QUALITY ASSURANCE AND DENTAL HYGIENE CARE IN BRITISH COLUMBIA

by

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ABSTRACT

Quality assurance and quality management are current topics in the field of health care. Quality assurance is necessary to ensure consumers of health care receive ethical, effective, efficient, competent care. Many methodologies drive quality assurance with no one method clearly more beneficial than the next.

An extensive review of the literature demonstrated that quality assurance, as a concept, has been evolving to adapt to the ever-changing needs of the health care field. However, information is lacking in the effectiveness, awareness, and suitability of quality assurance mechanisms in dental hygiene.

This cross sectional descriptive study was conducted to explore the perceptions that British Columbia dental hygienists have about quality assurance, their perceptions on the use of the College of Dental Hygienists of British Columbia practice standards as a quality assurance tool, and their perceptions about the degree to which they are able to practice according to these standards. Study participants were also asked about any potential barriers that prevent them from practicing according to the standards. A total of 336 self-administered questionnaires were mailed to dental hygienists currently registered as a “full registrant” and practicing in British Columbia. Of the 126 questionnaires that were returned (37% response rate), 108 met the inclusion criteria for the study.

The findings show that the majority of dental hygienists who responded to this questionnaire perceive that they are practicing in accordance with the standards all the time (always) or almost all the time (usually). This study also sought to explore the relationship between geographical location and the dental hygienist’s perceptions on adherence to the standards. This study showed that there was no appreciable link between these variables. It was postulated that the year a dental hygienist graduated may affect how he/she perceived his/her practice of dental hygiene in accordance with the standards. The results of the cross-tabulation using the Spearman’s Rank Correlation demonstrated a small, statistically, significant negative association between these two variables. This means that the longer a dental hygienist has been practicing, the less he/she perceives that he/she is practicing according to the standards.

This study has revealed some introductory information on how dental hygienists in the province of British Columbia view quality assurance and the use of practice standards as a quality assurance tool.
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Chapter 1

1.1 Introduction

The profession of dental hygiene has been growing and evolving since it was first recognized as an occupation in the early part of the 1900’s in North America (Working Group on the Practice of Dental Hygiene in Canada, 1988). Dental hygienists, like other health care professionals, must be accountable to consumers of health care for the services they provide. This accountability may be achieved in many ways, including quality assurance and quality management. In Canada, the development of a national code of ethics, development of a national policy framework for dental hygiene education, and the development of national competencies used to develop a national certification examination have also provided the profession of dental hygiene tools to become accountable to the public. Since public protection is the driving force behind quality assurance, provincial umbrella health legislation is providing the impetus for the development, revision, and maintenance of quality assurance mechanisms to ensure that practitioners are competent.

1.2 Statement of the Problem

At this time, the dental hygiene profession in Canada continues to rely heavily on traditional quality assurance mechanisms such as mandatory continuing education requirements to ensure continuing competence (Asadoorian, 2001). With the exception of Ontario, dental hygiene regulatory bodies do not use the term quality assurance and tend to focus on a dental hygiene practitioner’s continuing competence. Unfortunately, the mistake that dental hygiene regulatory bodies make is confusing continuing competence with quality assurance. As the

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literature review will show in Chapter 2, continuing competence is only one aspect of quality management.

As with many facets of health care, quality assurance is not static. As health professions grow and evolve, so must quality assurance methodologies. There is limited information available which explores the dental hygienist’s perceptions regarding quality assurance and effectiveness of quality assurance activities. This thesis will explore these perceptions in detail as they relate to quality dental hygiene care in British Columbia, Canada.

This introductory chapter will provide basic background information on the development of the profession of dental hygiene in Canada. The literature review in Chapter 2 will provide an exploration of quality assurance in the health care field, including dental hygiene.

1.3 Dental Hygiene in Canada

Dental hygiene has been a recognized a health occupation in Canada since 1947 (Working Group on the Practice of Dental Hygiene in Canada, 1988; Fulton, 1988). From that time until more recently provincial legislation regulated dental hygienists and dentists, typically under a provincial dental act (Working Group on the Practice of Dental Hygiene in Canada, 1988). Initially, provincial dental acts delegated the duties that dental hygienists were permitted to perform under direct or general supervision and guidance of a dentist (Working Group on the Practice of Dental Hygiene in Canada, 1988). As dental hygiene is evolving from an occupation into a profession, dental hygiene is striving to become more distinct from, yet still remain linked to, dentistry (Working Group on the Practice of Dental Hygiene in Canada, 1988; Fulton, 1988). Dental hygienists have learned that one way to achieve this distinction from the dental profession
is to become self-regulating (Working Group on the Practice of Dental Hygiene in Canada, 1988; Fulton, 1988). Self-regulation means that a professional group is responsible for ensuring that its members provide health care to the public in a safe, appropriate, and ethical manner (Health Care Professionals of British Columbia). Changes to health regulation in various provinces coincided with the determination of dental hygienists to have their role recognized in oral health care and provided dental hygienists with the opportunity and incentive to have the responsibility for public protection shifted from dentists to dental hygienists. Self-regulation is an important evolutionary step towards the “professionalization” of a health occupation because it requires members of a particular profession to determine the best, most ethical, and safest practice standards for individual members of the same occupation in order to protect public interest. Self-regulation of Canadian dental hygienists exists in 6 provinces (Quebec, Alberta, Ontario, British Columbia, Saskatchewan, and Manitoba). In the remaining provinces and territories, dental hygiene practice continues to be regulated through the dental regulatory authorities (dentists) and in the case of the territories, territorial government agencies oversee the licensing of dental hygienists, but efforts are underway to have self-regulation for dental hygienists in these provinces and territories, too.

The same provincial legislation that provided dental hygienists with the opportunity and privilege to become self-regulating also required the profession to develop a code of ethics as part of the new regulatory bodies’ by-laws and regulations. The Canadian Dental Hygienists Association (CDHA) has been instrumental in developing and disseminating a dental hygiene code of ethics to Canadian dental hygienists. In 1992, the CDHA developed Canada’s first code of ethics for dental hygienists. The CDHA Code of Ethics was revised in 2002 and CDHA members received a new copy shortly after the revised document was finalized. The CDHA’s
national code of ethics has been a helpful template for the development of provincial codes of ethics, especially in provinces where dental hygiene is self-regulating. For example, in British Columbia, the College of Dental Hygienists of British Columbia (CDHBC) developed a code of ethics in accordance with the provincial legislation criteria that includes many of the same concepts included in the CDHA code of ethics (College of Dental Hygienists of British Columbia [CDHBC], 1999; Canadian Dental Hygienists Association [CDHA], 1992).

Dental hygiene in Canada continued its evolution with the establishment of the National Dental Hygiene Certification Board (NDHCB) in 1996. Five provinces, namely British Columbia, Alberta, Saskatchewan, Ontario, and Newfoundland, currently require dental hygienists seeking registration to practice to successfully complete the NDHBC developed National Dental Hygiene Certification Examination. Successful completion of the written examination, based on national competencies, demonstrates that a dental hygienist possesses the basic knowledge required for entry-to-practice and makes a dental hygienist eligible for licensure and/or registration requirements in several Canadian provinces (Walker & Gallagher, 1994).

Dental hygiene education in Canada is continually revised to meet the public’s growing and ever changing needs and demands for dental hygiene services to be delivered by competent practitioners. Currently, the majority of dental hygienists in Canada possess a diploma in dental hygiene from an accredited educational institution that also makes them eligible for provincial registration and/or licensure. Although the awarding of a diploma at the conclusion of formal dental hygiene education has remained unchanged since the first graduating dental hygiene class in Canada in 1952, changing disease patterns and demographics are necessitating significant revisions. The CDHA has endorsed, through its Policy Framework for Dental Hygiene
Education in Canada, 2005 published in 2000, that the baccalaureate dental hygiene degree become the educational requirement for entry-to-practice for all dental hygiene students who commence their dental hygiene studies at Canadian programs as of 2005 (CDHA, 1998). Although this Policy Framework suggested that a baccalaureate degree in dental hygiene is the recommended entry to practice credential, as of the date of publication of this thesis, this is not the case. However, modifications to current dental hygiene educational programs have already begun in Canada. In Alberta and British Columbia, four-year programs are in place offering dental hygiene students the opportunity to obtain a baccalaureate or bachelor’s degree as their first dental hygiene credential. In addition, The College of Dental Hygienists of BC was the first dental hygiene regulatory authority to undertake an investigation of the implications of requiring baccalaureate education for new graduates seeking registration in BC by the year 2009 (F. Hubbard, personal communication, November 12, 2002). A CDHBC Special Committee was struck to investigate the factors involved in making such a decision. This initiative was found to be outside the responsibilities of CDHBC to the Special Committee has been disbanded and this initiative has been turned over to the BCDHA (Cynthia Johansen, personal communication, March 27, 2006).

Although the above efforts have provided dental hygiene with a strong foothold in the realm of “profession”, one key area of this professionalization still requires much attention: the area of quality assurance. Dental hygiene regulatory bodies have continually relied on traditional methods of quality assurance that may not ensure quality of care at all. Because of this reliance on traditional methods of continuing competence and quality assurance, dental hygiene is also faced with the traditional issues surrounding adequate and appropriate implementation of effective quality assurance methodologies. One such issue includes weak implementation
strategies for quality assurance activities (Epstein, 1995). Dental hygiene regulatory authorities need to recognize that registrants must be offered education and preparation about the use of quality assurance tools. Research suggests that without this type of education, health care professionals may be reluctant to participate in quality assurance activities (Epstein, 1995). Quality assurance mechanisms, in order to be effective, must also be evaluated for effectiveness, validity, and reliability (Epstein, 1995). A well written, pre-determined plan for such evaluation coupled with education and preparation of those individuals expected to use the quality assurance mechanism may be the most effective way to ensure the activity is appropriate (Epstein, 1995; Leiper & Hill, 1993).

Barriers to effective quality assurance may include professional reluctance to participate in the program and a lack of remedial programs for those who need to improve quality (Norman et al, 1993). Health care personnel qualified and willing to oversee proper functioning and maintenance of quality assurance activities are small in numbers. This contributes to further barriers in the development and utilization of appropriate quality assurance tools in dental hygiene.

An additional barrier to consider includes the lack of uniform appreciation for the benefits of quality assurance activities (Epstein, 1995). For example, in speaking with dental hygiene colleagues at various continuing education lectures and dental and dental hygiene conferences, it has been noted that dental hygienists, in many cases, do not agree with mandatory continuing education requirements and often only attend in order to obtain the required number of points in order to remain registered. Interest in the lecture or activities of the conference is limited and considered a waste of time. Finally, dental hygienists may perceive quality assurance as a method for dental hygiene regulatory bodies to restrict and/or control dental hygiene
practice (Epstein, 1995). These types of perceptions may result in resistance to participate in quality assurance activities.

There are limited studies available which document dental hygiene’s success (or lack of success) with current quality assurance methodologies. In Canada, Ontario is the only jurisdiction in which dental hygiene has a formal quality assurance program (as mandated by Ontario’s Regulated Health Professions Act). The CDHO has conducted 2 studies to determine the effectiveness of this program (also mandated by law). However, studies are lacking which explore the dental hygienist’s perceptions about quality assurance, quality of care and continuing competence of clinical skills in BC. This study explores BC dental hygienists’ perceptions regarding quality assurance, continuous quality improvement, and their perceptions regarding quality dental hygiene care.

The literature review in Chapter 2 explores the evolution of quality assurance in health care and briefly touches on some quality assurance methodologies currently in use in the health care field.
Chapter 2

Literature Review

The following literature review will briefly discuss the history and evolution of quality assurance in health care and provide an overview of current methodologies in use in the health care field. This information is important since it provides the groundwork for dental hygiene and demonstrates valid and reliable methods of quality assurance currently and previously used in health care that may be adapted in a suitable manner for dental hygiene. A discussion on the effectiveness, validity and reliability of some methodologies will also be provided. It is beyond the scope of this review to discuss all quality assurance methodologies employed in health care; therefore, only the most common methodologies will be presented. This literature review will also demonstrate that health care has been striving towards refinement of quality assurance methodologies to ensure the best, most efficient, most ethical, quality care is provided for all consumers of health care. A list of nomenclature and terms pertaining to quality assurance is provided in Appendix A.

2.1 Historical development of quality assurance in health care

Quality assurance is a broad concept which encompasses many different aspects. In health care, these components of quality assurance may include continuing competence, outcomes evaluation, process evaluation, quality assurance program development and maintenance, self assessment of clinical skills, and accreditation of health care facilities among others. Historically, the earliest report of quality assurance in health care dates back to 1854 when Florence Nightingale attempted to standardize nursing care in Britain (Meisenheimer,

In the United States, a very early attempt at standardization of medical education followed the landmark Flexnor Report in 1910 (Meisenheimer, 1985). The Flexnor Report reviewed medical education throughout the United States and determined that some institutions were lacking in sufficient credentials to provide physicians with quality education (Meisenheimer, 1985). This Report lead to the closure of many medical schools because the schools could not provide educational services which met the standards outlined in the Report (Meisenheimer, 1985). In 1917, The American College of Physicians established a list of criteria that doctors needed to meet to practice in hospitals (Fromberg, 1988). The criteria developed into a voluntary accreditation program which eventually expanded into the Joint Commission on the Accreditation of Hospitals (Joint Commission) (Fromberg, 1988). The Canadian equivalent to the Joint Commission is the Canadian Council on Health Facilities Accreditation (CCHFA), which has been active since 1958 (Wagner, 1995). Similar to the Joint Commission, the CCHFA runs a voluntary accreditation service and as of 1992 has accredited 1,316 facilities (Wagner, 1995). Both accreditation agencies require each health care institution or facility to develop, implement, and maintain a quality management program prior to being granted accreditation status (Fromberg, 1988; Wagner, 1995).

In the late 1940's and early 1950's, W. Edwards Deming changed the way industry functioned (Walton, 1986). First in Japan and then throughout North America, Deming's methods were adopted in industry which resulted in reduced cost of production and improved quality of products (Walton, 1986). Deming's focus on the consumer as a driving force behind quality assurance gained in popularity (Walton, 1986). With quality control charts and statistical processes backing his theories, Dr. Deming changed the way many products entered the economic playground (Walton, 1986). Although focussed on improving the quality of the
production of goods and materials, some of Deming’s methods were modified and adopted to suit the needs of the health care field. For example, health care could borrow such concepts such as statistical control charting to track patient outcomes (Donabedian, 1995). The health care field also identified with Deming’s theory that the consumer provides industry with the impetus for improving quality of goods and services (Donabedian, 1995). Once health care management teams realized the value in focussing on the consumer of health care, the health care industry developed early quality assurance activities with the goal of achieving improved patient outcomes (Joint Commission on Accreditation of Healthcare Organizations, 1990). A review of patient outcomes allowed the health care industry to pinpoint a few so-called outlier practitioners who did not fall within the standard curve of practitioner behaviour (Joint Commission on Accreditation of Healthcare Organizations, 1990).

Now that health care had some theories to support its quality management activities, it seemed prudent to refine the early attempts at improving delivery of health care services. Avedis Donabedian revolutionized the way quality assurance activities were carried out in the health care industry (Donabedian, 1980). Donabedian suggested that the structure, process, and outcomes of health care all played a vital role in the delivery of high quality care (Donabedian, 1980). Structure refers to such things as the buildings, equipment, drugs, and so forth available to health care workers; process refers to the care delivered to patients; and outcomes refers to patient outcomes of treatment (Donabedian, 1980). This broader thinking drew the emphasis away from strictly outcomes evaluation, which had been the norm in health care (Joint Commission on Accreditation of Healthcare Organizations). The difficulty in using a strictly outcomes approach is the inability to definitively link patient outcome with the type of care (process of care) received (Donabedian, 1995). This is the very reason Donabedian suggested
that all facets of care delivery be evaluated for quality (Donabedian, 1995; Donabedian, 1980). Current theories of quality assurance suggest that Donabedian’s approach may be more effective in improving the general practitioners’ overall performance rather than in correcting grossly inadequate health care delivery (outlier performers) (Joint Commission on Accreditation of Healthcare Organizations, 1990).

2.2 Quality Assurance Methodologies Used in Health Care

Armed with theories to support the development and use of quality assurance tools, the health care field now searched for appropriate methodologies for each phase of health care delivery as well as for each professional group responsible for the care of patients. Quality assurance activities vary considerably depending on type of practitioner and type of setting, including which part of the world, health care services are provided. These activities may include standards of practice, feedback, accreditation, annual reports on practice activities (popular in the UK), audit (popular in hospital or institution settings), and peer review (Royal Society of Edinburgh Proceedings, 1993).

Since each professional group (eg nurses, doctors) has a different scope of practice, no one quality assurance methodology is appropriate across all professions. This has resulted in the development of numerous quality assurance activities both within a profession and across professional groups.

