ADEA guidelines. In the first question, respondents were asked to indicate their knowledge of the existence of the ADEA guidelines. For this question, the three possible responses were yes, no, and don’t know. The response of 'don't know' was included to give the option to dental hygiene faculty that had no awareness of guidelines suggested by the ADEA another answer in the place of a 'no' answer. The second question asked respondents to comment on their agreement/disagreement with ADEA guidelines for dental hygiene faculty. Again, the response of ‘don’t know’ was included for those with little or no knowledge of ADEA guidelines, or no real opinion. It was anticipated that dental hygiene faculty members who agreed with ADEA guidelines would possess the educational coursework recommended by ADEA guidelines.

Statements on Educational Preparedness to Teach Dental Hygiene

A series of statements asked dental hygiene faculty to rate on a scale of one to five (5 = strongly agree, 4 = agree, 3 = no opinion, 2 = disagree, 1 = strongly disagree) the educational preparedness of dental hygiene faculty members to teach dental hygiene. The administrative, didactic, and clinical faculty were separated by faculty type, and each faculty type was assigned to questions concerning the preparedness to teach the clinical and didactic (classroom instruction) portions of dental hygiene education. It was anticipated that the results would indicate a correlation between the educational preparedness and type of faculty. Further, that faculty with educational coursework, in addition to dental hygiene coursework, may see themselves more capable and educationally prepared to teach the clinical/didactic portion(s) in dental hygiene education.

Both clinical and didactic types of faculty were separately paired with each type of recommended educational coursework (theory, methods, and measurement/evaluation) and respondents were asked to determine if particular coursework was necessary to be an effective dental hygiene faculty member in the clinical (separate) and didactic (separate) area of dental hygiene education. These questions were stated in a positive framework. A correlation between the type of faculty, the type of dental hygiene education/instruction, and specific coursework in educational theory, method, and measurement/evaluation (as suggested by the ADEA) may show that ADEA suggested guidelines are positive influences to dental hygiene faculty regarding dental hygiene education. The agreement of dental hygiene faculty and specific educational coursework (methods, theory, and measurement/evaluation) may have a correlation for effective

teaching among dental hygiene faculty. Dental hygiene education may prove to be strengthened the suggested guidelines set by the ADEA for well qualified dental hygiene faculty members.

To strengthen the correlation between suggested ADEA guidelines, dental hygiene faculty (clinical and didactic), and education/instruction (clinical and didactic), the same statements containing the same variables were stated in the negative. Stating the same questions with slightly different wording can be used to test the closeness and reliability of the responses. The same (or nearly the same) result of responses should occur.

Results

Demographics

The survey was initially sent by bulk email to dental hygiene directors on April 9, 2008. Dental hygiene directors were asked to take the survey and to also send the survey link to all full time and part time dental hygiene faculty members within the department. A second bulk email containing the survey was sent on May 2, 2008 containing the same instructions. The survey was closed on May 30, 2008.

Dental hygiene directors were asked to report on the total number of full time and part time dental hygiene faculty. In asking the dental hygiene directors to report the total number of dental hygiene faculty, a value could be assigned for *n*, the total population of survey responders. The *n* value would represent the number of dental hygiene faculty members in the United States who could potentially participate in the survey.

A number of dental hygiene programs may employ a director and co-director of the dental hygiene program at a given college or university. To prevent duplicate responses for the number of faculty at each institution, the survey question had specific instructions for co-directors to allow only the director of the program to indicate the number of total faculty in the dental hygiene program. Co-directors and all other faculty were asked to respond to this question with the value "0."

The total number of responses was 390. Of the 390 responses, 386 were received from respondents. The other 4 responses were received when the survey creator tested the link 4 different times to ensure the survey link was working. These results were thrown out. The overall number of completed and submitted surveys reached 232. Of the 232 responses, one survey was completed, but the data did not transfer over to the final

report. Of the 231 completed surveys with readable data, three were dental hygiene faculty from another discipline (discovered within other data). As stated elsewhere in the study, some dental hygiene programs utilize faculty from other departments such as nursing, dietetics, pharmacology and biology to teach dental hygiene curriculum. These three responders were eliminated from the study and were not expected to have knowledge of ADEA suggested guidelines. After this, 228 became the number of completed surveys.

Of the 386 surveys, 158 surveys were abandoned. Abandoned surveys indicated faculty members had looked at the survey but for some reason did not complete the survey or were unable to submit the survey. Again, of the 158 responses, four of the responses were used by the survey creator to test the link to the survey and to perform tests for responses to the survey. The total number of abandoned surveys became 154.

Based on the number of 97 dental hygiene program directors that completed the survey (indicated by position), 33% of the 294 dental hygiene programs, listed by the ADHA in 2007, are represented in this research. The 97 dental hygiene program directors reported a total of 1,457 full and part time faculty. The value for *n* becomes 1,457. The total number of faculty who viewed the survey reached 390 or 27% of the faculty at 97 dental hygiene programs in the United States. Dental hygiene faculty that completed and submitted the survey numbered 228 or 16% of the faculty at 97 dental hygiene programs. In the following sections, results are presented for the different questions and variables examined in the survey.

Employment Status

To classify faculty by type (administrative/chair, clinical, or didactic) reported position combined with how 50% of the time was spent at work were the two factors used to categorize dental hygiene faculty. The number of clinical dental hygiene faculty members totaled 93. The number of program chair persons totaled 97. The number of didactic dental hygiene faculty members totaled 38. Of the 93 clinical faculty members, 93 (100%) of the responders reported 50% or more of the time at work was spent clinically. Of the 38 didactic faculty members, 34 (89%) spent 50% or more of the time at work was spent didactically, and only 4 (11%) responded more that 50% of time at work was spent administratively. Of the 97 program chair persons, 75 (77%) spent 50% or more of the time at work administratively, 18 (19%) spent 50% or more of the time at work didactically, and 4 (4%) spent 50% or more of the time at work clinically.

Respondents were asked to report full time or part time employment at the current educational institution. The total number of full time dental hygiene faculty who completed the survey numbered 165 (72%). The total number of part time dental hygiene faculty who completed the survey numbered 63 (28%). By faculty type, all 97 (100%) dental hygiene program directors reported full time employment. Among the 38 didactic faculty members, 33 (87%) reported full time employment and 5 (13%) reported part time employment. Among the 93 clinical faculty members, 35 (38%) reported full time employment and 58 (62%) reported part time employment. Table 1 presents respondents by type of faculty (administrative/chair, clinical, or didactic) and employment status (part-time or full-time).

Table 1. Employment Status

Employment Status		
	Full Time	Part Time
Program Directors*	97	0
Didactic Faculty*	33	5
Clinical Faculty*	35	58

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

Number of Faculty Per Dental Hygiene Program

The number of dental hygiene faculty reported by the dental hygiene program directors that participated in the survey ranged from three faculty members (one reported) to 45 faculty members (one reported). A total of 97 dental hygiene programs were reported in the survey, or 33% of the 294 dental hygiene programs in the ADHA 2007(for the 2006 academic calendar) listing. Forty of the programs had between 10-15 faculty members (41%), twenty-four programs had between 3-9 faculty members (25%), twenty-three programs had between 16-25 faculty members (24%), and nine programs had between 26-45 faculty members (9%). Table 2 presents the number of faculty members of dental hygiene programs that responded to the survey.

Table 2. Number of Faculty Per Dental Hygiene Program

Number of Faculty Per Dental Hygiene Program	
3-9 Faculty Members	24 (25%)
10-15 Faculty Members	40 (41%)
16-25 Faculty Members	23 (24%)
26-44 Faculty Members	9 (9%)
45 Faculty Members	1 (1%)
Over 45 Faculty Members	0

Total number of programs in survey n=97

Institutional Setting

Responders at institutions from an urban location totaled 105 (46%), while a total of 94 (41%) reported from suburban locations. The total number of responders at rural locations was 29 (13%). Among dental hygiene directors, 43 (44%) reported from institutions in suburban locations, 35 (36%) reported from institutions in urban locations, and 19 (20%) reported from institutions in rural locations. Among didactic faculty members, nine (24%) reported from institutions in suburban locations, 24 (63%) reported from institutions in urban locations, and five (13%) reported from institutions in rural locations. Among clinical faculty members, 42 (45%) reported from institutions in suburban locations, 46 (50%) reported from institutions in urban locations, and five (5%) reported from institutions in rural locations. Table 3 displays the number of dental hygiene faculty for each institutional setting.

Table 3. Institutional Setting

Institutional Setting			
	Urban	Suburban	Rural
Program Directors*	35	43	19
Didactic Faculty*	24	9	5
Clinical Faculty*	46	42	5

Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

The respondents were asked to respond to a survey question regarding previous employment before the current employment as faculty members in dental hygiene education. Of the responses, 132 (58%) reported previous employent in private practice. Next, 68 (30%) were previously employed at another dental hygiene educational institution. After that, 11 (5%) were previously employed in the public health setting. Also, six (3%) were previously employed in another type of educational setting, not in

dental hygiene. One percent reported employment in each of the following, a hospital setting (two respondents), research (three respondents), and 'other' (three respondents) employment. Additionally .33% was reported from dental school education (one respondent), continuing education speaker/presenter (one respondent) and the military (one respondent) respectively.

By faculty type, 50 (52%) of dental hygiene program directors reported previous employment at another dental hygiene educational institution, 41 (42%) from private practice, two (2%) from the public health setting, two (2%) from another educational institution (not dental hygiene), and two (2%) from a hospital setting. Among didactic faculty members, nine (24%) reported previous employment at another dental hygiene educational institution, 23 (60%) from private practice, two (4%) from the public health setting, one (3%) from 'other' employment, one (3%) from another educational institution (not dental hygiene), one (3%) from professional continuing education presentation, and one (3%) from research. Among clinical faculty members, 10 (11%) reported previous employment in another dental hygiene educational institution, 67 (72%) from private practice, seven (7%) from the public health setting, three (3%) from 'other' employment, two (2%) from research, one (1%) from dental school education, and one (1%) from the military. Table 4 contains information regarding the previous employment of dental hygiene faculty by faculty type.

Table 4. Previous Employment

Previous Employment			
	Private Practice	Dental Hygiene Education	All Others
Program Directors*	41	50	6
Didactic Faculty*	23	9	6
Clinical Faculty*	67	10	16

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

Academic Degree

Academic degree(s) possessed by dental hygiene faculty are varied and many dental hygiene faculty hold more than one degree. This study choose to specifically look at degrees in dental hygiene and education. The public health and health science degrees were added and thought more likely among dental hygiene faculty. The category of 'other' was given in each category for faculty that did not fit the description of degree otherwise mentioned. In the associate degree category, 134 (58%) of the responders had an associate degree in dental hygiene, 72 (32%) had no associate degree, 17 (7%) selected 'other' associate degree, and five (2%) had an associate degree in education. Respondents were asked about a second associate degree. Most (90%) reported none (for the number of degrees in education held by all faculty, see Table 5).

Table 5. Degrees in Education

Degrees in Education				
	AS	BS	MS	PhD
Program Directors*	2	17	45	10
Didactic Faculty*	0	2	11	2
Clinical Faculty*	2	10	22	0

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

Overall, 96% of the dental hygiene faculty members held a bachelor's degree. Of the survey responders holding a bachelor's degree, 43% were reported in dental hygiene. Additionally, 22% held a bachelor's degree in the category 'other,' and 16% held a bachelor's degree in health science, while 12% held a bachelor's degree in education. Only 2% held a bachelor's degree in public health. Further, 4% did not hold a bachelor's degree. Most respondents (91%) did not hold a second bachelor's degree.

Overall, 67% of the dental hygiene faculty members held a master's degree. Of the survey responders holding a master's degree, 35% were reported in education. Other master degree's held by dental hygiene faculty members reported 15% in 'other,' 10% in dental hygiene, 3% in health science, and 3% in public health. Dental hygiene faculty members not holding a master's degree totaled 33%. When asked if a second master's degree was held, most respondents (96%), did not hold a second master's degree.

At the time of this research, a doctorate level in dental hygiene is unavailable, yet some dental hygiene faculty hold doctorate degrees. A doctorate degree was held by 17% of the respondents. A doctorate in education was reported by 6% of the respondents. A doctorate in 'other' was held by 6% of the respondents. A doctorate in health science was held by 5% of the respondents. Most (83%), did not hold a doctorate degree. When asked about holding a second doctorate degree, most respondents (98%), did not hold a second doctorate degree.

