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Survey of Attitudes of Licensed Dental Hygienists Toward Continuing Education in a State with Mandatory Continuing Education Versus a State without Mandatory Continuing Education

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SURVEY OF ATTITUDES OF LICENSED DENTAL HYGIENISTS TOWARD CONTINUING EDUCATION IN A STATE WITH MANDATORY CONTINUING EDUCATION VERSUS A STATE WITHOUT MANDATORY CONTINUING EDUCATION

by

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ABSTRACT

SURVEY OF ATTITUDES OF LICENSED DENTAL HYGIENISTS TOWARD CONTINUING EDUCATION IN A STATE WITH MANDATORY CONTINUING EDUCATION VERSUS A STATE WITHOUT MANDATORY CONTINUING EDUCATION

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Old Dominion University, 1988
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The purpose of this research was to compare attitudes of licensed dental hygienists toward continuing education (CE) in two states: Kentucky, a state with mandatory continuing education (MCE) as a requirement for dental hygiene relicensure and Virginia, a state without MCE for dental hygiene relicensure. A self-designed, 28-item instrument, Continuing Education Attitudinal Questionnaire, was mailed to a stratified and random sample of 400 licensed dental hygienists in Kentucky and Virginia. Employing the chi-square test for independence, analysis of results revealed that Kentucky participants responded more affirmatively than Virginia participants to attitudinal statements regarding CE, particularly in areas of MCE, benefits of CE, and CE program administration. Virginia respondents recorded higher percentages of undecided responses, especially in areas of benefits of CE and optional methodologies for CE instruction. Therefore, increased exposure to CE courses through MCE may result in

more favorable attitudes toward CE. The study also revealed that association members displayed more favorable attitudes toward CE than non-association members, and that graduation date did not appear related to attitudes toward CE.

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CHAPTER 1

Introduction

The concept of continuing education for dental hygienists is under considerable debate in the dental and dental hygiene professions.[71] Many professionals believe that continuing education for dental hygienists must be mandated to ensure continued competence of all licensed dental hygienists.[32,36,37] Other professionals believe, however, that the very definition of a professional entails a commitment to lifelong learning with continued improvement in providing quality patient care; therefore, legislating continuing education is unnecessary.[1,10] Additionally, professionals who do not endorse mandatory continuing education voice reservations about the usefulness of a law requiring a given number of course hours to ensure improvement of patient care, since the only measure of success in most courses is time spent taking the course.[10,65]

Continuing education in the health professions has been criticized for failure to document changes in practice behaviors and for low scientific merit of evaluation methods.[10,32,38,43,71] Therefore, many professionals are not in favor of requiring continuing

education courses for relicensure,[50] since these programs have not established a record of success in effecting behavioral changes or improvement in patient oral health.

Serious gaps exist in the body of knowledge regarding continuing education for dental hygienists. The purpose of this study was to examine the attitudes among dental hygienists toward continuing education in two states, one state with a legislated requirement for continuing education credit units and one state with no requirement for continuing education.

Statement of the Problem

The purpose of this investigation was to answer the following questions:

1. What were the attitudes toward continuing education among licensed dental hygienists in a state with mandatory continuing education versus a state without mandatory continuing education?

2. Was there a correlation between attitudes toward continuing education among licensed dental hygienists who are members of their professional association and licensed dental hygienists who are not members of their professional association?

3. What were the attitudes toward continuing education among dental hygienists who graduated from a dental hygiene program five years ago or less versus dental hygienists who graduated from a dental hygiene program more than five years ago?

Significance of the Problem

Legislation requiring continuing professional education is a controversial area for several reasons. First, dental hygienists are not in agreement concerning the purposes of continuing education. For many professionals, the primary purpose of continuing education is to improve patient oral health care in a continually changing health care delivery system.[10] Other professionals believe that continuing education is not only a way to enhance patient care, but is important for professional development of dental hygienists.[1,16] For example, participation in continuing education courses may positively influence attitudes and values of dental hygienists toward their profession by providing opportunities for participants to exchange ideas with peers as well as to keep abreast of the latest developments[3] in clinical and nonclinical aspects of dental hygiene. Continuing education courses also may provide a change of pace from the work environment, thus stimulating positive attitudes toward practice and increasing professional pride. Improvement in patient care need not be the only factor demonstrated in order for continuing education courses to be beneficial.[8]

The American Dental Hygienists' Association (ADHA) Policy Manual states that ADHA supports efforts "...to develop mechanisms for ensuring the continued competence of dental hygienists..."[2] The association endorses

development of continuing education courses at the constituent and component levels and encourages interaction and cooperation with educational institutions and other health disciplines to share ideas, programs, and resources. However, ADHA has no policy statement specifically indicating that mandatory continuing education is a mechanism for ensuring continued competence.

Controversy also surrounds continuing education because evaluation methods to determine course effectiveness and long-term impact of continuing education on patient oral health care have been inadequate and ineffective.[10,69] Frequently cited reasons for lack of effective evaluation methods include the following: the cost and time involved in long-term studies which evaluate behavioral or attitudinal changes;[36] inappropriate instruments for measuring these changes; and evaluation mechanisms which lack established reliability and validity.[43,69] Consequently, many continuing education programs have not been able to measure changes in patient oral health care or to measure changes in attitude toward practice as a result of participation in continuing education.[38]

Another area of concern is the belief that continuing education courses are not developed to impact on patient oral health care because patient needs are not assessed.[10] Very few courses are developed by first

analyzing patient care problems. Consequently, the goals and objectives for improvement in patient oral health may not be directed to patient needs.

Arguments also exist over the necessity of having to justify the impact of continuing education courses because the number of programs and participants attests to the effectiveness of continuing education courses.[14] Since a number of professionals regularly and voluntarily participate in continuing education opportunities, this fact alone substantiates the needs, purposes, and value of providing continuing education.[3,38]

While consensus is minimal concerning why professionals should participate in continuing education, agreement generally exists regarding the concept that the needs of the participants should be assessed prior to conducting programs.[39,67] However, controversy exists in deciding who best determines these needs - prospective course attendees, objective raters who perform chart audits and discover discrepancies in practice, peer reviewers, or program instructors and sponsors.[52,69] Since participants often have varied reasons for attending continuing education courses, benefits may be accrued to the attendees which may differ from the stated goals of the course. Reasons for attending courses may include desiring a change of pace from the work setting, meeting a requirement of employment or relicensure, or taking the course because the employer paid the registration fee.

Some professionals, therefore, believe that prospective participants and course sponsors should collaborate when developing course content in order to enhance positive attitudes among dental hygienists toward continuing education.

Another problem with needs assessment is the belief that clinicians may not always be the best judge of their own strengths and weaknesses and, consequently, cannot determine the optimum content for continuing education efforts. For example, a dental hygienist may have identified a need for improvement in an area such as patient care, yet a needs assessment by an objective rater may indicate improvement is needed not in patient care, but in office management, use of auxiliaries, or time management within the appointment.

Minimal information exists in the dental hygiene literature which reveals dental hygienists' attitudes toward continuing education. Inconsistencies occur concerning the purposes, applications, and benefits of continuing education programs as well as the issue of whether continuing education should be mandatory or voluntary for dental hygiene relicensure. However, mandatory continuing education is now a requirement for dental hygiene relicensure in 17 states.[55] Measures of dental hygienists' attitudes toward continuing education as well as comparisons of those attitudes among professionals where continuing education is voluntary

versus mandatory may bear on perceived values, usefulness, and support of continuing education courses which may impact on professional development and practice. If differences are found to exist in attitudes among dental hygienists toward continuing education where continuing education is mandatory versus voluntary, the dental hygiene profession may need to examine further the causes for these discrepancies in attitudes. This investigation may heighten awareness of dental hygienists' attitudes toward continuing education, thus enabling dental hygienists, educators, and legislators to give thoughtful consideration regarding future developments and decisions for continuing education programs. This study also will provide baseline information for further research in the complex arena of continuing professional education.

Definition of Terms

For purposes of this study, the following terms are defined:

1. Attitude: feelings and opinions regarding continuing education for dental hygiene practice; measured by the Continuing Education Attitudinal Questionnaire.

2. Continuing Education (CE): "Education of the individual beyond the basic preparation for the profession of dental hygiene...promote[s] optimal health service to the public by fostering continued professional competence. Continuing education includes educational activities that update, refresh, and increase the

knowledge and competence of the dental hygienist."[2]

3. Mandatory Continuing Education (MCE): a minimum number of course hours in a specified time period as a requirement by state law for dental hygiene relicensure. In this study, Kentucky is the state with mandatory continuing education.

4. Voluntary Continuing Education: participation in continuing education which is not required by law. In this study, Virginia is the state with no legislated requirements for continuing education.

5. Continuing Education Unit (CEU): "noncredit unit ...established by a national task force as a means of recording, accumulating, and transferring units of noncredit study."[30] One CEU is ten contact hours and can be divided into tenths. Kentucky dental hygienists are required by the Kentucky Board of Dentistry to earn 10 points (1 point = 1 hour = 0.1 CEU) per year for license renewal.

6. Dental Hygienist: "a licensed, professional, oral health educator and clinical operator who, as an auxiliary to the dentist, uses preventive, educational, and therapeutic methods for the control of oral diseases to aid individuals and groups in attaining and maintaining optimum oral health."[70]

7. American Dental Hygienists' Association (ADHA): a non-profit corporation of licensed dental hygienists and a federation of constituent (state level) associations

whose membership is voluntary and dues-paying.

8. Kentucky Dental Hygienists' Association (KDHA): constituent (state level) organization of the American Dental Hygienists' Association; membership is voluntary and dues-paying; for purposes of this study, members are licensed in Kentucky.

9. Virginia Dental Hygienists' Association (VDHA): constituent (state level) organization of the American Dental Hygienists' Association; membership is voluntary and dues-paying; for purposes of this study, members are licensed in Virginia.

10. Professional Association Member: membership in either the Kentucky Dental Hygienists' Association or the Virginia Dental Hygienists' Association which additionally includes membership in the American Dental Hygienists' Association.

11. American Dental Association (ADA): a non-profit corporation of licensed dentists and a federation of constituent (state level) associations whose membership is dues-paying and voluntary.

Assumptions

The following assumptions were made:

1. The random, stratified sample adequately represented the dental hygiene populations in the states of Kentucky and Virginia.

2. The instrument Continuing Education Attitudinal Questionnaire was an appropriate measure of dental

hygienists' attitudes toward continuing education.

3. The subjects answered the questionnaire honestly and completely.

4. Subjects understood the standardized instructions provided to them for completing the survey.

Limitations

The following factors might have influenced the validity and reliability of this study:

1. The self-designed questionnaire does not have established validity and reliability co-efficients. However, content validity and test-retest reliability were established in a pilot study.

2. The potential for bias existed between responders and nonresponders.

3. A potential for low response existed; therefore, a follow-up letter with a copy of the questionnaire was mailed to nonrespondents to increase the rate of response.

4. Exposure to any dramatic, newsmaking event in the media involving legislative action concerning mandatory continuing education may have produced an historical effect having transient rather than lasting effect on respondents.

5. Samples were intact groups; therefore, generalizations of the study's results were limited.

Research Questions

The following research questions were tested:

1. What are the attitudes toward continuing

education among licensed dental hygienists in a state with mandatory continuing education requirements versus a state without mandatory continuing education as measured by the Continuing Education Attitudinal Questionnaire?

2. Is there any relationship between attitudes toward continuing education among licensed dental hygienists who are members of their professional association and licensed dental hygienists who are not members of their professional association as measured by the Continuing Education Attitudinal Questionnaire?

3. What are the attitudes toward continuing education among licensed dental hygienists who graduated from a dental hygiene program five years ago or less versus licensed dental hygienists who graduated from a dental hygiene program more than five years ago as measured by the Continuing Education Attitudinal Questionnaire?

Methodology

A self-designed, mailed questionnaire was employed to assess attitudes toward continuing education between licensed dental hygienists in Kentucky, a state with mandatory continuing education, versus licensed dental hygienists in Virginia, a state without mandatory continuing education requirements. Four hundred subjects were invited to participate in the investigation and were stratified into four groups with 100 subjects per group. A sample group of 100 subjects was randomly selected from

each of four target populations: Kentucky licensed dental hygienists who were members of their professional association; Kentucky licensed dental hygienists who were not members of their professional association; Virginia licensed dental hygienists who were members of their professional association; and Virginia licensed dental hygienists who were not members of their professional association. The measuring instrument consisted of five demographic items and 23 attitudinal statements. Data were analyzed by frequency distributions, percentages, and the chi-square test of independence using the SAS program for computer analysis.

CHAPTER 2

Review of the Literature

Review of the literature on continuing education includes the following subject areas: development of continuing education in dentistry and dental hygiene, purposes and attitudes regarding continuing education for dental hygienists, and control and sponsorship of continuing education programs for health professionals.

Development of Continuing Education in Dentistry and Dental Hygiene

Continuing education in dentistry began to receive widespread attention after World War II when dentists who were veterans demanded "refresher" courses.[30] Factors influencing this desire for continuing education were rapid growth in technology and biomedicine as well as availability of funding for educational opportunities for veterans.[32,41,43] Other factors that additionally contributed to the expansion of continuing education were the considerable growth experienced by the health professions resulting in specialties and subspecialties, paraprofessional roles which required a need for education beyond the entry-level degree, and government involvement in dental payment plans.[16,32] With the increased demand

for services, particularly preventive and educational, oral health care personnel such as dental hygienists were given additional duties which necessitated training for these expanded functions through continuing education programs. Finally, public demand for accountability and professional concern over external control provided motivation for the growth of continuing education courses in the health professions.[16,31,34]

In the early sixties, New York became the first state to mandate some form of continuing education for dentists when the Board of Public Health required dentists who applied for Medicaid reimbursement to supply evidence of attendance at continuing education courses.[32] Dentists had to complete 75 hours of continuing education over a three-year period.[34] Such action by an agency external to the dental profession sparked dentistry to examine continuing education more earnestly.

One consequence of the action of the New York State Board of Public Health was the development of the Self-Assessment and Continuing Education Program (SACED) by the American College of Dentists.[57] Working closely with the Educational Testing Service (ETS), an Advisory Committee produced four courses in general dentistry which became available to dentists nationwide beginning in 1973. Dentists were able to take the tests, receive the confidential results from ETS, determine areas of deficiency, and enroll in the appropriate continuing

education programs. The SACED tests were acclaimed for being an important step in continuing education since professional self-assessment of the practitioner's current knowledge in the profession should be the first step in continuing education.

In 1969, Minnesota became the first state to mandate participation in continuing education courses as a requirement for maintaining licensure.[35,43] In the ensuing 16 years, various constituent groups and other states began to require participation in continuing education as a condition of membership or relicensure. By 1986, 17 states had mandated continuing education for both dentists and dental hygienists as a prerequisite for maintaining licensure. These states are Alaska, California, Connecticut, Delaware, Florida, Idaho, Iowa, Kansas, Kentucky, Massachusetts, Minnesota, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, and South Dakota.[35]

In 1974, "Guidelines for Continuing Dental Education" was approved by the American Dental Association (ADA).[20,21] The intent of the document was to guide sponsors of continuing education, state dental boards, and constituents of the professional dental hygiene association in planning, conducting, and evaluating continuing education programs.