For example, the majority of quality assurance activities in nursing typically include the use of a survey or questionnaire (Royal Society of Edinburgh Proceedings, 1993). These instruments evaluate nursing care either through a review of the patient record (most common),
interviews with patients and nurses, direct observation of nursing care or a combination of these (Royal Society of Edinburgh Proceedings, 1993). One of the earliest instruments employed in nursing, the Phaneuf Audit, has been criticized for its redundancy in type of questions asked as well as for its use of the patient record as the only source of quality of care measurement (Sparrow & Robinson, 1992). Additionally, this tool is lacking validation studies to support its use in evaluating quality of nursing care (Sparrow & Robinson, 1992). The Phaneuf Audit has been shown to be reliable in limited studies which employed assessors who have used the tool extensively (Sparrow & Robinson, 1992). Despite these limitations, the Phaneuf Audit remains a commonly used evaluation tool in nursing practice.

Other tools, such as Qualpacs (patient record assessment), Monitor (patient record assessment, interviews with nurses and patients, observation of nursing skills), and Senior Monitor (similar to Monitor with changes to reflect dependency level of patients on an elderly ward) have all demonstrated instrument validity and reliability (Redfern & Norman, 1995; Wandelt & Ager, 1974). Validation of these assessment tools is notoriously difficult since the assessor is required to formulate his or her own judgement of quality which may introduce bias into the validation study (Redfern & Norman, 1995).

Within larger health care institutions, such as hospitals or long term care facilities, protocols may be used as a quality assurance tool. Protocols for care are typically based on suitable standards of practice and are employed at a local level. One study was performed to determine the reliability and validity of a protocol to measure quality of care in special care units (SCU) in nursing homes (Hampel & Hastings, 1993). The protocol was developed by the Joint Commission on Accreditation of Healthcare Organizations (Hampel & Hastings, 1993). Special
care units in nursing homes (in the United States) are units for residents suffering from various forms of dementia (Hampel & Hastings, 1993). Because dementia patients require advanced care, the role of an SCU is to ensure that these residents receive adequate attention to their needs (Hampel & Hastings, 1993). The protocol used in this study utilized 435 standards to measure this care (Hampel & Hastings, 1993). Two groups of assessors rated six SCUs using the protocol (Hampel & Hastings, 1993). There were only 40 instances where the two assessment groups had large disagreements about the quality of care at each of the SCUs studied (Hampel & Hastings, 1993). This suggests that this protocol may be a reliable tool to assess quality of care in SCUs in nursing homes.

Clinical Practice Guidelines (CPGs) are gaining in popularity in quality management programs. Effectiveness of CPGs to manage and improve quality of care is dependent upon development and particularly upon the implementation strategies of the guideline. Expert panel development of guidelines and blanket distribution of these guidelines to the intended parties is not sufficient to stimulate behaviour change and practitioner adherence to such recommendations (Kosecoff et al, 1987). It may be difficult for health care providers to follow a CPG if one health care institution is responsible for development of the guidelines to be used at many health care facilities (Pilote et al, 1992). Several studies suggest that guidelines may be more effectively adopted and followed if each hospital or health care unit developed and implemented its own set of guidelines (Pilote et al, 1992; Nakayama, Gardner, & Waggoner, 1993). Additionally, guidelines are more readily accepted if health care providers are able to address concerns they may have about the guidelines (Weingarten & Gray, 1992).
Feedback to the health care provider outlining his or her own practice on use of the
guideline is also more helpful and fosters learning when compared to a punitive approach (for
example, financial penalties) for not following guidelines (Weingarten & Gray, 1992). Lomas,
Enkin, Anderson, et al (1991) have shown that a combination of strategies are needed to promote
adherence to guidelines. Such combinations included use of a feedback system to the
practitioner coupled with support of the guideline by an opinion leader in the field. The key in
this study was the use of an opinion leader to aid in the implementation of the guideline. The
opinion leader was a respected physician who was chosen by his or her peers deemed to be
Guideline adherence is also promoted by specific educational activities which address the
guideline (Grimshaw & Russell, 1993) and by a predisposition of the practitioner to want to
comply with the standards or recommendations (Cohen, Weinberger, Hui, et al, 1995).

Practice standards, like CPGs provide a measurable indicator of quality of care. Practice
standards are typically formulated at a professional level to serve as a general statement to
describe the conduct of care expected from each member of a professional group. These
standards have the potential to provide a convenient means for quality improvement and quality
management exercises. Professionals usually receive information about practice standards in the
form of general continuing education lectures, publication in various media including newsletters
and journals, and by direct mailing of the standard(s) to individuals of a professional body.
Unfortunately, the literature demonstrates that the mere dissemination of standards does little to
motivate professionals to self-assess care delivery and modify practice accordingly (Kosecoff,
Kanouse, Rogers, et al, 1987). In one study of health professionals who received practice
standards via a direct mailing, and were later surveyed, results showed that only 40% of these
health professionals were even aware that the standards existed (Lomas, 1991). Although the
literature suggests that more work is needed (in addition to the development and dissemination of
standards) if a profession chooses to use practice standards as a quality assurance mechanism, dental hygiene regulatory bodies are not investing in additional education of dental hygiene practitioners in the correct use of practice standards. For example, in British Columbia, the CDHBC developed practice standards as a requirement of self-regulation legislation and then disseminated these standards to all dental hygienists in the province. It is the individual dental hygienist's responsibility to become familiar with the standards and apply them to daily practice. It is also expected that a dental hygienist use the standards to evaluate his or her own practice to determine if any practice deficiencies exist and if so, that the dental hygienist seek various learning activities to correct the deficiencies identified. There is no literature to support whether dental hygienists are using the practice standards in this way.

However, different methodologies utilizing practice standards may have more positive results. For example, the American Pain Society has developed a set of five standards that relate to pain relief (Miaskowski & Donovan, 1992). These standards have been incorporated into a questionnaire format which may be used to evaluate patient outcome in the management of pain relief (C.C. Lin, 2000). C.C. Lin (2000) adapted and translated this questionnaire for use in Taiwan. The study examined the quality of pain management in three hospital wards and found that the questionnaire was useful in outlining general patient satisfaction (a common indicator of quality care) with pain management (C.C. Lin, 2000). Others have also reported success with this questionnaire to measure quality of pain management in hospitals (C.C. Lin, 2000).

Although practice standards alone can be used as a self-assessment tool, a more effective method of self-assessment combines the use of practice standards with the development and maintenance of professional portfolios. The preliminary research on the use of professional portfolios is very promising and suggests that their use may be a highly effective method to ensure high quality care (Parboosingh, 1996; Campbell et al, 1996). This research also suggests
professional portfolio development has the potential to enhance quality of care for practitioners providing care in isolation from colleagues that are providing similar care (Parboosingh, 1996). Typically, professionals have the choice of developing a portfolio electronically or manually (Parboosingh, 2000; Campbell et al, 1996). Electronic versions of portfolios may track an individual’s progress and learning more effectively than manual formats (Parboosingh, 1996; Campbell et al, 1996). Dental hygienists in Ontario are currently required, as part of a research based quality assurance program developed by the College of Dental Hygienists of Ontario (CDHO), to develop and maintain professional portfolios (Asadoorian, 2001).

Well-defined and well-developed programs are an effective method of ensuring quality. Well-developed programs require a wide range of individuals at different employment levels (managers and workers) to run the program. As noted by Benson, Flanagan, Liffering Hill, & Townes Jr (1987, pg. 20), successful quality assurance programs should have “written documentation which outlines the program’s goals and objectives; the scope of the program;...the frequency of quality assurance activities; and the annual program appraisal.” Developers of the QUARTZ program in mental health have included the aforementioned aspects within this quality assurance program (Leiper & Hill, 1993). Evaluation of the program is facilitated by these factors and the fact that criteria were established for the evaluation process. QUARTZ utilizes a series of schedules to determine the quality of mental health care (Leiper & Hill, 1993). An institution or health care facility which provides mental health services may use QUARTZ and a team leader educated with the system to evaluate quality of mental health services (Leiper & Hill, 1993). Leiper & Hill (1993) utilized a series of surveys and questionnaires to obtain information about the effectiveness of QUARTZ. The results of the evaluation indicate that QUARTZ is an effective method to measure and improve the quality of mental health services. It should be cautioned that program evaluation of this nature is costly and labour-intensive for the reviewers and the individuals involved in providing care.
Utilization management can be another effective quality assurance methodology. Currently, hospitals and large health care facilities are required to develop a utilization management program in order to gain accreditation status in the United States (Al-Assaf, 1995). In an early study on utilization management, Thomas, Moore, & Qualls (1983) looked at the effect of computer generated treatment recommendations and the resulting cost of health care. This 1983 study suggested that health care costs could be reduced or maintained at a manageable level without compromising quality of care (Thomas, Moore, & Qualls, 1983). Although the preliminary results suggested that quality could be high without the high cost the study did not give definitive proof that costs could be contained. It was recommended that further study in this area be undertaken.

Weingarten, Ermann, Bolus, et al (1990) showed that physician compliance with recommended guidelines could be achieved through utilization management. The study focused on decreasing the length of time patients with chest pain spent in the coronary care or intermediate treatment unit (Weingarten, Ermann, Bolus, et al, 1990). Researchers reviewed charts to confirm length of stay in each ward in a control and an experimental group. Those in the experimental group received an intervention which consisted of a telephone call from the utilization management board to the physicians. The utilization management team member requested physicians to discharge patients from the coronary care or intermediate wards at a specific time interval following admission (Weingarten, Ermann, Bolus, et al, 1990). The request, as described by the member contacting the physician, was supported by recommendations made within the medical community and suggested that patients did not need to spend as much time in more acute care units (Weingarten, Ermann, Bolus, et al, 1990). As a result, individuals receiving the phone call discharged patients more quickly from the coronary care or intermediate units (Weingarten, Ermann, Bolus, et al, 1990). A note of caution is
necessary when interpreting these results. This intervention may have elicited a fear response by
the doctors since it was directed from the utilization management board. Physicians may have
perceived an underlying threat of retribution by the hospital if they did not comply with the
request to transfer patients from the acute care wards.

Hospital accreditation, as a quality management tool, has been receiving increased
attention in the recent past. Hospitals undergoing accreditation review follow standards laid out
by the Joint Commission on Hospital Accreditation (Fromberg, 1988). These standards outline
exactly how quality assurance is to be managed within an institution seeking accreditation. This
form of quality assurance may initially be successful in managing quality issues; however,
continued success with the program may be questionable if the organization is not committed to
quality assurance and is implementing a program only to be assured accreditation.

In the private practice sector, checklists are commonly employed to ensure health care
practitioners comply with guidelines or recommendations. One study evaluated the reliability of
a checklist based on the American Diabetes Association’s Standards of Medical Care for Patients
with Diabetes Mellitus (Wylie-Rosett, Cypress, & Basch, 1992). The study utilized retrospective
analysis of patient records to determine physician compliance with the standards using the
checklist (Wylie-Rosett, Cypress, & Basch, 1992). It was then determined if the checklist could
provide a reliable indication of physician adherence to the published recommendations (Wylie-
Rosett, Cypress, & Basch, 1992). Two assessors each reviewed a total of 23 patient records from
two different health care settings (Wylie-Rosett, Cypress, & Basch, 1992). The same records
were again assessed five to seven weeks following the first assessment (Wylie-Rosett, Cypress,
& Basch, 1992). Results indicate high agreement both between each assessor and between the
two evaluations of the same assessor (Wylie-Rosett, Cypress, & Basch, 1992). Although this
agreement indicates that this checklist may be a reliable indicator of the quality of diabetes care provided by physicians, further study is needed to determine the validity of the checklist.

Another common method utilized within the private practice sector includes the use of peer assessment and peer review. These quality management techniques may be considered by the private health care practitioner to be the least threatening of the quality management activities employed in health care. However, peer assessment has not been shown to be a reliable measure of quality of care. Goldman (1992) suggests that this lack of reliability may be a result of assessor bias, subjective assessor forms, lack of calibration of assessors, and a lack of assessors’ skill. Although not suitable as a quality management method on its own, one study suggested that peer assessment or review might be reliable when determining the competence of physicians (Norman, Davis, Lamb, et al, 1993). In this study, a highly complex and staged peer review process was carried out to determine the competence of physicians (Norman, Davis, Lamb, et al, 1993). Although this methodology included a patient record review, a complex evaluation process, and recommendations for education for incompetent practitioners, it only covered the competency aspect of quality management (Norman, Davis, Lamb, et al, 1993). Inclusion of this process may be more useful if incorporated into a quality management program.

One of the most common quality assurance methodologies used in the private practice sector is mandatory continuing education. Typically, the health care professional needs to acquire a specific quantity of points (which are awarded to the registrant following attendance at lectures, conferences relative to the profession in question, and other such activities) to maintain registration. Continuing medical education is typically an honour system since professionals submit information confirming completion of the course work. The practitioner is not
responsible for demonstrating attainment and application of new knowledge nor is the practitioner required to demonstrate quality of service delivery. Several provinces in Canada require dental hygiene registrants to obtain continuing education credits in order to remain licensed or registered. On the surface, mandatory continuing education may appear to be a convenient and acceptable quality assurance mechanism; however, it is important to note that the literature indicates that mandatory continuing education is ineffective for improving the quality of health care delivery (Asadoorian, 2001; B.S. Linn, 1980; Hopkins, Shoemaker, Greenfield, et al, 1980).

However, studies show that continuing medical education may be beneficial if programs are provided in a manner different from the standard (and typical) lecture format. For example B.S. Linn (1980) has demonstrated that an intense information seminar coupled with a manual and feedback to physicians will increase compliance with a clinical practice guideline, which may enhance quality of care. Physicians in an emergency ward received intense education about treating burn patients upon patient arrival to the hospital (B.S. Linn, 1980). A manual containing treatment options for varying degrees of burns in the form of algorithms was also provided (B.S. Linn, 1980). Feedback on performance following a chart review outlined areas where the physician did not follow the algorithm. This study showed that, through intense continuing education strategies, physicians are more likely to adhere to recommendations outlined in an algorithm than physicians who did not participate in the continuing education program (B.S. Linn, 1980). Similar studies evaluating the effectiveness of algorithms also demonstrated that intense education of the algorithm increased physician compliance with the algorithm (Hopkins, Shoemaker, Greenfield, et al, 1980).
Finally, minimum practice hour requirements may be used, as a quality assurance tool, by health care professionals working in the private practice sector. This quality assurance mechanism assumes that quality of care can be maintained if the health care professional meets or exceeds the recommended number of practice hours set by a regulatory authority. In the Province of Alberta, in order for dental hygienists to remain eligible to practice, a minimum of 1000 practice hours are required over a five year period (Asadoorian, 2001). In 2001 the College of Dental Hygienists of British Columbia proposed amendments to its by-laws that would have required dental hygienists in British Columbia to satisfy a minimum of 500 practice hours in addition to the 75 credit hours of continuing education activities over a three year period in order to maintain registration status (Asadoorian, 2001). However, in March 2002 the provincial government rejected this proposal because the government and the CDHBC Board were unable to reach a consensus on specific criteria for establishing practice hour requirements (F. Hubbard, Deputy Registrar of CDHBC, personal communication, November 12, 2002). Although initially minimum practice hour requirements appear to be a logical requirement to ensure professional competence, controversy exists surrounding the determination of the number of hours required to maintain competence (Tu & Naylor, 1996). Controversy also exists about who is qualified to establish the minimum hours needed for competence. In addition, there is some concern that established minimum practice hour requirements are determined arbitrarily, thus lacking scientific evidence to support their utilization as a quality assurance mechanism.

2.3 Summary

There are currently several methodologies employed in health care to measure quality of care provided. Not all of the current methodologies have demonstrated effective quality control of health care delivery. Many have failed to measure adequately quality of care. With limited supporting studies of these methodologies, quality of health care remains questionable. However, techniques to measure quality of care are not without merit. In fact, they may be most
useful to pinpoint various areas of deficiencies which may stimulate learning activities by health care professionals to improve the delivery of health care. The most effective methodologies appear to include the use of clinical practice guidelines and development and maintenance of a quality assurance program (including evaluation of the program).

Quality assurance mechanisms, in order to be effective, must be evaluated for effectiveness, validity, and reliability (Parsley & Corrigan, 1999). A well written, pre-determined plan for such evaluation coupled with education and preparation of those individuals expected to use the quality assurance mechanism may be the most effective way to ensure the activity is appropriate (Al-Assaf, 1995; Thomas, Moore, & Qualls, 1983).

Quality assurance activities must also be acceptable to the health care professional. Options to increase this acceptability include incorporating quality management techniques during professional education. This may foster increased awareness of the need for quality management activities prior to the professional entering the work force. Including quality management techniques at the educational level may also aid in dispelling the commonly held belief that quality management is a punitive activity. Additional options include a non-punitive approach to quality management and using quality management activities as a form of self-assessment to promote professional ownership of deficiencies in health care delivery.

Quality assurance programs and the various activities discussed in this literature review purport to ensure health care professionals provide quality service to those who seek treatment. The benefit of many of the quality assurance activities employed in health care today may be questionable. The lack of reliability and validity testing and lack of quality assurance program
evaluation demonstrate this uncertainty. Quality assurance as a concept needs to address the efficiency of a health care professional as well as the effectiveness of a health care professional (Parsley & Corrigan, 1999).

Further studies are needed to create evidence based quality assurance activities. With further research into quality management and quality management activities, health care delivery may ultimately be grounded in scientific evidence.