This research observed data from different types of dental hygiene faculty, mainly, dental hygiene program directors, didactic faculty members and clinical faculty members. Among the 97 dental hygiene program directors, 74 (76%) hold a master's degree, 16 (16%) hold a doctorate degree, and 7 (7%) do not hold a master's or doctorate

degree. The master's degree, among dental hygiene program directors, by type are as follows; 45 (46%) in education, nine (9%) in dental hygiene, one (1%) in health science , two (2%) in public health, and 17 (18%) in 'other.' Doctorate degrees are held in the following categories; 10 (10%) in education, two (2%) in 'other,' and four (4%) in health science.

Among the 38 didactic faculty members, 23 (61%) hold a master's degree, 10 (26%) hold a doctorate degree, and five (13%) do not hold a master's or doctorate. The master's degree among didactic faculty members by type are as follows; 11 (29%) in education, four (11%) in dental hygiene, two (5%) in public health, three (8%) in health science, and three (5%) in 'other.' Doctorate degrees are held in the following categories; four (10%) in health science, three (8%) in 'other,' two (5%) in education, and one (3%) in public health.

Among the 93 clinical faculty members, 37 (40%) hold a master's degree, six (6%) hold a doctorate degree, and 50 (54%) do not hold a master's or doctorate degree. The master's degree, among clinical faculty members, by type are as follows; 22 (24%) in education, five (5%) in dental hygiene, three (3%) in health science, six (6%) in 'other,' and one (1%) in public health. Doctorate degrees are held in the following categories; four (4%) in 'other,' and two (2%) in health science. Table 6 contains information regarding the highest level of degree held by each faculty member, separtated by faculty type.

Table 6. Highest Degree Level

Highest Degree Level				
	AS	BS	MS	PhD
Program Directors*		7	74	16
Didactic Faculty*		5	23	10
Clinical Faculty*	9	41	37	6

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

Educational Coursework

The ADEA has suggested guidelines for dental hygiene faculty that include educational courses in methods, testing, measurement and evaluation. Respondents were asked about educational coursework in educational methods, educational theory, and educational measurement/evaluation at both the undergraduate and graduate levels. Respondents were asked to report a number value between 0-5 for the number of courses that were completed. Table 7 indicates the number of faculty that have completed at least one class at either the undergraduate or graduate level in educational methods, educational theory, or measurement/evaluation.

Table 7. At Least One Course Completed

At Least One Course Completed			
	Educational Methods	Educational Theory	Evaluation/Measurement
Program Directors*	91	95	91
Didactic Faculty*	29	32	32
Clinical Faculty*	63	65	60

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

Table 8 presents the educational coursework taken at the undergraduate level by all faculty. The researcher tallied the number of courses taken by each respondent for the three categories: educational theory, educational methods, and measurement/evaluation.

Table 8. Completed Undergraduate Educational Coursework Among All Faculty

Completed Undergraduate Coursework Among All Faculty			
Number Of Classes	Educational Theory	Educational Methods	Measurement/ Evaluation
0	69 (30%)	87 (38%)	97 (43%)
1	45 (20%	46 (20%	80 (35%)
2	42 (19%)	37 (16%)	29 (13%)
3	19 (8%)	20 (9%)	14 (6%)
4	14 (7%)	8 (4%)	1 (.4%)
5	5 (2%)	3 (11%)	0
5+	32 (14%)	25 (11%)	5 (2%)

For coursework in educational theory at the undergraduate level among all dental hygiene faculty, a total of 69 (30%) respondents reported not completing coursework in this area. Only 45 (20%) had completed one course, 42 (19%) had completed two courses, 19 (8%) had completed three courses, 14 (7%) had completed four courses, and five (2%) had completed five courses. Respondents that had completed five or more courses totaled 32 (14%). The respondents that were taking educational theory coursework at the undergraduate level at the time of the survey totaled four (2%). Most respondents (98%) were not currently taking educational theory coursework at the undergraduate level at the time of the survey.

For coursework in educational methods at the undergraduate level among all dental hygiene faculty, respondents reported that 87 (38%) had not completed coursework in this area. Only 46 (20%) had completed one course, 37 (16%) had

completed two courses, 20 (9%) had completed three courses, 8 (4%) had completed four courses, and 3 (1%) had completed five courses. Respondents that had completed five or more courses totaled 25 (11%). The respondents that were taking educational methods coursework at the undergraduate level at the time of the survey totaled five (2%). Most respondents (98%) were not currently taking educational methods coursework at the undergraduate level at the time of the survey.

For coursework in measurement and/or evaluation at the undergraduate level among all dental hygiene faculty, respondents reported that 97 (43%) had not completed coursework in this area. Only 80 (35%) had completed one course, 29 (13%) had completed two courses, 14 (6%) had completed three courses, one (.4%) had completed four courses, and none reported taking five courses. Respondents that had completed five or more courses totaled five (2%). The respondents that were taking measurement and/or evaluation coursework at the undergraduate level at the time of the survey totaled four (2%). Most respondents (98%) were not currently taking measurement and/or evaluation coursework at the undergraduate level at the time of the survey.

Table 9 presents the educational coursework taken at the graduate level by all faculty members. The researcher tallied the number of courses taken by each respondent for the three categories: educational theory, educational methods, and measurement/evaluation.

Table 9. Completed Graduate Educational Coursework Among All Faculty

Completed Graduate Coursework Among All Faculty			
Number Of Classes	Educational Theory	Educational Methods	Measurement/ Evaluation
0	72 (32%)	72 (32%)	69 (30%)
1	13 (6%)	22 (9%)	50 (22%)
2	22 (10%)	37 (16%)	60 (26%)
3	28 (12%)	22 (10%)	20 (9%)
4	21 (9%)	13 (6%)	15 (7%)
5	10 (4%)	8 (3%)	2 (1%)
5+	60 (27%)	55 (24%)	11 (5%)

For coursework in educational theory at the graduate level among all dental hygiene faculty, respondents reported that 72 (32%) had not completed coursework in this area. Only 13 (6%) had completed one course, 22 (10%) had completed two courses, 28 (12%) had completed three courses, 21 (9%) had completed four courses, and 10 (4%) had completed five courses. Respondents that had completed five or more courses totaled 60 (27%). The respondents that were taking educational theory coursework at the graduate level at the time of the survey numbered 27 (12%). Most respondents (88%) were not currently taking educational theory coursework at the graduate level at the time of the survey.

For coursework in educational methods at the graduate level among all dental hygiene faculty, respondents reported that 72 (32%) had not completed coursework in this area. Only 22 (9%) had completed one course, 37 (16%) had completed two courses, 22 (10%) had completed three courses, 13 (6%) had completed four courses, and 8 (3%) had completed five courses. Respondents that had completed five or more courses totaled 55 (24%). The respondents that were taking educational methods at the graduate level at the time of the survey totaled 22 (10%). Most respondents (90%) were

not currently taking educational methods coursework at the graduate level at the time of the survey.

For coursework in measurement and/or evaluation at the graduate level among all dental hygiene faculty, respondents reported that 69 (30%) had not completed coursework in this area. Only 50 (22%) had completed one course, 60 (26%) had completed two courses, 20 (9%) had completed three courses, 15 (7%) had completed four courses, and two (1%) had completed five courses. Respondents that had completed five or more courses totaled 11 (5%). The respondents that were taking measurement and/or evaluation coursework at the graduate level at the time of the survey totaled 21 (9%). Most respondents (91%) were not currently taking measurement and/or evaluation coursework at the graduate level at the time of the survey.

Educational Courses Completed by Faculty

Among the 97 dental hygiene program directors, a total of 95 (98%) had completed at least one course in educational theory at the undergraduate and/or graduate level. Of the dental hygiene program directors, 91(94%) had completed at least one course in educational methods at the undergraduate and/or graduate level. Coursework in measurement and/or evaluation at the undergraduate and/or graduate level was completed by 91 (94%) of the dental hygiene program directors. Tables 10 through 12 indicate the number of classes dental hygiene program directors (n = 97) have completed in educational theory, educational methods, and measurement/evaluation at the undergraduate and graduate levels.

Table 10. Educational Theory Coursework Completed By Program Directors

Educational Theory Coursework Completed Among Program Directors		
Number of Classes	Undergraduate	Graduate
0	16 (17%)	11 (12%)
1	20 (21%)	8 (9%)
2	21 (22%)	9 (10%)
3	11 (12%)	13 (14%)
4	6 (6%)	9 (10%)
5	3 (3%)	2 (2%)
5+	17 (18%)	37 (42%)

Table 11. Educational Methods Coursework Completed By Program Directors

Educational Methods Coursework Completed Among Program Directors		
Number of Classes	Undergraduate	Graduate
0	23 (24%)	31 (34%)
1	23 (24%)	10 (11%)
2	18 (19%)	15 (16%)
3	9 (9%)	14 (15%)
4	6 (6%)	7 (8%)
5	1 (1%)	2 (2%)
5+	15 (16%)	31 (34%)

Table 12. Measurement/Evaluation Coursework Completed By Program Directors

Measurement/Evaluation Coursework Completed Among Program Directors		
Number of Classes	Undergraduate	Graduate
0	28 (29%)	7 (7%)
1	41 (43%)	19 (20%)
2	11 (12%)	35 (37%)
3	11 (12%)	8 (8%)
4	0	9 (9%)
5	0	0
5+	4 (4%)	7 (7%)

Among the 93 clinical dental hygiene faculty members, 65 (70%) had completed at least one course in educational theory at the undergraduate or graduate level. Of clinical dental hygiene faculty members, 63 (68%) had completed at least one course in

educational methods at the undergraduate or graduate level. Additionally, 60 (65%) of clinical dental hygiene faculty members had completed at least one course in measurement and/or evaluation at the undergraduate or graduate level. Tables 13 through 15 indicate the number of classes dental hygiene clinical faculty (n = 93) have completed in educational theory, educational methods, and measurement/evaluation at the undergraduate and graduate levels.

Table 13. Educational Theory Coursework Completed By Clinical Faculty

Educational Theory Coursework Completed Among Clinical Faculty		
Number of Classes	Undergraduate	Graduate
0	40 (43%)	48 (52%)
1	15 (16%)	2 (2%)
2	17 (18%)	9 (10%)
3	5 (5%)	12 (13%)
4	5 (5%)	4 (5%)
5	2 (2%)	4 (5%)
5+	9 (10%)	14 (15%)

Table 14. Educational Methods Coursework Completed By Clinical Faculty

Educational Methods Coursework Completed Among Clinical Faculty		
Number of Classes	Undergraduate	Graduate
0	45 (48%)	47 (51%)
1	17 (18%)	6 (6%)
2	15 (16%)	14 (15%)
3	6 (7%)	5 (5%)
4	2 (2%)	4 (4%)
5	2 (2%)	3 (3%)
5+	6 (7%)	14 (15%)

Table 15. Measurement/Evaluation Coursework Completed By Clinical Faculty

Measurement/Evaluation Coursework Completed Among Clinical Faculty		
Number of Classes	Undergraduate	Graduate
0	49 (53%)	46 (49%)
1	29 (31%)	18 (19%)
2	13 (14%)	18 (19%)
3	1 (1%)	6 (6%)
4	1 (1%)	2 (2%)
5	0	1 (1%)
5+	0	2 (2%)

Among the 38 didactic faculty members, 32 (84%) had completed at least one course in educational theory at the undergraduate and/or graduate level. Of didactic dental hygiene faculty members, 29 (76%) had completed at least one course in educational methods at the undergraduate and/or graduate level. Coursework in measurement and/or evaluation at the undergraduate and/or graduate level among didactic dental hygiene faculty members 32 (84%). Tables 16 through 18 indicate the number of classes dental hygiene didactic faculty (n = 38) completed in educational theory, educational methods, and measurement/evaluation at the undergraduate and graduate levels.