The seventies was a period of growth in continuing education efforts not only in the American Dental

Association, but also in the American Dental Hygienists' Association (ADHA), the recognized professional organization of dental hygienists in the United States. The ADHA has declared support for mechanisms which ensure the continued competence of dental hygienists and has endorsed short-term continuing education courses as one of those mechanisms.[2]

In 1972, a Standing Committee on Continuing Education was formed by ADHA.[34] Recommendations of the committee for criterion referenced continuing education were the following: clearly stated curricula, pretests and posttests, objectives stated in behavioral terms, and evaluation mechanisms. These national guidelines were accepted and published in a Continuing Education Manual available to anyone interested in continuing education for dental hygienists. Credit is provided by ADHA for continuing education programs.[34,44] However, since the specifications for continuing education are diverse among states, i.e., number of required continuing education units, time frame in which to complete the units for relicensure, types of courses which are acceptable, and manner in which the courses are monitored, CEU's provided by ADHA are only based upon the national guidelines and content of the course.

The ADHA encourages the development of continuing education courses by dental hygiene associations at state and local levels.[2] The organization also has stated

support for the efforts of state boards in promoting continued competence of dental hygienists. Additionally, ADHA urges cooperation with accredited institutions presenting or sponsoring continuing education programs and promotes cooperation among other health disciplines (allied health professionals) in continuing education efforts.

In addition to supporting the American Dental Hygienists' Association's recommendations on continuing education, the Virginia Dental Hygienists' Association (VDHA) has taken a further step. In 1985, the House of Delegates of VDHA passed a resolution stating its support for mandatory continuing education for relicensure of dental hygienists.[64] However, to date mandatory continuing education is not a requirement for dental hygiene relicensure in Virginia.

Purposes and Attitudes Regarding Continuing Education for Dental Hygienists

Purposes and attitudes regarding continuing education for dental hygienists will be discussed in the following subsections: purposes of continuing education, continuing education for improvement in patient oral health care, continuing education for personal and professional development, attitudes toward continuing education, and barriers to continuing education.

Purposes of Continuing Education

Mescher[48] defined three purposes of continuing

education for the dental hygienist: to enable the practicing dental hygienist to stay abreast of current knowledge and accepted clinical practices, to teach expanded functions, and to provide educational resources to dental hygienists who interrupted their careers, thus allowing non-practicing hygienists to re-enter the labor force. The Code of Ethics of the American Dental Hygienists' Association states, "The dental hygienist has an obligation to improve professional competency through continuing education...."[2] By acknowledging the contrast in these two statements, the purposes of continuing education for dental hygienists, thus, can be divided into two general categories, education resulting in improvement in patient care and continuing education courses for personal and professional development.

Continuing Education for Improvement in Patient Oral Health Care

Public pressure, in the form of lobbying legislators and law suits, has demanded continuing education as a requirement for relicensure of dental hygienists in order to assure professional competence.[30,40,71] However, critics of mandatory continuing education have stated that continuing education credits are simply verification of a certain number of hours of attendance - a measure of time only and not of learning. Thus, attendance is not an adequate measure of professional competence. In addition, critics argue that improvement in patient oral health care

is frequently not assessed even though one purpose of continuing education is to increase competence or ensure quality assurance.

Researchers have responded to criticisms about inadequate and inconclusive evaluations concerning the effectiveness of continuing education by striving to understand and to improve the mechanisms for measuring success of a continuing education course. Young and Willie[72] identified four levels in the continuing education evaluation process in an effort to measure effectiveness of continuing education courses: participant satisfaction, practitioner competence, practitioner performance, and patient health. Participant satisfaction was identified as the lowest level of evaluation and reveals no information on the effectiveness of continuing education courses other than knowing if the participant was satisfied or discontent.

Practitioner competence, the second level of evaluation, is typically evaluated by pretests and posttests involving practical knowledge and skills. Chambers and Hamilton[17] argued, however, that pretests and posttests are only measures of what is known, not behavioral changes. Echoing the viewpoint of Brown and Uhl,[10] Chambers and Hamilton[17] also concurred that pretest and posttest measures of evaluation are not reflective of successful learning for adult learners, who tend to be problem-solvers.

The third level of evaluation of continuing education is to measure practitioner performance. Methods of evaluation may include chart audits, peer review, observations of patient care by a rater, and self-reports of activities by the practitioners.[24,28,38,49,65] Because of comparatively low cost, self-reports are a common tool of evaluation at this level, but are probably the least reliable. Gray[36] believed that chart audits are better measures of needs assessments than evaluation of behavioral changes as a result of continuing education participation, while Ottoson and Stearns[52] did not believe chart audits are adequate to determine practitioner deficiencies.

The highest identifed level of evaluation is evident in patient health; that is, continuing education can be considered successful when patient oral health improves as a result of increased competence by the dental hygienist. This fourth level of evaluation is also the most expensive and difficult and requires considerable lapse time, as well as time to make the evaluations.

Continuing education courses generally ask for attendee opinions and attitudes regarding courses, the first level of evaluation.[21] In accordance with ADA and ADHA guidelines, most courses also administer a pretest and a posttest, the second level of evaluation. Review of the dental hygiene literature revealed a few studies where effectiveness of continuing education courses are

evaluated at the third level - determining practitioner performance or behavioral change as a result of the continuing education experience. Studies which were reported in the literature generally used a single group design with pretests and posttests and self-reports by participants.

Sutton and Lysaught,[60] in 1979, conducted a study of the long-range effectivenesss of a continuing education program designed to teach dental hygienists ultrasonic scaling, curet use and maintenance, and periodontal probing. Instruction was provided by a periodontist with teaching experience to 19 practicing dental hygienists over a six-week period. The class met for three hours each week. Objectives of the course were defined and methods of evaluation included a written posttest, clinical observations by the instructor, and a questionnaire which was administered immediately following the course and one year later. The first third of the course was devoted to didactic presentation and the latter two-thirds of the course was devoted to clinical practice. The authors reported that all participants were successful in both the didactic and clinical parts of the course as measured by a written examination and clinical evaluations by the instructor. Eighteen respondents reported a level of satisfaction with the course between 75 and 100 percent.

One year later, a self-report questionnaire returned

by 16 of the participants revealed 50 percent of the respondents were applying new knowledge and skills learned in the course and 50 percent were not. Eight hygienists who were applying information and skills acquired from the course had discussed their new capabilities with their employers; the other eight had not discussed the course with their employers. The author concluded that even when participants successfully completed a continuing education course, behavioral changes in their performance were impeded by the work environment and professional relationships. Consequently, in this study, benefit of increased competence of the participant/practitioner was accrued to the patients only when the participant had discussed the course with the employer.

Another study in dental hygiene designed to measure long-term behavioral changes as a result of a continuing education course was developed by Young, Speidel, and Willie.[73] Researchers conducted a 30-hour continuing education program for 33 practicing dental hygienists which reviewed theory and dental hygiene intervention in periodontal disease. Clinically, probing techniques, soft tissue curettage, and root planing were reviewed with a course manual being issued which required approximately nine hours of study prior to the course. The course was divided into didactic (eight hours) and clinical (13 hours) components, and evaluations included pretests and postests, self-reports, and instructor evaluations. Six

months after completing the course, the attendees returned a self-report questionnaire which contained situational problems identical to those on the pre-course self-report. Data from the questionnaire indicated participants were not applying what they had been taught. Curets had been recommended for root planing and scalers recommended as being inappropriate for root planing. Although students reported an improvement in their root planing technique, no change in selection of curets over scalers as the instrument of choice for root planing was reported. A high proportion of the respondents were still selecting scalers for root planing, although this had been taught as the less appropriate instrument for this procedure.

Results of the study indicated that although short-term continuing education course objectives were successfully completed by participants, a failure of the dental hygienists to change their practice habits demonstrated that long-term objectives of the course were not successful. The authors concluded that high participant satisfaction and knowledge gained did not translate to patient benefits and were not adequate measures of the long-term objective of improved patient care. Limitations of this study included the fact that methods of instruction during the didactic and clinical components of the course were not identified, nor were instructor qualifications and experience mentioned.

Nieman[51] evaluated the long-term effects of a program

to teach three specific prosthodontic functions to 15 practicing dental hygienists as part of expanded functions legislation in Kentucky. Two weeks prior to the course, a self-instructional manual was sent to the attendees, who then participated in a one-and-a-half day course utilizing the self-instructional manual and laboratory practice. Objectives of the course were defined, and instruction by dental auxiliary educators was provided to the participants as needed. Methods of evaluation included a pretest, posttest, self-evaluation of learning, and instructor evaluation. Nine months later, a follow-up questionnaire was administered. Results revealed that 11 of the 14 respondents reported feeling comfortable providing care to prosthodontic patients. However, the new skills were not used frequently for several reasons: heavy recall scheduling, financially not viable, and employer performing the functions.[62] Results indicated employer and environmental factors present were significant deterrents in preventing practitioners from applying knowledge and skills gained from the course,[63] corroborating the findings of Sutton and Lysaught.[60]

Tilliss,[61] in 1986, conducted a study to determine the effectiveness of a continuing education course on pit and fissure sealants. The course was designed to increase the frequency of use of sealants either by learning the procedure for the first time or, in the case of practitioners using sealants, by improving the technique

of application. Dental auxiliaries completed a pre-course questionnaire and participated in a half-day of didactic instruction and a half-day of laboratory and clinical practice. Instruction was provided by an experienced educator and objectives were defined. Six months later, subjects were administered a post-course questionnaire designed to compare the frequency of sealant application before and after the course. Results revealed a greater number of participants placing sealants after completion of the course as well as an increase in the frequency of sealant application. The primary reason given for not applying sealants was lack of employer support and, secondarily, a lack of alloted time.

Continuing Education for Personal and Professional Development

Participants enrolled in continuing education courses have a great variety of needs and expectations beyond improvement in patient care.[8,29] Only measuring benefits to patients would be to ignore the other gains professionals derive from participating in continuing education programs. Chambers[16] reported that only one in 20 private practitioners stated a commitment to making a change in their practices was a motive for attending continuing education courses. This contrasted with instructors' opinions that making a behavioral change was the primary motive of the participants. Instead, "professionalism" was the first reason given by private

practitioners, followed by being current, and interest in the topic.

Participants of continuing education courses have reported that programs also are beneficial because the courses provide a change of pace from the employment setting and allow learning in areas of personal interest. Participation in continuing education provides an opportunity for validation of personal development as well as an attitude of increased professionalism. Additionally, attendees indicated participation at continuing education programs afforded opportunities to keep abreast of new changes and developments in aspects of professional and personal growth, many of which may not directly affect the oral health of the public.[1] Examples of personal and professional growth include increasing knowledge in areas of computers, time management, management theory for small businesses, or a course on how to review scientific literature. Thus, the attitude exists that the purposes or benefits of continuing education should be for the professional development of dental hygienists as well as for improvement in patient oral health. Chambers[16] and others[1,10,54] support continuing education programs, not as a measure of competence for public protection, but as a service to the profession.

To measure the impact of continuing education on learners, Chambers, et al.[18] conducted a pilot study on

sit-down, four-handed dentistry using ten dimensions of behavior to observe whether learning was being utilized. Fifteen participants were evaluated prior to the course by a team of two dentists. The attendees experienced a one-day, participatory course and were evaluated five months later on ten observable dimensions of four-handed dentistry. An interesting result was the unique way in which dentists intentionally modified what was taught in the course. Also, the participants' evaluation of behavioral change did not agree with the evaluators' ratings of behavioral change, indicating complexity in the dentists' motives for attending the course. The authors suggested that a preset motive to change might be a more reliable predictor of learning than measuring course effectiveness against predetermined criteria.

Obtaining needs assessments is recommended when planning for continuing education programs. Recently, however, the value of such needs assessments has been questioned. Gessner,[33] in 1982, voiced a number of "second thoughts" concerning gathering data on needs. Is it individual, societal, or organizational needs which will be assessed? Sometimes sponsors of continuing education courses find low enrollment in courses thought to be tailored to individual needs. The author described various ways to make needs assessments, but never mentioned evaluating patient care. If a purpose of continuing education is improvement in patient care,

examination of that care is important in designing programs. Additionally, needs assessments can be expensive to perform;[39] therefore, the purposes and selection of the population for the needs assessment should be well planned to support the development of continuing education programs.

In 1984, Chapko, et al.[19] used a cross-over research design to study the effects of a practice management continuing education course on dental auxiliary utilization among 60 dental practices with a control group of 62 practices. The first part of the two-year study was a workshop of two days when lecture and discussion formats were used to present material on practice management. Each practice group developed its own measurable goals. For instance, for the goal of improved scheduling, each practice identified the specific behavior and decided how the goal would be attained and measured in that particular practice. For a seven-month period thereafter, consultation to assist practices in instituting changes was provided by teams of a dentist, hygienist, and assistant/receptionist, all experienced in dental auxiliary utilization. Results revealed that the experimental group showed a 22 percent improvement in areas of delegation, scheduling, and communication as measured with bi-weekly logs while the control group showed only a 5 percent improvement. An important factor in this study was the extent of involvement of the adult

learners in the objectives of the course. Investigators also believed their study was the first in dentistry to use a control group and, thus, demonstrated a true cause-effect relationship for long-term continuing education.

Although educators and researchers are more frequently measuring long-term benefits of continuing education courses, Chambers[16] stated that updating knowledge does not always, and sometimes should not, result in measurable behavioral changes. Learning about controversial theories and technologies and deciding to wait for further research evidence of practicality, safety, and usefulness have been suggested as being equally as valuable a result of learning. Chambers[16] opined that a lack of behavioral change was an acceptable outcome of continuing education courses by using examples of dentists taking courses in acupuncture, nitrous oxide, and nutritional counseling. Knowledge regarding these areas was desired and valuable, if only to determine information which would not be appropriate to every practice.

Attitudes Toward Continuing Education

In 1970, Brown and Uhl[10] addressed a conference of medical educators about the "sense or nonsense" of mandating continuing education. Concern was expressed over the basic nature of continuing education courses which may stifle creativity, require memorization, are teacher-centered and not problem-based, and are not tied

to patient treatment needs and improvement in oral health care for the patient. The authors deplored the inadequacies of present continuing education courses which do not incorporate principles of adult learning and whose topics are not generated from evaluating patient needs. Brown and Uhl[10] felt that mandating continuing education would merely enforce the mediocrity of current approaches to continuing professional learning when, instead, innovative and unique forms of learning are needed which can be adapted to situational problems.

Minimal information is available in the literature revealing dental hygienists' attitudes toward continuing education. In 1975, the Virginia Board of Dentistry conducted a survey on continuing dental education of all dentists and dental hygienists in Virginia.[27] With a return rate of 65 percent for dental hygienists, results indicated that 55 percent of the dental hygienists responding supported mandatory continuing education.