2.4 Purpose of the Project

The purpose of this study was to explore the perceptions that British Columbia dental hygienists have regarding quality assurance, continuous quality improvement, and their perceptions of their provision of dental hygiene care according to the 8 CDHBC practice standards (see Appendix B for the 8 CDHBC practice standards). It is anticipated that this study will demonstrate the BC dental hygienist's perceptions of their provision of care in accordance with the practice standards. This study will also explore any barriers that dental hygienists may face when attempting to practice according to the CDHBC practice standards. The number of years a dental hygienist has been practicing may influence the perceptions he or she has about the degree to which he or she applies the practice standards in daily practice. This study will explore this as well. A final topic of interest for this study is the possible correlation of geographical location in which dental hygienists practice and his or her perceptions about the degree to which the dental hygienist practices according to the 8 CDHBC practice standards.
The research questions used included:

Main Thesis Question

In their opinion, what are British Columbia dental hygienists’ perceptions regarding their provision of dental hygiene care in accordance with the 8 CDHBC practice standards?

Research Questions

1. How often do BC dental hygienists consult/review the practice standards as a guide to daily practice?
2. What barriers may prevent dental hygienists from practicing according to the practice standards? What factors impact the way a dental hygienist practices?
3. Is there a link between the geographical location of the dental hygienist and his/her perceptions of his/her provision of dental hygiene care?
4. In their opinion, are BC dental hygienists using the practice standards as a self-evaluation tool to identify strengths and weaknesses in their practice and to help guide continuous quality improvement exercises?
5. As reported by dental hygienists in BC, does the length of time a dental hygienist has been practicing influence the way dental hygiene care is provided?

2.5 Significance of the Study

Because dental hygiene can be considered a profession in its infancy, dental hygiene regulatory bodies are still working with and evaluating various quality assurance mechanisms. These mechanisms vary from province to province and may be influenced to a certain degree by the legislation governing dental hygiene in each province. If dental hygiene continues to evolve and grow as a profession, the quality assurance mechanisms must also grow, evolve, and adapt to the changing face of dental hygiene. In order for dental hygiene regulatory bodies to
successfully develop and implement quality assurance programs, tools, or mechanisms, one may assume that input from dental hygienists is needed. This input could provide dental hygiene regulatory bodies with a baseline of the perceptions that dental hygienists hold regarding quality assurance, practice standards, and other aspects of quality assurance. Research is lacking which explores dental hygienists’ perceptions of quality assurance and quality dental hygiene care.
Chapter 3

Materials and Methods

3.1 Population

The target population consisted of dental hygienists providing clinical dental hygiene services on either a full or part time basis and those dental hygienists currently residing in British Columbia (see below for a full description of inclusion/exclusion criteria). It was felt by the author that clinical dental hygienists could better reflect on the use of the practice standards since the practice standards appear to be largely applicable to clinical dental hygiene practice. British Columbia dental hygienists registered in the Full Registration Category with the CDHBC (see Appendix C for CDHBC Full Registration Category Criteria) appeared to adequately meet the subject inclusion criteria for this study.

According to the College of Dental Hygienists of British Columbia, there were a total of 1868 dental hygienists registered to practice in British Columbia as of March 11, 2004. This figure included those dental hygienists maintaining full registration status even if they were currently practicing outside the province of British Columbia. Of these 1868 dental hygienists, the College noted that 1766 were registered in the full registration category.

3.2 Inclusion/Exclusion Criteria for Study Participants

Inclusion criteria for participation in the study are as follows: currently eligible to practice dental hygiene in the province of BC and registered in the full registration category; currently providing clinical dental hygiene care (in a general/specialist practice or practising independently in a dental hygiene clinic or providing mobile dental hygiene services) on a full time (over 30 hours per week) or part time (minimum of 15 hours per week) basis; living within
geographical boundaries of study (BC); and a willingness to participate in the study. Exclusion criteria are as follows: not currently eligible to practice dental hygiene in BC and not registered in the full registration category; not currently providing clinical dental hygiene care (this includes dental hygienists employed as full time educators, community health dental hygienists and others who may not fall into the so-called usual dental hygiene practice settings). These criteria were chosen because the 8 CDHBC practice standards, although intended to apply to dental hygienists working in a variety of practice settings, appear to more closely apply to those dental hygienists employed in a traditional clinical practice setting (ex private dental clinic).

3.3 Research Design

The design was a cross-sectional, descriptive study. A questionnaire for self-administration was developed by the author. The questionnaire consisted of 4 sections: a) demographics with 7 open and closed questions; b) questions pertaining to perceptions regarding quality assurance knowledge in general (forced choice); c) questions pertaining to perceptions regarding quality dental hygiene care in relation to the 8 CDHBC practice standards including questions pertaining to challenges that dental hygienists may face when attempting to practice according to the standards (forced choice); d) open ended question asking participants for additional information and insights into quality dental hygiene care and quality assurance in British Columbia (see Appendix D for a copy of the questionnaire).

On April 14, 2004 the study proposal was submitted to the UBC Behavioural Research Ethics Board. Approval for the study was granted on May 28, 2004. See Appendix E for a copy of the Ethical Review Board Certificate of Approval.
To help ensure the validity of the questionnaire, a pilot study was conducted in late June 2004. A convenience sample of 5 dental hygienists was chosen to carry out the pilot study. Pilot study subjects were asked to complete the questionnaire and then provide feedback to the author about length of time to complete the questionnaire, general layout of the questionnaire, and readability of the questions. The dental hygienists that participated in the pilot study have a wide range of length of time practicing dental hygiene. Participants in the pilot study also demonstrated a variety of education obtained to date which ranged from a diploma in dental hygiene to a masters degree in education. Upon receipt of and analysis of the pilot study, the author clarified the wording of some questions and refined the layout of the questionnaire. Pilot study participants noted an average time of 40 minutes to complete the questionnaire. Responses from the pilot study subjects were not tabulated in the final results of the study.

Since this study focused on dental hygienists currently registered in the full registration category and currently practicing in British Columbia, permission was sought to obtain mailing labels for only these registrants from CDHBC. Permission was obtained to receive these mailing labels in June 2004 (see Appendix F for written permission from CDHBC to obtain the mailing labels). Upon receipt of the labels, it was determined that a total of 1680 dental hygienists were currently registered in the full registration class and were currently practicing in British Columbia. A sample size of 10% of this population was chosen. This resulted in a sample size of 168 dental hygienists.

Study participants were selected using a table of random numbers which corresponded to the population’s rank order of appearance in the mailing list obtained for use in this study.
The author numbered each registrant in order as his or her name appeared on the mailing labels. Once this was accomplished, a table of random numbers was used to generate the stratified random sample. Each participant was coded with a subject code number and a questionnaire code number. This coding allowed the author an easy way to sort the responses by region for efficient data entry.

The CDHBC electoral districts provided the criteria for the strata used in this study for a total of 5 strata (see Figure 1). In order to select registrants to participate in the study, each stratum provided a 10% sample to complete the required 168 dental hygienists needed for the study. Because mail-out questionnaires are notorious for a poor response rate, the actual number of questionnaires mailed out was doubled (336) in anticipation of a 50% response rate. The number of subjects per stratum was also doubled to reflect the additional questionnaires needed for the initial mailing (see Table 1 for sample size determination). The doubling of the initial sample size allows for spoiled and unusable questionnaires as well as non-responders.
BRITISH COLUMBIA ELECTORAL DISTRICTS

LEGEND:
1 — CARIBOO NORTH
2 — VANCOUVER ISLAND / COAST
3 — LOWER MAINLAND
4 — OKANAGAN
5 — KOOTENAYS
Table 1 Study Population: Breakdown of Participants

<table>
<thead>
<tr>
<th>REGION</th>
<th>TOTAL # REGISTRANTS IN REGION</th>
<th>10% OF TOTAL IN REGION (SAMPLE SIZE)</th>
<th>FINAL SAMPLE SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cariboo North</td>
<td>134</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>2 Vancouver Island/Coast</td>
<td>360</td>
<td>36</td>
<td>72</td>
</tr>
<tr>
<td>3 Lower Mainland</td>
<td>907</td>
<td>91</td>
<td>182</td>
</tr>
<tr>
<td>4 Okanagan</td>
<td>221</td>
<td>22</td>
<td>44</td>
</tr>
<tr>
<td>5 Kootenays</td>
<td>58</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>TOTALS</td>
<td>1680</td>
<td>168</td>
<td>336</td>
</tr>
</tbody>
</table>

Since the summer months prove to be a busy time for many individuals, the sample population was chosen in June/July of 2004 in preparation for questionnaire mail-out in August 2004. Consent to participate in the study was assumed if the registrant completed and mailed in the questionnaire. The questionnaire (see Appendix D), cover letter/consent letter (see Appendix G), a self-addressed, stamped return envelope, CDHBC electoral districts boundary map (see Figure 1) and a copy of the 8 CDHBC practice standards (see Appendix B) was first mailed to the stratified random sample of dental hygienists in August of 2004. The boundary map was included to aid participants in identifying his or her region of residence. This identification was needed so that a link, if any, could be established between geographical location of the dental hygienist and perceptions of degree of adherence to the practice standards. It was also decided to include the 8 CDHBC practice standards in the initial mailing so subjects could refer to the standards as they completed the questionnaire. Participants were asked to complete and return the questionnaire within 2 weeks (September 5, 2004). A reminder postcard was sent to all subjects at the conclusion of the 2 week deadline (September 5, 2004). A response rate of 37.5% was achieved (126/336). Of those 126 dental hygienists who responded, 108 met the inclusion
criteria for the study. The remaining respondents did not meet the inclusion criteria (17 questionnaires) or submitted a spoiled questionnaire (1 questionnaire). See Table 2 for a summary of response rate by region and total response rate.

Table 2 Response Rate by Region

<table>
<thead>
<tr>
<th>REGION</th>
<th># REGISTRANTS SELECTED FOR STUDY</th>
<th># REGISTRANTS RESPONDED</th>
<th>RESPONSE RATE (in %)</th>
<th>NUMBER OF REGISTRANTS WHO MET INCLUSION CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cariboo North</td>
<td>26</td>
<td>10</td>
<td>38.5</td>
<td>8</td>
</tr>
<tr>
<td>2 Vancouver Island/Coast</td>
<td>72</td>
<td>30</td>
<td>41.6</td>
<td>24</td>
</tr>
<tr>
<td>3 Lower Mainland</td>
<td>182</td>
<td>65</td>
<td>35.7</td>
<td>59</td>
</tr>
<tr>
<td>4 Okanagan</td>
<td>44</td>
<td>15</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td>5 Kootenays</td>
<td>12</td>
<td>6</td>
<td>50.0</td>
<td>6</td>
</tr>
<tr>
<td>TOTALS</td>
<td>336</td>
<td>126</td>
<td>37.5</td>
<td>108</td>
</tr>
</tbody>
</table>

3.4 Data Analysis

The degree to which dental hygienists perceive they are practicing according to the standards are summarized using pie charts. Bar charts and tables summarize demographic information and challenges that dental hygienists may face when attempting to provide care in accordance with the 8 CDHBC practice standards.

The relationship between the length of time a dental hygienist has been practicing and the degree to which he or she perceives he/she practices according to the standards was investigated. A Spearman’s rank correlation test was used to evaluate this association. The Spearman’s rank correlation test was used to determine this relationship since the data do not meet the
assumptions to conduct a Pearson’s $r$ correlation test (Coakes, 2005). The Spearman’s rank is “the non-parametric alternative to [the] parametric bivariate correlation (Coakes, 2005, p. 218). A summary of the significant findings is presented. Complete data tables are contained in Appendix H.

The association between geographical location and the overall measure of perceptions of adherence to practice standards was evaluated using a Kruskal-Wallis test. The Kruskal-Wallis test was used to determine this relationship as it looks for differences in responses for two or more groups, such as those dental hygienists residing in different geographical locations (Coakes, 2005). A summary of the significant findings is presented. Complete data tables are contained in Appendix I.

Data was analyzed using the SPSS Graduate Pack version 13.0 for Windows.
Chapter 4

Results

When the questionnaire was sent to the selected registered dental hygienists, the author assumed that the respondents would interpret the questions to mean "on an as needed basis". The results of the mail-out questionnaire are summarized in Tables, Bar Charts, and Pie Charts below. A discussion of these results is provided in further detail in Chapter 5. Conclusions, recommendations and future considerations as a result of this study are provided in Chapter 6.

4.1 Demographic Information

The participants in this study obtained his/her dental hygiene credential from a variety of schools and institutions in Canada and the United States. Year of graduation from a dental hygiene program ranged from 1966 to 2003. 78.7% of respondents indicated that their highest level of education to date is their diploma in dental hygiene while 18.5% had obtained a bachelors degree (in various fields) with 2.8% earning a masters degree and no respondents stated that they had obtained a PhD. 71 out of 108 respondents stated that they were currently working full time with 35 working part time. One respondent works part time in a dental practice and part time in a self run dental hygiene clinic. One respondent is currently on maternity leave but usually works full time in clinical practice. The majority of respondents work in a general dental practice office (91.7% of respondents) with the remaining 8.3% or 9 respondents working in a speciality practice. One dental hygienist did not specify the area of specialization, 6 respondents work in a periodontal practice and one respondent works in a prosthodontic office. The remaining dental hygienist who reported working in a speciality practice stated that work time was divided between a regular dental clinic and a self run dental hygiene office. The majority of dental hygienists participating in the study are between the ages
of 35 and 49 years old (53.3% of respondents). 32 respondents are between the ages of 25 and 34 years, one is under 25 years old and 17 are aged 50 or older. Table 3 and Figures 2 and 3 summarize the demographic information of the study participants. This demographic information was not determined for the selected subjects who did not participate in the study.

Table 3 Place of graduation from a dental hygiene program

<table>
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<tr>
<th>Location</th>
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<tr>
<td>Canada</td>
<td>46</td>
</tr>
<tr>
<td>United States</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
</tr>
</tbody>
</table>
Figure 2 Highest level of education to date

highest level of education to date

Percent

80
60
40
20
0

dental hygiene diploma
bachelors degree
masters degree

highest level of education to date
Figure 3 Geographical Location

The diagram illustrates the geographical location distribution across various regions:

- Cariboo North
- Kootenays
- Lower Mainland
- Vancouver Island/Coast
- Okanagan
4.2 Perceptions Pertaining to Quality Assurance

Part II of the questionnaire asked participants about their general knowledge regarding quality assurance. This information is important as background knowledge of and in quality assurance may dictate the respondents' perceptions on the importance of following quality assurance protocols. This section of the questionnaire also asked respondents about their perceived use of the 8 CDHBC practice standards as a quality assurance tool to improve practice. As can be noted from the pie charts below, the majority of respondents indicated that they are familiar with the terms quality assurance and feel that quality assurance is one way to remain current in dental hygiene practice. The majority of respondents also indicated that the practice standards and practice standards policies were helpful and effective in determining areas of practice that require improvement.

Participants were also asked how frequently they refer to the practice standards for day to day guidance of dental hygiene practice. Most respondents indicated that they refer to the standards annually or more frequently. However, there is a large portion of respondents who refer to the standards only once every 2-5 years and those who never refer to them.

A final area of interest for Part II of the questionnaire was to determine in which continuing competence activities dental hygienists participated to improve noted areas of dental hygiene practice. Most respondents indicated a variety of activities were used to enhance and improve practice (data not shown) with the most popular activity being continuing education lectures followed by participation in study clubs.
Figure 4 Purpose of Quality Assurance

Figure 5 Quality Assurance Helps DH Remain Current
Figure 6 Able to Define Quality Assurance

Figure 7 Practice Standards Effective QA Tool
Figure 8 PS Policies Helpful to Interpret PS

Figure 9 PS Help Identify areas Needing Improvement
Figure 10 Most Helpful Activities

Continuing Ed Lectures
Hands on workshops
Professional conferences
Study clubs
Self-directed
Journals
Distance/Online courses
Other
No response

Figure 11 Refer to Practice Standards

Monthly
Quarterly
Annually
Once every 2-5 yrs
Never
No response
4.3 Perceptions Pertaining to Practice Standard Adherence

Part III of the questionnaire deals specifically with the 8 CDHBC practice standards and queries the participant on his/her perceptions of how frequently he/she feels they are practicing according to the standards. Each practice standard, and the accompanying practice standard policy statement(s), will be discussed individually with the results of the study presented and summarized using pie charts. As noted in the CDHBC Registrant’s Handbook, each practice standard and policy statement(s) include the words “must” or “may”. Those statements noted as “must” are the basis for minimum practice standards while “may” statements “are a recommended standard of practice, but discretionary” (CDHBC Registrant’s Handbook).

**Practice Standard 1**

A dental hygienist must obtain informed consent from the client or the client’s representative before initiating dental hygiene care.

**Policy Statement**

1.1 Dental hygienists must obtain informed consent from the client or the client’s representative before providing any services, by physical indication or verbal statement, following applicable laws. (see the following policies in Tab 7: Informed Refusal to Consent, Consent of Minors to Treatment, and the summary of BC's New Adult Guardianship Laws).