Table 16. Educational Theory Coursework Completed by Didactic Faculty

Educational Theory Coursework Completed Among Didactic Faculty		
Number of Classes	Undergraduate	Graduate
0	15 (39%)	12 (31%)
1	9 (24%)	3 (8%)
2	3 (8%)	3 (8%)
3	3 (8%)	3 (8%)
4	3 (8%)	6 (16%)
5	1 (3%)	3 (8%)
5+	4 (10%)	8 (21%)

Table 17. Educational Methods Coursework Completed Didactic Faculty

Educational Methods Coursework Completed Among Didactic Faculty		
Number of Classes	Undergraduate	Graduate
0	20 (53%)	11 (29%)
1	6 (16%)	5 (13%)
2	4 (10%)	8 (21%)
3	5 (13%)	3 (8%)
4	0	1 (3%)
5	0	2 (5%)
5+	3 (8%)	8 (21%)

Table 18. Measurement/Evaluation Coursework Completed by Didactic Faculty

Measurement/Evaluation Coursework Completed Among Didactic Faculty		
Number of Classes	Undergraduate	Graduate
0	21 (55%)	6 (16%)
1	9 (24%)	12 (32%)
2	5 (13%)	7 (18%)
3	2 (5%)	7 (18%)
4	0	3 (8%)
5	0	1 (3%)
5+	1 (3%)	2 (5%)

A number of the 228 dental hygiene faculty members were currently taking coursework in subjects suggested by the ADEA at the time of the survey. A total of four respondents (three clinical faculty members and one program director) reported taking an undergraduate course in educational theory. A total of 26 respondents (14 clinical faculty members, six didactic faculty members, and six program directors) reported taking a graduate course in educational theory. A total of five respondents (three clinical faculty members, one didactic faculty member, and one program director) reported taking an undergraduate course in educational methods. A total of 22 respondents (15 clinical faculty members, four didactic faculty members, and three program directors) reported taking a graduate course in educational methods. A total of four (three clinical faculty

members and one program director) reported taking an undergraduate course in measurement and/or evaluation. A total of 21 respondents (13 clinical faculty members,seven didactic faculty members, and one program director) reported taking a graduate course in measurement and/or evaluation. Overall, clinical faculty members reported taking more ADEA recommended coursework among dental hygiene faculty.

Responding to Institutional and Departmental Educational Coursework Required for Work

Questions on the survey asked respondents to think of educational coursework in terms of what specific educational coursework was needed for the position held at the time of the survey. Respondents were asked to separate the educational coursework requirements of the institution and educational coursework required by the department, in this case the dental hygiene department. Though there may be many different types of coursework required for work by the institution or by the department, respondents were asked to relate educational coursework recommended by the ADEA in regard to work in the institution and in the dental hygiene department. Respondents may view the educational requirements for the position by the institution differently than educational requirements for the position by the department. Table 19 indicates the number of faculty (and corresponding percentage) that reported coursework in educational methods, educational theory, or measurement/evaluation was required for the position by the institution.

Table 19 Coursework Required for Position by the Institution

Coursework Required for Position by the Institution			
	Educational Methods	Educational Theory	Measurement/ Evaluation
Program Directors*	39 (40%)	37 (38%)	21 (22%)
Didactic Faculty*	8 (21%)	7 (18%)	4 (11%)
Clinical Faculty*	20 (22%)	20 (22%)	16 (17%)

Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

In the case of educational theory coursework required by the *institution*, 36 (37%) dental hygiene program directors reported educational theory coursework as a requirement at work while 38 (39%) reported this was strongly recommended, and 19 (20%) reported this was not recommended. Among didactic faculty members, 7 (18%) reported educational theory coursework as a work requirement by the insitution, while 15 (39%) reported this was strongly recommended at work, and 13 (34%) reported this was not required for work. Five (13%) didactic faculty members did not know if educational theory coursework was required at all by the institution. Among clinical faculty members, 20 (22%) reported educational theory coursework as a requirement for work by the institution, while 17 (18%) reported this was strongly recommended at work, and 44 (47%) reported this was not required for work. Twelve (13%) clinical faculty members did not know if educational theory coursework was required at all by the institution.

In the case of educational methods coursework required by the *institution,* 37 (38%) dental hygiene program directors reported educational methods coursework as a requirement at work while 39 (40%) reported this was strongly recommended, and 21 (22%) reported this was not recommended. Only three (3%) did not know if educational methods coursework was a requirement for work by the institution. Among didactic faculty members, eight (21%) reported educational methods coursework as a work

requirement by the institution, while 13 (34%) reported this was strongly recommended, and 12 (32%) reported this was not required for work by the institution. Four (11%) didactic faculty members did not know if educational methods coursework was required at all by the institution. Among clinical faculty members, 20 (22%) reported educational methods coursework as a requirement for work by the institution, while 19 (20%) reported this was strongly recommended at work, and 43 (46%) reported this was not required for work by the institution. Twelve (13%) clinical faculty members did not know if educational methods coursework was required at all by the institution.

In the case of measurement and/or evaluation coursework required by the *institution*, 34 (35%) dental hygiene program directors reported measurement and/or evaluation coursework as a requirement at work while 37 (38%) reported this was strongly recommended, and 24 (25%) reported this was not recommended. Only two (2%) did not know if measurement and/or evaluation coursework was a requirement for work. Among didactic faculty members, four (11%) reported measurement and/or evaluation coursework as a requirement for work by the insitution, while 16 (42%) reported this as strongly recommended at work, and 12 (32%) reported this was not required for work. Only 4 (11%) didactic faculty members did not know if measurement and/or evaluation coursework was required at all by the institution. Among clinical faculty members, 16 (17%) reported measurement and/or evaluation was required for work by the institution, while 18 (19%) reported this was strongly recommended for work by the institution, and 44 (47%) reported that this was not required for work. Fourteen (15%) clinical faculty members did not know if measurement and/or evaluation coursework was required at all by the institution.

In the case of educational theory coursework required by the *dental hygiene department,* 45 (46%) dental hygiene program directors reported educational theory coursework was required for work in the dental hygiene department while 34 (35%) reported this was strongly recommended and 16 (16%) reported this was not recommended. Among didactic faculty members, 7 (18%) reported educational theory coursework as required for work by the dental hygiene department, while 15 (39%) reported this was strongly recommended for work, and 12 (32%) reported this was not required for work. Four (11%) didactic faculty members did not know if educational theory coursework was required at all by the dental hygiene department. Among clinical faculty members, 17 (18%) reported educational theory coursework as required for work by the dental hygiene department, while 19 (20%) reported this was strongly recommended for work, and 46 (49%) reported this was not required for work. Eleven (12%) clinical faculty members did not know if educational theory coursework was required at all by the dental hygiene department.

In the case of educational methods coursework required by the *dental hygiene department,* 49 (51%) dental hygiene program directors reported educational methods coursework as a requirement at work while 33 (34%) reported this as strongly recommended for work, and 12 (12%) reported this was not a requirement for work. Three (3%) dental hygiene program directors did not know if educational methods coursework was required at all by the dental hygiene department. Among didactic faculty members, 8 (21%) reported educational methods coursework as required for work by the dental hygiene department, while 15 (39%) reported this as strongly recommended for work, and 10 (26%) reported this was not a requirement for work. Four (11%)

didactic faculty members did not know if educational methods coursework was required at all by the dental hygiene department. Among clinical faculty members, 18 (19%) reported educational methods coursework as required for work by the dental hygiene department, while 20 (22%) reported this as strongly suggested for work, and 44 (47%) reported this was not required for work. Twelve (13%) clinical faculty members did not know if educational methods coursework was required at all by the dental hygiene department.

In the case of measurement and/or evaluation coursework required by the *dental hygiene department*, 37 (38%) dental hygiene directors reported measurement and/or evaluation coursework as a requirement for work, while 34 (35%) reported this was strongly recommended for work, and 24 (25%) reported this was not recommended for work. Two (2%) dental hygiene directors did not know if measurement an/or evaluation coursework was a requirement for work. Among didactic faculty members, 8 (21%) reported measurement and/or evaluation courserwork a requirement for work by the dental hygiene department, while 14 (37%) reported this as strongly recommended for work, and 13 (34%) reported this was not required for work. Four (11%) didactic faculty members did not know if measurement and/or evaluation coursework was required at all by the dental hygiene department. Among clinical faculty members, 14 (15%) reported measurement and/or evaluation coursework was required for work by the dental hygiene department, while 22 (24%) reported this was strongly recommended for work, and 42 (45%) reported this was not required for work. Fifteen (16%) clinical faculty members did not know if measurement and/or evaluation coursework was required at all by the dental hygiene department. Table 20 indicates the number (and percentage) of faculty

that reported coursework in educational methods, educational theory, or measurement/evaluation was required for the position by the dental hygiene department.

Table 20. Coursework Required for Position by the Dental Hygiene Department

Coursework Required for Position by the Dental Hygiene Department			
	Educational Methods	Educational Theory	Measurement/ Evaluation
Program Directors*	49 (51%)	45 (46%)	37 (38%)
Didactic Faculty*	8 (21%)	7 (18%)	8 (21%)
Clinical Faculty*	18 (19%)	17 (18%)	14 (15%)

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

Responding to Being Educationally Prepared to Teach Dental Hygiene

Respondents were asked to rate a series of statements regarding how educationally prepared dental hygiene faculty were to teach the clinical and didactic portions in dental hygiene education. The statements included various faculty positions with various educational coursework combinations. A scale of one to five for responses was given, five being strong agreement with the statement and one being strong disagreement with the statement. The following tables show the agreement, disagreement, and 'no opinion' percentages of each statement (from the survey) for easy reference. The strongly agree and agree percentages were added together to create the agree status for Tables 21, 22, and 23, and the disagree and strongly disagree percentages were added together to create the disagree status.

Table 21 presents the results of statements pertaining to the preparation of faculty to teach dental hygiene courses. In general, faculty members felt that they were

educationally prepared to teach, but at the same time indicated that they needed specific coursework in educational methods, educational theory, and measurement/evaluation.

Table 21. Statements Regarding Preparation of Dental Hygiene Faculty

Statements Regarding Preparation of Dental Hygiene Faculty									
STATEMENTS	Program Directors*			Didactic Faculty*			Clinical Faculty*		
A = Agree. DA = Disagree. N = No Opinion.	A	DA	N	A	DA	N	A	DA	N
Dental hygiene faculty members are educationally prepared to teach dental hygiene	74%	16%	10%	71%	24%	5%	74%	15%	11%
Dental hygiene faculty members are educationally prepared to teach the didactic portion of dental hygiene education	73%	18%	9%	69%	21%	10%	71%	17%	12%
Dental hygiene faculty members are educationally prepared to teach the clinical portion of dental hygiene education	86%	10%	4%	79%	16%	5%	77%	15%	8%
Didactic professors are educationally prepared to teach the didactic portion of dental hygiene education	81%	12%	7%	74%	18%	8%	70%	14%	16%
Didactic professors are educationally prepared to teach the clinical portion of dental hygiene education	77%	12%	11%	67%	25%	8%	71%	13%	60%
Clinical professors are educationally prepared to teach the clinical portion of dental hygiene education	80%	11%	9%	72%	17%	11%	76%	13%	11%
Clinical professors are educationally prepared to teach the didactic portion of dental hygiene education	54%	35%	10%	42%	42%	16%	53%	27%	20%

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

The statement 'dental hygiene faculty members are educationally prepared to teach dental hygiene' received the following results from dental hygiene program directors; 22% strongly agree, 51% agree, 10% had no opinion, 14% disagree, and 2% strongly disagree. Overall, 74% of dental hygiene program directors agree with this statement. Among didactic faculty members, 32% strongly agree, 39% agree, 5% had no opinion, 21% disagree, and 3% strongly disagree. Overall, 71% of didactic faculty members agree with this statement. Among clinical faculty members, 21% strongly agree, 53% agree, 11% had no opinion, 14% disagree, and 1% strongly disagree. Overall, 74% of clinical faculty members agree with this statement.

The statement 'dental hygiene faculty members are educationally prepared to teach the didactic portion of dental hygiene education' received the following results from dental hygiene program directors; 22% strongly agree, 51% agree, 9% had no opinion, 16% disagree, and 2% strongly disagree. Overall, 73% of dental hygiene program directors agree with this statement. Among didactic faculty members, 24% strongly agree, 45% agree, 10% had no opinion, 18% disagree, and 3% strongly disagree. Overall, 69% of didactic faculty members agree with this statement. Among clinical faculty members, 20% strongly agree, 51% agree, 12% had no opinion, 15% disagree, and 2% strongly disagree. Overall, 71% of clinical faculty members agree with this statement.