Begun and Swisher[7] surveyed a sample of 439 dental hygienists in Virginia in 1985 and reported that the majority of Virginia dental hygienists responding favored continuing education for relicensure (64 percent), with an increase in favor of mandatory continuing education (72 percent) when association membership was analyzed separately. A study of Michigan dental hygienists in 1975 also revealed that dental hygienists who were association members reported attending more continuing education

courses.[46]

Body,[9] reporting in 1987, surveyed 144 Ohio dental hygienists in a pilot study conducted to determine the status of continuing education in Ohio, a state which does not require continuing education for relicensure. Results of the study revealed 49 percent of Ohio dental hygienists were in favor of mandatory continuing education. In terms of actual participation, dental hygienists who were members of ADHA had significantly higher attendance at continuing education courses than nonmember dental hygienists.

Since nursing and dental hygiene share several common characteristics such as varying educational levels for entry-level employment, being health professionals, and having a concentration of women in the professions, examination of attitudes toward continuing education in the nursing literature is appropriate. One study in particular was recent, thorough, and designed to determine any changes in attitude toward continuing education. In a survey of Iowa nurses' attitudes toward mandatory continuing education reported in 1985, Arneson[4] mailed a four-part questionnaire to 1,000 Iowa licensed nurses with a response figure of 673 questionnaires. Open-ended questions, an attitude scale of equal-appearing intervals, a graphic rating scale, and demographic items comprised the questionnaire. At the initiation of mandatory continuing education for nurses in Iowa, results indicated

that 73 percent of the respondents were in favor of mandatory continuing education. Nurses viewed continuing education positively when topics were of interest and when courses were presented close to home. Positive attitudes toward mandatory continuing education were statistically significant when courses were perceived to be readily available. Additionally, nurses with higher degrees and more responsible positions viewed mandatory continuing education more positively. Results revealed demographic information of marital status, number of dependents, and employment setting or years of experience had no significant relationship to attitudes toward mandatory continuing education in this study. Two years later in a follow-up study, Arneson[5] wrote that approximately one-third of the nurses reported increasing in a positive attitude toward mandatory continuing education, yet analyses of scores indicated no significant change in attitude had occurred when grouped demographically. In both studies, a positive attitude toward mandatory continuing education was correlated with higher educational levels and administrative positions.

Barriers to Continuing Education

The literature review revealed barriers which impede the effectiveness of continuing education programs and influence attitudes toward continuing education. Researchers have identified unique personal reasons for participation in continuing education programs as factors

limiting the application of learning in the work setting. Arneson's[4] study indicated perceived barriers toward participation were concerns that courses were inaccessible, expensive, and poor in quality. Lack of employer support was noted as an area of concern. Another barrier of continuing education participation is personal cost which includes baby sitters, lost time and income from work, time to travel to the courses, and cost of food and lodging when necessary.[6,9,31,55,67] Hauf[37] discussed the multiple roles of women which may be that of professionals, wives, and mothers, which often present obstacles that limit participation in continuing education courses.

In a study of Michigan dental hygienists' preferences for continuing education courses, researchers reported that 79 percent of the respondents favored independent study as an option for continuing education credit.[42] Motivation of the participants is felt to be of significant importance in the success or failure of learning through continuing education programs.[24,45] A poor attitude toward continuing education or being required to participate in continuing education is felt to impede learning.[10] In one study of continuing education topics for dentists, length of time in practice influenced attitudes toward subject content of continuing education courses.[8,13] Finally, several researchers point out another barrier to continued learning - providers of

continuing education courses often do not follow principles of instruction for adult, professional learners, nor are courses tailored for different learning styles.[15,18,32,36]

To facilitate improved learning, Brown, Connolly, and Wooton[11] discussed improvement in writing behavioral goals for continuing education courses, specifically, writing some goals for continuing education courses in affective terms rather than only cognitive. Integration of learning from continuing education courses could be greater if behaviors were written in affective terminology and if values and attitudes were identified through simulation, game-playing, role-playing, and values clarification exercises.

Just as certain factors inhibit application of behavioral changes as a result of learning in continuing education courses, particular qualities of the continuing education courses may support behavioral changes. The use of testing, definition of objectives, and a high percentage of clinical practice were found to contribute to the long-range effectiveness of continuing education programs.[26,58] Clinical and laboratory courses, while more expensive to offer,[69] are more effective in producing behavioral changes and are preferred by many participants.[9,13,42] Additionally, employer encouragement and support and the practice environment contribute to the application of newly acquired or reinforced skills and

theory.

Control and Sponsorship of Continuing Education Programs for Health Professionals

Presently, continuing education courses for dental hygienists are sponsored by educational institutions, professional associations, state boards, private groups, and dental products companies.[32] Dental and dental hygiene schools provide the majority of continuing education programs available. Additionally, validation of courses for continuing education relicensure, either by state licensing boards or ADHA and ADA and their constituents, varies among states.

With interest in and the need for continuing education courses rapidly expanding, Crawford[25] reviewed continuing education course offerings by U.S. and Canadian dental schools from 1969 to 1978 to determine the characteristics of these courses. Results of the review showed that all dental schools endeavored to provide continuing education programs on a yearly basis. Courses ranged over 33 content areas with an average of 17 percent of the courses primarily for auxiliaries. Average length of a course was 2.3 days with approximately one out of every five courses incorporating clinical or laboratory activities for the attendees.

Discussion in the literature over sponsorship of continuing education programs by educational institutions was varied with regard to reasons why schools should or

should not sponsor continuing education programs. Hozid[41] encouraged development of continuing education to "a new status in the professional school's curriculum." If professional schools, certain governmental agencies, and professional organizations collaborated on developing long-range goals and on a logical progression of courses, continuing education and its effect on participants would be more significant.

Gaynor[32] also felt that continuing education courses should be based primarily in professional schools. Since education is the business of institutions, the schools already have physical plant facilities, administrative support, professional capability, and knowledge and expertise from research to produce quality continuing education programs. Apps[3] stated that professional schools benefit financially from continuing education courses. Declining enrollment in regular programs may be compensated by enrollment in continuing education programs, and Crawford[25] reported that dental school courses generally need to be fully subscribed to be financially viable. Therefore, financial considerations bear on continuing education offerings by dental schools.

Sultz, Sawner, and Sherwin[59] suggested that schools which teach entry-level professional competence should work cooperatively with the professional community when providing continuing education because the clinical community is better able to identify the needs of the

practitioner. Schools and the clinical community could begin with entry-level objectives and then develop a formal process of continuing education and evaluation.

Lutz and Brooks[45] discussed the need for educational institutions to adjust their preparation of students, thereby creating a student who is receptive to and prepared for a lifetime of learning. Instead of presenting problems with solutions which the students can match to the problems, in preparation for lifelong learning, formal professional education should be guiding students toward problem identification and analysis as well as development and testing of solution. The authors also mentioned that attitudes and values influence motivation to learn and ability to retain information and skills. Therefore, Lutz and Brooks[45] suggested that participation for continuing educational learning must begin with the development of problem-solving methods during entry-level education.

In addition to the expansion of continuing education in U.S. dental schools, efforts toward continuing learning are provided by specialty academies, study clubs, and dental societies. The Virginia Dental Society in 1978 implemented a series of statewide continuing education courses for dental professionals.[68] As a state dental society committed to continued learning, statewide course offerings are held in each component area to increase availability to the professional community by decreasing

travel time and expense, a proven factor in attitude toward continuing education courses.

In order to provide organization out of the proliferation of programs, as well as to share program expenses, many researchers have urged cooperation rather than competition among potential program providers.[22,23,30,47,66] Puetz[53] discussed the functions of the professional association in continuing education. Organizational strengths identified included professional expertise of the membership, staff/administrative support, and the ability to collaborate with other associations. Programs were encouraged to be income-producing. Potential advantages to the association sponsoring continuing education courses were increased membership, revenue production, wider public relations, and a greater variety of continuing education programs for professionals. The author also discussed potential problems with association sponsorship of continuing education courses: other programs within the organization could take priority over continuing education programs, financial and administrative/managerial functions may place too great a strain on the resources of the association, and programming of the courses may be trendy rather than based on new research findings.

Summary

Review of the literature has highlighted development of continuing education in dentistry and dental hygiene.

Continuing education received considerable attention during the seventies due to public pressure for demonstration of professional competence, third party funding, medical and technological advances, and growth of specialties and subspecialties. The action of the New York State Board of Public Health requiring evidence of continuing education participation by dentists applying for Medicaid funding was a significant move by an outside agency to regulate dentistry. Responding to the pressure of outside forces, guidelines for continuing education courses were developed by ADA and ADHA. All continuing education courses should have identifiable content, objectives written in behavioral terms, pretest and posttests, and a method of evaluation. The American College of Dentists with ETS produced SACED, a self-assessment test available to dentists nationwide and valuable since self-assessment is vital to continued learning. By 1986, mandatory continuing education had been legislated in 17 states and endorsed by VDHA.

Debate and development of continuing education continued. The purposes for participating in continuing education vary among practicing professionals, course sponsors, and the public. Although improvement in patient oral health is considered the ultimate goal by many, other professionals include personal and professional growth as vital goals for continuing education programs. Needs assessment of participants, patients, and providers is a

complex, but important task in deciding course content. More difficult, yet, is demonstrating improvement in patient oral health as a result of professionals' experience in continuing education.

The literature revealed that attitudes toward mandating continuing education are rather evenly divided between dental hygienists who do and do not support mandatory continuing education. However, the studies are few and are limited in sample size and geographical areas studied.

Barriers to continuing education influence receptiveness and attitudes toward continued learning by professionals. The literature review pointed to the multiple roles of women which limit time and financial resources to participation in continuing education; distance from course offerings, cost of the program, and interest in the subject were major influences on ability and desire of the professionals to participate.

Cooperation for sponsorship of continuing education is encouraged by many writers to reduce wasteful overlap in offerings of similar content or in the same localities and to maximize administrative resources and reduce costs. Collaboration between the educational and clinical communities is also encouraged to produce the most current and vital courses which will enable the practicing professional to provide the highest level of patient care.

A review of the literature has indicated still

unanswered questions and concerns regarding the continuing education of dental hygiene professionals. No study has compared and contrasted the attitudes of licensed dental hygienists toward continuing education in a state where continuing education has been mandatory for ten years and a state where continuing education is voluntary. The study will reveal if differences in attitudes do exist based upon state of licensure, membership/nonmembership in the professional association, and length of time since graduation.

CHAPTER 3

Methods and Materials

A self-designed attitudinal questionnaire was employed to obtain data on attitudes among licensed dental hygienists toward continuing education. The sample population was stratified according to membership and nonmembership in the professional organization of dental hygienists in two states, Kentucky and Virginia. Data were gathered using a mailed instrument, the Continuing Education Attitudinal Questionnaire. Analysis of data utilized percentages, frequency distributions and the chi-square test of independence.

Sample Description

The sample for this study consisted of 200 dental hygienists from the 1,078 dental hygienists licensed in Kentucky and 200 dental hygienists from the 2,149 dental hygienists licensed in Virginia. These populations were chosen for this investigation because Kentucky is a state which has had mandatory continuing education for dental hygiene relicensure since 1979, and Virginia is a state which has no requirements for continuing education for dental hygiene relicensure. The sample population was procured by both random and stratified techniques from

master lists of licensed dental hygienists generated by the Kentucky Cabinet of Human Resources and the Virginia Board of Dentistry. Stratified sampling was used to ensure equal numbers of licensed dental hygienists who are members or nonmembers of their professional associations. Master lists from each state were divided into one of two groups - group one consisted of licensed dental hygienists who are members of their professional association and group two consisted of licensed dental hygienists who are not members of their professional association. The resulting four lists were numbered, and using a table of random numbers to eliminate bias, 100 subjects were selected from each list. If a subject was licensed in both states and the same name was generated twice, the subject remained in the first group from which the name was drawn and another subject was randomly selected for the other group. Only subjects with Kentucky or Virginia addresses were included in the sample.

Methodology

A cover letter (Appendix A) and a self-designed data collection instrument, Continuing Education Attitudinal Questionnaire (Appendix B), were mailed to 200 dental hygienists licensed in Kentucky and 200 dental hygienists licensed in Virginia. The cover letter explained the purpose and importance of the investigation, the approximate amount of time the subject needed to complete the questionnaire, and a date for return of the data

collection instrument. Respondents were asked to complete the survey honestly and completely and to return the questionnaire in the self-addressed stamped envelope provided. Envelopes were coded to identify nonrespondents; subjects were assured of anonymity through non-identifiable questionnaires. Three weeks from the initial mailing date, a second letter (Appendix C) and a copy of the questionnaire were mailed to nonrespondents in order to increase the return rate. Participation was voluntary and consent was understood by participants upon return of the completed questionnaire. Surveys received four weeks after the date of the second mailing were not included in the study.

Protection of Human Subjects

In accordance with the Old Dominion University Committee on the Protection of Human Subjects, the following procedures were followed:

Subject Population: Samples were selected from lists of all licensed dental hygienists in Kentucky and Virginia. These populations were chosen because Kentucky has had mandatory continuing education since 1979 and Virginia has no requirements for continuing education for dental hygiene relicensure.

Consent Procedure: Subject participation was voluntary. By completion and return of the questionnaire, respondents gave voluntary and informed consent.

Protection of Subjects' Rights: Subjects were informed in

a letter than anonymity would be preserved. Self-addressed envelopes were numbered only to identify subjects who had not returned the questionnaire in order to send a follow-up letter and another copy of the questionnaire. Subjects were informed that results would be reported in aggregate form only and would be available upon request.

Potential Risks: The descriptive procedure involved no risks to the subjects. All responses remained confidential and data were reported in group form only.

Potential Benefits: Data collected in this study provided information about the attitudes of licensed dental hygienists in two states toward continuing education. The information may be beneficial in assessing current practices and beliefs of dental hygienists regarding continuing education. Recommendations for change, resulting in improvements in continuing education courses and policies, could occur which, in turn, may result in improved delivery of patient care as well as heightened awareness of attitudes among licensed dental hygienists toward continuing education.

Risk/Benefit Ratio: Since no risks existed, the results were only beneficial.

Instrumentation

The data collection instrument which was administered by mail consisted of a self-designed questionnaire containing five demographic items and 23 fixed alternative

attitudinal statements measured on a Likert scale. Response to each Likert-type question ranged over a scale of five choices which were strongly agree, agree, undecided, disagree, and strongly disagree. Demographic items included state of licensure, association membership, length of time since obtaining dental hygiene degree, highest level of education attained, employment setting, and recent participation in continuing education programs. Likert-type questions were grouped according to attitudes about mandatory continuing education, content of continuing education courses, impact of continuing education programs on subjects' practice, barriers to participating in continuing education, and opinions about the control and sponsorship of continuing education courses.

Content validity of the Continuing Education Attitudinal Questionnaire was established by a panel of adult education experts including licensed dental hygienists who were not part of the study. Verbal feedback was provided in person to the principal investigator and revisions were made according to participants' feedback. Reliability of the questionnaire was established by a test-retest pilot study using five licensed dental hygienists who were not included in the study, with testing in a one-week interval. The test-retest reliability was significant at $p = 0.0187$.