As can be determined by the Figures 12-14, dental hygiene registrants use a variety of methods to obtain informed consent from his/her client and/or the client’s representative. The most common method of obtaining informed consent is by way of a verbal indication. Some respondents indicated that they presume informed consent if the client presents for his/her dental hygiene appointment.
Figure 12 Physical

Figure 13 Verbal

Figure 14 Verbal and Physical
PRACTICE STANDARD 2

A dental hygienist must practice safely.

Policy Statement

2.1 When contacting blood or saliva, dental hygienists must practice recognized infection control as outlined by current resources as amended from time to time (refer to Health Canada - Centers for Disease Control, "CDC Infection Control Guidelines for Dentistry", and "Recommendations for Implementation of Infection Control Procedures" by the Canadian Dental Association).

Since this policy is a minimum practice standard that requires all dental hygienists to use current recognized infection control procedures, it was anticipated that all respondents would respond "always" to this question. A small portion of individuals indicated that they "usually" practice this way. Further study is needed to determine why a dental hygienist would not always practice current methods of infection control when blood and saliva are contacted.

Figure 15 Infection control
2.2 Dental hygienists must protect the client. In a clinical setting this should include:

- Draping the client with a lead apron and thyroid collar during exposure to x-rays; and
- Providing safety glasses for the client if there is any danger from splatter or materials; and
- Providing hearing protection for the client if he/she is sensitive to the noise of practice setting equipment.

Client safety is paramount to establishing a trusting, caring relationship between dental hygienist and the consumer of health care. This policy statement ensures that the client is not exposed to scatter radiation when radiographs are needed and that the client is protected from vision and hearing contamination when appropriate. In the pie charts depicted below, most dental hygienists use a lead apron when radiographs are needed and most provide safety eyewear. The one area where dental hygienists lack in minimizing contamination is where hearing protection is concerned. Many respondents indicated that they do not provide their clients with hearing protection if their client is sensitive to noises of the practice environment (ex ultrasonic scaler).

![Figure 16 Lead apron](image-url)
2.3 Dental hygienists must use potentially hazardous materials (such as radiation and disinfectants) safely, according to manufacturers' recommendations and government guidelines (refer to the Workplace Hazardous Materials Information System (WHMIS) guidelines and sections 8 and 9 of Health Canada's, "Safety Code 30" document).
The final 2 policies pertain to dental hygienists who own their own practice. Since policy statement 2.5 was only in draft form when this research was conducted, no question pertaining to this issue was included in the questionnaire. The majority of respondents do not own a dental hygiene practice, so the bulk of the responses for this statement is largely "not applicable".

2.4 When dental hygienists own their practice, dental hygienists **must** store and dispose of potentially hazardous wastes and materials safely, according to government guidelines (refer to the Workplace Hazardous Materials Information System (WHMIS) guidelines).

2.5 When dental hygienists are responsible for radiography equipment, dental hygienists **must** comply with all aspects of the Radiation Protection Program.
PRACTICE STANDARD 3

A dental hygienist must assess the client's needs.

Policy Statement

3.1 Dental hygienists must collect baseline assessment data as appropriate for the client (or supplement data collected by another health professional), and update the data as required. In a clinical setting, this should include:

- demographic information
- the client’s concerns, if any
- medical and dental history information
- vital signs, if indicated
- head and neck examination data
- intra-oral soft tissue examination data
- periodontal examination data
- dental and occlusal examination data that impacts on health
- diagnostic results/interpretations (e.g. from radiographs, bacterial and enzyme tests, etc)
• oral hygiene routines and techniques
• the client's anxiety and pain levels.

The questions pertaining to this standard on the questionnaire followed the aforementioned bullets outlined in the standard. Since dental hygienists are required (as needed) to collect and/or modify existing client information, some variability was expected. However, those dental hygienists who responded that they rarely/never collected such information may need to review the practice standard to ensure that they have interpreted the standard correctly and that they are collecting sufficient client information to form a complete, legal document in addition to providing the minimum standard care as outlined by the CDHBC practice standards.
• Always
• Usually
• Occasionally
• Rarely/never

Figure 25 Head/neck exam

• Always
• Usually
• Occasionally
• Rarely/never

Figure 26 Intraoral soft tissue exam
Figure 27 Periodontal exam

Figure 28 Dental exam

Figure 29 Occlusal exam
Figure 30 Diagnostic

Figure 31 Oral Hygiene

Figure 32 Client anxiety/pain
PRACTICE STANDARD 4

A dental hygienist must analyze the assessment information and make a dental hygiene diagnosis.

Policy Statement

4.1 Dental hygienists must establish a dental hygiene diagnosis by interpreting the dental hygiene assessment findings and discussing the implications of the findings with the client or the client’s representative. In a clinical setting this should include the implications of conditions that are abnormal or unhealthy, and conditions that require special care.

Participants were asked about their perceptions of the frequency of establishing a dental hygiene diagnosis, how often they discussed the implications of these findings with their clients, and how often they discussed abnormal or unhealthy conditions with their clients. As part of the record keeping process, respondents were also asked how often they recorded this information in the client’s chart. This documentation question was included with this statement as it would provide a frame of reference for the dental hygienist when responding to the questions regarding dental hygiene diagnosis. The curious results for this practice standard included those individuals who responded that they rarely/never established a dental hygiene diagnosis, yet all respondents indicated that they discuss the implications of his/her findings, including abnormal or unhealthy conditions and all respondents indicated that they record the dental hygiene diagnosis as well as the implications and findings of the assessment.
Figure 33 Establish DH Diagnosis

Figure 34 Discuss Implications

Figure 35 Discuss abnormal/unhealthy findings
4.2 Dental hygienists may determine short and long-term dental hygiene prognoses. This portion of the policy statement was not investigated in this study.

**PRACTICE STANDARD 5**

A dental hygienist must plan for the dental hygiene care to be provided, based on the assessment data and dental hygiene diagnosis.

**Policy Statement**

5.1 Dental hygienists must endeavor to integrate the dental hygiene treatment plan with the dentist's plan for the client's comprehensive dental care.

Respondents were asked to indicate how frequently they perceive to integrate all aspects of their assessment findings within their own dental hygiene care plan and within the dentist's care plan so that comprehensive dental and dental hygiene care may be provided. Although the majority of respondents indicated that they integrate their dental hygiene plan with the dentist's plan for care (as can be seen below), there is a portion of dental hygiene practitioners who indicated that they do not do this. Further study is required to determine why this may be so.
5.2 When indicated, dental hygienists must consult with the client’s dentist, and may consult with other applicable health care providers, in order to integrate the plan for dental hygiene services into the client’s total health care plan.

Dental hygienists work in tandem with dentists so that the client may receive comprehensive dental care. The above CDHBC practice standard policy statement suggests that this is the minimum required of all registered dental hygienists in the province. Some respondents in this study indicated that they do not consult with the client’s dentist when formulating a care plan in order to meet the criteria outlined in the standard. It is also recognized
that dental hygienists may, from time to time, require information from another health care (HC) professional so that optimum dental hygiene care may be provided in a safe, effective, efficient, and ethical manner. With the changing population demographics and an increasing number of individuals with disabilities presenting themselves for routine dental care in a private dental clinic setting, one would expect that there would be significant numbers of dental hygienists consulting other HC professionals on a regular basis. As demonstrated by the results of this study, there are still dental hygiene practitioners who do not consult with other HC professionals. Further study is needed to determine why these consultations are not taking place.

![Figure 39 Consult client's Dentist](image)

![Figure 40 Consult other HC providers](image)
5.3 Dental hygienists **must** discuss the dental hygiene plan for services with the client or the client’s representative. In a clinical setting this **should** include:

- oral health and wellness information and techniques
- treatment options
- pain and anxiety control options
- the number of appointments recommended
- the recommended time interval between appointments
- services to be provided at each appointment
- short-term goals that could result from the recommended services and how they will be evaluated
- risks of the recommended services
- recommendations for future referrals to dentists and other health care providers, if applicable
- risks of the client declining the recommended services.

Dental hygienists need to be informing their clients of all risks associated with treatment and the risks associated if they do not proceed with treatment. In this study, not all dental hygienists inform their clients of the risks of recommended services or risks of not proceeding with recommended services. Dental hygiene may be considered a referral profession. It is often (if not always) recognized that there are certain oral conditions that a client may present with that requires care that is beyond the scope of practice for a dental hygienist, thus necessitating a referral to a dentist or other health care (HC) professional. In this study, not all dental hygienists indicated that they refer their clients to a dentist or other health care professional.
Figure 41 Oral health and wellness

Figure 42 Treatment options

Figure 43 # appointments
Figure 44 Time Interval

Figure 45 Services

Figure 46 Short term goals
Figure 47 Evaluate short term goals

Figure 48 Risks of rec'd services

Figure 49 Referrals
5.4 Dental hygienists may discuss long-term goals with the client or the client’s representative including evaluation of the goals.

The discussion of long term goals may be important as goal setting is one motivator and may drive behaviour change, which may ultimately affect the outcome of dental hygiene care once these goals are articulated to the client. Although the practice standard policy indicates that the dental hygienist may discuss long term goals, this study indicated that most respondents are carrying out these conversations with their clients.
5.5 Dental hygienists may discuss fees associated with the plan.

The discussion of fees is important as fewer people have comprehensive third party coverage (i.e., dental insurance) to pay for dental services. These individuals are responsible for covering the costs of dental and dental hygiene care as an out of pocket expense and if they are informed of fees associated with treatment they may adequately budget their resources to include health care. Dental hygienists could provide information for their clients regarding fees for recommended dental hygiene therapy as part of care provision. A large portion of dental hygienists in this study indicated that discussing fees associated with dental hygiene care was not always carried out. Some respondents indicated that the dental receptionist in the office is responsible for discussing and collecting fees for all dental services.
PRACTICE STANDARD 6

A dental hygienist must implement the plan consented to or adjust the plan in consultation with the client or the client's representative.

Policy Statement

6.1 Dental hygienists must attempt to reduce a client's anxiety and, if indicated for the provision of clinical services, offer pain control.

Dental hygiene therapy, for some clients, is a painful experience. All registered dental hygienists in the province are required to obtain the skill to provide local anesthesia for their clients, on an as needed basis. This study targeted all dental hygienists currently registered in the full registration category with CDHBC (see Appendix C). This means that all respondents have the ability to provide this service for their clients (some registrants may be in the conditional category, in which case they may have re-located to British Columbia and may not yet have obtained the knowledge or skill to administer local anesthesia). As indicated by this study, the minority of respondents indicated that they do not always offer pain control measures for their clients, when needed.

Figure 53 Pain control
6.2 Dental hygienists **must** discuss, as the plan is implemented, any proposed changes to the plan (based on client response or evaluation of services), and again obtain informed consent.

For this standard, it was important to first determine if the registrant carries out all services provided in the original care plan. This provides some background information for how the participant may be expected to respond to the additional questions regarding modifications of the care plan. Most respondents indicated that they always or almost always provide all the care as outlined in their care plans.
Figure 56 Consult prior to adjusting plan

Figure 57 Re-obtain informed consent
PRACTICE STANDARD 7

A dental hygienist must evaluate while dental hygiene care is being provided and at the completion of care.

Policy Statement

7.1 At the completion of the planned services, dental hygienists must explain to the client the need for any follow-up or maintenance dental hygiene care and recommend a time interval to the next dental hygiene appointment or meeting.

Figure 58 Provide all services as outlined in care plan

Figure 59 Discuss outcome of DH services
Dental hygienists were also asked what methods they use to evaluate dental hygiene therapy. A list of potential methodology was presented from which to choose as well as an additional category for the respondent to write in a method of evaluation not already on the list. The majority of dental hygienists used observation most often as an evaluation tool. Some used client satisfaction questionnaires and some used dental indices. The majority of respondents also indicated that they use a combination of methods to evaluate the outcome of dental hygiene therapy. Table 4 summarizes these findings.

<table>
<thead>
<tr>
<th>Tool used</th>
<th>Observation</th>
<th>Questioning</th>
<th>Dental indices</th>
<th>Verbal/written client satisfaction questionnaires</th>
<th>Radiographs</th>
<th>Evaluate home care</th>
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</thead>
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<td>105</td>
<td>47</td>
<td>22</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 4 Summary of tools used to evaluate dental hygiene treatment

Figure 60 Explain follow up
7.2 Dental hygienists must, if indicated, recommend referral to dental and other applicable health care professional(s).
PRACTICE STANDARD 8

A dental hygienist must document the dental hygiene care provided, following protocols of the practice setting.

Policy Statement

8.1 Dental hygienists must label all client records with the client’s name and the date.

This policy statement was not directly evaluated in this study. Rather, information pertaining to the remaining policy statements (8.2-8.6) was gathered.

8.2 Dental hygienists must record accurate details of the dental hygiene care provided, including:

- baseline assessment data
- an interpretation of dental hygiene assessment findings (or a dental hygiene diagnostic statement)
- a plan for services, particularly if the client needs or desires more than one appointment
- notes about the services provided (in a clinical setting this would include pain control method(s) used and the type and amount of any agents used)
- amount of time spent with the client, when appropriate
- evaluation findings and next appointment planning details
- precautions and instructions given (if any)
- possible risks (if any) of services planned and of not receiving the recommended services
- recommended referrals.
Figure 63 Baseline findings

Figure 64 DH assessment findings/
DH diagnostic statement

Figure 65 Plan for services
Figure 69 Next appointment

Figure 70 Precautions/instructions

Figure 71 Risks
8.3 Dental hygienists **must** make legible and objective record entries, preferably in ink, initial or sign entries and corrections, and make corrections so that the original entry is still legible.
Figure 74 Initial/sign all entries

Figure 75 Original entry legible if corrected

Figure 76 Corrections signed/initialed
8.4 Dental hygienists **must** record details of pertinent discussions and communications with the client, and maintain copies of correspondence.

Figure 77 Record discussions/communication

- Always
- Usually
- Occasionally
- Rarely/never

Figure 78 Maintain copies of correspondence

- Always
- Usually
- Occasionally
- Rarely/never
- Not applicable
8.5 Dental hygienists must document and initial the client’s informed refusal to consent to any recommended aspect of care (the client may give a physical indication or verbal statement of refusal).

![Figure 79 Refusal for care](image)

8.6 When the dental hygienist owns the client's records, dental hygienists must retain records in a secure manner for no less than 10 years after the last client appointment.

![Figure 80 Retain records](image)
4.4 Challenges

Study participants were asked to identify any barriers they may experience when providing dental hygiene care in accordance to the 8 CDHBC practice standards. The literature on quality of care in health care showed that issues of quality, or rather, lack of quality care may be attributed to several common issues. These issues include a lack of time to provide adequate care, a lack of continuity of care (eg several care providers), insufficient resources for adequate care delivery, expectations of employers, and lack of quality educational programs available to health care providers to improve service. These issues were incorporated into the questionnaire to gain a better understanding of the issues facing BC dental hygienists when providing clinical services. 34% of respondents indicated that they did not have enough time allotted to provide quality care. 6.6% did not know if they had enough time while 59.4% stated that they were provided sufficient time. Most respondents (76.4%) did not feel that the issue of continuity of care had an impact on care delivery while 17.9% felt that this was an issue and 5.7% were unsure. 14.2% of respondents agreed that they had insufficient resources to provide the type of care they wanted to provide to his/her clients. The most common resource that was lacking was an adequate charting system. Respondents noted that the system currently used in his or her office was out of date, did not provide adequate space for probe readings and/or there was no space for probe readings. Other issues noted were poor quality equipment, minimal hygiene supplies (ex toothbrushes, oral hygiene aids), and inability to obtain hygiene instruments when needed. Some respondents also noted that the dentist employer was not willing to supply needed items for the dental hygienist.

Employer expectations shape the way a dental hygienist practices. This is unavoidable in an employer/employee relationship. 9.3% of respondents agreed that his/her dentist employer
expected him/her to practice differently than required by the 8 CDHBC practice standards. 9.3% were unsure and 81.3% did not agree that their dentist employer expected them to practice differently than required by the practice standards.

19.6% of respondents stated that they encounter barriers when attempting to access quality continuing education/continuing competence programs. 4.7% were unsure and 75.7% did not feel that there were any barriers preventing them from accessing quality continuing education programs. Of those 19.6% who identified barriers, the most commonly noted barrier was cost of the program, cost of travel and accommodation to attend the program. Other common issues included time conflicts with family and work, variety and availability of courses, and conflicts with the dentist employer about the benefit of attending such a program.
Figure 81 Not enough time

not enough time for each client

Percent

agree not sure disagree

not enough time for each client
Figure 81 Not enough time

not enough time for each client

Percent

agree  not sure  disagree

not enough time for each client
Table 5 Barriers when attempting to access CE courses

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Table 6 Dentist employer expects different practice than required

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Table 7 Insufficient resources

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<th>Valid Percent</th>
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Table 8 Lack of continuity of care

<table>
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<th>Valid Percent</th>
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<td>agree</td>
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</table>

4.5 Relationship between Year of Graduation from a Dental Hygiene Program and perceived adherence to the standards

A Spearman’s rank correlation was used to determine the relationship between the length of time a dental hygienist has been practicing and the degree to which he or she perceives that he/she practices according to the standards. This was performed for only Part III of the questionnaire (those questions which relate directly to the 8 CDHBC practice standards and practice standards policies). The average length of time that subjects have been practicing is 13.5 years with a range of 1 year to 38 years. Only the significant results of the Spearman’s Rank Correlation are provided. All data tables can be found in Appendix H.