The statement 'dental hygiene faculty members are educationally prepared to teach the clinical portion of dental hygiene education' received the following results from dental hygiene program directors; 30% strongly agree, 56% agree, 4% had no opinion, 10% disagree, and none strongly disagreed. Overall, 86% of dental hygiene program

directors agree with this statement. Among didactic faculty members, 29% strongly agree, 50% agree, 5% had no opinion, 13% disagree, and 3% strongly disagree. Overall, 79% of didactic faculty members agree with this statement. Among clinical faculty members, 32% strongly agree, 45% agree, 8% had no opinion, 13% disagree, and 2% strongly disagree. Overall, 77% of clinical faculty members agree with this statement.

The statement 'didactic professors in dental hygiene are educationally prepared to teach the didactic portion of dental hygiene education' received the following results from dental hygiene program directors; 21% strongly agree, 60% agree, 7% had no opinion, 11% disagree, and 1% strongly disagree. Overall, 81% of dental hygiene program directors agree with this statement. Among didactic faculty members, 21% strongly agree, 53% agree, 8% had no opinion, 16% disagree, and 2% strongly disagree. Overall, 74% of didactic faculty members agree with this statement. Among clinical faculty members, 22% strongly agree, 48% agree, 16% had no opinion, 12% disagree, and 2% strongly disagree. Overall, 70% of clinical faculty members agree with this statement.

The statement 'didactic professors are educationally prepared to teach the clinical portion of dental hygiene education' received the following results from dental hygiene program directors; 25% strongly agree, 52% agree, 11% had no opinion, 12% disagree, and none strongly disagreed. Overall, 77% of dental hygiene program directors agree with this statement. Among didactic faculty members, 19% strongly agree, 48% agree, 8% had no opinion, 22% disagree, and 3% strongly disagree. Overall, 67% didactic faculty members agree with this statement. Among clinical faculty members, 27% strongly agree, 44% agree, 16% had no opinion, 12% disagree, and 1% strongly disagree. Overall, 71% of clinical faculty members agree with this statement.

The statement 'clinical professors in dental hygiene are educationally prepared to teach the clinical portion of dental hygiene education' received the following results from dental hygiene program directors; 26% strongly agree, 54% agree, 9% had no opinion, 11% disagree, and none disagreed. Overall, 80% of dental hygiene program directors agree with this statement. Among didactic faculty members, 27% strongly agree, 45% agree, 11% had no opinion, 14% disagree, and 3% strongly disagree. Overall, 72% of didactic faculty members agree with this statement. Among clinical faculty members, 32% strongly agree, 44% agree, 11% had no opinion, and 12% disagree, and 1% strongly disagree. Overall, 76% of clinical faculty members agree with this statement.

The statement 'clinical professors in dental hygiene are educationally prepared to teach the didactic portion of dental hygiene education' received the following results from dental hygiene program directors; 9% strongly agree, 45% agree, 10% had no opinion, 34% disagree, and 1% strongly disagree. Overall, 54% of dental hygiene program directors agree with this statement. Among didactic faculty members, 8% strongly agree, 34% agree, 16% had no opinion, 32% disagree, and 10% strongly disagree. Overall, 42% of didactic faculty members agree with this statement. Among clinical faculty members, 12% strongly agree, 41% agree, 20% had no opinion, 22% disagree, and 5% strongly disagree. Overall, 53% of clinical faculty members agree with this statement.

Table 22 presents the results of statements pertaining to how the coursework pertains to the different types of faculty. In general, faculty members felt that the didactic faculty members were more educationally prepared and in fact, the didactic faculty did take more education courses.

Table 22. Statements Supporting Educational Preparation

Statements Regarding Dental Hygiene Faculty Being Educationally Prepared to Teach Dental Hygiene Coursework									
STATEMENTS	Program Directors*			Didactic Faculty*			Clinical Faculty*		
A = Agree. DA = Disagree. N = No Opinion.	A	DA	N	A	DA	N	A	DA	N
Coursework in educational methods are required to be an effective didactic dental hygiene faculty member	88%	7%	4%	69%	21%	10%	69%	11%	20%
Coursework in educational methods are required to be an effective clinical dental hygiene faculty member	82%	11%	7%	53%	26%	21%	47%	34%	18%
Coursework in educational theory is required to be an effective didactic dental hygiene faculty member	90%	6%	4%	58%	21%	21%	65%	14%	21%
Coursework in educational theory is required to be an effective clinical dental hygiene faculty member	76%	16%	8%	50%	26%	24%	49%	33%	18%
Coursework in measurement/evaluation is required to be an effective didactic dental hygiene faculty member	79%	12%	9%	61%	18%	21%	68%	11%	20%
Coursework in measurement/evaluation is required to be an effective clinical dental hygiene faculty member	77%	16%	7%	47%	31%	21%	54%	24%	22%

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

The statement 'coursework in educational methods are required to be an effective didactic dental hygiene faculty member' received the following results from dental hygiene program directors; 35% strongly agree, 53% agree, 4% had no opinion, 7%

disagree, and none disagreed. Overall, 88% of dental hygiene program directors agree with this statement. Among didactic faculty members, 16% strongly agree, 53% agree, 10% had no opinion, 16% disagree, and 5% strongly disagree. Overall, 69% of didactic faculty members agree with this statement. Among clinical faculty, 26% strongly agree, 43% agree, 20% had no opinion, 10% disagree, and 1% strongly disagree. Overall, 69% of clinical faculty members agree with this statement.

The statement 'coursework in educational methods are required to be an effective clinical dental hygiene faculty member' received the following results from dental hygiene program directors; 30% strongly agree, 52% agree, 7% had no opinion, 9% disagree, and 2% strongly disagree. Overall, 82% of dental hygiene program directors agree with this statement. Among didactic faculty members, 8% strongly agree, 45% agree, 21% have no opinion, 18% disagree, and 8% strongly disagree. Overall, 53% of didactic faculty members agree with this statement. Among clinical faculty members, 13% strongly agree, 34% agree, 18% had no opinion, 30% disagree, and 4% strongly disagree. Overall, 47% of clinical faculty members agree with this statement.

The statement 'coursework in educational theory is required to be an effective didactic dental hygiene faculty member' received the following results from dental hygiene program directors; 31% strongly agree, 59% agree, 4% had no opinion, 6% disagree, and none disagreed. Overall, 90% of dental hygiene program directors agree with this statement. Among didactic faculty members, 11% strongly agree, 47% agree, 21% had no opinion, 13% disagree, and 8% strongly disagree. Overall, 58% of didactic faculty members agree with this statement. Among clinical faculty members, 23%

strongly agree, 42% agree, 21% had no opinion, 13% disagree, and 1% strongly disagree. Overall 65% of clinical faculty members agree with this statement.

The statement 'coursework in educational theory is required to be an effective clinical dental hygiene faculty member' received the following results from dental hygiene program directors; 19% strongly agree, 57% agree, 8% had no opinion, 15% disagree, and 1% strongly disagree. Overall, 76% of dental hygiene program directors agree with this statement. Among didactic faculty members, 5% strongly agree, 45% agree, 24% had no opinion, 18% disagree, and 8% strongly disagree. Overall, 50% of didactic faculty members agree with this statement. Among clinical faculty members, 10% strongly agree, 39% agree, 18% had no opinion, 29% disagree, and 4% strongly disagree. Overall, 49% of clinical faculty members agree with this statement.

The statement 'coursework in measurement and/or evaluation is required to be an effective didactic dental hygiene faculty member' received the following results from dental hygiene program directors; 22% strongly agree, 57% agree, 9% had no opinion, 11% disagree, and 1% strongly disagree. Overall, 79% of dental hygiene program directors agree with this statement. Among didactic faculty members, 8% strongly agree, 53% agree, 21% had no opinion, 13% disagree, and 5% strongly disagree. Overall, 61% of didactic faculty members agree with this statement. Among clinical faculty members, 17% strongly agree, 51% agree, 20% had no opinion, 10% disagree, and 1% strongly disagree. Overall, 68% of clinical faculty members agree with this statement.

The statement 'coursework in measurement and/or evaluation is required to be an effective clinical dental hygiene faculty member' received the following results from dental hygiene program directors; 21% strongly agree, 56% agree, 7% had no opinion,

14% disagree, and 2% strongly disagree. Overall, 77% of dental hygiene program directors agree with this statement. Among didactic faculty members, 5% strongly agree, 42% agree, 21% had no opinion, 21% disagree, and 8% strongly disagree. Overall, 47% of didactic faculty members agree with this statement. Among clinical faculty members, 13% strongly agree, 41% agree, 22% had no opinion, 22% disagree, and 2% strongly disagree. Overall, 54% of clinical faculty members agree with this statement.

Table 23 presents responses of faculty to negative statements about the lack of educational preparedness to teach dental hygiene courses. These statements assessed clinical and didactic faculty, and clinical and didactic components of dental hygiene education.

Table 23. Statements Against Educational Preparation

Statements Regarding Dental Hygiene Faculty not Being Educationally Prepared to Teach Dental Hygiene									
STATEMENTS	Program Directors*			Didactic Faculty*			Clinical Faculty*		
A = Agree. DA = Disagree. N = No Opinion.	A	DA	N	A	DA	N	A	DA	N
Dental hygiene faculty members are not educationally prepared with enough educational theory to teach clinical dental hygiene education	25%	58%	16%	23%	61%	16%	16%	59%	25%
Dental hygiene faculty members are not educationally prepared with enough educational methods to teach clinical dental hygiene education	26%	57%	16%	21%	63%	16%	17%	61%	22%
Dental hygiene faculty members are not educationally prepared with enough measurement/evaluation to teach clinical dental hygiene education	25%	58%	16%	16%	66%	18%	22%	54%	24%
Dental hygiene faculty members are not educationally prepared with enough measurement/evaluation to teach didactic dental hygiene education	25%	58%	17%	29%	53%	18%	23%	53%	24%
Dental hygiene faculty members are not educationally prepared with enough educational methods to teach didactic dental hygiene education	25%	58%	17%	29%	53%	18%	20%	58%	22%

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

The statement 'dental hygiene faculty members are not educationally prepared with enough educational theory coursework to teach clinical dental hygiene education' received the following results from dental hygiene program directors; 13% strongly disagree, 45% disagree, 16% had no opinion, 21% agree, and 4% strongly agree. Overall, 58% of dental hygiene program directors disagree with this statement. Among didactic faculty members, 8% strongly disagree, 53% disagree, 16% had no opinion, 23% agree, and no didactic faculty members strongly agreed with this statement. Overall, 61% of didactic faculty members disagree with this statement. Among clinical faculty members, 5% strongly disagree, 54% disagree, 25% had no opinion, 15% agree, and 1% strongly agree. Overall 59% of clinical faculty members disagree with this statement.

The statement 'dental hygiene faculty members are not educationally prepared with enough educational methods to teach clinical dental hygiene education' received the following results from dental hygiene program directors; 13% strongly disagree, 44% disagree, 16% had no opinion, 22% agree, and 4% disagree. Overall, 57% of dental hygiene program directors disagree with this statement. Among didactic faculty members, 10% strongly disagree, 53% disagree, 16% had no opinion, 21% agree, and no didactic faculty members strongly agree with this statement. Overall, 63% of didactic faculty members disagree with this statement. Among clinical faculty members, 6% strongly disagree, 55% disagree, 22% had no opinion, 16% agree, and 1% strongly agree. Overall, 61% of clinical faculty members disagree with this statement. The statement 'dental hygiene faculty members are not educationally prepared with enough measurement an/or evaluation coursework to teach clinical dental hygiene education'

received the following results from dental hygiene program directors; 13% strongly disagree, 45% disagree, 16% had no opinion, 21% agree, and 4% strongly disagree. Overall, 58% of dental hygiene program directors disagree with this statement. Among didactic faculty members, 11% strongly disagree, 55% disagree, 18% had no opinion, 13% agree, and 3% strongly disagree. Overall, 66% of didactic faculty members disagree with this statement. Among clinical faculty members, 5% strongly disagree, 49% disagree, 24% had no opinion, 21% agree, and 1% strongly agree. Overall, 54% of clinical faculty members disagree with this statement.