Statistical Treatment

Data collected were discrete, ordinal, and reported in summary form. Data were tabulated by computer scanning and analysis utilized the SAS system for computer analysis. Responses from each item were analyzed with frequency distributions. Demographic data of association membership/nonmembership and length of time since graduation from a dental hygiene program were cross-tabulated to determine if these variables were associated with attitudes toward continuing education. Chi-square test of independence was used to determine: if a relationship existed in attitudes toward continuing education among licensed dental hygienists in a state with mandatory continuing education versus licensed dental hygienists for whom continuing education is voluntary; if there was any relationship in attitudes of dental hygienists toward continuing education among dental hygienists who were members of their professional association versus those who were not members; and if a relationship existed in attitudes toward continuing education among dental hygienists based upon length of time since graduation. Alpha level of confidence was 0.05.

CHAPTER 4

Results and Discussion

Four hundred registered dental hygienists in Kentucky and Virginia were sent the Continuing Education Attitudinal Questionnaire. Two hundred and forty-six questionnaires were returned from two mailings, resulting in a 61.5 percent response rate. Three questionnaires were not usable. Total results for each questionnaire item in Section Two are found in Appendix D.

Percentages reported are adjusted frequencies which exclude incomplete data and inapplicable responses. The sum of percentages reported may not equal 100 percent due to rounding or to SAS management of incomplete responses. Results are discussed in relation to the questions addressed in the statement of the problem.

Results

Demographic data were obtained from items one through five located in Section One of the questionnaire. Item one requested respondents to identify their state of licensure and also to indicate whether or not respondents were members of their professional association. Of the total number of respondents, 47 percent (113 respondents) were licensed in Kentucky and 54 percent (130 respondents)

were licensed in Virginia. Sixty-four percent (155 respondents) were members of their professional association and 36 percent (88 respondents) were not members of their professional association. Figure 1 illustrates the distribution of responses by state of licensure and membership status.

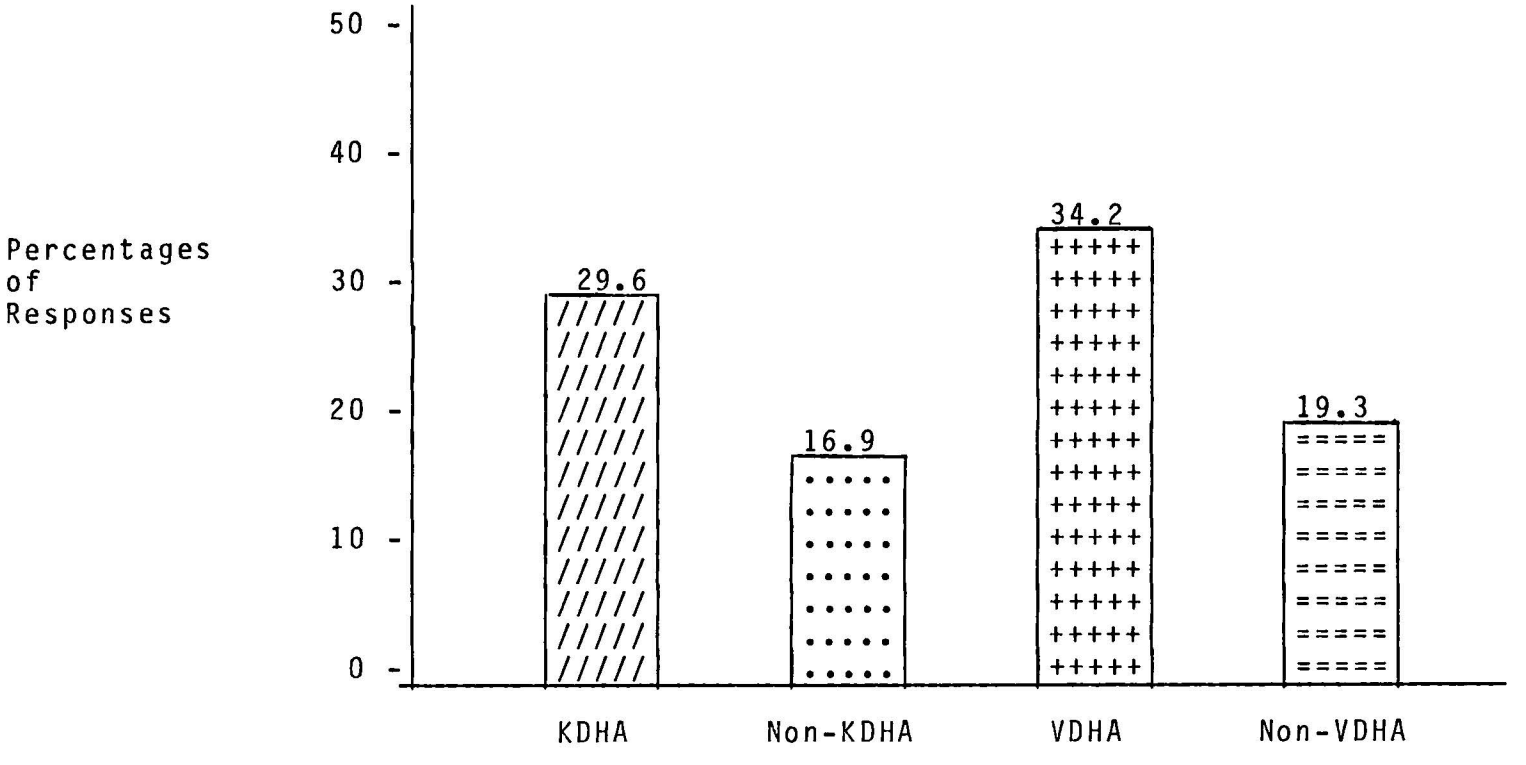
Item two requested respondents to reveal the length of time since graduation from dental hygiene school. Seventy-five percent (181 respondents) graduated prior to 1982 and 26 percent (62 respondents) graduated in 1982 or more recently.

Item three requested respondents to state the highest level of education attained. Fifty-five percent (134 respondents) of those surveyed had earned an associate degree; 37 percent (89 respondents) had received a bachelor's degree; and 8 percent (19 respondents) had attained a master's degree.

Of the total replies to item four, type of employment, 75 percent (182 respondents) were employed in private practice, 5 percent (13 respondents) in specialty practices, 3 percent (8 respondents) in public health/government, and 3 percent (8 respondents) in dental hygiene/dental assisting educational settings. The remaining 13 percent (32 respondents) were not employed as dental hygienists.

Item five queried respondents regarding the number of CEU's earned in the past two years. Forty-one percent (99

FIGURE 1 PERCENTAGES OF RESPONSES BY STATE OF LICENSURE AND MEMBERSHIP STATUS



Percentages may not equal 100% due to rounding.

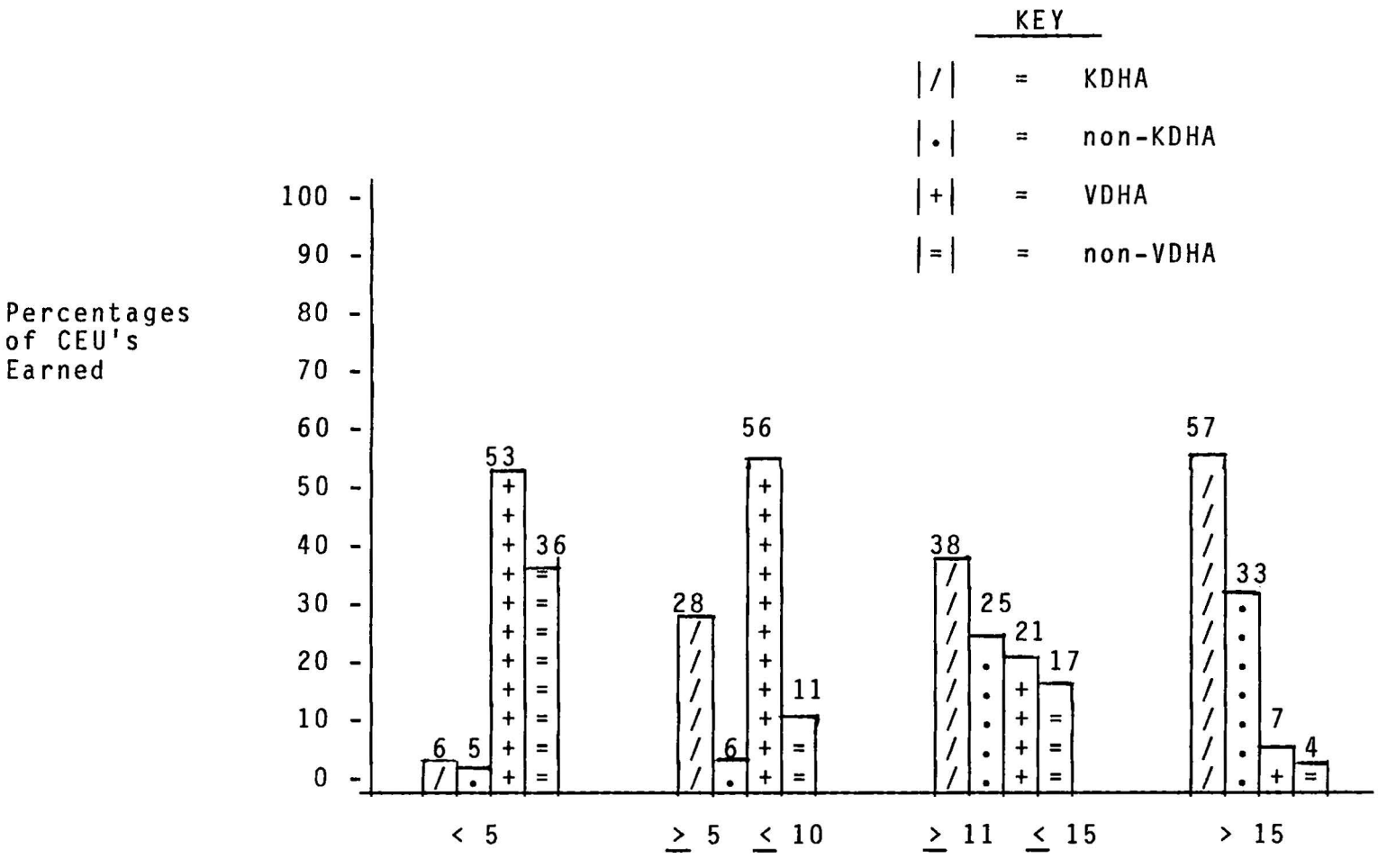
respondents) earned less than five CEU's; 15 percent (36 respondents) earned five to ten CEU's; 10 percent (24 respondents) earned 11 to 15 CEU's; and 34 percent (83 respondents) earned more than 15 CEU's. Further analysis of frequencies, as displayed in Figure 2, indicated that Kentucky dental hygiene respondents had earned a greater percentage of CEU's than Virginia respondents within the same time frame.

Section Two of the questionnaire was comprised of 23 Likert-type statements with five response choices: strongly agree, agree, undecided, disagree, and strongly disagree. Agree and strongly agree responses were grouped for statistical analysis as were disagree and strongly disagree; therefore, responses were agree, undecided, and disagree. Data from each statement were analyzed using percentages, frequency distributions, and the chi-square test of independence to determine if differences in attitudes toward continuing education existed among dental hygienists in a state with MCE, Kentucky, versus a state without MCE, Virginia.

Research Question One

What are the attitudes toward continuing education among licensed dental hygienists in a state with mandatory continuing education requirements versus a state without mandatory continuing education as measured by the Continuing Education Attitudinal Questionnaire? Thirteen questionnaire items (6-9, 14, and 17-24) were identified

FIGURE 2 **CEU'S EARNED BY RESPONDENTS BETWEEN JUNE '85 AND MAY '87**



Percentages may not equal 100% due to rounding.

as attitudinal statements which would address the research question. Five of those statements (6, 9, 17, 18, and 23) resulted in statistically significant differences when responses were grouped according to respondents' state of licensure, either Kentucky or Virginia.

Item 6 stated that participation in continuing education courses should be a matter of personal choice for the dental hygienist. Thirty percent of the Kentucky respondents agreed with the statement, 63 percent disagreed, and 7 percent were undecided. Conversely, 58 percent of the Virginia respondents agreed with item 6, 30 percent disagreed, and 12 percent were undecided. Chi-square analysis revealed highly significant differences in responses ($p = 0.000$, $df = 2$). Results indicated that there is a relationship between state of licensure and attitudes toward item 6; the majority of Kentucky respondents disagreed with item 6 more frequently than Virginia respondents.

Item 7 stated that dental hygienists have a professional obligation to improve their knowledge and skills through participation in CE courses. Ninety-six percent of the Kentucky respondents agreed with the statement, 3 percent disagreed, and 2 percent were undecided. Eight-eight percent of the Virginia respondents agreed with item 7, 7 percent disagreed, and 5 percent were undecided. When Kentucky and Virginia samples were compared for attitude differences toward item

7, statistically significant results were not obtained ($p = 0.132$, $df = 2$) and most respondents from both groups agreed with the statement.

Item 8 of the questionnaire stated that CEU's should be awarded for participation in continuing education activities. Ninety-three percent of the Kentucky respondents agreed with item 8, 4 percent disagreed, and 3 percent were undecided. Eight-nine percent of Virginia respondents agreed with item 8, 3 percent disagreed, and 8 percent were undecided. Item 8 yielded no statistically significant results ($p = 0.189$, $df = 2$); the majority of Kentucky and Virginia respondents agreed with the statement.

Item 9 queried if continuing education credits should be required by state law for dental hygiene relicensure. Of Kentucky dental hygiene respondents, 73 percent agreed with the statement, 18 percent disagreed, and 9 percent were undecided. Of the dental hygiene respondents from Virginia, 36 percent agreed with statement 9, 42 percent disagreed, and 22 percent were undecided. Chi-square analysis revealed statistically significant results ($p = 0.000$, $df = 2$), indicating that there was a relationship between state of licensure and attitudes toward item 9. The majority of Kentucky respondents endorsed MCE while the responses of Virginia participants were divided among the three response choices. The largest proportion of Virginia respondents were not in

favor of MCE.

Item 14 asked if participation in continuing education programs contributed to personal self-esteem and confidence. Seventy-nine percent of the Kentucky sample agreed with item 14, 13 percent disagreed, and 8 percent were undecided; 80 percent of the Virginia sample agreed, 12 percent disagreed, and 9 percent were undecided. Chi-square analysis revealed no statistically significant results ($p = 0.914$, $df = 2$), indicating that state of licensure did not relate to attitudes toward item 14. Over 75 percent of the respondents from each state agreed with item 14.

Item 17 stated that a practicing dental hygienist does not need to participate in CE courses to increase knowledge. Ten percent of the Kentucky respondents agreed with item 17, 84 percent disagreed, and 6 percent were undecided. Twenty-five percent of the Virginia respondents agreed with item 17, 65 percent disagreed, and 10 percent were undecided. Data analysis indicated statistically significant results ($p = 0.004$, $df = 2$), indicating that the variables were related. The majority of Kentucky and Virginia respondents disagreed with the statement, although Kentucky respondents disagreed more frequently than Virginia respondents.