Part III B: Practicing Safely

For this part of the questionnaire, there were only 2 instances where a significant association was found between the length of time a dental hygienist has been practicing and his/her perceptions of adherence to the practice standards. A negative relationship was found when asked how often the dental hygienist provided safety eyewear for their client (p<.05) and when participants were asked if they used hazardous materials according to manufacturer’s directions (p<.05). Although an association was found, this link is rather weak as indicated by the Spearman’s correlation (-.230 and -.226, respectively).
Part III C: Data Collection

As in Part B above, there were only 2 instances where an association was found between the 2 variables. These instances included a link between the year of graduation of a dental hygienist and how often he/she collects a client’s concerns and how often they collect a medical and dental history for their clients (both p<.05). However, also as in Part B above, the results indicate that there is a weak negative association (Spearman’s correlation: -.221 and -.199, respectively).

Part III D: Dental Hygiene Diagnosis

When looking at how long a dental hygienist has been practicing and how often he/she records a dental hygiene diagnosis, it was expected that there may be a significant result since theories in dental hygiene change as new information is obtained in the profession. Although no significant finding was found when dental hygienists were asked how often they develop a dental hygiene diagnosis and the amount of time they had been practicing, there was a significant, although weak, negative finding (Spearman’s correlation: -.222) when looking at how often the dental hygienist records the dental hygiene diagnosis and the discussion and implications surrounding the diagnosis and how long the dental hygienist has been practicing (p<.05).

Part III E: Dental Hygiene Care Plan

There were three components of the care plan process which were identified as being significantly linked to the length of time a dental hygienist has been practicing. These include how often the dental hygienist integrates assessment findings and the dental hygiene diagnosis into the care plan (p < .05; Spearman’s correlation: -.199), how often the dental hygienist discusses treatment options (p < .05; Spearman’s correlation: -.197), and how often the registrant discusses the recommended number of appointments needed to complete dental hygiene therapy
Although these are statistically significant results, the correlation is a negative weak one and cannot reliably indicate that the year a dental hygienist graduated affects the degree to which the registrant perceives that he/she practices according to the standards.

Part III F: Implementation of Dental Hygiene Care

It is not uncommon for dental hygiene care plans to be modified during the course of treatment. According to the standards set by CDHBC, the dental hygienist must inform the client of the proposed changes and then re-obtain informed consent from the client. In this study, there was a significant association between how often the dental hygienist re-obtains informed consent (if the dental hygiene care plan needs modification) and how long the dental hygienist has been practicing ($p = .004$).

Another area of significant association and the year the dental hygienist graduated is when pain control is needed. Dental hygienists in this study vary in how often they offer pain control to their clients with the length of time they have been practicing ($p < .05$).

Part III H: Documentation

When looking at documentation practices of dental hygienists in BC according to the CDHBC practice standards, there were several areas where a significant association was found between the length of time a dental hygienist has been practicing and the policies laid out for minimum best practice.
When registrants were asked how often they recorded notes of services provided, there was a significant association between their response and how long he/she have been practicing (p < .05). There was also a significant association between how often a participant indicated they entered information in the client’s chart in ink and how long they have been practicing (p < .05).

As part of good practice, dental hygienists are required to sign or initial any corrections they make in the chart. There was a significant association between how often they indicated they performed this task and the length of time they have been practicing (p = .006).

For legal purposes and to maintain continuity of care, dental hygienists must record pertinent conversations and communication they have with their client in the client record. In this study, how long a dental hygienist has been practicing was significantly associated with how often they perform this task (p = .000).

All of the above results indicated a statistically significant, negative association between perceived adherence to the standards and the length of time a dental hygienist has been practicing. This negative association means that the longer the dental hygienist has been practicing, the less he/she practices according to the standards. Some statistically significant results can be expected in a study of this nature due to the quantity of questions posed. The minimal statistically significant results obtained cannot definitively demonstrate that the year of graduation from a dental hygiene program significantly affects how a dental hygienist provides care in BC.
4.6 Relationship between Geographical location of the dental hygienist and perceived adherence to the standards

Due to differences in access to resources, one could presume that dental hygienists may present differences in adherence to the standards depending on where in the province they practice. A Kruskal-Wallis test was used to determine the association between geographical location of the dental hygienist and his/her perceptions of his/her adherence to the standards. Only the significant results are discussed. All data tables for the Kruskal-Wallis can be found in Appendix I.

Part III A: Informed Consent

As noted in the practice standard policy statement for this practice standard, dental hygienists may obtain informed consent in a variety of methods. There was a significant association between geographical location and when dental hygienists obtained informed consent by way of a combination of physical and verbal indications ($p < .05$).

Part III B: Practicing Safely

Practicing safely encompasses many components, as previously noted. In this study, the only significant interaction between geographical location and aspects of practicing safely was found when the dental hygienist was asked how frequently they store and dispose of hazardous wastes and materials according to government guidelines ($p < .05$).

Part III C: Data Collection

Of all the aspects of data collection, only one significant link between geographical location and how frequently the dental hygienist practiced according to the standards was noted.
This included how often the registrant collected information pertaining to the dental exam \( (p < .05) \).

**Part III E: Dental Hygiene Care Plan**

One aspect of forming the care plan \( (\text{discussion of fees}) \) was found to be significantly associated with where in the province the dental hygienist provided dental hygiene care \( (p = .05) \).

**Part III H: Documentation**

One significant area of the documentation process \( (\text{recording a client’s refusal for care}) \) was linked to the geographical location of the dental hygienist \( (p < .05) \).

Due to the sheer volume of questions asked of study participants, it would not be unexpected to find some statistically significant results when determining if a link existed between geographical location and perceived adherence to the practice standards. In this study, the few areas noted above of significant associations cannot reliably indicate that geographical location is a contributing factor which greatly affects the practice of dental hygiene in BC.
4.7 Additional Comments Pertaining to Quality Dental Hygiene Care and Quality Assurance in British Columbia

Participants were asked to comment on quality dental hygiene care and quality assurance in British Columbia. Several respondents provided feedback. The comments were typed and then reviewed for common themes. The largest roadblock to quality dental hygiene care appeared to be lack of time for registrants to complete necessary tasks to his/her desired level of quality. For example, Respondent 092 from Vancouver Island/Coast states:

I believe that limited time is the biggest contributing factor in preventing the best dental hygiene treatment possible and that given more time, most hygienists would be able to practice following the guidelines.

Dental hygienists participating in this study also felt that their efforts to provide high quality care are stymied by his/her dentist employer. Respondent 212 in the Lower Mainland comments:

...[w]e know, are trained and educated to provide better service, but are often stone-walled by lack of time, resources (equipment, assistant to chart), and the dentist’s wishes.

An additional theme that seemed to be prominent in the responses of the dental hygienists included a call for standardization of charting. Participants in the study indicated that a CDHBC devised template for proper charting would be beneficial to help guide and standardize dental hygiene care.
Chapter 5

5.1 Discussion

This study demonstrated that the majority of dental hygienists (who responded to this questionnaire) in British Columbia believe that they are practicing in accordance with the 8 CDHBC practice standards. This is evidenced by the number of respondents who indicated that they always or usually provide care as outlined by the standards. Those dental hygienists who indicated that they, in their opinion, occasionally or rarely/never provide care in accordance with standards were in the minority. The variations in responses in this study indicate that all registrants may not be using the practice standards as a tool to self-evaluate daily clinical practice. This variation may also indicate that some registrants do not perceive the importance of practicing according to the CDHBC established practice standards. Dental hygienists may not fully understand the practice standard and/or the practice standard policy statements, and, therefore, are not able to indicate that they practice according to these standards. Registrants work in tandem (usually) with other dental health care providers. These other dental health care providers may provide care which overlaps the care required of the dental hygienist as outlined in the standards which could result in a reduced perceived adherence to the standards. The discussion will focus on significant and interesting results of the study. Possible explanations for variations in responses will be provided.

The College of Dental Hygienists of BC is the regulatory body responsible for the safe, ethical, effective and efficient practice of dental hygienists in the province. As a requirement of legislation (The Health Professions Act), the CDHBC was required to establish a continuing competency program to ensure all registrants of the College provide safe, ethical and responsible dental hygiene care. One component of this continuing competency program consists of the use
of practice standards. These standards were formed not only to conform to the requirements of legislation, but to also provide dental hygienists in BC with a tool to self evaluate his/her dental hygiene practice, identify areas requiring improvement, and to seek appropriate educational programs to achieve this improvement. Almost 20 per cent of respondents indicated either that the standards and the policy statements were ineffective and not helpful or they were unsure of the effectiveness and helpfulness of the standards and the policies. One explanation for this could be that these 20 per cent of respondents rarely or never referred to the standards, thus they could not state whether they are effective in daily practice or not. This is comparable to a study conducted by Lomas (1991) to determine the degree to which medical practitioners were aware of consensus statements on practice. That study showed that even with a direct mailing of the statements to the specific health care providers who would be utilizing the consensus statements, only about 40% of practitioners was aware of the statements (Lomas, 1991). Comments inserted by some participants in this study indicated that the practice standards are unrealistic, not user friendly, and are not reflective of true clinical dental hygiene practice, and thus they find them unhelpful and ineffective in improving dental hygiene skills.

As in other health care settings, dental hygienists must obtain informed consent of the patient/client prior to providing care. The CDHBC requires that a dental hygienist obtain informed consent verbally, by way of a physical indication, and/or a combination of these. This study showed that BC dental hygienists used a variety of methods to obtain informed consent from their clients/patients with the most popular method of obtaining informed consent by way of a verbal indication. Although respondents were not asked why they answered a question a particular way or to elaborate on the questions, some respondents felt it was important to clarify their responses. Some dental hygienists indicated that they obtain informed consent from the
client at the beginning of the client/practitioner relationship and then assume that informed consent is given when the client shows up for his/her dental hygiene appointment. Some participants noted that it is inconvenient and cumbersome to obtain informed consent for each and every dental hygiene appointment and provided suggestions that CDHBC re-visit the practice standard to make it more user friendly for clinical dental hygienists.

Quality care usually means that the patient/client (consumer of health care) is in a safe environment to receive this care. Part of creating a safe environment in dental hygiene means the dental hygienist attempts to prevent cross contamination of infection between client and practitioner, between clients, and between dental care practitioners. Because dental hygiene treatment may produce contaminated aerosols, thus presenting a risk of cross contamination, current standards of infection control must be followed to minimize this risk. It would not be unreasonable, then, to assume that all respondents to this questionnaire would respond that they always practice currently recognized infection control procedures. However, the results indicated that a minority of dental hygienists (2.8% of the sample) only usually practice this way. One explanation could be that a certified dental assistant is responsible for disinfecting the treatment room following and/or preceding client care. Another explanation could be that the dental hygienist controls the risk of cross contamination over and above currently recognized infection control procedures.

Safety eyewear for the client could also minimize cross-contamination. Although the majority of respondents indicated that they always or usually provide such a service for their clients, others do not. The reasons for not providing safety eyewear could be many, such as lack
of resources, specific office protocol, allowing the client to use prescription eyewear as a safety barrier, and others.

Another aspect of safe dental hygiene practice could include protecting the client's hearing during the provision of dental hygiene therapy. In dental hygiene practice, it is sometimes necessary for the dental hygienist to use equipment with a high frequency that could potentially cause hearing distress to the patient/client. However, the majority of respondents stated that they rarely/never offer this service. Again, the reasons for this could be many. This could mean that the dental hygienist does not have equipment available which would necessitate the proffering of hearing protection, or, the dental hygienist may lack resources to offer this service to his/her clients. Additionally, the registrant may not perceive the importance of this practice standard or feel that it is an appropriate requirement for the provision of safe dental hygiene care.

Taking radiographs may be a part of any dental hygienist's workday. Current standards of protection for the client suggest that when the client is exposed to radiation, a lead apron and thyroid collar should be used. Most dental hygienists responding to this survey indicated that they use a lead apron and thyroid collar. Some respondents stated that often the thyroid collar gets in the way and they do not use it even if it is available. Some respondents also stated that a thyroid collar is not always available and if it is, it is usually cracked and broken. These results suggest to the author that there may be some misinformation among dental hygiene practitioners regarding the importance of protecting the thyroid gland when exposing the client to radiation. Other reasons dental hygienists may not use a lead apron with a thyroid collar may simply be
that they are not the health care provider responsible for taking radiographs. Often taking radiographs is delegated to a certified dental assistant.

Dental hygienists use potentially hazardous materials in day to day practice. Things such as radiation, as discussed above and disinfection materials are only two examples. Dental hygienists who own their own practice must ensure that they are storing and disposing of potentially hazardous materials safely and according to government guidelines. In this study, 21 hygienists did not respond to this question. This could be due to the fact that they do not own their own practice or they did not understand the question. Of those participants who responded, 71 stated that this was not applicable (ie they do not own their own practice), 1 occasionally followed the guidelines for storage and disposal, and 15 always followed such guidelines and recommendations. For the one dental hygienist who stated that they occasionally followed the guidelines, one must wonder what prevents him/her from always following recommended guidelines. Perhaps there are restrictions on waste disposal and removal within the city which prevents the registrant from always following these guidelines.

Dental hygienists must collect adequate and appropriate data from the client in order to develop a relevant dental hygiene diagnosis and subsequent care plan. This data includes demographic information, medical and dental histories, among others. Some respondents indicated that they do not obtain demographic data for their clients because a dental receptionist or office manager is responsible for obtaining and updating such information. This was also the case when asked if the registrant obtain medical and dental histories.
Most, if not all, dental hygienists learn how to obtain basic vital signs such as pulse, respiration, temperature, and blood pressure for his/her client. The majority of respondents in this study indicated that they rarely/never obtain vital signs in their day to day practice. Some respondents indicated that they did not take vital signs because they lacked adequate equipment to do so. It would be interesting to explore other reasons why dental hygienists do not routinely perform the task of obtaining a client’s vital signs.

Conducting a head and neck exam is a critical part of dental hygiene care. Since many cancers and unusual growths of the head and neck region are only found by dental personnel, it is important for the dental hygienist to be diligent about performing this examination. However, this study showed that the majority of respondents do not routinely screen their clients for such growths in the form of a formal head and neck exam. One explanation for this finding could be that another dental health care worker providing care within the same practice setting is conducting this type of exam.

Another important aspect of dental hygiene care includes the collection of assessment data, including a periodontal exam. In this study, only 79.6% of respondents indicated that they always perform a periodontal exam. While this study did not ask for reasoning behind a respondent’s reply, some participants added comments about why they did not do a periodontal exam. Some indicated that the dentist employer is responsible for doing the exam while others stated that they alternate doing the exam for clients on every other recall appointment. However, no additional comments were provided to explain if these dental hygienists performed a follow-up exam once initial dental hygiene therapy has been completed.
In order for dental hygienists to provide optimum care, they must first establish a dental hygiene diagnosis based on assessment findings. This concept has been stressed more strongly in recent dental hygiene educational programs; however, the concept is not new. Dental hygienists in this study were asked how often they formulated a dental hygiene diagnosis, how often they discuss the implications of their assessment findings with their client, how often they discuss abnormal/unhealthy findings with their client, and how often they record the dental hygiene diagnosis, discussion, and implications. It is interesting that 1.9% of respondents indicated that they rarely/never establish a dental hygiene diagnosis, yet all respondents indicated that they discussed implications of assessment findings, abnormal or unhealthy findings and recorded the dental hygiene diagnosis, the discussion with the client, and implications of the assessment findings. Perhaps those dental hygienists who responded that they rarely/never establish a dental hygiene diagnosis are not consciously aware that they are doing so and form an informal dental hygiene diagnosis following the assessment. Since the term dental hygiene diagnosis is a fairly recent introduction into the scope of practice for dental hygienists, those registrants who have been practicing prior to this introduction may be unwilling to use this term as use of this term was not previously allowed by dental hygiene practitioners. This would make the registrant reluctant to state that they form a dental hygiene diagnosis.

A well thought out and thorough dental hygiene care plan based on data collected and the dental hygiene diagnosis precludes the provision of quality dental hygiene services. There are numerous aspects to a quality dental hygiene care plan. The results of this study indicate a wide variation in how dental hygienists formulate and use a dental hygiene care plan.
One aspect of formulating a dental hygiene care plane includes integrating his/her findings and dental hygiene diagnosis into a care plan. This study showed that the majority of respondents indicated that they always do this. When asked if respondents discussed risks associated with recommended dental hygiene services, the results of this study indicated that dental hygienists vary in the frequency of this discussion. There may be several reasons why a registrant may not always or usually discuss the risks of treatment with their clients. The lack of time during the dental hygiene appointment could be the largest contributing factor. Dental hygienists may feel that they do not have the time to have such discussions and may prefer to carry out dental hygiene therapy to optimize the time they have with their clients. Another reason may be that the registrant is simply unaware that they are required by law to discuss these risks.