The statement 'dental hygiene faculty members are not educationally prepared with enough measurement and/or evaluation coursework to teach the didactic portion of dental hygiene education' received the following results from dental hygiene program directors; 13% strongly disagree, 45% disagree, 17% had no opinion, 21% agree, and 4% strongly agree. Overall, 58% of dental hygiene directors disagree with this statement. Among didactic faculty members, 13% strongly disagree, 40% disagree, 18% had no opinion, 26% agree, and 3% strongly agree. Overall, 53% of didactic faculty members disagree with this statement. Among clinical faculty members, 3% strongly disagree, 50% disagree, 24% had no opinion, 22% agree, and 1% strongly agree. Overall, 53% of clinical faculty members agree with this statement.

The statement, 'dental hygiene faculty are not educationally prepared with enough educational methods coursework to teach the didactic portion of dental hygiene education' received the following results from dental hygiene program directors; 13% strongly disagree, 45% disagree, 17% had no opinion, 21% agree, and 4% strongly agree. Overall, 58% of dental hygiene program directors agree with this statement.

Among didactic faculty members, 13% strongly disagree, 40% disagree, 18% had no opinion, 29% agree, and no didactic faculty members strongly agree with this statement. Overall, 53% didactic faculty members disagree with this statement. Among clinical faculty members, 6% strongly disagree, 52% disagree, 22% had no opinion, 18% agree, and 2% strongly agree. Overall, 58% of clinical faculty members disagree with this statement.

ADEA Knowledge and Agreement

Respondents were asked to respond to this statement 'I know the ADEA guidelines for dental hygiene faculty.' Table 24 presents the results of this statement. Choice responses were; yes, no, don't know. Of the 97 dental hygiene program directors who completed the survey, 81 (84%) answered 'yes,' and 9 (9%) answered 'no,' while 7 (7%) did not know the ADEA suggested guidelines for dental hygiene faculty. Among the 38 didactic faculty members, 19 (50%) answered 'yes,' and 14 (37%) answered 'no,' while 5 (13%) did not know the ADEA suggested guidelines for dental hygiene faculty. Among the 93 clinical faculty members, 37 (40%) answered 'yes,' and 35 (38%) answered 'no,' while 21 (22%) did not know the ADEA suggested guidelines for dental hygiene faculty.

Table 24. Faculty Knowledge of ADEA Suggested Guidelines

Faculty Knowledge of ADEA Suggested Guidelines			
	Yes	No	Don't Know
Program Directors*	81	9	7
Didactic Faculty*	19	14	5
Clinical Faculty*	37	35	21

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

The respondents were asked to respond to the statement 'I agree with the educational requirements the ADEA has for dental hygiene faculty.' Table 25 presents

the results of this statement. Choice responses were; yes, no, don't know. Of the 97 dental hygiene program directors who completed the survey, 74 (76%) agree with ADEA guidelines for dental hygiene faculty and 4 (4%) did not agree with ADEA guidelines, while 19 (20%) did not know if they were in agreement with ADEA guidelines for dental hygiene faculty. Among didactic faculty members, 17 (45%) agreed with ADEA guidelines, and 21 (55%) did not know if they were in agreement with ADEA guidelines. No (zero) didactic faculty members answered 'no' for this question. Among clinical faculty members, 28 (30%) agree with ADEA guidelines, and 2 (2%) did not agree, while 63 (68%) did not know if they were in agreement with ADEA guidelines for dental hygiene faculty members.

Table 25. Faculty Agreement with ADEA Guidelines

Faculty Agreement With ADEA Suggested Guidelines			
	Agree	Disagree	Don't Know
Program Directors*	74	4	19
Didactic Faculty*	17	0	21
Clinical Faculty*	38	2	63

*Program Directors n = 97 *Didactic Faculty n = 38 *Clinical Faculty n = 93

The last question in the survey asked 'was the survey comprehensive enough concerning education and educational requirements among dental hygiene faculty?' Among dental hygiene program directors, 56% answered 'yes,' and 24% answered 'no,' while 20% answered 'don't know.' Among didactic faculty members, 45% answered 'yes,' and 24% answered 'no,' while 31% answered 'don't know.' Among clinical faculty members, 49% answered 'yes,' and 24% answered 'no,' while 20% answered 'don't know.'

Discussion

The ADEA has suggested guidelines for 'well qualified' dental hygiene faculty that teach and instruct dental hygiene students in dental hygiene programs. The suggested guidelines include an appropriate level of education and background in educational methods, testing and measurement and evaluation. Some of the wording used by the ADEA regarding the educational qualifications for dental hygiene faculty is vague. Yet, ADEA policy is clear that recuriting dental hygiene faculty with an appropriate background in certain educational areas, and further, that this should apply to all dental hygiene faculty. The ADEA is also clear about the level of degree dental hygiene faculty should possess (that full time dental hygiene faculty members should hold a minimum of a master's degree, or be in the process of obtaining a master's degree). To determine if dental hygiene faculty meet criteria of the ADEA, this research included questions regarding the type and level of educational degree(s) and specific educational coursework dental hygiene faculty members currently possess.

The Commission on Dental Accreditation also gives direction for dental hygiene faculty. The program administrator (director) must "have a full-time appointment and be a dental hygienist who possesses a masters or higher degree or is currently enrolled in a masters or higher degree program or a dentist who has a background in education and the professional experience necessary to understand and fulfill program goals" (CODA, 2007 p. 27). Likewise, the "dental hygiene program must be staffed by a core of well-qualified full-time faculty who possess a baccalaureate or higher degree, and that didactic faculty must have a baccalaureate degree or be currently enrolled in such, further, that all dental

hygiene faculty members have current knowledge of specific subjects they teach. All program faculty must have documented background in educational methodology consistent with teaching assignments" (CODA, 2007 p. 29). The CODA further explains that examples of faculty development could include, in-services, workshops, self-study courses, on-line and credited courses (CODA, 2007 p. 29). Both CODA and the ADEA have endorsed the need for educational methods (and other educational courses) coursework in addition to dental hygiene subjects and the basic life sciences to qualify dental hygiene faculty with appropriate foundations to teach within dental hygiene education.

Academic Degree and Employment Status

As the ADEA and CODA have degree standards for dental hygiene faculty, the importance of finding the degree level and type of degree held by all dental hygiene faculty becomes apparent as this information could align dental hygiene faculty with complience of current CODA standards and ADEA guidelines. This study found that most (92%) dental hygiene program directors had a Master's degree. Among the dental hygiene program directors, 16% held a doctorate degree. This leaves 7% of dental hygiene program directors who do not possess either a master's or doctorate degree. An explanation for this could arise that the dental hygiene program director in place in the dental hygiene program at the time of the survey could have been serving as an interim program director, and may not have possessed the full qualifications for the position. Another reason could be the location of the institution, that finding a dental hygiene program director with the complete educational requirements of the position may not be available as faculty shortages have been seen in the literature. The hiring institution also

may not be fully aware of the many CODA requirements and ADEA suggested guidelines of dental hygiene program directors and may be allowing under qualified faculty to fill a position. Further, the language used to describe qualifications for dental hygiene program directors may be misunderstood by the hiring institution and by those applying for the position of a dental hygiene program director.

All respondents were asked to report individual knowledge of the ADEA suggested guidelines for dental hygiene faculty. The dental hygiene program directors reported the highest (84%) confirmation of knowing ADEA suggested guidelines. Dental hygiene program directors also reported possessing the highest numbers of holding a degree in education (46% held a master's in education and 10% a doctorate in education). With these high numbers in educational coursework, dental hygiene program directors may be seen to have more knowledge of ADEA recommended educational coursework. Dental hygiene program directors could also hold more educational coursework due to the length of employment within dental hygiene education and therefore may possess more exposure to educational coursework made available through employment. Also, dental hygiene program directors in this study were full time employees (100%) and may have some educational benefits that come with the position at the institution.

All 38 didactic faculty members held at least a bachelor's degree and most (61%), held a master's degree. The highest number by degree type in the master's category was in education (29%). Of the 38 didactic faculty members, 87% were full time employees. As with the dental hygiene program directors, being employed full time with the institution may give didactic faculty members opportunity to receive the benefit of

pursuing coursework to coincide with teaching duties. Half (50%) of the didactic faculty members reported knowledege of the ADEA suggested guidelines for faculty. The role that didactic dental hygiene faculty members provide through instruction in the classroom in the format of lectures, tests, and other educational activities may suggest the didactic dental hygiene faculty members recognize the need of possessing educational coursework aside from, or in addition to, a knowledge of ADEA suggested guidelines.

Clinical faculty members reported the least educational coursework and the fewest master's degrees. Yet, among clinical faculty members that held a master's degree most (24%), were in education. CODA standards that state a dental hygiene program director should have a master's degree, and that didactic faculty members should hold a baccalaureate degree, yet no statement is made concerning specific educational degree levels for clinical faculty members. Not having a clear statement concerning the specific degree from CODA may be a factor for the low number of higher educational degrees among clinical faculty members. Another contributing factor may be linked to high (62%) part time employment among clinical faculty members who may not have the employment benefits that, at times, include tuition reimbursement. Additionally, the part time employment status of clinical dental hygiene members may not be conducive to attending educational workshops and seminars made available at the place of employment. The language used in the CODA statement refers to dental hygiene programs that are staffed by well qualified full time faculty members. Clinical faculty members hired on a part time basis could interpret CODA statements as applicable to only full time faculty members. The fact that many clinical faculty members are part time in education may lead to a belief that because of the part time teaching status,

certain educational levels and specific coursework do not directly apply to a part time teaching position. Again, clinical faculty members may see the teaching role of teaching clinical skills differently than teaching in a classroom setting and may not see the need for higher educational levels or specific educational coursework. This research found that only 40% of clinical faculty members knew the ADEA suggested guidelines for dental hygiene faculty. The fact that 60% of clinical faculty members do know know the suggested ADEA guidelines could be a major factor in having lower educational levels and the lack of educational coursework.

How do dental hygiene faculty members get information about ADEA suggested guidelines? One way to get information on ADEA suggested guidelines is to look at the suggested guidelines and policy statements on the ADEA website. Another way dental hygiene faculty members may acquire knowledge regarding ADEA suggested guidelines is through information available through the dental hygiene department. Another source of ADEA knowledge may come from information personally shared by the dental hygiene program director (or other dental hygiene faculty) that is conveyed to all dental hygiene faculty members within the dental hygiene department. Still another source for ADEA suggested eduational guidlines for dental hygiene faculty may come from workshops, meetings, and seminars sponsored by the ADEA or other professional dental organizations.

Chmar et al. (2006) found that 61% of dental school faculty members had previous employment in private practice and had little to no experience in teaching as a result. Chmar suggested that dental school faculty members coming directly from private practice to academia may be a factor for the lack of educational experience among dental

school faculty members. To investigate if the previous employment of dental hygiene faculty members would show similar results to that which Chmar found among dental school faculty members and previous employment in private practice, respondents were asked about previous employment and the results here indicate very similar results. Clinical faculty members had the highest number (72%) of previous employment in private practice (42% for dental hygiene program directors and 60% for didactic faculty members). Dental hygiene faculty members previously employed in private practice may have less educational coursework, teaching experience, and knowledge of ADEA suggested guidelines for well qualified dental hygiene faculty.

Specific Coursework in Education

The ADEA and CODA have both suggested that educational coursework is necessary for well qualified dental hygiene faculty. The ADEA has suggested that educational coursework in certain areas (methods, testing, measurement/evaluation) are needed by all dental hygiene faculty members. According to CODA the accreditation process of a dental hygiene program asks all dental hygiene faculty members to document coursework in educational methods in additional to educational background. Program accreditation cycles occur every seven years.

This study observed coursework dental hygiene faculty members had in educational theory, educational methods, and measurement/evaluation. The study found that dental hygiene program directors had the highest levels of the specific educational coursework (98% had educational theory, 94% had educational methods, 94% had measurement/evaluation). Dental hygiene program directors also had the highest knowledge (84%) of ADEA suggested guidelines. Having the knowledge of ADEA

suggested guidelines and having the suggested educational coursework seem to be closely linked among dental hygiene program directors.

The didactic faculty members in this study also had high numbers of educational coursework (96% had educational theory, 94% had educational methods, 95% had measurement/evaluation) yet the knowledge concerning ADEA suggested guidelines was only 50%. Because didactic faculty members have classroom instruction and duties in lecture materials and testing, these faculty members may see educational coursework as aligned with the specific work provided as didactic dental hygiene faculty in dental hygiene education. Again, the full time employment status in education may also be a factor that didactic faculty members have regarding the position.