Item 18 stated that participation in CE is the best way to update knowledge and skills. Seventy-six percent of the Kentucky respondents agreed with item 18, 14

percent disagreed, and 10 percent were undecided; 60 percent of the Virginia respondents agreed, 22 percent disagreed, and 18 percent were undecided. Chi-square analysis produced a statistically significant result ($p = 0.032$, $df = 2$), indicating that attitudes towards item 18 and state of licensure were related. The majority of respondents from both states agreed with item 18; however, Kentucky respondents agreed more frequently than Virginia respondents.

Item 19 stated that a practicing dental hygienist needs to participate in continuing education courses to increase clinical competence. Forty percent of the Kentucky respondents agreed with item 19, 42 percent disagreed, and 18 percent were undecided. Forty-four percent of the Virginia respondents agreed with item 19, 34 percent disagreed, and 22 percent were undecided. Chi-square analysis revealed no statistically significant results ($p = 0.357$, $df = 2$); responses of Kentucky and Virginia respondents were relatively evenly distributed among all response choices.

Item 20 stated that taking courses in CE was more of a hardship than a benefit. Of the Kentucky sample, 16 percent agreed with item 20, 69 percent disagreed, and 15 percent were undecided; of the Virginia sample, 20 percent agreed, 57 percent disagreed, and 23 percent were undecided. Results of chi-square analysis were not statistically significant ($p = 0.137$, $df = 2$) at the 0.05

alpha level. Although a majority of respondents from both states were in disagreement with the statement, Kentucky had a higher percentage of disagreed responses than Virginia.

Item 21 stated that reading professional journals is a better way to update knowledge than attending continuing education courses. Eighteen percent of the Kentucky respondents agreed with item 21, 55 percent disagreed, and 27 percent were undecided. Twenty percent of the Virginia respondents agreed with this statement, 42 percent disagreed, and 38 percent were undecided. Chi-square analysis revealed no statistically significant results ($p = 0.099$, $df = 2$). The majority of Kentucky respondents disagreed with the statement while slightly less than a majority of Virginia respondents disagreed with the statement. Both groups had large percentages of undecided responses, with Virginia respondents undecided more frequently than Kentucky respondents.

Item 22 stated that clinical skills can be maintained and improved through peer review rather than through CE courses. Of the Kentucky sample, 25 percent agreed with the statement, 51 percent disagreed, and 24 percent were undecided; of the Virginia sample, 22 percent agreed, 45 percent disagreed, and 32 percent were undecided. Chi-square analysis indicated no statistically significant results ($p = 0.349$, $df = 2$). The highest frequencies of both groups disagreed with the statement, although

Kentucky respondents had a higher percentage of disagreed responses than the Virginia group. More Virginia than Kentucky respondents had undecided responses, while percentages of agreed responses were similar and the lowest for both groups.

Item 23 queried if respondent was willing to pay a fee of $150 for one day to hear a nationally renowned speaker. Two percent of the Kentucky respondents agreed with item 23, 78 percent disagreed, and 20 percent were undecided; 8 percent of Virginia respondents agreed, 60 percent disagreed, and 32 percent were undecided. Chi-square analysis revealed statistically significant results ($p = 0.007$, $df = 2$). The majority of both state respondents disagreed with the item; however, a higher percentage of Kentucky respondents disagreed with the statement than Virginia respondents. Additionally, the Virginia group had a higher frequency of undecided responses than the Kentucky group.

Item 24 asked for respondent's willingness to pay a fee of $75 for a local course in a topic of interest. Thirty-six percent of the Kentucky respondents agreed with this statement, 41 percent disagreed, and 23 percent were undecided. Forty-eight percent of the Virginia respondents agreed with item 24, 28 percent disagreed, and 24 percent were undecided. No statistically significant results were obtained for item 24 ($p = 0.104$, $df = 2$). The highest percentage of Kentucky respondents disagreed

with the statement while the highest percentage of Virginia respondents agreed with the statement.

Research Question Two

Is there was any relationship between attitudes toward continuing education among licensed dental hygienists who are members of their professional association and licensed dental hygienists who are not members of their professional association as measured by the Continuing Education Attitudinal Questionnaire? Thirteen items from the survey instrument (6-9, 14, and 17-24) were identified to answer the research question. Four of those statements (19-21 and 23) produced statistically significant results, indicating a relationship between attitudes toward continuing education and professional association membership. Five statements (7, 8, 14, 22, and 24) produced no statistically significant results indicating independence among attitudes toward continuing education and the professional association membership (Table 1). Additionally, data revealed statistically significant results for 6, 9, 17, and 18 when responses for professional association members were further analyzed based upon state of licensure (KDHA members, VDHA members, KDHA nonmembers, and VDHA nonmembers).

Item 6 stated that participation in continuing education courses should be a matter of personal choice for the dental hygienist. No statistically significant

TABLE 1

PERCENTAGES OF RESPONSES TO ITEMS 7, 8, 14, 22 and 24 BY MEMBERSHIP STATUS

Item	Members			Nonmembers			p value
	Agree	Disagree	Undecided	Agree	Disagree	Undecided	
7.	92.26	4.52	3.23	90.91	5.68	3.41	*0.918
8.	87.10	5.81	7.10	97.67	0.00	2.33	*0.018
14.	80.00	12.26	7.74	77.91	12.79	9.30	0.902
22.	21.29	52.26	26.45	27.27	40.91	31.82	0.231
24.	46.45	30.97	22.58	35.23	39.77	25.00	0.214

* x^2 may not be a valid test.

results were obtained ($p = 0.101$, $df = 2$). Responses were relatively evenly distributed between the two groups; a slightly higher percentage of members disagreed with the statement, and a slightly higher percentage of nonmembers agreed with the statement (Table 2).

Item 6 was further analyzed to determine if responses between members and nonmembers of the professional association correlated with state of licensure. Chi-square analysis revealed statistically significant results ($p = 0.000$, $df = 6$). The majority of Kentucky respondents, whether they were professional association members or nonmembers, disagreed with item 6, whereas the majority of Virginia respondents agreed (Table 2).

Item 9 asked if continuing education courses should be required by state law for relicensure. Chi-square analysis produced no statistically significant difference in responses between association members and nonmembers regarding item 9 ($p = 0.166$, $df = 2$). The majority of members agreed with the statement while the highest percentage of nonmember responses were divided between agreement and disagreement (Table 3).

Responses to item 9 were further examined for differences in responses between members and nonmembers within each state. Chi-square analysis produced a statistically significant difference ($p = 0.000$, $df = 6$). The majority of KDHA member and nonmember respondents agreed with the statement. However, a higher percentage

TABLE 2

PERCENTAGES OF RESPONSES TO ITEM SIX* BY ASSOCIATION STATUS AND STATE OF LICENSURE

	% Agree	% Disagree	% Undecided	
Members	43.51	49.35	7.14	p = 0.101 df = 2
Nonmembers	48.86	37.50	13.64	
KDHA	28.17	64.79	7.04	p = 0.000 df = 6
KDHA nonmembers	34.15	58.54	7.32	
VDHA	56.63	36.14	7.23	
VDHA nonmembers	61.70	19.15	19.15	

*Item 6. Participation in continuing education courses should be a matter of personal choice of a dental hygienist.

TABLE 3

PERCENTAGES OF RESPONSES TO ITEM NINE* BY ASSOCIATION STATUS AND STATE OF LICENSURE

	% Agree	% Disagree	% Undecided	
Members	58.06	27.74	14.19	p = 0.166 df = 2
Nonmembers	45.45	36.36	18.18	
KDHA	77.78	13.89	8.33	p = 0.000 df = 6
KDHA nonmembers	65.85	24.39	9.76	
VDHA	40.96	39.76	19.28	
VDHA nonmembers	27.66	46.81	25.53	

*Item 9. Continuing education credits should be required by state law for dental hygiene relicensure.

of VDHA member respondents agreed with the statement while a higher percentage of VDHA nonmember respondents disagreed with the statement (Table 3).

Item 17 stated that a practicing dental hygienist did not need to take continuing education courses to increase knowledge. Chi-square analysis revealed no statistically significant differences ($p = 0.130$, $df = 2$). Over sixty percent of respondents from each group disagreed with the statement, with member respondents disagreeing more frequently with the statement than nonmembers. Approximately 32 percent of the nonmember responses were divided between agree and undecided (Table 4).

Data for item 17 were also analyzed for association member and nonmember differences in responses within each state. Chi-square analysis revealed statistically significant results ($p = 0.009$, $df = 6$), indicating that attitudes toward continuing education were associated with state of licensure. The majority of respondents in each group disagreed with item 17; however, KDHA member and nonmember respondents disagreed with item 17 more frequently than did VDHA member and nonmember respondents (Table 4).

Item 18 stated participation in continuing education is the best way to update knowledge and skills. Chi-square analysis resulted in no statistically significant results ($p = 0.513$, $df = 2$). More than 67 percent of members and nonmembers agreed with the statement, and

TABLE 4

PERCENTAGES OF RESPONSES TO ITEM SEVENTEEN* BY ASSOCIATION STATUS AND STATE OF LICENSURE

	% Agree	% Disagree	% Undecided	
Members	16.77	77.42	5.81	p = 0.130 df = 2
Nonmembers	19.54	67.82	12.64	
KDHA	9.72	84.72	5.56	p = 0.009 df = 6
KDHA nonmembers	10.00	82.50	7.50	
VDHA	22.89	71.08	6.02	
VDHA nonmembers	27.66	55.32	17.02	

*Item 17. A practicing dental hygienist does not need to take continuing education courses to increase knowledge.

remaining respondents were almost equally divided between disagreed and undecided (Table 5).

Further information was revealed, however, when responses to item 18 were analyzed by membership or nonmembership in the professional association within each state. Chi-square analysis revealed statistically significant results between attitudes and the four groups ($p = 0.001$, $df = 6$). Regardless of state of licensure and membership status, the majority of respondents agreed with item 18. However, both KDHA members and nonmembers agreed with the statement more frequently than VDHA members and nonmembers. A large percentage (30.4%) of VDHA nonmembers were undecided (Table 5).

Item 19 stated that a practicing dental hygienist needs to participate in continuing education courses to increase clinical competence. Of association member respondents, 48 percent agreed with item 19, 32 percent disagreed, and 19 percent were undecided. Of nonmember respondents, 31 percent agreed, 48 percent disagreed, and 22 percent were undecided. Chi-square analysis revealed statistically significant results ($p = 0.019$, $df = 2$), indicating that professional association membership was related to attitudes toward continuing education courses for the purpose of increasing clinical competence. The highest percentage of members agreed with the statement, and the highest percentage of nonmembers disagreed.

Item 20 stated that taking courses in CE is more of a

TABLE 5

PERCENTAGES OF RESPONSES TO ITEM EIGHTEEN* BY ASSOCIATION STATUS AND STATE OF LICENSURE

	% Agree	% Disagree	% Undecided	
Members	68.39	19.35	12.26	p = 0.513 df = 2
Nonmembers	66.67	16.09	17.24	
KDHA	75.00	11.11	13.89	p = 0.001 df = 6
KDHA nonmembers	78.05	19.51	2.44	
VDHA	62.65	26.51	10.84	
VDHA nonmembers	56.52	13.04	30.43	

*Item 18. Participation in continuing education courses is the best way I have to update my knowledge and skills.

hardship for me than a benefit. Of member respondents, 13 percent agreed, 69 percent disagreed, and 18 percent were undecided; of nonmember respondents, 28 percent agreed, 49 percent disagreed, and 23 percent were undecided. Data indicated statistically significant results ($p = 0.004$, $df = 2$). The highest percentage of both groups agreed with item 20; however, 51 percent of nonmembers were divided in their responses between agreed and undecided.

Item 21 stated that reading professional journals is a better way to update knowledge than by attending continuing education courses. Seventeen percent of association member respondents agreed with the statement, 55 percent disagreed, and 28 percent were undecided; 23 percent of nonmember respondents agreed, 35 percent disagreed, and 42 percent were undecided. Statistical analysis yielded significant results ($p = 0.013$, $df = 2$), indicating a relationship between membership in the professional association and attitudes toward statement 21. The majority of member respondents disagreed with item 21, while nonmember responses were divided among the three response choices. The highest frequency of responses for nonmembers was undecided.

Item 23 stated that continuing education is so important that I would pay a fee of $150 (one day) to hear a nationally renowned speaker. Six percent of association member respondents agreed with item 23, 63 percent disagreed, and 31 percent were undecided. Three percent

of nonmember respondents agreed with the statement, 78 percent disagreed with the statement, and 18 percent were undecided. Chi-square analysis produced statistically significant results ($p = 0.045$, $df = 2$). The majority of respondents disagreed with the statement and would be unwilling to pay a fee of $150 for a course. Nonmember respondents disagreed more frequently than member respondents toward item 23, and one-third of the association members were undecided in their responses.

Research Question Three

What are the attitudes toward continuing education among licensed dental hygienists who graduated from a dental hygiene program five years ago or less versus licensed dental hygienists who graduated from a dental hygiene program more than five years ago as measured by the Continuing Education Attitudinal Questionnaire? Thirteen items from the survey instrument (6-9, 14, and 17-24) were identified to answer the research question. Twelve of those items, however, yielded no statistically significant relationships between attitudes toward continuing education and length of time since graduation (Table 6). Only one statement, 14, yielded a statistically significant relationship between attitudes toward continuing education and graduation time.

Item 14 addressed the value of participation in continuing education courses as related to personal self-esteem and confidence. Of the respondents who graduated

TABLE 6

PERCENTAGES OF RESPONSES TO ITEMS 6-9, 17-24 BY LENGTH OF TIME SINCE GRADUATION

Item	Time	% Agree	% Disagree	% Undecided	p value
6.	Prior to 1982	43.09	48.07	8.84	p = 0.263
	1982 to 1987	52.46	36.07	11.48	df = 2
7.	Prior to 1982	90.61	6.08	3.31	p = 0.374
	1982 to 1987	95.61	1.61	3.23	df = 2
8.	Prior to 1982	91.11	3.33	5.56	p = 0.841
	1982 to 1987	90.16	4.92	4.92	df = 2
9.	Prior to 1982	54.70	30.94	14.36	p = 0.629
	1982 to 1987	50.00	30.65	19.35	df = 2
17.	Prior to 1982	17.78	74.44	7.78	p = 0.894
	1982 to 1987	17.44	72.58	9.68	df = 2
18.	Prior to 1982	67.78	16.67	15.56	p = 0.364
	1982 to 1987	67.74	22.58	9.68	df = 2

TABLE 6 (CONTINUED)

Item	Time	% Agree	% Disagree	% Undecided	p value
19.	Prior to 1982	39.78	40.33	19.89	p = 0.370
	1982 to 1987	48.39	30.65	20.97	df = 2
20.	Prior to 1982	21.23	60.89	17.88	p = 0.105
	1982 to 1987	9.68	66.13	24.19	df = 2
21.	Prior to 1982	18.78	47.51	33.70	p = 0.978
	1982 to 1987	19.35	48.39	32.26	df = 2
22.	Prior to 1982	24.86	46.41	28.73	p = 0.585
	1982 to 1987	19.35	53.23	27.42	df = 2
23.	Prior to 1982	5.56	68.89	25.56	p = 0.696
	1982 to 1987	3.23	67.74	29.03	df = 2
24.	Prior to 1982	41.99	35.36	22.65	p = 0.770
	1982 to 1987	43.55	30.65	25.81	df = 2

prior to 1982, 77 percent agreed with the statement, 16 percent disagreed, and 8 percent were undecided. Of the respondents who graduated in 1982 or more recently, 87 percent agreed with item 14, 3 percent disagreed, and 10 percent were undecided. Chi-square analysis revealed statistically significant results ($p = 0.038$, $df = 2$). A majority of both groups agreed with the statement; however, respondents who had graduated in 1982 or later recorded a higher frequency of agreed responses than respondents who had graduated prior to 1982. However, between the two groups, the largest percentage difference was in disagreed responses. Earlier graduates disagreed with item 14 more frequently than respondents who had graduated since 1982.