Once the dental hygiene care plan has been formulated, the dental hygienist is required to consult with the client’s dentist so that dental hygiene care can be integrated with the total health care plan for the client. Only half of respondents to this study indicated that they always consult with the client’s dentist. One could speculate that an informal consultation may occur between dental hygienist and dentist, thus the dental hygienist may not necessarily view these informal discussions as a consultation per se. If and when the dental hygienist consults the dentist, the next logical step in the care plan process is to integrate the dental hygiene care plan with the dentist’s care plan. Although only half of respondents indicated that they consult with the client’s dentist while the dental hygiene care plan is being formulated, almost all respondents indicated that they always or usually integrate the dental hygiene plan with the total health care plan. This supports the idea that informal discussions may take place between practitioners, yet the dental hygienist may not view the discussion as a formal consultation.
Many clients who frequent dental offices for dental and dental hygiene care also present with other, sometimes complex, health issues. It is imperative that dental hygienists have all the necessary medical information for these clients so that they may provide the best care possible. It is not unreasonable, therefore, to expect the dental hygienist to consult other health care providers (e.g., medical doctors, pharmacists) when formulating the care plan. In this study, only 26.2% of respondents indicated that they always consult other health care professionals. As with all of the other questions in this survey, dental hygienists were asked to respond to the frequency of performing a certain task as needed. It is not implausible that some participants misinterpreted the question and responded inappropriately. Alternatively, it is possible that the registrant does not perceive the importance of consulting with other health care providers. A greater emphasis in dental hygiene education on the importance of interdisciplinary and interprofessional care may be warranted. In addition, dental hygiene practitioners may consult with the dentist regarding appropriate treatment protocols when a medically compromised client presents for dental hygiene therapy.

Dental hygienists are very interested in helping clients achieve, maintain, and improve oral health. As expected, the majority of respondents indicated that they always have oral health discussions with their clients. Once the client’s oral health status has been determined, various treatment options may be available to meet the clients’ needs. The dental hygienist has the responsibility to present these options to the client so the client may make an informed choice (informed consent). It must be stressed that the dental hygienist has the obligation to present all reasonable treatment options to all clients, regardless of perceived financial limitations (e.g., no third-party dental insurance). In discussing such situations with fellow dental hygienists it has
been noted that some practitioners tailor his/her recommendations based on the dental hygienist’s perceptions of the client’s ability to afford such treatment. However, as this study indicated, most respondents indicated that they always or usually provide their clients with treatment options. Some respondents indicated that sometimes there are no options for treatment. This statement was not further explained by the respondents. Did the dental hygienist mean that sometimes there are no options because the client has received all the care possible from the dental hygienist? Or was the statement intended to mean that the client is now facing extractions because of advanced periodontal disease and no further options for treatment are needed? Further clarification of these responses needs to be followed up in additional studies.

The number of appointments needed to complete treatment goes hand in hand with the presentation of treatment options. The client has a right to know how long treatment is expected to take so that a fully informed choice can be made. It is not surprising that this study demonstrated that most dental hygienists always or usually provide this information to his/her clients.

Clients receiving dental hygiene treatment should also receive a suggested time interval for the next appointment or series of appointments. Dental hygienists have an obligation to inform their clients of services rendered at each appointment. Not only does this serve to meet the need for informed consent, it also allows the client to take some control of his or her oral health care by being informed of the progress of treatment. Respondents in this study did not always discuss services provided at each appointment. Only 55.6% of participants stated that they always informed clients of services provided. This could be explained by the time crunch that hinders the provision of quality dental hygiene care as indicated by many respondents. In
addition, it was noted that every attempt is made to follow the standards as much as possible, but, due to limited time with the client, some aspects of care necessarily are not tended to (as is the case with informing the client of services that were performed). This is comparable to the studies conducted by the CDHO on total quality improvement (College of Dental Hygienists of Ontario & Johnson, 2005). A report issued by the CDHO illustrates the need for dental hygienists to have more time to carry out various procedures for their clients (College of Dental Hygienists of Ontario & Johnson, 2005).

As with many other health care procedures, dental hygiene treatment presents with risks to the client. For example, a client may experience temporarily increased bleeding of the gingiva following treatment. Another potential risk is an increase in tooth and tissue sensitivity. It is every client’s right to be informed of these potential risks prior to receiving dental hygiene care. This study indicated that the majority of dental hygienists do not always discuss risks of dental hygiene care with their clients. Only 33.3% of respondents always discuss such risks with their clients. This lack of information exchange could open the door for client complaints and client perceptions of poor dental hygiene care should treatment result in one of the aforementioned risks of care. These potential complaints could perpetuate the general public’s view that dentistry is painful and something that should be avoided unless absolutely necessary. Dental hygienists should be striving to improve dentistry’s image as a whole and dental hygiene’s image specifically so that consumers of health care will seek out preventive dental hygiene and dental services.

Occasionally, clients will decline recommended dental hygiene therapy. When this occurs, dental hygienists must inform the client of the risks associated with not accepting
treatment. Such risks may include further loss of periodontal support and eventual tooth loss. Not all dental hygienists responding to this survey discuss these risks. The reasons could be many. Perhaps they feel uncomfortable providing their clients with such straightforward information. Perhaps they don’t want to be perceived as nagging the client. A lack of time during the dental hygiene appointment to discuss such issues may also be a factor. Follow up studies are needed to determine why a dental hygienist does not always provide care in accordance with the standards (in their opinion).

Dental care is one aspect of health care that is not included in the national health care system. Users of dental treatment must find ways of funding this service on their own. In many cases, clients have third party insurance coverage (dental insurance). In several cases, particularly the elderly of society as well as those who may be marginalized (ex new immigrants) and those who have a disability (physical or mental), dental care may be an unachievable resource since they must pay for services out of their own limited funds. Keeping this in mind, dental hygienists should discuss the fees associated with the proposed treatment plan so that clients may budget for the dental expense, if needed. The minority of respondents in this survey indicated that they always discuss fees associated with proposed treatment, with responses evenly distributed across the scale. Some respondents wrote in additional comments and stated that the receptionist usually provides the client with this information. It could be postulated that some dental hygienists do not feel comfortable discussing fees associated with dental hygiene care. After all, dental hygiene is a health profession and many people who enter into a health profession do so to help people achieve and maintain health. Some dental hygienists may lose sight of the fact that dentistry is also a business which necessitates the collection of fees for
services rendered. Perhaps additional education may help prepare dental hygiene graduates for such discussions.

The ultimate outcome or goal of dental hygiene therapy is to help the client attain, maintain, and improve his/her oral health. To achieve this goal, long term and short term goals need to be set so that the client may observe noticeable improvements in his or oral health care status. Dental hygienists must discuss these goals with the client. As indicated by the respondents in this study, the majority of dental hygienists provide their clients with long term and short term goals all the time or almost all the time. However, fewer practitioners always discussed how the short term goals will be evaluated. Perhaps this is done informally at follow up appointments without the dental hygienist even being consciously aware that they are evaluating the short term goals for the client (thus, they are unable to articulate to the client how the short term goals will be evaluated).

Once all data has been collected, a dental hygiene diagnosis made, and dental hygiene care plan developed, dental hygienists are now fully equipped to provide their clients with dental hygiene services. Quality care, one could argue, necessitates the dental hygienist providing all services as outlined in the original care plan. In this study, participants mostly provided all services outlined in the care plan. Although no reasons were asked to explain why all services were not provided, one could assume that the treatment plan changed to reflect modified needs of the client as treatment progresses. Also, clients may not return for care, thus preventing the dental hygienist from completing all services outlined in the care plan.
Dental hygiene care, in some instances, can be sensitive to the client; therefore, pain control measures (ex local anaesthesia) need to be offered. A small percentage of respondents to this questionnaire indicated that they only occasionally or rarely/never offer their clients pain control measures if needed. One reason for this could be that the practitioner may not feel comfortable providing such services. Another reason could be lack of resources, especially time, to adequately carry out needed dental hygiene therapy. This perceived lack of time could force the dental hygienist to overlook his/her client’s discomfort and carry on with the appointment (without offering or providing pain control) in order to complete the care outlined in the care plan. An additional explanation for those dental hygienists who indicated that they do not offer pain control could be that their dentist employer provides this aspect of care, thus, eliminating the need for the registrant to do so.

Some dental practices may have other measures available to reduce a client’s anxiety while receiving dental hygiene therapy. The measures available vary widely from nitrous oxide sedation to merely providing a blanket and a pillow. When asked if they provide/offer their clients a means to reduce anxiety (other than pain control measures), it was noted that dental hygienists responding to this survey are consistent in always or usually providing their clients with anxiety easing tools.

Once dental hygiene care has been provided, dental hygienists need to evaluate their care to determine if his or her interventions were successful in helping the client improve his/her oral health. Various aspects of the evaluation process are used in dental hygiene practice. These include explaining a need for follow up care to the client, recommending a time interval for the next dental hygiene appointment, referring clients to other health care professionals on an as
needed basis (ex medical doctor to monitor high blood pressure), providing care as outlined in the pre-determined dental hygiene care plan, and discussing the outcome of dental hygiene care. The majority of respondents to this questionnaire always or usually explain the need for follow up, refer to other health care providers, provide care as discussed, and discuss the outcome of dental hygiene care with their clients. This study also showed that dental hygienists use a range of tools to evaluate his/her services which may include observation, questioning, dental indices, use of client satisfaction questionnaires, and other methods. Importantly, all respondents in this study indicated that they performed some form of evaluation of dental hygiene services.

Records form a legal document and provide anyone reviewing a client’s chart the opportunity to learn about that client’s health and dental histories, demographic information, recommended treatment (dental and dental hygiene), treatment provided at a particular dental practice as well as changes in his/her oral health status since attending that dental practice. It is important that dental hygienists maintain appropriate and adequate records so that they may track a client’s oral health changes and adapt dental hygiene care accordingly. This study investigated several detailed aspects of the record keeping process. The results are discussed below.

An important aspect of record keeping is to know what conditions the client presented with at an initial dental hygiene appointment. Dental hygienists should record their interpretation of their assessment findings so that another care provider may be aware of the rationale behind a particular treatment choice/option offered to the client. Once a dental hygienist has formulated a plan of action, it is not unreasonable to expect that he/she will record such a plan should another care provider step in and provide dental hygiene services. This helps maintain continuity of care which can be considered one aspect of quality care delivery. The
majority of dental hygienists in this study also indicated that they always record notes of services provided. More challenging to record, perhaps due to lack of space in the chart, is the amount of time the dental hygienist spends with each client. However, this study showed that a large portion of respondents, 58.9%, always record the amount of time spent with clients. The largest portion of respondents indicated that they always or usually record his/her evaluation findings, the next appointment planning details, and precautions and instructions given to clients.

As with any medical procedure, certain risks are involved with dental hygiene therapy (ex tender gingiva following treatment) as well as risks associated with not receiving recommended dental hygiene care (ex progression of periodontal disease). In this study, only 38% of respondents indicated that they always record this information in clients' charts. Once again, a lack of time and charting space could be preventing the dental hygienist from recording such information.

It is required that dental hygienists record most information in ink in the client's chart. The exception could be periodontal charting, which is sometimes recorded in coloured pencils at some offices. In this study, 97.2% of respondents indicated that they always record information in ink. Although this study did not seek to investigate the rationale behind a respondent's reply, some participants added additional information to some questions. The most common reason a dental hygienist did not record information in ink was because the office they work in is completely computerized, thus eliminating the need for paper charts.

Along the same vein as recording information in ink, it is also required for dental hygienists to initial or sign the entries they make in a client's chart. This allows anyone
reviewing the chart to identify which individuals last provided care for a particular client.

Although the majority of respondents indicated that they always or usually initial or sign chart entries, there are some registrants who indicated that they only occasionally or rarely/never initial or sign their chart entries. Investigations into why this is the case is warranted.

An important aspect of record keeping includes recording and maintaining copies of pertinent and important discussions/communications that dental hygienists had with their clients. This study indicated that over 70% of respondents always or usually perform such tasks.

One final aspect of documentation practices that was investigated in this study was the frequency with which dental hygienists record the client’s refusal of dental hygiene treatment. It is important to note this refusal in the permanent client record in case of a legal dispute. Over 20% of respondents indicated that they do not routinely record in the client’s record if the client refused care. This would be useful should a client choose to initiate litigation if an undesirable outcome were to occur which could be linked to this lack of care (ex tooth loss). However, the dental hygienist may have an additional system in place to document the client’s refusal of care; or, alternately, another member of the dental team may be responsible for recording this information.

If a dental hygienist owns his or her own practice, they are required by law to retain clients’ records/charts for a minimum of ten years should clarification of past treatment by the dental hygienist be required. For the majority of respondents in this study, this question was a non issue since only 12.9% of respondents indicated that they own their own dental hygiene practice.
One final area of interest in this study was to determine if registrants experienced any barriers or challenges when they attempt to practice in accordance with the 8 CDHBC practice standards. Most respondents indicated that they have few challenges or barriers when attempting to practice dental hygiene as required by the practice standards. Those who did indicate a challenge noted that it was lack of adequate time to provide all needed dental hygiene therapy for their clients. This challenge was further qualified by many respondents. Those dental hygienists who felt that lack of time was an issue indicated that they would like to see tailored appointment times for each individual client’s needs rather than a standard or blanket one hour per client. Some dental hygienists also indicated that lack of time they had available to treat their clients impacted the services they provided. For example, some respondents indicated that they simply do not have enough time to properly complete a full periodontal chart, chart important dental issues (ex suspected caries), take necessary radiographs, and provide supportive periodontal therapy tailored to their clients’ needs. Because time is perceived to be a scant resource, respondents indicated that they provided dental hygiene services to the best of their ability in the allotted time, which sometimes meant excluding various assessment or evaluation items (ex not doing a full periodontal exam, but rather doing a full periodontal exam for one quadrant or sextant).

Continuing education programs are provided for dental hygiene (and other) practitioners with the intention of improving care delivery. Dental hygienists were asked in this questionnaire if they experienced any challenges when attempting to access these continuing education programs. The majority of respondents indicated that quality continuing competence programs were available to help them improve various areas of their practice. Those participants who
indicated that there is a paucity of adequate programs available were situated outside of British Columbia's Lower Mainland. The major barrier noted was cost to attend the program, which included travel cost, accommodation, child care, and time away from work. Greater effort needs to be made to bring quality continuing competence programs across the province. One alternative to in-person programs could be the development of on-line courses which could be readily accessed by all dental hygienists in the province. The CDHA has recently made available on DVD the Journal of Dental Hygiene which allows CDHA members to subscribe to the electronic version of the journal, complete a post-test once viewing the journal has been complete, and apply for continuing competency credits, all from the comfort of the dental hygienists' home.

Once all data was gathered to determine the registrants' perceived adherence to the standards and perceived challenges to providing care as required by the standards, further relationships were explored with the available data. The two relationships of note for this study included investigating the possible link between geographical location and the dental hygienists' perceived adherence to the standards and the year of graduation from a dental hygiene program and the registrants' perceived adherence to the standards.

There were few significant results when examining the relationship between dental hygienists' perceptions of adherence to the standards and their geographical location. Geographical location and perceived adherence to the standards was chosen because there is the potential for the dental hygienist to have different resources available depending on the location he/she practices which could impact on the registrants' perceived adherence to the standards. The results of this study indicate that there are few co-relations between geographical location
considering the volume of variables explored for a relationship between geographical location and the dental hygienist’s perceived adherence to the standards, the significant result for the 5 variables noted in the results section indicates that geographical location of the dental hygienist does not have a significant impact on the dental hygienists’ perceived adherence to the standards.

There were also few significant results when determining the relationship between the dental hygienist’s perceptions of adherence to the standards and the length of time the dental hygienist has been practicing. Because educational requirements and programs change over time to adapt to the growing needs and demands of the health consumer, it is not unreasonable to postulate that different practice philosophies exist among dental hygienists which depend upon the year the dental hygienist graduated. There is some evidence in the literature that the year of graduation of a health professional affects the way health care is provided (Cartwright, 1978). This is the result of changes in care philosophies, curriculum, and the make-up of the student body (Cartwright, 1978).

However, the 8 CDHBC practice standards outline minimum practice requirements of all registered dental hygienists. It is expected that all BC dental hygienists will refer to the standards and provide dental hygiene therapy accordingly. There were 14 areas where a negative, statistically significant (all p<.05) relationship existed. The negative relationship indicates that the longer a dental hygienist has been practicing, the less he/she perceives to be practicing according to the standards. There is one area of interest in these findings: when the dental hygienist records the dental hygiene diagnosis. As noted previously, the dental hygienists...
who have been in practice the longest may not be entirely comfortable with the term dental hygiene diagnosis and may be reluctant to record such a statement in a client’s record.

5.2 Limitations of the study

As with any study, this study is not without limitations. Mail out questionnaires are notorious for low response rates and this study was no different (37.5%). The author anticipated a low response rate and doubled the number of questionnaires mailed in an attempt to improve the number of participants, yet still a low response was achieved. Distribution of the sample size could also have contributed to the low response rate. Many individuals residing in BC’s Lower Mainland may have felt overwhelmed with requests for participation in studies or they lead very busy lives and completing a questionnaire was not a priority for them. Additionally, over sampling of certain regions (ex Cariboo North) and under sampling of certain regions (ex Lower Mainland) in the province could have allowed for a better distribution of study participants.