Educational coursework among clinical faculty members was the lowest (60% had educational theory, 68% had educational methods, 65% had measurement/evaluation). Still, in each category, more than half of clinical faculty members had educational coursework. The low numbers in educational coursework correspond with the low number of education degrees among clinical faculty members. Again, part time employment may be another factor as many clinical faculty members may have another job/position that does not require any educational coursework and the perception of obtaining educational coursework is less. Though clinical faculty members had the lowest numbers (40%) concerning knowledge of suggested ADEA guidelines, clinical faculty members have the highest numbers of attending school (at the time of the survey) for educational coursework. Some clinical faculty members must understand that teaching clinical skills in dental hygiene education involves having educational coursework to support teaching. Clinical faculty members and may also recieve more

encouragement from administration to obtain educational coursework to become compliant with educational requirements of the position.

Educational Coursework Relating to Work Requirements at the Institution and Dental Hygiene Department

The perceptions dental hygiene faculty may have regarding educational coursework the institution required may differ from perceptions dental hygiene faculty may have regarding educational coursework the dental hygiene department may require. The institution may or may not be aware of ADEA suggested guidelines for dental hygiene faculty members. The institution may or may not be aware of CODA requirements for dental hygiene faculty members. Dental hygiene faculty members may be aware of two different categories of work related requirements (educational coursework or other work requirements) from both the institution and the dental hygiene department.

The responsibility of informing dental hygiene faculty members about skills, educational level, experience and specific coursework needed for teaching in dental hygiene education could fall to either the employing institution, the dental hygiene department, or both. If dental hygiene faculty members are unaware of skills, educational level, experience or specific coursework needed for a position in teaching dental hygiene education, how are dental hygiene faculty members expected to obtain all that is required? Research of the dental hygiene faculty position performed by the candidate seeking a teaching position in dental hygiene is expected and an individual does have some of the responsibility to know what is required for the position. The institution and the dental hygiene department also have a responsibility to inform candidates with a

complete job description of what is required for a teaching position in dental hygiene education.

The position of dental hygiene program director may be described by the institution or the former dental hygiene program director. The description of the position for dental hygiene program directors probably differs from the job description of a didactic faculty member or clinical faculty member. Of the 97 dental hygiene program directors, 40% perceive educational methods coursework was required by the institution for the position and 40% perceive educational methods coursework was strongly suggested by the institution for the position. Only 19% of dental hygiene program directors reported educational methods coursework was not required for the position. Dental hygiene program directors (30%) perceive measurement/evaluation coursework was required by the institution for the position and 36% perceive measurement/evaluation was strongly suggested by the institution for the position. Only 31% of dental hygiene program directors reported measurement/evaluation coursework was not required by the institution while 2% did not know if measurement/evaluation was required by the institution for the position. Dental hygiene program directors may know about educational requirements of the position through the institution, the ADEA, the CODA or previous employment at another dental hygiene education institution, still, less than half of the dental hygiene program directors perceive that educational coursework is required by the institution for the position.

The didactic faculty members share similar numbers regarding what educational coursework is required by the institution for the position. Less than half of didactic

faculty members perceive educational coursework is required by the institution for the position. Only 21% of didactic faculty members perceive educational methods coursework was required by the institution for the position, and 42% perceive educational methods coursework was strongly suggested by the institution for the position. Further, 32% perceive educational methods coursework was not required by the institution for the position and 11% did not know if educational methods coursework was required by the institution for the position. The numbers are also low among didactic faculty members that perceive measurement/evaluation coursework is required by the institution. Only 21% of didactic faculty members perceive measurement/evaluation coursework is required by the institution for the position and 37% perceive measurement/evaluation coursework is strongly suggested by the institution for the position while 34% perceive measurement/evaluation coursework is not a requirement for the position and 11% do not know if this is required.

The numbers are still lower among clinical faculty that perceive educational methods and measurement/evaluation coursework are tied to the position by the institution. Only 19% of clinical faculty perceive educational methods coursework as being required by the institution for the position and 22% perceive this is strongly suggested by the institution for the position. Further, 47% perceive that educational methods coursework is not required by the institution for the position and 13% do not know if this is required by the institution for the position. Low numbers are also reported by clinical faculty members concerning measurement/evaluation coursework. Only 15% perceive measurement/evaluation coursework as being required by the institution for the position and 24% perceive this as strongly suggested coursework by the institution for the

position while 47 perceive measurement/evaluation coursework is not required by the institution for the position and 15% do not know if this coursework is required by the institution for the position.

Dental hygiene faculty members have the obligation of meeting position qualifications at the employing institution, and also with the dental hygiene program (department) contained within the educational institution. Meeting the educational coursework suggested by the ADEA and CODA may more directly impact the dental hygiene program and dental hygiene faculty. Compared to numbers of coursework required by the institution, more, 51%, of dental hygiene program directors perceive educational methods coursework as required for the position within the dental hygiene program and 35% perceive this as strongly suggested. Only 12% of dental hygiene program directors did not perceive educational methods coursework was required for the position within the dental hygiene program and 3% did not know. There were also slightly higher numbers among dental hygiene program directors that perceive measurement/evaluation coursework as being required or strongly suggested within the dental hygiene program requirements for the position. Only 25% of dental hygiene program directors perceive measurement/evaluation coursework is not required by the dental hygiene program for the position and 2% did not know if this coursework is required by the dental hygiene program for the position.

Compared to numbers of coursework required by the institution, the numbers were also slightly higher among didactic faculty members that perceive educational methods coursework is needed for the position within the dental hygiene program. Most, 42%, of didactic faculty members perceive educational methods is strongly suggested

within the dental hygiene program for the position and only 21% perceive this coursework as required within the dental hygiene program. Still, 26% of didactic faculty members perceive that educational methods coursework is not required within the dental hygiene program for the position and 11% do not know if this coursework is required by the dental hygiene program for the position. More, 21%, didactic faculty members perceive measurement/evaluation coursework as required by the dental hygiene program for the position, but slightly less, 37%, of didactic faculty members perceive this coursework as strongly suggested by the dental hygiene program for the position. Still, 34% of didactic faculty members perceive that measurement/evaluation coursework is not required within the dental hygiene program for the position and 11% do not know if this coursework is required by the dental hygiene program for the position.

The numbers are still low among clinical faculty members that perceive certain coursework is required by the dental hygiene program compared with required coursework by the institution. Only 19% of clinical faculty members perceive educational methods coursework is required by the dental hygiene program for the position and 22% perceive this coursework is strongly suggested by the dental hygiene program for the position. A high number, 47%, of clinical faculty members perceive educational methods coursework is not required by the dental hygiene program for the position and 13% do not know if this coursework is required by the dental hygiene program for the position. The same low numbers exist among clinical faculty members regarding measurement/evaluation coursework as required by the dental hygiene program. Only 15% of clinical faculty members perceive measurement/evaluation

coursework is required by the dental hygiene program for the position and 24% perceive this coursework as strongly suggested by the dental hygiene program for the position. Slightly more, 45%, of clinical faculty members perceive that measurement/evaluation coursework is not required by the dental hygiene program for the position and 16% do not know if this coursework is required by the dental hygiene program for this position.

The perceptions that didactic and clinical faculty members have about educational methods and measurement/evaluation coursework within the dental hygiene program are low. Combined with having less knowledge of ADEA and CODA, didactic and clinical faculty members must somehow be informed about the educational requirements for the position held. Some of this responsibility must fall on the dental hygiene program to have adequate knowledge about ADEA suggested guidelines and then getting that information to all faculty. Dental hygiene programs must also work with the institution to provide all requirements needed by dental hygiene to write clear position qualifications for accurate job descriptions.

Being Educationally Prepared to Teach Dental Hygiene

Dental hygiene faculty members, as a collective group in this study, perceive that the education already attained prepared them to teach dental hygiene education. Over 73% of the 228 dental hygiene faculty members agree and strongly agree in being educationally prepared to teach dental hygiene. When the didactic portion of dental hygiene education is separated from dental hygiene education, only 71% of all dental hygiene faculty perceive that all dental hygiene faculty members are educationally prepared to teach. When the clinical portion of dental hygiene education is separated

from dental hygiene education, 82% of all dental hygiene faculty members perceive that dental hygiene faculty members are educationally prepared to teach. Dental hygiene faculty members are required to have a dental hygiene license and possess the skills of a dental hygienist through work experience before becoming a dental hygiene faculty members and this may strengthen the perception that more dental hygiene faculty members support being educationally prepared to teach the clinical portion of dental hygiene education. Teaching the didactic portion of dental hygiene education must be perceived by dental hygiene faculty as having additional requirements (such as in teaching methods or test construction) since lower numbers of dental hygiene faculty members perceived that all dental hygiene faculty members were educationally prepared in this capacity.

When didactic faculty members are combined with the didactic portion of dental hygiene education, more than 75% of all dental hygiene faculty members agree these are educationally prepared to teach. When clinical faculty members are combined with the clinical portion of dental hygiene education, more than 78% of all dental hygiene faculty members agree these are educationally prepared to teach. Even when didactic faculty members are combined with the clinical portion of dental hygiene education, 73% of all dental hygiene faculty members agree these are educationally prepared to teach. When clinical faculty members are combined with the didactic portion of dental hygiene education, 69% of all dental hygiene faculty members agree these are educationally prepared to teach. The perception of dental hygiene faculty members seem to indicate that teaching the didactic portion of dental hygiene requires more educational preparation.

Over 75% of all dental hygiene faculty members in this research agree that educational methods and measurement/evaluation coursework are required to be an effective in teaching the didactic portion of dental hygiene education. This is in agreement of suggested ADEA guidelines, that dental hygiene possess educational methods and measurement/evaluation coursework (together with course subject matter). Of the faculty members who spent 50% or more of the time at work in didactic teaching in dental hygiene education, over 90% had coursework in educational methods and measurement/evaluation, so didactic faculty members seem to know educational coursework is needed in teaching the didactic portion of dental hygiene education. Fewer, however, see educational methods (21%) and measurement/evaluation (21%) coursework as required coursework for a didactic position within the dental hygiene department. One reason didactic faculty members may not view educational methods and measurement/evaluation coursework as a requirement for the position may stem from a lack of knowledge of ADEA suggested guidelines. Also, didactic faculty members may view ADEA suggested guidelines as only suggested and not mandatory. Another reason may be that the dental hygiene department has not communicated specific coursework as necessary for positions in didactic teaching requirements.

The same is true for clinical faculty members, but in greater contrast. Slightly less (63%) of all dental hygiene faculty agree that clinical faculty members required educational methods and measurement/evaluation coursework to be effective in the clinical portion of dental hygiene education. Although the ADEA has suggested this coursework for all dental hygiene faculty members, only 68% have coursework in educational methods and 65% have coursework in measurement/evaluation. Of all dental

hygiene faculty members, fewer view this coursework as important in teaching the clinical portion of dental hygiene education. Again, one reason for lower numbers may be that only 19% of clinical faculty members view educational methods coursework as required in the dental hygiene department for the position, and 15% view measurement/evaluation coursework as required in the dental hygiene department for the position. A reason for this may be that the dental hygiene department has not communicated specific educational coursework requirements to clinical faculty members describing the requirements of the position. Also, the lack of knowledge among clinical faculty members concerning ADEA suggested guidelines may be a factor for the lower numbers of clinical faculty members with educational coursework. The lack of higher educational degrees, such as a master's degree, may be another contributing factor among clinical faculty members having lower numbers of educational coursework.

The dental hygiene department and the institution are both involved in the hiring process of dental hygiene faculty. The dental hygiene department should have more knowledge of ADEA suggested guidelines for dental hygiene faculty and CODA accreditation standards. There is evidence that some dental hygiene departments have expressed a concern that underqualified candidates apply for dental hygiene faculty positions. Dental hygiene program directors (32%) report that "there is a lack of qualified individuals for dental hygiene faculty openings" (ADHA, 2006 p. 4-5). The 2006 ADHA report also states that three of the top five reasons for current vacancies in dental hygiene faculty positions are too few qualified candidates (52%), candidates lack required academic qualifications (24%) and no qualified candidates (18%). The report

does not state what the specific required academic qualifications are for dental hygiene faculty.