Data were analyzed from responses to remaining items in Section Two of the survey instrument in order to obtain ancillary information which might contribute to knowledge of continuing education for dental hygienists. Items 25 and 28 revealed attitudinal differences based upon state of licensure.

Item 25 stated that the state board which issues licenses should regulate continuing education courses for dental hygienists. Thirty-seven percent of the Kentucky respondents agreed with the statement, 35 percent disagreed, and 27 percent were undecided; 18 percent of the Virginia respondents agreed, 49 percent disagreed, and 33 percent were undecided. Analysis of data revealed

statistically significant results ($p = 0.003$, $df = 2$). The highest percentage of Virginia respondents disagreed with the statement while Kentucky respondents were divided among the three response choices.

Statement 28 stated that any interested dental hygienist may develop and present a continuing education program. Sixty-one percent of the Kentucky respondents agreed with the statement, 15 percent disagreed, and 25 percent were undecided. Forty-five percent of the Virginia respondents agreed with item 28, 26 percent disagreed, and 30 percent were undecided. When data were analyzed according to state of licensure, chi-square analysis resulted in statistically significant results ($p = 0.031$, $df = 2$). The highest percentage of respondents from both groups agreed with the statement, although Kentucky respondents agreed more frequently than Virginia respondents with the statement. However, a large percentage of respondents from both states were undecided and more Virginia respondents disagreed with the statement than Kentucky respondents.

Discussion

Results are discussed in order of their relation to the three research questions posed in this study.

Research Question One

What are the attitudes toward continuing education among licensed dental hygiensts in a state with mandatory continuing education requirements versus a state without

mandatory continuing education as measured by the Continuing Education Attitudinal Questionnaire? Data suggest that there is a relationship between attitudes of dental hygienists toward continuing education based on state of licensure. Data reveal that the majority of Kentucky respondents were not in favor of allowing continuing education to be a matter of personal choice of dental hygienists (item 6) and were in favor of MCE (item 9). Conversely, more Virginia respondents were in favor of allowing dental hygienists the personal choice of whether or not to participate in CE (item 6) and were not in favor of MCE (item 9). Data suggest that more Kentucky than Virginia respondents disagree that practicing dental hygienists do not need CE to increase knowledge (item 17). Results also indicate that Kentucky respondents agree more frequently than Virginia respondents that CE is the best way to update knowledge and skills (item 18). However, Kentucky respondents were more reluctant than Virginia respondents to pay a large fee for a CE course.

Data reveal that Kentucky and Virginia respondents registered significantly different responses concerning participation in CE being a personal choice of the dental hygienist (item 6). Kentucky respondents are required to participate in continuing education courses and, thus, appear to reflect consensus with Kentucky state law since the majority of Kentucky respondents did not agree that participation in CE should be a personal choice of the

dental hygienist. Conversely, the majority of Virginia respondents agreed with the statement. Virginia dental hygienists do not have mandatory continuing education requirements for relicensure and decide for themselves concerning participation in CE courses. Therefore, data suggest the attitudes of each group appear to support continuing education as delineated in the laws of their respective states of licensure.

Statements 7 and 8 produced no indication of relationship between state of licensure and attitudes of respondents towards continuing education as a professional obligation. Examination of frequency distributions disclosed that 92 percent of the total respondents agreed with item 7 and 91 percent of the total respondents agreed with item 8. Therefore, regardless of the state of licensure, data reveal that most respondents agree that dental hygienists have a professional obligation to improve knowledge and skills through participation in CE, and that such participation should be recognized by awarding continuing education credit units.

Responses toward mandating continuing education for relicensure (item 9) were different between Kentucky and Virginia respondents. Data suggest a significant relationship between attitudes of respondents toward mandatory continuing education and state of licensure. The majority of Kentucky respondents were favorably disposed toward mandatory continuing education, while only

36 percent of Virginia respondents were in favor of MCE.

A number of reasons may account for the differences in respondents' attitudes regarding mandated CE. Kentucky respondents have more exposure to and experience with continuing education than Virginia respondents. Figure 2 (page 52) displays the percentages of CEU's earned by respondents according to professional membership and state of licensure. The perceived quality of continuing education experiences among respondents may have influenced attitudes toward mandatory continuing education and state of licensure. For example, Kentucky and Virginia hygienists may be offered continuing education courses which are different in depth, breadth, and variety. Characteristics such as course location, type of courses, cost, and course content may also be different between the two states. These differences may have contributed to the positive attitudes of Kentucky participants and the negative attitudes of Virginia respondents toward mandating continuing education. Previous research of Arneson,[4] Bauer and Bush,[6] Body,[9] Gaston and Pucci,[31] Rizzuto,[55] and Wechsler, et al.[67] has shown that course characteristics influence participants' attitudes toward continuing education.

Begun and Swisher[7] and Body[9] in 1987, and the Virginia Board of Dentistry in 1975,[27] reported higher percentages of dental hygiene respondents in favor of mandatory continuing education than reported in this

study. One explanation for the disparity of results may be differences in survey wording. Response differences may result from word choices such as the differences between "favor" or "oppose" compared with "should be required", or a reference to the second person, "you," in the statement rather than use of the third person. Additionally, an explanation for the different results of this survey may be found in the types of response choices. Inclusion of an "undecided" response category in the questionnaire for this study may account for the difference in results since 22 percent of Virginia respondents selected the "undecided" response choice compared with nine percent from Kentucky. Eliminating the response choice of "undecided" would have required 22 percent more of Virginia respondents to either "agree" or "disagree" with the statement, and based upon previously cited research, an assumption might be that many "undecided" responses would then have been "agreed". "Undecided" was not a response choice in Begun and Swisher's[7] survey instrument; response choices used in the other studies[9,27] are unknown to this researcher.

Another explanation for differences in attitudes toward MCE among the cited studies[7,9,27] might be proportion of characteristics of sample populations. The proportion of professional association member and nonmember respondents in the studies[7,9,27] could produce different responses since research has shown that

association members and nonmembers are not similar in support of and participation in CE.[7,9,46,67] Also, Begun and Swisher[7] statistically adjusted their sample of all Virginia dental hygienists to reflect the fact that 22.5 percent of the licensed dental hygiene population in Virginia were VDHA members; a weighting technique was not performed in the present study.

Another explanation could be possible. In two Virginia studies,[7,27] results indicated that the majority of Virginia dental hygienists were in favor of mandatory continuing education. A shift in attitude concerning mandatory continuing education may have occurred in Virginia between the time of the Virginia surveys (1976 and 1985) and the present study. This shift in attitudes might be attributed to a change in the political climate surrounding continuing education, resistance to the 1985 VDHA resolution supporting mandatory CE,[64] or adversarial information from the experiences of continuing education efforts within other licensed professions.

Data suggest that state of licensure did not appear to influence respondents' attitudes concerning personal self-esteem and confidence as benefits of CE (item 14). Data reveal that the majority of respondents from Kentucky and Virginia agreed with the statement. Body[9] reported that a majority of Ohio dental hygiene respondents felt attendance at CE courses increased career satisfaction in dental hygiene. However, further review of the literature

did not disclose research which investigated or compared different licensing laws as a factor influencing attitudes toward course benefits.

The majority of Kentucky and Virginia respondents disagreed with the statement that practicing dental hygienists do not need CE to increase knowledge (item 17). However, more Kentucky respondents disagreed with the statement than Virginia respondents. Kentucky respondents may be exhibiting a stronger attitude than Virginia respondents toward the value of CE courses as the best way to gain knowledge. By virtue of their required, and thus, greater participation in CE courses, Kentucky dental hygienists may stay more current with recent theories and technologies (Figure 2, page 52). However, a survey of Michigan dental hygienists in 1978 revealed that the majority of respondents supported independent study as an option to CE course participation.[42] Therefore, Virginia respondents may also believe that gains in knowledge can be accomplished by other means such as peer review evaluations, journal reading, or independent study.

The majority of respondents from both states agreed with the statement that participation in CE is the best way to update knowledge and skills (item 18). Data analysis suggests a relationship between state of licensure and attitudes toward item 18, since the Kentucky sample had a more favorable attitude toward CE than the Virginia sample. Type and content of CE courses offered

and regularity of participation due to MCE in Kentucky may have produced more positive responses from the Kentucky sample. Conversely, the paucity of CE participation by Virginia respondents (Figure 2, page 52) may have fostered an attitude which is formed from lack of exposure to CE courses and, consequently, an attitude which is different from Kentucky respondents regarding the necessity of CE courses for knowledge and skill development. On the other hand, it is unknown if Virginia respondents view other avenues of knowledge and skill development as viable alternatives to continuing education.

Data suggest that respondents' attitudes toward item 19, a practicing dental hygienist needs CE courses to increase clinical competence, were not influenced by their state of licensure. Responses indicate that attitudes of respondents from both states were relatively evenly dispersed among response categories. Several explanations may account for this finding. Respondents may be attending CE courses for reasons other than to increase clinical competence, e.g., to comply with licensing laws, for personal growth, or to increase interaction with peers.[1,10,54] Or, CE courses which are designed to raise clinical expertise may not be widely available[25,69] in either Kentucky or Virginia and, thus, not be a familiar nor acceptable mode for improving clinical competence. Finally, respondents, irrespective of state of licensure, may feel that clinical competence is increased by means

other than CE courses, such as experience or peer review.

Data suggest that respondents' attitudes toward item 20 also were not influenced by state of licensure. Most respondents agreed that taking CE courses is not more of a hardship than a benefit. However, the similarity of responses from participants in the two states may have different explanations. For instance, Kentucky CE participants may have adequate numbers of CE courses at times and locations convenient to many Kentucky dental hygienists. Yet, Virginia respondents may not have considered CE courses more of a hardship than a benefit because Virginia respondents are not required to earn a specified number of CEU's and, therefore, probably select courses which cause the least amount of inconvenience or hardship. Regardless of reasons, most respondents did not believe that taking CE courses was a hardship.

Data analysis of item 21, reading journals is a better way to update knowledge than attending CE courses, reveals no relationship between the two state samples and attitudes toward statement 21. Slightly more than 50 percent of the Kentucky respondents disagreed with the statement while responses from Virginia dental hygienists were more equally dispersed among the response choices. One explanation for the differences in attitudes toward journal reading may be the undefined use of the words "journal reading". The statement wording did not indicate the use of journal articles as a guided method of self-

study, i.e., journal articles accompanied by study guides, pretests, and posttests. Journal articles accompanied by study guides are a form of independent learning and Keevil and Cartwright,[42] in a study of Michigan dental hygienists, reported that the majority of respondents favored independent study as an option for CE credit. However, more recently, Body[9] found that self-instruction and correspondence-type courses were the least favored mode of instruction for CE programs of Ohio dental hygiene respondents. Another explanation for a lack of any significant differences of results may be the use of undecided as a response choice since both state groups recorded high percentages of the undecided response choice (Kentucky - 27 percent and Virginia - 38 percent).

Data suggest that attitudes of respondents toward peer review evaluations as an option for maintaining and improving clinical skills (item 22) are not related to different relicensure requirements. Approximately 50 percent of Kentucky respondents disagreed with the statement while the responses of Virginia participants were more equally divided among the response choices. Therefore, the peer review process may not be perceived as an option for maintaining and improving clinical competence. Lack of exposure to peer review or the belief that peer review is a form of assessment prior to continuing education may also account for the disagreed responses. Previous research did not disclose

respondents' experience with peer review nor evaluate the peer review process as a possible alternative form of CE.[1]

Data reveal that most respondents were unwilling to pay a fee of $150 for a one-day CE course with a nationally known speaker (item 23). The negative attitudes of Kentucky and Virginia respondents toward paying a high fee for a one-day course is similar to the findings of Body's[9] survey of Ohio dental hygienists. Body's[9] study revealed that the majority of Ohio respondents did not perceive that instructors with a national reputation necessarily provide better courses than less well-known individuals. However, Virginia respondents were more willing to pay the stated fee than Kentucky respondents which could be due to several factors: freedom of choice in Virginia in not having to take (expensive) courses to fulfill a mandatory number of credits, availability of more but less expensive courses in Kentucky, or possibly, higher incomes in Virginia.

Data suggest that no relationship exists between state of licensure and attitudes concerning paying a fee of $75 for a CE course. Thirty-six percent of Kentucky respondents and 48 percent of Virginia respondents were willing to pay this lower fee. These findings are similar to those of Body[9] who found that 42 percent of Ohio respondents were willing to pay fees between $35 and $50 to attend a CE course. In comparison with statement 23, less differences in willingness to pay appear to exist

with a more reasonable fee. Additionally, attitudes toward lower fees may not be related to different relicensuring laws, but rather to income; however, the present research did not investigate income as a factor in attitudes toward CE.

Research Question Two

Is there any relationship between attitudes toward continuing education among licensed dental hygienists who are members of their professional association and licensed dental hygienists who are not members of their professional association as measured by the Continuing Education Attitudinal Questionnaire? Data suggest relationships between membership or nonmembership in the professional association in attitudes towards several areas of continuing education. Results reveal that association member respondents agree more frequently than nonmembers that a practicing dental hygienist needs to participate in CE courses to increase clinical competence (item 19). Member respondents more frequently disagree than nonmember respondents that taking CE courses is a hardship (item 20) and that reading journals is a better way to update knowledge than attending CE courses (item 21). Finally, data indicate that while a majority of member and nonmember respondents are unwilling to pay a fee of $150 for a nationally renowned speaker, member respondents appear to be more willing to pay the fee.

Data suggest that association membership or

nonmembership status did not reveal a relationship between attitudes of respondents and item 6, participation in continuing education should be a matter of personal choice of the dental hygienist. More association members than nonmembers disagreed with the statement, while data suggest that more nonmembers than members agreed that CE should be a personal choice of the dental hygienist. This finding may be expected since research has shown that respondents who are members of their professional association attend more CE courses than nonmembers.[7,9,46]

Data suggest that association member and nonmember respondents possess similar attitudes in agreeing that dental hygienists have a professional obligation to increase knowledge and improve skills through participation in CE (item 7). While results reveal that nonmembers as well as members have positive attitudes toward participation in CE, research has shown that more association members than nonmembers participate in continuing education courses.[7,9,46] Therefore, where CE is not mandatory, the actual behavior of nonmember respondents appears to differ from their positive attitudes toward CE.