One must also be cautious when asking individuals to self-administer a questionnaire. People responding to such questionnaires may be more outspoken than non-participants. This can introduce an element of bias to the study results. A response bias is also possible with this type of questionnaire. Since this study asked for participants’ perceptions on how they practice everyday, a feeling of being policed may affect how a respondent answers the questions. For example, a respondent may indicate “always” for each question because they feel that is the answer the investigator is looking for.

Further limitations include the type of questions asked of participants. This study did not ask “why” a respondent answered a question in a certain way since the intention of this study
was to collect baseline information about the feasibility of using practice standards as a quality assurance tool by finding out the frequency with which dental hygienists perceive they practice according to such standards. Follow up studies need to be conducted to explore the “why” behind this baseline information. This may provide further, in depth information regarding the feasibility of BC’s current quality assurance methodology.

Another limitation of this study is that not all dental hygienists in BC were given the opportunity to express their opinions and perceptions on quality assurance and quality dental hygiene care. Additional studies could obtain a larger sample size which would help validate the questions posed in this thesis.
Chapter 6

Conclusions, Recommendations, and Future Considerations

6.1 Conclusions

The results of this study indicate that the majority of dental hygienists who responded to this questionnaire perceive that they are practicing in accordance with the standards all the time (always) or almost all the time (usually). This study also sought to explore the relationship between geographical location and the dental hygienist's perceptions on adherence to the standards. This study showed that there was no appreciable link between these variables. It was postulated that the year a dental hygienist graduated may affect how he/she perceives his/her practice of dental hygiene in accordance with the standards. The results of the cross-tabulation using the Spearman's Rank Correlation demonstrated no appreciable associations between these two variables.

The current practice standards outline minimum standards of care required by all dental hygiene registrants in BC. The standards may not provide guidance for those dental hygiene practitioners who feel that they practice over and above the minimum requirements. This could provide variations in the responses received and affect the outcome of the study.

Since the majority of dental hygienists work in tandem with other dental health care providers, it is not unreasonable to suggest that these team members may be responsible for some duties/tasks that overlap the dental hygienist's required scope of practice. This could explain why some registrants responded in the way they did.
The tool used to generate data for this study could have limited the quality of information obtained. Many registrants may have perceived that the results questionnaire would be used to penalize the dental hygienist in some way by the CDHBC, thus potentially skewing the results of the study. Although respondents were asked about any barriers they perceive to encounter when attempting to practice in accordance to the standards, the possibility exists that the registrant was unable to name such a barrier. Further study needs to be conducted to gain a better understanding of a typical dental hygienists' work day in the province of British Columbia.

6.2 Recommendations

Although it was interesting to investigate dental hygienists' perceptions on how often they practice dental hygiene in accordance with the practice standards, the responses of most interest are from those dental hygienists who indicated that they occasionally or rarely/never provide care (in their opinion) in accordance with the practice standards. Additional studies to explore these individuals' rationale for practicing this way are needed to gain a more comprehensive understanding of the usefulness of the practice standards as a guide for daily clinical practice.

The small, yet statistically significant link between year of graduation and perceived adherence to the standards indicates that there may be some complacency in clinical practice among some of the more experienced dental hygiene practitioners. The BCDHA offers a dental hygiene refresher course for those dental hygienists interested in maintaining competency. Since dental hygiene is continually evolving, large volumes of new information pertaining to the clinical practice of dental hygiene is constantly generated through research (ex the establishment of the link between oral health and systemic health). It is challenging, and perhaps impossible,
for clinical practitioners to remain current in all aspects of dentistry and dental hygiene. Perhaps a dental hygiene refresher course which targets dental hygienists practicing for 10 years and over may be helpful to update the knowledge base for those registrants by providing information on new and emerging dental hygiene theories of practice. Additional study to investigate this relationship on a deeper level is also recommended.

Some respondents indicated, in the margin of the questionnaire, that the practice standards are not entirely user friendly for daily clinical practice and the feasibility of always practicing in accordance to the standards for all clinical situations is challenging. More input from registrants regarding appropriate quality assurance methodologies will allow dental hygienists to obtain ownership of the program and facilitate improved acceptance of the use of quality assurance in dental hygiene care. Workshops or other educational forums providing registrants with information on the importance of quality assurance will also facilitate acceptance of a quality assurance program. The College needs to look at the current continuing competency program and revise it to make it easier for all registrants (not just those in clinical practice) to self-evaluate his or her practice behaviour so that identification of weaknesses may be discovered and appropriate actions taken to improve those areas of practice deficiency.

6.3 Future Considerations

At the time of publication of this study, the Health Professions Act in BC had undergone revisions. These revisions require all Colleges legislated by the Act to develop, implement, and eventually evaluate a formal quality assurance program. The CDHBC is working to meet these requirements so that the program can be implemented for 2009. This new program could be more well received by dental hygiene registrants in the province of BC if the CDHBC developed
components of the program which can be applicable to all dental hygienists, including those registrants who are full time educators, those who provide care beyond the basic minimum requirements, and those dental hygiene care providers who may have a varied scope of practice.
REFERENCES


Your Assurance of Competent, Ethical Health Care. The Health Professionals of British Columbia. [Pamphlet].
LIST OF NOMENCLATURE AND ABBREVIATIONS

The field of quality assurance in health care contains many terms that are used interchangeably which may confuse many readers. A brief list of key definitions and an explanation of various terms are provided.

Quality

As could be expected, a true definition of quality is difficult to formulate. Hill and Leiper (1992) provide a long definition which attempts to encompass a range of components within the health care system. They define quality as “a judgement of value based on current social conventions of which the most important constituents are notions of professional good practice, consumer rights and empirical evidence (Hill & Leiper, 1992, pg. 290).”

Quality assurance/quality management

This is defined as an effort to ensure care is delivered consistently in a high manner (Royal Society of Edinburgh, 1993). Although brief, this definition encompasses the heart of quality assurance.

Quality Assurance Program

Generally, a quality assurance program will involve individuals from all levels of management and health care in order to ensure that the institution will meet minimum quality and safety standards (American Association of Tissue Banks, 1996). Quality assurance occurs during the delivery of a service and is not determined upon completion of a service. This may also be termed process evaluation.
Quality control

Quality control is a process which determines the quality of a product or service after that product or service has been produced or delivered (Ellis & Norton, 1995). The aim of quality control procedures is to determine deficiencies in a product or service and to correct these deficiencies (Ellis & Norton, 1995). This may also be termed outcome evaluation.

Total quality management (TQM)

Total quality management encompasses more than just a quality assurance program. TQM requires input from all individuals involved in the delivery of health care and is considered a continuous management process for ensuring quality (Orme, Parsons, & McBride, 1992).

Continuous quality improvement/management (CQI/M)

Continuous quality improvement or management is sometimes used interchangeably with total quality management. Although not entirely incorrect, continuous quality management is best considered to be that portion of total quality management that is used to ensure that quality of care is improving as time goes on. In addition, continuous quality management may be considered a set of philosophies adopted to bring about change in service to increase quality (St. Leger, 1991). Parsley and Corrigan (1999) suggest that a more suitable name for continuous quality improvement is audit since the aim of CQI is to ensure that health care professionals are following pre-established practice standards. Self-assessment strategies play a large role in continuous quality improvement (Joint Commission on Accreditation of Healthcare Organizations, 1990).

Clinical Practice Guidelines (CPG)

According to the Institute of Medicine (Field & Lohr, 1992), clinical practice guidelines can be defined as systematically developed statements to assist practitioner and patient decisions
about appropriate health care for specific clinical circumstances. This is the most widely used definition of CPGs.

**Medical Review Criteria**

According to the Institute of Medicine (Field & Lohr, 1992), medical review criteria are linked to practice guidelines but differ in their use. Medical review criteria are established to monitor and assess whether practitioners are following the guideline correctly (Field & Lohr, 1992). Criteria are also used in health care institutions’ quality assurance programs as part of continuous quality improvement.

**Indicators**

Indicators are typically included in the description of a clinical practice guideline and are used to measure whether the guideline is being met in a review or audit of the provision of health care (Lomas, 1991). The Joint Commission on the Accreditation of Hospitals defines an indicator as [an] assessment tool used to monitor and evaluate the quality of important governance, management, clinical, and support functions that affect patient outcomes (Joint Commission on Accreditation of Healthcare Organizations, 1990). Indicators may be useful as a trigger to locate events which are very serious in nature (sentinel) and those which may have adverse outcomes not as severe as a sentinel event (rate-based) (Joint Commission on Accreditation of Healthcare Organizations, 1990).

**Algorithm**

An algorithm can be defined as a decision tree where each action and its conditions are specified and each successive action depends on the results of prior tests and therapies (Anderson & Noyce). In many cases, algorithms and clinical practice guidelines will be similar and represent similar procedures. The major difference being that algorithms are more complex and involved than guidelines and will outline step by step what should be done in a particular
situation whereas guidelines broadly define appropriate clinical action. Algorithms are commonly employed at the local level.

**Practice Standard**

A practice standard can be defined as a statement which outlines what level of performance is expected (Parsley & Corrigan). Practice standards can be used to outline optimal, best, and minimal standards of care. In British Columbia, the 8 College of Dental Hygienists of British Columbia practice standards are intended to outline the minimum standard of care dental hygienists are required to provide.

**Protocol**

Unlike standards which determine how well a practitioner is expected to perform, protocols typically outline at a local level what type of behaviour is expected of a health care practitioner (Birchall, 1999). Protocols will usually vary between institutions and private practice settings whereas practice standards do not.

**Accreditation**

Accreditation takes many forms. Hospitals, institutions, and educational settings are typically accredited while private practice clinics are not. Overall, accreditation can be defined as a form of quality oversight in which the organizations (a) plan, organize, and run their programs in concert with a published set of standards, (b) submit to a review against these standards, and (c) if they sufficiently conform to the standards, receive an award of an accreditation certificate for potentially varying lengths of time or different levels of achievement (Wilkerson, Migas, & Slaven).

**Utilization Management**

Utilization management is a form of quality assurance which attempts to control the cost of health care while maintaining or improving the quality of such health care (Fromberg, 1988). Cost containment and maintenance of quality of care are typically achieved in concert with an
organization’s general goals (Fromberg, 1988). A utilization management team may be more effectively utilized in a large hospital or health care centre rather than smaller private practice clinics.

The following acronyms are used throughout the thesis.

CDHBC: The College of Dental Hygienists of British Columbia, the regulatory body for dental hygienists in British Columbia; all dental hygienists wishing to practice dental hygiene in British Columbia must meet CDHBC’s criteria and pay the appropriate registration fees to CDHBC

CDHA: The Canadian Dental Hygienists Association, a voluntary professional organization which exists to promote the profession of dental hygiene on a national level

BCDHA: The British Columbia Dental Hygienists Association, a provincial component of CDHA

NDHCB: The National Dental Hygiene Certification Board, the organization responsible for developing the National Dental Hygiene Certification Examination, the examination which is used to evaluate a dental hygiene student’s readiness for entry to practice; successful completion of this examination is a requirement for licensure or registration for dental hygienists in 5 Canadian provinces

CDHO: The College of Dental Hygienists of Ontario
Appendix B

CDHBC PRACTICE STANDARDS AND POLICY STATEMENTS

(Used with permission)

PRACTICE STANDARD POLICY #1

Practice Standard:
A dental hygienist must obtain informed consent from the client or the client's representative before initiating dental hygiene care.

Policy:
1.2 Dental hygienists must obtain informed consent from the client or the client's representative before providing any services, by physical indication or verbal statement, following applicable laws. (see the following policies in Tab 7: Informed Refusal to Consent, Consent of Minors to Treatment, and the summary of BC's New Adult Guardianship Laws).

PRACTICE STANDARD POLICY #2

Practice Standard:
A dental hygienist must practice safely.

Policy:
2.4 When contacting blood or saliva, dental hygienists must practice recognized infection control as outlined by current resources as amended from time to time (refer to Health Canada - Centers for Disease Control, "CDC Infection Control Guidelines for Dentistry", and "Recommendations for Implementation of Infection Control Procedures" by the Canadian Dental Association*).

* Publications change from time to time. Dental hygienists are encouraged to obtain a current copy of any resources noted in the Practice Standards Policies from the publicist or from the College office.

2.5 Dental hygienists must protect the client. In a clinical setting this should include:

- Draping the client with a lead apron and thyroid collar during exposure to x-rays; and
- Providing safety glasses for the client if there is any danger from splatter or materials; and
- Providing hearing protection for the client if he/she is sensitive to the noise of practice setting equipment.

2.3 Dental hygienists must use potentially hazardous materials (such as radiation and disinfectants) safely, according to manufacturers' recommendations and government guidelines (refer to the Workplace Hazardous Materials Information System (WHMIS) guidelines and sections 8 and 9 of Health Canada's, "Safety Code 30" document).

2.4 When dental hygienists own their practice, dental hygienists must store and dispose of potentially hazardous wastes and materials safely, according to government guidelines (refer to the Workplace Hazardous Materials Information System (WHMIS) guidelines).

2.5 When dental hygienists are responsible for radiography equipment, dental hygienists must comply with all aspects of the Radiation Protection Program. **
At the date of drafting, the Radiation Protection Program proposed by the New Partnership Agreement between the Ministry of Health's Radiation Protection Branch and the CDHBC is under review. When finalized, point 2.5 becomes part of this policy.

PRACTICE STANDARD POLICY #3

Practice Standard:
A dental hygienist must assess the client's needs.

Policy:
3.1 Dental hygienists must collect baseline assessment data* as appropriate for the client (or supplement data collected by another health professional), and update the data as required. In a clinical setting, this should include:
- demographic information
- the client’s concerns, if any
- medical and dental history information
- vital signs, if indicated
- head and neck examination data
- intra-oral soft tissue examination data
- periodontal examination data
- dental and occlusal examination data that impacts on health
- diagnostic results/interpretations (e.g. from radiographs, bacterial and enzyme tests, etc)
- oral hygiene routines and techniques
- the client’s anxiety and pain levels.

* The extent of data collected will vary with the different practice settings and with clients who have specific needs or conditions. Professional judgement must be used to determine the data that are needed to assess each client.

PRACTICE STANDARD POLICY #4

Practice Standard:
A dental hygienist must analyze the assessment information and make a dental hygiene diagnosis.

Policy:
4.3 Dental hygienists must establish a dental hygiene diagnosis by interpreting the dental hygiene assessment findings and discussing the implications of the findings with the client or the client’s representative. In a clinical setting this should include the implications of conditions that are abnormal or unhealthy, and conditions that require special care.

4.4 Dental hygienists may determine short and long-term dental hygiene prognoses.
PRACTICE STANDARD POLICY #5

Practice Standard:
A dental hygienist must plan for the dental hygiene care to be provided, based on the assessment data and dental hygiene diagnosis.

Policy:
5.1 Dental hygienists must endeavor to integrate the dental hygiene treatment plan with the dentist's plan for the client's comprehensive dental care.

5.2 When indicated, dental hygienists must consult with the client's dentist, and may consult with other applicable health care providers, in order to integrate the plan for dental hygiene services into the client's total health care plan.

5.3 Dental hygienists must discuss the dental hygiene plan for services with the client or the client's representative. In a clinical setting this should include:
- oral health and wellness information and techniques
- treatment options
- pain and anxiety control options
- the number of appointments recommended
- the recommended time interval between appointments
- services to be provided at each appointment
- short-term goals that could result from the recommended services and how they will be evaluated
- risks of the recommended services
- recommendations for future referrals to dentists and other health care providers, if applicable
- risks of the client declining the recommended services.

5.4 Dental hygienists may discuss long-term goals with the client or the client's representative including evaluation of the goals.

5.6 Dental hygienists may discuss fees associated with the plan.
PRACTICE STANDARD POLICY #6

Practice Standard:
A dental hygienist must implement the plan consented to or adjust the plan in consultation with the client or the client's representative.

Policy:
6.1 Dental hygienists must attempt to reduce a client's anxiety and, if indicated for the provision of clinical services, offer pain control.

6.2 Dental hygienists must discuss, as the plan is implemented, any proposed changes to the plan (based on client response or evaluation of services), and again obtain informed consent.

PRACTICE STANDARD POLICY #7

Practice Standard:
A dental hygienist must evaluate while dental hygiene care is being provided and at the completion of care.

Policy:
7.1 At the completion of the planned services, dental hygienists must explain to the client the need for any follow-up or maintenance dental hygiene care and recommend a time interval to the next dental hygiene appointment or meeting.

7.2 Dental hygienists must, if indicated, recommend referral to dental and other applicable health care professional(s).

PRACTICE STANDARD POLICY #8

Practice Standard:
A dental hygienist must document the dental hygiene care provided, following protocols of the practice setting.

Policy:
8.2 Dental hygienists must label all client records with the client's name and the date.

8.2 Dental hygienists must record accurate details of the dental hygiene care provided, including:
- baseline assessment data
- an interpretation of dental hygiene assessment findings (or a dental hygiene diagnostic statement)
- a plan for services, particularly if the client needs or desires more than one appointment
- notes about the services provided (in a clinical setting this would include pain control method(s) used and the type and amount of any agents used)
- amount of time spent with the client, when appropriate
- evaluation findings and next appointment planning details
- precautions and instructions given (if any)
- possible risks (if any) of services planned and of not receiving the recommended services
• recommended referrals.