The numbers in this research indicate that there may be many currently employed dental hygiene faculty that are 'underqualified' since this research observed the level, type of degree and specific coursework needed by dental hygiene faculty members as suggested by the ADEA. Yet, with the faculty shortage and hygienists applying for faculty positions that do not have the educational coursework suggested for teaching within dental hygiene education, the trend to hire dental hygiene faculty with less than desired qualifications may continue. The research here observed that not all dental hygiene faculty have educational coursework that is suggested by the ADEA. The research here also shows that degree level and type held by dental hygiene faculty does not always meet CODA standards.

Recommendations would include greater awareness among all dental hygiene faculty members of ADEA suggested guidelines and policy. To achieve this, a faculty development seminar for dental hygiene faculty could be developed to increase awareness of ADEA suggested educational qualifications for dental hygiene faculty. The faculty development seminar could also include the regulations from the CODA standards. The seminar could be developed by the ADEA or CODA in video or power point format and be delivered to dental hygiene programs for viewing. Dental hygiene programs could participate in a ‘mock accreditation review’ during the years in which the accreditation process is not taking place. Similar to the credentialing process in this research, dental hygiene programs should verify not only the professional license held by

dental hygiene faculty, but the 'educational qualifications' of dental hygiene faculty to check for compliance with ADEA and CODA standards.

Other recommendations would include the addition of a link from the ADHA website to the ADEA website. The ADHA website contains information concerning the education of dental hygienists, but does not offer information concerning the education and qualifications needed to become a dental hygiene faculty member. The ADHA should view the ADEA not only in terms of solid educational research (through publications), but also as a source for faculty development and life-long learning activities. Dental hygiene faculty could also direct dental hygiene students interested in a career in academia to the ADEA website in addition to mentoring a student toward teaching in dental hygiene education.

In conclusion, this research shows that clinical dental hygiene faculty members do not always demonstrate required educational level or degree recommended by the ADEA suggested guidelines. Neither do all clinical dental hygiene faculty members possess the recommended coursework in educational methods and measurement/evaluation as recommended by the ADEA suggested guidelines. The part time employment by most clinical dental hygiene faculty, the lack of knowledge concerning ADEA suggested guidelines, direct previous employment in private practice and perhaps a failure of the dental hygiene department to communicate position requirements may all be factors for why clinical dental hygiene members lack some of the suggested educational requirements for well qualified dental hygiene faculty as defined by the ADEA.

Limitations

The survey research 'Dental Hygiene Education Survey' was limited in many ways. The introductory letter and survey link were sent via email on April 9, 2008 at a time when dental hygiene programs are in a particularly busy academic time of Regional and National board preparation. Faculty members may have been too busy with educational duties to respond to the survey. A better time may have been in the month of February in the academic calender of dental hygiene education. Also, the survey was closed on May 30, 2008 at which time many faculty may have been away on vacation. Also, requesting the dental hygiene program directors to forward the introductory letter and survey link likely reduced the number of respondents to the survey, but a complete listing of current dental hygiene faculty does not exist and therefore the introductory letter and email link could not be sent directly to all dental hygiene faculty members.

Some of the demographic questions could have been more clearly stated, for instance, the definition of urban, suburban and rural could have had population numbers inserted to provide an easier alternative for respondents to answer the question concerning the location of the institution. The survey was attempting to gather responses across the United States while allowing responders to remain anonymous. The same was true for the location of the Regional Board Exam, many could not answer this question with the choices given because many states now except a number of different Regional Board Exams (laws and jurisdictions change from time to time). The question of location could have been framed by grouping a number of states together such as Maine, Vermont, New Hampshire, Connecticut, Rhode Island and Massachusetts which would provide location and still allow for anonymity.

Dental hygiene faculty were asked to self report on questions that pertained to education type, level and specific educational coursework. Some dental hygiene faculty members could have taken specific coursework a number of years ago and may not have been clear about specific coursework that may or may not have been taken. Also, the survey asked questions about specific educational coursework taken as a college course level. Questions should have been included about educational workshops, seminars or professional development courses that may have been taken regarding educational methods and measurement/evaluation. Also, respondents may have had confusion about the wording of the coursework listed. Clear definitions should have been given to identify terms for educational methods, educational theory, and measurement and/or evaluation coursework.

Questions regarding the perceptions dental hygiene faculty have concerning teaching the didactic and clinical portions of dental hygiene education were asked only of didactic and clinical dental hygiene faculty members and did not include administrative types (or specifically, dental hygiene program directors) of dental hygiene faculty members. The research could have also included perceptions concerning teaching by administrative faculty (or dental hygiene program directors) since ADEA suggested guidelines include all dental hygiene faculty members. Perhaps allowing questions about teaching and dental hygiene program directors could give the research more balance and generalization.

Dental hygiene program directors were asked to report on the number of full and part time dental hygiene faculty members by indicating the total number of faculty in the dental hygiene program. The number of dental hygiene faculty members (as reported by

dental hygiene program directors) was used for the value of *n*. The number of faculty included by dental hygiene program directors could have included faculty who teach dental hygiene subjects that come from other disciplines, such as a nurse teaching a class on medical emergencies for dental hygiene students. These types of faculty could have been included by the dental hygiene program directors in the personnel pool of dental hygiene faculty members and would probably have no knowledge of ADEA suggested guidelines. There is no way to know for certain if dental hygiene program directors included these types of faculty in the number of dental hygiene faculty members, or if these faculty responded to the survey.

The survey was sent to dental hygiene program directors and had to rely on dental hygiene program directors to send the survey link to other dental hygiene faculty members. A limitation of the research was not being able to send the survey directly to all dental hygiene faculty. If a central database for all dental hygiene faculty email information was available, an increased response to research projects may be realized.

Suggestions for Future Research

Suggestions for future research could include having an organization such as the ADHA, ADEA, ADA or CODA conduct research to determine specific educational coursework current dental hygiene faculty members possess. With the name recognition of a large organization, increased response may occur. A dental hygiene educator who is nationally recognized may also have an increased response among dental hygiene faculty.

The ADEA could also conduct future research to determine how clear the suggested guidelines are for dental hygiene faculty or develop a nation wide campaign to

reveal suggested guidelines to all faculty. A large task to tackle before conducting nation wide research for all faculty members may include the creation of a database of faculty. CODA could also conduct future research to clearly define the educational requirements for dental hygiene faculty and design compliance agreements for dental hygiene programs in order for more dental hygiene faculty members to complete more educational coursework. Measures taken by CODA and the ADEA could affect dental school faculty, dental hygiene faculty, dental assisting faculty and dental technology faculty.

APPENDIX A:

Dental Hygiene Survey Questions

1. At your current institution, are you:

   full time or part time

2. Describe the setting of your institution:

   choose: rural, urban, suburban

3. Location of your institution's Regional Board:

   choose: NERB, WREB, CRDTS, SRTA, CITA, none

4. If you are the director of the dental hygiene program at your institution, please enter the total number of part time and full time faculty.

NOTE: If you are a co-chair, please discuss who will enter the total faculty number. One response per program, please.

NOTE: All other faculty, please enter 0

5. Area in which you were predominately working prior to your current position:
   ( ) Private practice

   ( ) Dental hygiene education

   ( ) Public health

   ( ) Other educational setting

   ( ) Research

   ( ) Hospital

   ( ) Continuing education speaker/presenter

   ( ) Dental school (DDS) education

   ( ) Dental equipment/product sales

   ( ) Military

   ( ) Other

6. What is your current position (check all that apply):
   ( ) Program Chair

( ) Program Co-Chair
( ) Associate Professor
( ) Assistant Professor
( ) Clinic Co-Coordinator
( ) Didactic Professor/Instructor
( ) Clinical Professor/Instructor
( ) Distance Site Program Chair/Co-Coordinator
( ) Distance Site Clinic Co-Coordinator
( ) Distance Site Didactic Professor/Instructor
( ) Distance Site Clinical Professor/Instructor

7. Describe your current position:

( ) Clinical Professor/Instructor (50% or more of your time in clinical activities)

( ) Didactic Professor/Instructor (50% or more of your time spent in classroom lecture/activities)

( ) Administrator (50% or more of your time spent administratively)

8.Your educational background: Associates Degree
( ) Dental Hygiene
( ) Education
( ) Other
( ) N/A

9. Do you have another Associate Degree?
( ) Education
( ) Other
( ) N/A

10. Your educational background: Bachelor's Degree
( ) Dental Hygiene
( ) Education
( ) Health Science
( ) Public Health
( ) Other
( ) N/A

11. Do you have another Bachelor's degree?
( ) Dental Hygiene
( ) Education
( ) Public Health
( ) Health Science
( ) Other
( ) N/A

12. Your educational background: Master's Degree
( ) Dental Hygiene
( ) Education
( ) Public Health
( ) Health Science

( ) Other
( ) N/A

13. Do you have another Master's Degree?
( ) Dental Hygiene
( ) Education
( ) Public Health
( ) Health Science
( ) Other
( ) N/A

14. Your educational background: Doctorate Degree
( ) Education
( ) Public Health
( ) Health Science
( ) Other
( ) N/A

15. Do you have another Doctorate Degree?
( ) Education
( ) Public Health
( ) Health Science
( ) Other
( ) N/A

16. If you have more than 2 degree's in any category, please indicate here (select all that apply):
( ) N/A
( ) Associate
( ) Bachelor's
( ) Master's
( ) Doctorate

17. Number of classes you have completed in educational **theory** at the **undergraduat**e level:
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 5+

18.Number of courses you have completed in educational **theory** at **graduate** level:
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 5+

19. Number of courses you have completed in educational **methods** at the **undergraduate** level:
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 5+

20. Number of courses you have completed in educational **methods** at a **graduate** level:
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 5+

21. Number of courses you have completed in **measurement and/or evaluation** at the **undergraduate** level:
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 5+

22. Number of courses you have completed in measurement and/or evaluation at a **graduate** level:
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 5+

23. I am currently taking coursework in educational **theory** at the **undergraduate** level:
( ) yes ( ) no

24. I am currently taking coursework in educational **theory** at the **graduate** level.
( ) yes ( ) no

25. I am currently taking coursework on measurement and/or evaluation at the **undergraduate** level.
( ) yes ( ) no

26. I am currently taking coursework in measurement and/or evaluation at the **graduate** level.
( ) yes ( ) no

27. I am currently taking coursework in educational **methods** at the **undergraduate** level.
( ) yes ( ) no

28. I am currently taking coursework in educational **methods** on a **graduate** level.
( ) yes ( ) no

29. The institution I currently work in :

( ) Requires coursework in educational theory for my position

( ) Strongly suggests coursework in educational theory for my position

( ) Does not require coursework in educational theory for my position

( ) Don't know

30. The institution I currently work in:

( ) Requires coursework in educational methods for my position

( ) Strongly suggests coursework in educational methods for my position

( ) Does not require coursework in educational methods for my position

( ) Don't know

31. The institution I currently work in:

( ) Requires coursework in measurement and/or evaluation for my position

( ) Strongly suggests coursework in measurement and/or evaluation for my position

( ) Does not require coursework in measurement and/or evaluation for my position

( ) Don't know

32. The dental hygiene program I work in:

( ) Requires coursework in educational theory for my position

( ) Strongly suggests coursework in educational theory for my position

( ) Does not require coursework in educational theory for my position

( ) Don't know

33. The dental hygiene program I currently work in:

( ) Requires coursework in educational methods for my position

( ) Strongly suggests coursework in educational methods for my position

( ) Does not require coursework in educational methods for my position

( ) Don't know

34. The dental hygiene program I currently work in:

( ) Requires coursework in measurement and/or evaluation for my position

( ) Strongly suggests coursework in measurement and/or evaluation for my position

( ) Does not require coursework in measurement and/or evaluation for my position

( ) Don't know

35. I know the American Dental Education Association guidelines for dental hygiene faculty.

( ) yes ( ) no ( ) don't know

36. I agree with the educational requirements the American Dental Educational Association has for dental hygiene faculty.