Both association members and nonmembers responded that participation in continuing education should be recognized by awarding continuing education credit units (item 8). Regardless of the degree of involvement, support, or exposure to continuing education, a large

majority of member and nonmember respondents were in favor of the formal recording of credit for continuing education programs.

Data suggest that membership status and attitudes toward MCE (item 9) are not related. In general, the majority of members agreed with MCE for relicensure while the majority of nonmember responses were divided between agreed and disagreed. However, when members were separated by state, Kentucky respondents most often agreed regardless of membership status while VDHA members' responses were divided between agreed and disagreed. Non-VDHA members most often disagreed. These findings also are supported by the studies of Begun and Swisher[7] and the Virginia Board of Dentistry,[27] who reported higher percentages of association members than nonmembers in favor of MCE. The differences between Kentucky and Virginia member responses may be due to the clearly undecided attitudes of Virginia dental hygienists toward MCE.

Data indicate that respondents' attitudes toward item 14, participation in CE contributes to personal self-esteem and confidence, are not related to association membership status. Since more association members participate in CE courses than nonmembers, personal self-esteem and confidence are two benefits of CE courses evidently not associated with the variable of membership status.

Results indicate that the majority of member and nonmember respondents disagreed with item 17, a practicing dental hygienist does not need CE to increase knowledge, indicating that membership status is not related to item 17. However, inspection of percentage frequencies reveals that association member respondents disagreed with the statement more frequently than nonmember respondents, which supports previously cited research findings that association members are more in favor of continuing education. Research has not yet determined what characteristics can be used to predict who will become members of their professional association and who will not. However, association members may be more supportive of CE because their characteristics of professionalism may be different from nonmembers.

Data suggest that there is not a relationship between respondents' attitudes toward item 18 and their membership status. The majority of member and nonmember respondents agree that participation in CE is the best way to update knowledge and skills. An explanation for this finding may be related to the fact that respondents accept the premise that professionals must continue to learn, improve, and change with appropriate new philosophies and technologies. Agreement with CE as the best way to update knowledge and skills is a general statement calling for no personal commitment and no fulfillment of personal or legal requirements. Therefore, the statement revealed no

attitudinal differences based on professional association membership. Additionally, the statement does not differentiate purposes for or various modes of CE.

Data suggest that association member respondents were more supportive than nonmembers concerning the necessity of CE to increase clinical competence, suggesting a relationship between professional association membership and respondent's attitudes toward item 19. Association members, possibly through increased contact with their peers, may be more aware than nonmembers of the need to keep current with changing treatment philosophies, new materials and techniques, and shifts in prevalent pathologies.

Participation in CE courses was felt to be less of a hardship and more of a benefit (item 20) by association members than nonmembers. A positive attitude from members might be expected because association members may pay lower course fees when programs are offered through the association. Additionally, during course evaluation, participants may be asked for comments which could shape future courses. Possibly even more relevant to understanding the differences in attitudes to item 20 is recognizing that members place values and benefits upon affiliation with their professional association and in their professional growth, which includes participation in CE programs.

Data suggest that more member than nonmember

respondents disagreed that journal reading is a better way to increase knowledge, revealing a relationship between membership status and attitudes toward item 21. One explanation for this relationship in attitudes may be the high undecided response rate of nonmember respondents who may have limited access to journals, particularly ADHA's journal, Dental Hygiene. The majority of association members did not feel that journal reading was a better way to increase knowledge than by attending CE courses. Body[9] reported that Ohio respondents favored self-instruction/ correspondence by nine percent. Clinical instruction/ participation was the preference for CE instruction (56.6%), followed by informal lecture/discussion (49.7%) and formal lecture (26.2%).

Respondents' membership/nonmembership status did not reflect an attitudinal relationship with the statement that dental hygienists can maintain and improve clinical skills through peer review rather than attending CE courses (item 22). Data reveal that most participants disagreed with the statement. Respondents may have had little or no exposure, or similar exposure, to the peer review process but still believe that CE courses provide a better mechanism to maintain and improve clinical skills. Or, differences in wording of the item may produce different results, i.e., eliminating "improved" or inserting "as well as" instead of "rather". Finally, participants may feel that peer review is a mechanism of

assessment or quality assurance rather than a mode of continuing education.

Data reveal that attitudes of most association members and nonmembers did not agree with paying $150/day for a course with a nationally renowned speaker (item 23). Association respondents were less unwilling to pay $150/day, but a large percentage of members were undecided, possibly indicating a struggle between fee and speaker's reputation versus the benefits of CE courses. Frequently, CE courses offer a reduced fee to association members. Begun and Swisher[7] reported that VDHA members generally have a higher income than nonmembers of VDHA, and, therefore, VDHA members might be better able to pay a higher fee. The same relationship of income might be true with Kentucky members versus nonmembers.

Data suggest no relationship between attitudes concerning one's willingness to pay a fee of $75/day for a local course of interest (item 24) and membership status. A majority of members and a majority of nonmembers did not approve or disapprove of the suggested fee. Thus, no attitudinal differences or preferences toward local course presentations were revealed.

Research Question Three

What are the attitudes toward continuing education among licensed dental hygienists who graduated from a dental hygiene program five years ago or less versus licensed dental hygienists who graduated from a dental

hygiene program more than five years ago as measured by the Continuing Education Attitudinal Questionnaire? Only item 14 generated a relationship with length of time since graduation.

Data suggest that 87 percent of recently graduated respondents believe that CE courses increase personal self-esteem and confidence (item 14), while 75 percent of respondents who graduated prior to 1982 have the same attitude. More recent graduates may view grades as a measure of self-esteem, while respondents who have been out of school longer may be developing other sources for increasing their self-esteem and confidence, such as observing improvement in patient oral health, approval and encouragement of co-workers and employers, and the satisfaction of productive service. Previous research had only revealed that length of time since graduation influenced CE course preferences[8] and had not attempted to examine attitudes toward continuing education based upon length of time since graduation. However, since this variable produced a significant difference in responses on only one of 13 items, length of time since graduation is probably a weak indicator of relationships of attitudes toward continuing education.

Ancillary information was revealed when relationships between state of licensure and other questionnaire statements were analyzed. Data suggest that state of licensure may be related to participants' responses to the

statement that the state board which issues licenses should regulate CE courses for dental hygienists (item 25). Kentucky respondents were divided among three response choices, while Virginia respondents were divided between disagreed and undecided. The lack of involvement of Virginia respondents in CE courses could explain the high percentages of undecided and possibly disagreed responses; that is, the statement is less pertinent to Virginia respondents.

Data reveal that 61 percent of Kentucky participants agreed that dental hygienists can develop and present CE courses (item 28), while less than a majority of Virginia respondents agreed with the statement. Although both groups had large percentages of undecided responses, a relationship is suggested between state of licensure and attitudes toward CE courses produced by dental hygienists. As previously shown in Figure 2 (page 52), Kentucky respondents have had greater participation in CE. The greater familarity and experience of Kentucky respondents may encourage the opinion that dental hygienists can produce their own CE courses.

Certain factors limit the generalizability of the study. Results of the study were based alone on the sample population drawn, but different samples may yield different results. Larger sample groups may have yielded a higher number of usable statistical test results. Further research is needed to compare attitudes toward CE

among dental hygienists from other states to determine how far the findings of this study can be generalized.

The survey instrument Continuing Education Attitudinal Questionnaire was examined by dental hygienists and adult education experts for validity. The questionnaire was pilot tested and test-retest reliability was established. Five Virginia dental hygienists not included in the present study comprised the pilot test sample. Another instrument with established validity and reliability may have produced different results concerning attitudes toward continuing education and the variables of state of licensure, membership status, and graduation date.

Findings from this study indicated that dental hygienists in Kentucky, a state requiring CE for relicensure, responded differently than dental hygienists in Virginia, a state with no CE requirements for relicensure, to five attitudinal items regarding continuing education. Where attitudes toward statements on CE were compared by the variable of membership status in the professional association, members were significantly more supportive of CE than were nonmembers in responses to four attitudinal items. Eight different items produced significantly different responses; only the statement regarding a high fee for a nationally known speaker produced relationships for two variables - state of licensure and association membership. The category

length of time since graduation suggested a relationship only between date of graduation and personal self-esteem and confidence as a benefit of CE participation.

CHAPTER 5

Summary and Conclusions

The continuing education experience for dental hygiene professionals continues to evolve and vary from state to state. In some states, practitioners must earn continuing education credits for relicensure; in other states, continuing education is not mandatory for relicensure. Diversity among continuing education programs also exists because providers of CE courses have varying reasons for offering CE courses and participants have different reasons for taking CE courses. In addition to the varying purposes of continuing education, the success of continuing education is measured differently among CE programs. Additionally, such factors as professional association membership, work environment, level of education, and years of experience may produce different attitudes toward CE among dental hygienists.

The purpose of the present study was to determine if dental hygienists' attitudes toward continuing education are associated with different relicensure laws. Using a self-designed attitudinal survey, the research questions were answered by comparing responses of dental hygienists for whom CE was a requirement for relicensure with

responses of dental hygienists for whom continuing education was not mandatory. The study also investigated professional membership status and length of time since graduation as factors associated with attitudes toward continuing education.

A pilot study was used to establish validity and reliability of the survey instrument, Continuing Education Attitudinal Questionnaire. The survey was sent to 200 dental hygienists in Kentucky, a state with MCE, and 200 dental hygienists in Virginia, a state without MCE. Data were obtained from 246 questionnaires for a response rate of 61.5 percent, with a usable data set of 243 questionnaires. Data were arranged by frequencies and percentages and were analyzed using the chi-square test of independence on the SAS computer program.

Results of this study revealed that Kentucky dental hygienists, who must earn continuing education credits for relicensure, displayed generally more affirmative attitudes toward continuing education than dental hygienists from Virginia, a state with no MCE requirements. Attitudes of Kentucky respondents were particularly more favorable in the areas of MCE and the benefits of participation in CE programs. Virginia participants were more frequently undecided in their responses to attitudinal statements than Kentucky respondents, especially regarding benefits of CE participation and various methodologies for CE programs.

Information gained from this investigation contributes to the profession's knowledge base concerning hygienists' attitudes toward continuing education. Kentucky dental hygiene respondents who are required to earn CEU's have a positive attitude toward CE, while Virginia respondents who are not required to earn CEU's for relicensure are more undecided in their attitudes toward continuing education. Since previous research has not compared attitudes toward continuing education among dental hygiene professionals with different CE requirements, the information gained from this study may serve to influence the future direction of CE and MCE requirements. Kentucky dental hygienists have more exposure to and participation in CE which may result in more favorable attitudes of dental hygienists toward continuing education.

Attitudes of Kentucky respondents were significantly more in favor of continuing education than Virginia respondents in response to five attitudinal statements. Kentucky respondents did not believe that participation in continuing education courses should be a personal choice of the dental hygienist and were more in favor of mandatory continuing education than Virginia respondents. Kentucky respondents disagreed that practicing dental hygienists do not need to take CE courses to increase knowledge and agreed that participation in CE is the best way they have to update

knowledge and skills. Kentucky respondents were also less willing to pay a fee of $150 for a one-day course to hear a nationally renowned speaker.

Five other attitudinal statements indicated relationships between state of licensure and attitudes toward continuing education. Kentucky participants had more positive attitudes regarding the following areas: 1) professional obligation to improve knowledge and skills through CE courses; 2) awarding CEU's for participation in courses; 3) the need for practicing dental hygienists to participate in CE to increase clinical competence; 4) CE courses more of a benefit than a hardship; and 5) reading journals not being a better way to update knowledge than attending CE courses.

The variable of state of licensure was also associated with differences on two ancillary statements regarding continuing education: 1) regulation of CE courses through licensing boards and 2) development and presentation of CE courses by dental hygienists. Kentucky respondents agreed with both statements more frequently than Virginia respondents. Nearly half the Virginia respondents disagreed with licensing boards regulating CE and were divided between disagreed and undecided about CE courses being developed by dental hygienists. Therefore, results may suggest that respondents who are more involved with CE have more definite ideas regarding the development, management, and administration of CE courses.

Four statements revealed relationships between membership status in the professional association and attitudes toward CE. Respondents who are members of their professional association demonstrated a more positive attitude toward continuing education than respondents who are not members of their professional association. Association member respondents, more than nonmember respondents, believed that practicing dental hygienists need to participate in CE to increase clinical competence. Member respondents disagreed more than nonmember respondents that CE is more of a hardship than benefit and that journal reading is not a better way to update knowledge than attending CE courses. However, member respondents displayed more resistant attitudes than nonmember respondents toward paying a fee of $150 for a one-day course given by a nationally renowned speaker. These findings generally reinforce previous research findings that hygienists who are members of their professional association are more supportive of CE than nonmembers.

Other statements which suggested a more positive attitude toward continuing education from members of the professional association rather than nonmembers concerned: 1) participation in CE not a matter of personal choice; 2) awarding CEU's for participation; 3) CE required by state law for relicensure; and 4) clinical skills maintained and improved through CE courses rather

than peer review. Thus, professional association members, possibly by virtue of their characteristics of membership in the professional association, also possess a supportive attitude toward continuing education.

Willingness to pay $150 for a one-day course to hear a nationally renowned speaker was the only statement revealing a relationship between two variables, state of licensure and membership status. Kentucky respondents and respondents who are members of their professional association disagreed with paying a large fee. This negative response should be considered by developers and presenters of CE programs, since Kentucky respondents and association member respondents otherwise had positive attitudes toward continuing education.

Length of time since graduation did not appear to be a significant factor in revealing attitudes toward continuing education. Only one statement elicited any significant differences in responses of attitudes toward continuing education based upon graduation date. Respondents who graduated from a dental hygiene program in 1982 or later, agreed more than respondents who had graduated prior to 1982, that participation in continuing education programs contributes to personal self-esteem and confidence. Therefore, the focus of CE programs may need to be variously directed based upon length of time since graduation.

Based upon the results of this study, the following

conclusions are offered:

1. Kentucky dental hygienists have more affirmative attitudes toward CE than Virginia dental hygienists, particularly in the areas of MCE, benefits of CE, and program administration.

2. Virginia respondents have more unformed attitudes toward CE, particularly in the areas of benefits of CE and optional methodologies for instruction.

3. Length of time since graduation is not a significant variable to indicate a relationship between attitudes toward continuing education and length of time since graduation.

4. Mandated CE does not negatively influence attitudes of dental hygienists toward CE since Kentucky respondents had more positive attitudes toward CE, while Virginia respondents had less positive attitudes or were more undecided.

5. In a state (Virginia) where CE is not mandated, attitudes of dental hygienists are not as positive toward CE as in a state (Kentucky) where CE is mandated.

Considering the results and limitations of this study, the following recommendations for future study are made:

1. Conduct a study comparing attitudes of dental hygienists toward continuing education in another regional licensing area where continuing education is mandatory in one state and not mandatory in another, to compare with

the results of this study.

2. Investigate in depth the continuing education program in Kentucky to determine what are the characteristics of CE which may contribute to favorable attitudes toward CE of Kentucky dental hygienists.