( ) yes ( ) no ( ) don't know

37. Dental hygiene faculty members are educationally prepared to teach dental hygiene.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

38. Dental hygiene faculty members are educationally prepared to teach the didactic portion of dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

39. Dental hygiene faculty members are educationally prepared to teach the clinical portion of dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

40. Didactic Professors/Instructors in dental hygiene are educationally prepared to teach the didactic portion of dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

41. Didactic Professors/Instructors are educationally prepared to teach the clinical portion of dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

42. Clinical Professors/Instructors in dental hygiene are educationally prepared to teach the clinical portion of dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

43. Clinical Professors/Instructors in dental hygiene are educationally prepared to teach the didactic portion of dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

44. Coursework in educational methods are required to be an effective didactic dental hygiene faculty member.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

45. Coursework in educational methods are required to be an effective clinical dental hygiene faculty member.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

46. Coursework in educational theory is required to be an effective didactic dental hygiene faculty member.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

47. Coursework in educational theory is required to be an effective clinical dental hygiene faculty member.

( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

48. Coursework in measurement and/or evaluation is required to be an effective didactic dental hygiene faculty member.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

49. Coursework in measurement and/or evaluation is required to be an effective clinical dental hygiene faculty member.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

50. Dental hygiene faculty members are not educationally prepared with enough educational theory coursework to teach clinical dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

51. Dental hygiene faculty members are not educationally prepared with enough educational methods coursework to teach clinical dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

52. Dental hygiene faculty members are not educationally prepared with enough measurement and/or evaluation coursework to teach clinical dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

53. Dental hygiene faculty members are not educationally prepared with enough measurement and/or evaluation coursework to teach the didactic portion of dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

54. Dental hygiene faculty are not educationally prepared with enough educational methods coursework to

teach the didactic portion of dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

55. Dental hygiene faculty are not educationally prepared enough with educational methods coursework to teach the clinical portion of dental hygiene education.
( ) Strongly Disagree
( ) Disagree
( ) No Opinion
( ) Agree
( ) Strongly Agree

56. Was the survey comprehensive enough concerning education and educational requirements among dental hygiene faculty?

( ) yes ( ) no ( ) don't know

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Thank You!

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Thank you for taking our survey. Your response is very important to us.

References

AAMC, (2004). Association of American Medical Colleges, Washington, DC.

ADA, (1998). American Dental Association, Commission on Dental Accreditation. Accreditation Standards for Dental Hygiene Education Programs. Chicago: American Dental Association.

ADA, (2009). website ada.org/prof/ed/programs/search_ddsdmd_us.asp accessed April 4, 2009.

ADEA, (2005a). American Dental Education Association; Compendium of Curriculum Guidelines (Revised Edition) Allied Dental Education Programs, Chicago, Illinois.

ADEA, (2005b). ADEA Policy Statements (As revised and approved by the 2005 House of Delegates) *Journal of Dental Education,* 69, (7), 786-799.

ADEA, (2007). Principles of Accreditation for Dental Education. *Journal of Dental Education,* 71, (7), 934-935.

ADEA, (2008). American Dental Education Association; Policy Statements. *Faculty Qualifications*. Retrived from http://www.adea.org/about_adea/governance/Pages/PolicyStatements.aspx

ADHA, (2006). Dental Hygiene Education Program Director Survey, Executive Summary. Center for health Workforce Studies at the School of Public Health, University at Albany (the Center) for the American Dental Hygienists' Association; Chicago, Illinois.

Austin, Ann E. & Baldwin, Roger G., (1992). Faculty Collaboration: Enhancing the Quality of Scholarship and Teaching, ERIC Digest (ED347958). The George

Washington University, Washington, DC.

Bandura, A., & Walters, R., (1963). *Social Learning and Personality Development.* New York: Holt, Rinehart and Wilson.

Bandura, A., (1977). Toward a Unifying Theory of Behavior Change. *Psychological Review*, 84, (2), 191-215.

Behar-Horenstein, Linda S., Schneider-Mitchell, Gail, Graff, Randy, (2008). Faculty Perceptions of a Professional Deveopment Seminar. *Journal of Dental Education*, 72, (4), 472-483.

Bergman, K & Gaitskill, T. (1990). Faculty and Student Perceptions of Effective Clinical Teachers: An Extension Study. *Journal of Professional Nursing,* 6, 33-44.

Boyer, Ernest L., (1990). Scholarship Reconsidered: Priorities of the Professoriate. Princeton, New Jersey: Carnegie Foundation.

Brown, L. Jackson, (2005). A Look at Allied Dental Education in the United States. *The Journal of the American Dental Association*, 136, 797-804.

Chmar, J.E., Weaver, R. G., Valachovic, R. W. (2006). ADEA Survey of Dental School Seniors: 2005 Graduating Class. *Journal of Dental Education*, 70 (2), 313-337.

Chmar, J. E., Weaver, R. G., Valachovic, R. W. (2006). Dental School Vacant Budgeted Faculty Positions: Academic Year 2004-2005. *Journal of Dental Education*, 70 (2), 189-198.

CODA, (2007). Commission on Dental Accreditation; Accreditation Standards for Dental Hygiene Education Programs. American Dental Association, Chicago, Illinois.

Collins, M., Zinskie, C., Keskula, D., Thompson, A. (2007). Characteristics of Full-Time Faculty in Baccalureate Dental Hygiene Programs and their Perceptions of the

Academic Work Environment. *Journal of Dental Education*, 71 (11), 1385-1402.

Darby, M. L. & Walsh, M. M. (1995). Dental Hygiene Theory and Practice. Philadelphia: W. B. Saunders Company.

Davis, D, Stullenbarger, E., Dearman, C, Kelley, J. A. (2005). Proposed Nurse Educator Competencies: Development and Validation of a Model. *Nursing Outlook*, 53 (4), 206-211.

Dick, W., Carey, L., Carey, J. O., (2005). Conducting Front-End Analysis to Identify Instructional Goal(s). *The Systematic Design of Instruction.* (6th ed.). Boston: Pearson.

Farmer, D. W. (1990). Strategies for Change. *New Directions for Higher Education*, 71, 7-18.

Gagne, R. M., & Medsker, K. L., (1996). *The Conditions of Learning: Training Applications.* Fort Worth: Harcourt Brace College Publishers.

Haden, N. K., Andrieu, S. C., Chadwick, D. G., Chmar, J. E., Cole, J. R., George, M. C., Kalkwarf, K. L. (2006). The Dental Education Environment. *Journal of Dental Education,* 70 (12), 1265-1270.

Haden, N. K., Morr, K. E., Valachovic, R. W., (2001). Trends in Allied Dental Education: An Analysis of the Past and a Look to the Future. *Journal of Dental Education*, 65 (5), 480-495.

Hand, Jed S. (2006). Identification of Competencies for Effective Dental Faculty. *Journal of Dental Education*, 70 (9), 937-947.

Heidenreich, C., Lye, P., Simpson, D., Lourich, M. ((2000). The Search for Effective and Efficient Ambulatory Teaching Methods Through the Literature. *Pediatrics,*

105 (1), 231-237.

Hilgard, Ernest R. & Bower, Gordon H., (1975). Theories in Learning. In G. Lindzey & K. MacCorquodale (Eds.), *Recent Developments* (pp. 599-605). Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

Lanning, S. K., Pelok, S. D., Williams, B. C., Richards, P. S., Sarment, D. P., Oh, Tae-Ju, McCauley, L. K., (2005). Variation in Periodontal Diagnosis and Treatment Planning Among Clinical Instructors. *Journal of Dental Education,* 69, (3), 325-337.

Lanning, S. K., Best, A. M., Temple, H.J., Richards, P. S., Carey, A., McCauley, L. K., (2006a). Radiographic Interpretation Among Clinical Instructors Using Two Viewing Systems. *Journal of Dental Education*, 70, (2), 149-159.

Lanning S. K., Best, A. M., Temple, H. J., Richards, P. S., Carey, A., McCauley, L. K., (2006b). Accuracy and Consistency of Radiographic Interpretation Among Clinical Instructors in Conjunction with a Training Program. *Journal of Dental Education*, 70, (5), 545-557.

LCME (2004). Liaison Commission on Medical Education, Standards for Accreditation of Medical Educational Programs Leading to the MD Degree. http://www.lcme.org/functionlist.htm#faculty

Lewis, E.A., Albino, J. E., Cunat, J.J., Tedesco, L.A., (1982). Reliability and Validity of Clinical Assessment of Malocclusion. *American Journal of Orthodontics*, 81,(6) 473-477.

Licari, Frank W., (2007). Faculty Development to Support Curriculum Change and Ensure the Future Vitality of Dental Education. *Journal of Dental Education*, 71, (12), 1509-1512.

Majeski, J., (2004). The Educator Shortage. *Access: An Official Publication of the American Dental Hygienists' Association*, 9, (18), 17-22.

Marbach, J. J., Raphael, K. G., Janal, M. N., (2003). Reliability of Clinician Judgements of Bruxism. *Journal of Oral Rehabilitation*, 30, 113-118.

Masella, Richard S., (2005). Confronting Shibboleths of Dental Education. *Journal of Dental Education*, 69 (10), 1089-1194.

Mitchell, Terry Lavigne, Salme, (2005). A Survey of Canadian Dental Hygiene Faculty Needs and Credentials. *Journal of Dental Education*, 69 (8), 879-889.

Myers, Ronnie, Yoon, Angela J., (2006). Faculty Credentialing: A Survey of Forty-Six U. S. Dental Schools. *Journal of Dental Education*, 70 (6), 636-643.

Nahas, V.L., Nour, V., al-Nobani, M. (1999) Jordanian Undergraduate Nursing Students' Perceptions of Effective Clinical Teachers. *Nurse Educator Today*, 19, 639-648.

Nathe, C. N., (2005). Dental Public Health: Contemporary Practice for the Dental Hygienist. Upper Saddle River, New Jersey: Pearson/Prentice Hall.

Nathe, C., (2005). Why is There a Push for Graduate Education in Dental Hygiene? *RDH: The Magazine for Dental Hygiene Professional*, 25 (1), 38-40, 76.

Nunn, P. J., Gadbury-Amyot, C. C., Battrell, A., Bruce, S. I., Hanlon, L. L., Kaiser, C., Purlfoy-Sheldon, B., (2004). The Current Status of Allied Dental Faculty: A Survey Report. Journal of Dental Education, 68, (3), 329-344.

Pyle, M., Andrieu, S. C., Chadwick, D. G., Chmar, J. E., Cole, J. R., George, M. C., . . . Kalkwarf, K. L. (2006). The Case for Change in Dental Education. *Journal of Dental Education*, 70 (9), 921-924.

Ring, T., (2002). Trends in Dental Hygiene Education. *Access: An Official Publication*

of the American Dental Hygieneists' Association, 16, (7), 15-23.

Rotter, Julian B., (1982). The Development and Application of Social Learning Theory; Selected Papers. New York, New York: Praeger Publishers.

Spielman, A. I., Fulmer, T., Eisenberg, E. S., Alfano, M. C. (2005). Dentistry, Nursing, and Medicine: A Comparison of Core Competencies. *Journal of Dental Education*, 69, (11), 1257-1271.

SREB (2002). Concil on Collegiate Education in Nursing, *Nurse Educator Competencies,* Southern Regional Education Board, Atlanta, Georgia.

Swanson, R. A., (1996). Analysis for Improving Performance. San Francisco: Berrett-Koehler Publishers.

Swanson, R. A. & Holton, E. F. (2001). Foundations of Human Resource Development. San Francisco: Berrett-Koehler Publishers, Inc.

Schonwetter. D. J., Lavigne, S., Mazurat, R., Nazarki, O., (2006). Students Perceptions Of Effective Classroom and Clinical Teaching in Dental and Dental Hygiene Education. *Journal of Dental Education,* 70 (6), 624-635.

Tedesco, L. & Ferrillo, P., (2002). Introduction to Theme 3: Securing and Maintaining An Effective Dental School Faculty. *European Journal of Dental Education*, 6, (3), 84-85.

Valenza, John A., George, Lloyd A., O'Neill, Paula N., (2005). A Model of Clinical Credentialing of Dental School Faculty. *Journal of Dental Education*, 69, (8), 870-878.

Wilkins, E. M., (2005). Clinical Practice of the Dental Hygienist (9th ed.). Philadelphia: Lippincott, Williams, and Wilkins.

Williams, Sandra W., (2001). The Effectiveness of Subject Matter Experts as Technical Trainers. *Human Resource Development Quarterly,* 12, (1), 91-97.