3. Conduct a detailed survey of preferences for CE courses of Virginia dental hygienists to include course content, preferred instructional methodologies, alternatives to physical presence at a course, modes of administration, locations, time, and fees.

4. Analyze CE courses in Virginia to construct a profile of successful and effective programs.

5. Study the significance of including or excluding the "undecided" response choice in survey research.

In conclusion, this study suggests that relationships exist between state of licensure and dental hygienists' attitudes towards CE. Dental hygienists licensed in a state where continuing education has been required for relicensure for ten years have more positive attitudes in areas of MCE, benefits of participation in CE, and CE course administration than dental hygienists licensed in a state with no mandatory continuing education requirements. The high percentage of undecided responses from Virginia respondents suggests that these respondents have not formed positive or negative attitudes toward continuing education, particularly in areas of benefits of CE and optional methodologies for CE programs. The study

also suggests, along with previous research findings, that association membership status is related to dental hygienists' attitudes toward continuing education. Length of time since graduation is not suggested as a variable strongly associated with attitudinal differences in this study.

These results provide evaluative data for dental hygiene professionals and educators who guide and direct the continuing education of dental hygienists. Information from the present study may contribute to the profession's knowledge concerning CE and may serve as a basis for further investigations concerning continuing education. Additionally, these results provide information for professional associations, lobbyists, and legislators regarding future ideas and decisions regarding continuing education, since mandatory continuing education for relicensure may result in more favorable attitudes toward continuing education.

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OLD DOMINION UNIVERSITY

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Norfolk, Virginia 23508

June 29, 1987

Office of the Dean
804-440-4960

Office of Continuing Education
440-4256

School of Community Health Professions and Physical Therapy
440-4409

Community Health Education
440-4410

Environmental Health
440-3611

Ophthalmic Technology
461-0050

Physical Therapy
440-4519

School of Dental Hygiene and Dental Assisting
440-4310

School of Medical Technology
440-3589

School of Nursing
440-4297

Clinical Practice Center
440-4960

Dear Dental Hygienist:

An investigation is being conducted to assess the attitudes of licensed dental hygienists toward continuing education. Results of this study will reveal attitudes about continuing education with regard to perceived value, usefulness, and support for continuing education. This information will be helpful to the dental hygiene profession, sponsors of continuing education programs, and legislators in shaping the future of continuing education for dental hygienists.

Please complete the enclosed questionnaire in a quiet, relaxed atmosphere. The questionnaire can be completed in approximately ten minutes. Try to respond to each item completely and honestly. A self-addressed stamped envelope is enclosed for your convenience in returning the answer sheet. Please do not fold the answer sheet when you insert the answer sheet into the self-addressed envelope. Please return the answer sheet by July 20, 1987.

For purposes of checking which questionnaires have been answered, the envelopes are numbered. Numbers will not be identified with any questionnaires and anonymity will be preserved. Results of the study will be reported in group form only and will be available, upon request, to the School of Dental Hygiene and Dental Assisting, Old Dominion University.

Your cooperation and prompt response will be highly appreciated and will greatly contribute to the results of the study.

Sincerely,

Katharine R. Behroozi, RDH, BS
Dental Hygiene Graduate Student
Old Dominion University

APPENDIX B

CONTINUING EDUCATION ATTITUDINAL QUESTIONNAIRE

CONTINUING EDUCATION ATTITUDINAL QUESTIONNAIRE

The following questions are divided into two sections. The first section asks for background information and the second section is composed of statements about continuing education.

Directions: Please use the **General Purpose Answer Sheet, side one,** to record your responses. Using a #2 pencil darken the appropriate circle for each question 1 through 5.

Section 1

1. I am

   A. a member of the Kentucky Dental Hygienists' Association

   B. a member of the Virginia Dental Hygienists' Association

   C. not a member of either Kentucky or Virginia constituents of ADHA

2. I graduated with a certificate or degree in dental hygiene

   A. prior to 1982

   B. in 1982 or more recently

3. The highest educational degree which I have attained is

   A. associate

   B. bachelor

   C. master

   D. doctorate

4. I am primarily employed in

   A. private practice - general dentistry

   B. specialty practice

   C. public health/government setting

   D. dental hygiene/dental assisting education

   E. another setting or not employed as a dental hygienist

please turn page over

5. Between June 1985 and May 1987 I have completed continuing education credits [1 hr. = 0.1 CEU] which total

   A. less than 5

   B. between 5 and 10

   C. between 11 and 15

   D. more than 15

Section 2

Directions: For numbers 6 through 28, please darken the appropriate letter in the circle which indicates your attitude toward the following statements on continuing education.

A - strongly agree **B - agree** **C - undecided**

D - disagree **E - strongly disagree**

mandated

6. Participation in continuing education courses should be a matter of personal choice of the dental hygienist.

7. Dental hygienists have a professional obligation to improve their knowledge and skills through participation in continuing education courses.

8. Continuing education credit (C.E.U.) should be awarded for participation in continuing education activities.

9. Continuing education credits should be required by state law for dental hygiene relicensure.

content

10. Mandatory continuing education courses taken by a dental hygienist should be in any area of interest to the dental hygienist.

11. Continuing education course content should be related to dental hygiene knowledge and skills areas.

12. Courses are available to me in subject areas in which I am interested.

13. Most continuing education courses do not offer information in subject areas of interest to me.

14. Participating in continuing education programs contributes to my personal self-esteem and confidence.

A - strongly agree B - agree C - undecided

D - disagree E - strongly disagree

behavioral change

15. Participation in continuing education courses has influenced changes in dental hygiene services to my patients.

16. Participation in continuing education courses does not affect the way I practice dental hygiene.

17. A practicing dental hygienist does not need to take continuing education courses to increase knowledge.

18. Participation in continuing education courses is the best way I have to update my knowledge and skills.

19. A practicing dental hygienist needs to participate in continuing education courses to increase clinical competency.

barriers

20. Taking courses in continuing education is more of a hardship for me than a benefit.

21. I can better update my knowledge by reading professional journals than by attending continuing education courses.

22. Clinical skills can be maintained and improved through peer review rather than through continuing education courses.

23. Continuing education is so important I would pay a fee of $150 (one day) to hear a nationally renowned speaker.

24. I would pay a fee of $75 (one day) for a local course in a topic of interest to me.

control/sponsorship

25. The state board which issues licenses should regulate continuing education courses for dental hygienists.

26. Continuing education courses for dental hygienists should be regulated by the state dental hygiene association.

27. Continuing education course curricula should be under the supervision of an educational institution.

28. Any interested dental hygienist may develop and present a continuing education program.

Thank you for your time and effort in completing this questionnaire!

OLD DOMINION UNIVERSITY

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Norfolk, Virginia 23508

July 20, 1987

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440-4519

School of Dental Hygiene and Dental Assisting
440-4310

School of Medical Technology
440-3589

School of Nursing
440-4297

Clinical Practice Center
440-4960

Dear Dental Hygienist:

Recently you were sent a questionnaire to complete concerning attitudes toward continuing education. I have not yet received your reply to the questionnaire. In order for this study to be representative of the dental hygienists in your state, it is important that I receive as many responses as possible. This study is a graduate research project which I am conducting. Information obtained from you and fellow dental hygienists on attitudes toward continuing education may influence licensing requirements for dental hygienists.

For your convenience, I have enclosed a copy of the questionnaire and a stamped, self-addressed envelope. Please return the completed questionnaire by **August 11, 1987.** The return envelopes have been numbered for purposes of checking which questionnaires have been returned. Numbers will not be identified with individual questionnaires so that your responses will be completely anonymous. Results will be reported in group form only. Your time and cooperation in participating in this study are greatly appreciated.

Sincerely,

Katharine R. Behroozi, RDH, BS
Dental Hygiene Graduate Student
Old Dominion University

APPENDIX D

SUMMARY OF RESPONSES TO CONTINUING EDUCATION ATTITUDINAL QUESTIONNAIRE, SECTION TWO

Section 2

6. Participation in continuing education courses should be a matter of personal choice of the dental hygienist.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	43	17.8	43	17.8
Agree	67	27.7	110	45.5
Undecided	23	9.5	133	55.0
Disagree	78	32.2	211	87.2
Strongly disagree	31	12.8	242	100.0

- -

7. Dental hygienists have a professional obligation to improve their knowledge and skills through participation in continuing education courses.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	120	49.4	120	49.4
Agree	103	42.4	223	91.8
Undecided	8	3.3	231	95.1
Disagree	10	4.1	241	99.2
Strongly disagree	2	0.8	243	100.0

- -

8. Continuing education credit (C.E.U.) should be awarded for participation in continuing education activities.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	136	56.4	136	56.4
Agree	83	34.4	219	90.9
Undecided	13	5.4	232	96.3
Disagree	5	2.1	237	98.3
Strongly disagree	4	1.7	241	100.0

- -

9. Continuing education credit should be required by state law for dental hygiene relicensure.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	57	23.5	57	23.5
Agree	73	30.0	130	53.5
Undecided	38	15.6	168	69.1
Disagree	48	19.8	216	88.9
Strongly disagree	27	11.1	243	100.0

- -

10. Mandatory continuing education courses taken by a dental hygienist should be in any area of interest to the dental hygienist.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	75	30.9	75	30.9
Agree	97	39.9	172	70.8
Undecided	29	11.9	201	82.7
Disagree	36	14.8	237	97.5
Strongly disagree	6	2.5	243	100.0

- -

11. Continuing education course content should be related to dental hygiene knowledge and skills areas.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	52	21.4	52	21.4
Agree	120	49.4	172	70.8
Undecided	26	10.7	198	81.5
Disagree	42	17.3	240	98.8
Strongly disagree	3	1.2	243	100.0

- -

12. Courses are available to me in subject areas in which I am interested.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	11	4.6	11	4.6
Agree	141	58.5	152	63.1
Undecided	42	17.4	194	80.5
Disagree	43	17.8	237	98.3
Strongly disagree	4	1.7	241	100.0

- -

13. Most continuing education courses do not offer information in subject areas of interest to me.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	6	2.5	6	2.5
Agree	54	22.3	60	24.8
Undecided	31	12.8	91	37.6
Disagree	135	55.8	226	93.4
Strongly disagree	16	6.6	242	100.0

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14. Participating in continuing education programs contributes to my personal self-esteem and confidence.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	63	26.1	63	26.1
Agree	128	53.1	191	79.3
Undecided	20	8.3	211	87.6
Disagree	28	11.6	239	99.2
Strongly disagree	2	0.8	241	100.0

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15. Participation in continuing education courses has influenced changes in dental hygiene services to my patients.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	42	17.4	42	17.4
Agree	134	55.4	176	72.7
Undecided	35	14.5	211	87.2
Disagree	26	10.7	237	97.9
Strongly disagree	5	2.1	242	100.0

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16. Participation in continuing education courses does not affect the way I practice dental hygiene.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	6	2.5	6	2.5
Agree	30	12.5	36	15.0
Undecided	28	11.7	64	26.7
Disagree	144	60.0	208	86.7
Strongly disagree	32	13.3	240	100.0

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17. A practicing dental hygienist does not need to take continuing education courses to increase knowledge.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	10	4.1	10	4.1
Agree	33	13.6	43	17.8
Undecided	20	8.3	63	26.0
Disagree	110	45.5	173	71.5
Strongly disagree	69	28.5	242	100.0

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18. Participation in continuing education courses is the best way I have to update my knowledge and skills.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	50	20.7	50	20.7
Agree	114	47.1	164	67.8
Undecided	34	14.0	198	81.8
Disagree	36	14.9	234	96.7
Strongly disagree	8	3.3	242	100.0

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19. A practicing dental hygienist needs to participate in continuing education courses to increase clinical competency.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	19	7.8	19	7.8
Agree	83	34.2	102	42.0
Undecided	49	20.2	151	62.1
Disagree	72	29.6	223	91.8
Strongly disagree	20	8.2	243	100.0

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20. Taking courses in continuing education is more of a hardship for me than a benefit.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	12	5.0	12	5.0
Agree	32	13.3	44	18.3
Undecided	47	19.5	91	37.8
Disagree	130	53.9	221	91.7
Strongly disagree	20	8.3	241	100.0

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21. I can better update my knowledge by reading professional journals than by attending continuing education courses.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	11	4.5	11	4.5
Agree	35	14.4	46	18.9
Undecided	81	33.3	127	52.3
Disagree	97	39.9	224	92.2
Strongly disagree	19	7.8	243	100.0

22. Clinical skills can be maintained and improved through peer review rather than through continuing education courses.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	8	3.3	8	3.3
Agree	49	20.2	57	23.5
Undecided	69	28.4	126	51.9
Disagree	100	41.2	226	93.0
Strongly disagree	17	7.0	243	100.0

23. Continuing education is so important I would pay a fee of $150 (one day) to hear a nationally renowned speaker.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	4	1.7	4	1.7
Agree	8	3.3	12	5.0
Undecided	64	26.4	76	31.4
Disagree	79	32.6	155	64.0
Strongly disagree	87	36.0	242	100.0

24. I would pay a fee of $75 (one day) for a local course in a topic of interest to me.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	15	6.2	15	6.2
Agree	88	36.2	103	42.4
Undecided	57	23.5	160	65.8
Disagree	46	18.9	206	84.8
Strongly disagree	37	15.2	243	100.0

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25. The state board which issues licenses should regulate continuing education courses for dental hygienists.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	9	3.7	9	3.7
Agree	56	23.0	65	26.7
Undecided	74	30.5	139	57.2
Disagree	69	28.4	208	85.6
Strongly disagree	35	14.4	243	100.0

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26. Continuing education courses for dental hygienists should be regulated by the state dental hygiene association.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	28	11.5	28	11.5
Agree	96	39.5	124	51.0
Undecided	63	25.9	187	77.0
Disagree	43	17.7	230	94.7
Strongly disagree	13	5.3	243	100.0

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27. Continuing education course curricula should be under the supervision of an educational institution.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	18	7.5	18	7.5
Agree	77	32.0	95	39.4
Undecided	64	26.6	159	66.0
Disagree	68	28.2	227	94.2
Strongly disagree	14	5.8	241	100.0

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28. Any interested dental hygienist may develop and present a continuing education program.

	frequency	percent	cumulative frequency	cumulative percent
Strongly agree	25	10.5	25	10.5
Agree	98	41.4	123	51.9
Undecided	65	27.4	188	79.3
Disagree	38	16.0	226	95.4
Strongly disagree	11	4.6	237	100.0

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APPENDIX E

SUGGESTIONS FOR REVISION OF THE QUESTIONNAIRE

Suggestions for Revision of the Questionnaire

Item 1.	Separate C. response choice into C. not a member of Kentucky Dental Hygienists' Association, and D. not a member of Virginia Dental Hygienists' Association.
Item 5.	Separate response choice A. into two choices: A. no continuing education credits earned and B. less than 5. Reletter succeeding letters.
Item 21.	Change "reading professional journals" to "using self-instructional study guides". This could be a separate area of investigation into alternative forms of continuing education such as peer review, study clubs, and self-instructional programs.