8.3 Dental hygienists must make legible and objective record entries, preferably in ink, initial or sign entries and corrections, and make corrections so that the original entry is still legible.

8.4 Dental hygienists must record details of pertinent discussions and communications with the client, and maintain copies of correspondence.

8.5 Dental hygienists must document and initial the client's informed refusal to consent to any recommended aspect of care (the client may give a physical indication or verbal statement of refusal).

8.7 When the dental hygienist owns the client's records, dental hygienists must retain records in a secure manner for no less than 10 years after the last client appointment*.

* The CDHBC's policy for the retention of dental hygiene records is the same as the CDSBC's standard for the retention of dental records. Dental hygienists who own clinics, own their clients' records. One of the issues affecting dental hygienists is the length of time it is necessary to retain records in the event of litigation arising from treatment. The College recommends that dental hygienists who own clinics obtain legal advice regarding this issue. Special rules apply in respect to minors and adults under a disability. In addition, judicial interpretation of the Limitation Act has introduced some uncertainty regarding limitation periods.
Appendix C

CDHBC FULL REGISTRATION CRITERIA

(Used with permission)

This class of registration is for graduate dental hygienists planning to practice in British Columbia. Full registration must be renewed annually, no later than the last day of February.

Full registration will be granted to dental hygienists who meet ALL of the following requirements:

- Graduation from a dental hygiene education program accredited by the Commission on Dental Accreditation of Canada or the American Dental Association Commission on Dental Accreditation;
- Certification by the National Dental Hygiene Certification Board of Canada;
- Graduation from a CDHBC approved local anaesthesia course and
  (i) eligibility to perform local anaesthesia in the jurisdiction of practice within the past three years; or
  (ii) successful completion of a CDHBC approved local anaesthesia refresher course;
- Demonstration of Continuing Competency (must meet one of the following Options)
  (i) Option A - 75 hours of CDHBC approved continuing education within the past three years
  (ii) Option B - successful completion of a CDHBC approved dental hygiene refresher course
  (iii) Option C - successful completion of the BC Examination
- Completion of the BC Dental Hygiene Regulation Assessment;
- Possession of professional negligence insurance in the amount of $1 million per occurrence;
- Demonstration of good standing in every jurisdiction in which currently or previously registered to practice dental hygiene;
- Demonstration of good character, consistent with the responsibilities and standards expected of a registrant;
- Authorization for a criminal record check (as required by the Criminal Records Review Act); and
- Submission of the required fees.
Appendix D

Mail out Questionnaire

Thank you for taking the time to complete this questionnaire.

Your completion of this questionnaire will help a UBC dental hygiene graduate student complete a thesis project about quality dental hygiene care in British Columbia. Your input regarding quality dental hygiene care and current quality assurance methodologies employed in British Columbia is extremely important.

The enclosed questionnaire is designed to gather pertinent information associated with British Columbia dental hygienists' perceptions about quality dental hygiene care. The goal is to determine how these perceptions relate to the current practice standards and practice standards policies of the College of Dental Hygienists of B.C.

Your answers to the following questions may help guide further development and enhancement of quality assurance, as well as the continuing competence activities for dental hygienists in British Columbia.

Directions for completing the Questionnaire

Please refer to the attached 8 - CDHBC Practice Standards as you proceed through the questionnaire.

Please complete all FOUR sections of the questionnaire.

Please answer all of the questions as outlined, in the space provided.

You will have an opportunity to provide additional information at the end of this survey.

Once you have completed the survey, please enclose in the self-addressed, stamped envelope provided and mail the completed survey.

Thank you.
PART I
BACKGROUND INFORMATION

1. Year of Graduation from a Dental Hygiene Program: ____________________________

2. School/Institution of Graduation: ____________________________________________

3. Please check one of the following:
   □ Under 25 years
   □ 25 - 34 years
   □ 35 - 49 years
   □ 50 years and older

4. Highest level of Education to Date:
   □ Dental Hygiene Diploma/Associate Degree
   □ Bachelors Degree (Specify Field): ____________
   □ Master's Degree (Specify Field): ______________
   □ PhD (Specify Field): _________________________

5. Current CLINICAL Dental Hygiene Practice Setting:
   □ General Practice
   □ Specialty Practice (Specify): ____________________
   □ I currently am not employed in a clinical dental hygiene practice *

6. Please indicate your current work situation, using the following guideline.
   Consider full time practice to be working, in a clinical setting, 30 hours per week or more, excluding lunch and other breaks.
   Consider part time practice to be working, in a clinical setting, of 15 hours per week or more, excluding lunch and other breaks.
   □ Full time clinical practice
   □ Part time clinical practice
   □ Other (Specify): ____________________________

7. Please indicate the region in which you currently practice dental hygiene (see attached map)
   □ Cariboo North
   □ Kooteney
   □ Lower Mainland
   □ Vancouver Island/Coast
   □ Okanagan

* If you checked “I currently am not employed in a clinical dental hygiene practice” in question # 5 above, you have completed the questionnaire. Thank you for your input. Please return all portions of the questionnaire in the enclosed self-addressed stamped envelope.
Part II
PERCEPTIONS PERTAINING TO QUALITY ASSURANCE

The following questions refer to your perceptions about quality assurance. Please answer each question in the space provided.

Quality Assurance is a term currently used within the profession of dental hygiene. Please indicate your level of agreement with the following statements:

1. (a) I am aware of the purpose of quality assurance. □ Agree □ Not Sure □ Disagree
(b) Quality assurance is one way for dental hygienists to remain current and up-to-date. □ Agree □ Not Sure □ Disagree
(c) I am familiar with and can define quality assurance. □ Agree □ Not Sure □ Disagree

2. I believe that evaluating my dental hygiene practice in relation to the 8 CDHBC Practice Standards on a regular basis is an effective method of quality assurance. □ Agree □ Not Sure □ Disagree

3. The 8 CDHBC Practice Standards help me to identify areas of my practice that need improvement. □ Agree □ Not Sure □ Disagree

4. The Practice Standards Policies that accompany the 8 CDHBC Practice Standards enhance my understanding of each practice standard. □ Agree □ Not Sure □ Disagree

5. How often, ON AVERAGE do you refer to the 8 CDHBC Practice Standards to help you identify areas of your practice that need improvement? Please check ONE box only.
   □ Monthly □ Quarterly □ Annually □ Once every 2-5 years □ Never

6. Once you have identified areas of your practice that need improvement, which activities do you participate in to achieve improvement? Please check all that apply.
   □ Continuing education lectures
   □ Hands-on workshops
   □ Professional conferences
   □ Study clubs
   □ Self-directed learning (eg. textbooks, videos)
   □ Dental/dental hygiene journals (eg. Probe, JCDA)
   □ Distance/online education courses
   □ Other (Specify)
7. Please indicate which ONE of the activities you checked in question 6 above has helped you improve your dental hygiene practice the most. **Please check ONE box only.**

- Continuing education lectures
- Hands-on workshops
- Professional conferences
- Study clubs
- Self-directed learning (eg. textbooks, videos)
- Dental/dental hygiene journals (eg. *Probe, JCDA*)
- Distance/online education courses
- Other (Specify)

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**Part III**

**PERCEPTIONS PERTAINING TO QUALITY DENTAL HYGIENE CARE**

This section pertains to *YOUR perceptions about* and *YOUR delivery of* quality of dental hygiene care to meet the 8 CDHBC Practice Standards. Please refer to the attached 8 CDHBC Practice Standards as you proceed through the questionnaire. Please answer all questions in the space provided.

**A. INFORMED CONSENT**

**How often do you:**

Obtain informed consent from your client/client’s representative by way of a verbal statement?

- Always
- Usually
- Occasionally
- Rarely/Never

Obtain informed consent from your client/client’s representative by way of a physical indication? (For example, a signature in the client’s record).

- Always
- Usually
- Occasionally
- Rarely/Never

Obtain informed consent from your client/client’s representative by way of a combination of a verbal statement and physical indication.

- Always
- Usually
- Occasionally
- Rarely/Never

**B. PRACTICING SAFELY**

**When providing dental hygiene care for your clients, how frequently do you:**

Practice currently recognized infection control procedures when blood and saliva are contacted?

- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable

Drape your client with a lead apron and thyroid collar?

- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable

Provide safety glasses for your client when danger of splatter or materials is present?

- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable
Provide hearing protection for your client if the client is sensitive to the noise of your practice setting equipment? (Eg. ultrasonic instruments, high-speed hand-piece).

☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never  ☐ Not Applicable

Use potentially hazardous materials (such as radiation and disinfectants) according to manufacturers’ recommendations and government guidelines?

☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never  ☐ Not Applicable

Store and dispose of potentially hazardous wastes and materials safely and according to government guidelines? (Applies to dental hygienists who own their own practice)

☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never  ☐ Not Applicable

C. DATA COLLECTION

How often do you collect and record the following information/assessment findings for each client (as needed):

Demographic information  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never  ☐ Not Applicable
(eg. address, phone#, marital status, occupation)

Client concerns  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never

Medical and dental history  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never

Vital signs  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never

Head and neck examination  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never

Intra-oral soft tissue examination  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never

Periodontal examination  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never

Dental examination  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never

Occlusal examination  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never

Diagnostic results and interpretations  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never
(eg. from radiographs, bacterial/enzyme tests)

Oral hygiene routines and techniques  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never

Client anxiety and pain levels  ☐ Always  ☐ Usually  ☐ Occasionally  ☐ Rarely/Never
D. DENTAL HYGIENE DIAGNOSIS

Please indicate how often you:

Establish a dental hygiene diagnosis. □ Always □ Usually □ Occasionally □ Rarely/Never

Discuss the implications of your assessment findings with your client/client’s representative. □ Always □ Usually □ Occasionally □ Rarely/Never

Discuss the implications of abnormal or unhealthy findings or findings that require special attention with the client/client’s representative. □ Always □ Usually □ Occasionally □ Rarely/Never

Record, in the client’s chart, your dental hygiene diagnosis, discussion, and implications. □ Always □ Usually □ Occasionally □ Rarely/Never

E. DENTAL HYGIENE CARE PLAN

1. How often do you:

Integrate your assessment findings and dental hygiene diagnosis into your dental hygiene care plan? □ Always □ Usually □ Occasionally □ Rarely/Never

Consult with the client’s dentist in order to integrate your plan for dental hygiene services into the client’s total health care plan (if indicated)? □ Always □ Usually □ Occasionally □ Rarely/Never

Integrate your dental hygiene treatment plan with the dentist’s plan for the client’s comprehensive dental care? □ Always □ Usually □ Occasionally □ Rarely/Never

Consult with other applicable health care providers in order to integrate your plan for dental hygiene services into the client’s total health care plan (if indicated)? □ Always □ Usually □ Occasionally □ Rarely/Never

2. How often do you discuss the following aspects of the dental hygiene care plan with your client/client’s representative:

Oral health and wellness information/techniques? □ Always □ Usually □ Occasionally □ Rarely/Never

Treatment options? □ Always □ Usually □ Occasionally □ Rarely/Never

Number of appointments recommended? □ Always □ Usually □ Occasionally □ Rarely/Never

Recommended time interval between appointments for continuing care appointments and/or multiple initial therapy appointments? □ Always □ Usually □ Occasionally □ Rarely/Never

Services provided at each appointment? □ Always □ Usually □ Occasionally □ Rarely/Never
Risks associated with recommended services (eg. local anesthetic)?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

Recommendations for referrals to dentists and other health care professionals?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

Risks of the client declining recommended services?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

Fees associated with the services recommended in your dental hygiene care plan?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

3. Please indicate the frequency with which you carry out the following discussions with your client or your client's representative:

Long-term goals and the evaluation of these goals?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

Short-term goals that may result from services provided?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

How these short-term goals will be evaluated?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

F. IMPLEMENTATION OF DENTAL HYGIENE CARE

1. Please indicate how often you:

Carry out the services as discussed and outlined in the dental hygiene care plan?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

Consult with the client or the client’s representative prior to proceeding with an adjustment to the dental hygiene care plan?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

Re-obtain informed consent prior to proceeding with the adjustment to the dental hygiene care plan?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

2. How frequently do you:

Offer pain control for the provision of clinical services (if required)?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never

Provide other means to reduce a client’s anxiety (eg. headphones, pillow/blanket if required)?

☐ Always   ☐ Usually   ☐ Occasionally   ☐ Rarely/Never
G. EVALUATION OF DENTAL HYGIENE CARE

1. Please indicate how often you:

Explain the need for follow up/maintenance dental hygiene care?

- Always  - Usually  - Occasionally  - Rarely/Never

Recommend, at the completion of planned dental hygiene care, a time interval for the next dental hygiene appointment?

- Always  - Usually  - Occasionally  - Rarely/Never

Refer your client to dental/other health care professionals (when indicated)?

- Always  - Usually  - Occasionally  - Rarely/Never

Provide ALL services as outlined in your dental hygiene care plan?

- Always  - Usually  - Occasionally  - Rarely/Never

Discuss the outcome of dental hygiene services?

- Always  - Usually  - Occasionally  - Rarely/Never

2. Which of the following tools do you use to evaluate dental hygiene treatment? (Please check ALL that apply)

- Observation (eg. probing, exploring)
- Questioning
- Dental indices
- Client satisfaction questionnaire(s)
- Other (Specify): ________________________________

H. DOCUMENTATION

1. Please indicate how often you record accurate details of dental hygiene care provided to your clients including the following:

Baseline assessment findings?

- Always  - Usually  - Occasionally  - Rarely/Never

Interpretation of dental hygiene assessment findings/dental hygiene diagnostic statement?

- Always  - Usually  - Occasionally  - Rarely/Never

Plan for services?

- Always  - Usually  - Occasionally  - Rarely/Never

Notes about services provided (including pain control methods used, amount and type of agent)?

- Always  - Usually  - Occasionally  - Rarely/Never

Amount of time spent with the client?

- Always  - Usually  - Occasionally  - Rarely/Never

Evaluation findings?

- Always  - Usually  - Occasionally  - Rarely/Never

Next appointment planning details?

- Always  - Usually  - Occasionally  - Rarely/Never

Precautions/instructions given?

- Always  - Usually  - Occasionally  - Rarely/Never
Possible risks of services planned and risks of not receiving recommended services?
- Always
- Usually
- Occasionally
- Rarely/Never

Recommended referrals?
- Always
- Usually
- Occasionally
- Rarely/Never

2. Please indicate the frequency with which you do the following:

Enter information in a client’s chart in ink?
- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable

Initial or sign all entries?
- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable

Ensure the original entry in a client’s chart is still legible if corrections need to be made?
- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable

Ensure corrections to original entries are signed or initialled?
- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable

Record, in detail, pertinent discussions/communications with the client in the client’s chart?
- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable

Maintain copies of ALL correspondence with clients?
- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable

Record (and initial/sign) the client’s refusal to consent to any recommended aspect of care?
- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable

Retain the clients’ records in a secure manner for no less than 10 years after the last client appointment?
(Applies to those dental hygienists who own client records)
- Always
- Usually
- Occasionally
- Rarely/Never
- Not Applicable
I. CHALLENGES

Please indicate your level of agreement with the following statements regarding challenges you may face when practicing dental hygiene care in accordance with the 8 CDHBC Practice Standards:

I do not have enough time allotted for each client (per appointment).

☐ Agree ☐ Not Sure ☐ Disagree

There is a lack of continuity of care for clients in my office (eg. no avenue for follow-up/evaluation; multiple care providers).

☐ Agree ☐ Not Sure ☐ Disagree

I have insufficient resources available to me (eg. inadequate charting system; poor quality equipment).

☐ Agree ☐ Not Sure ☐ Disagree

Specify:

My dentist/employer expects me to practice differently than required by the 8 CDHBC Practice Standards

☐ Agree ☐ Not Sure ☐ Disagree

I encounter barriers when attempting to access quality continuing education/continuing competence programs.

☐ Agree ☐ Not Sure ☐ Disagree

Please specify your barriers (if any):

________________________________________________________

________________________________________________________

Other (Specify):

________________________________________________________

________________________________________________________
Part IV
ADDITIONAL COMMENTS PERTAINING TO QUALITY DENTAL HYGIENE CARE

Are there any other comments you would like to make regarding quality dental hygiene care and quality assurance in dental hygiene in British Columbia?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Thank you for taking the time to complete this questionnaire.
Appendix E

Ethics Approval Form
Appendix F

Permission from CDHBC to obtain mailing labels
Appendix G

Cover letter/Consent Form
Appendix H

Spearman’s Rank Correlation Data Tables

Spearman’s Rank Correlation

This was used to determine the relationship between the length of time a dental hygienist has been practicing and the degree to which he or she perceives that he/she practices according to the standards. The average length of time that subjects have been practicing is 13.5 years with a range of 1 year to 38 years. The results of the Spearman’s Rank Correlation are summarized in the sections below.

Part III: Perceptions Pertaining to Quality Dental Hygiene Care

Part III A: Informed Consent

Table 9 Informed consent, verbal * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-.145</td>
<td>.096</td>
<td>-1.493</td>
<td>.138(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-.149</td>
<td>.094</td>
<td>-1.534</td>
<td>.128(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>106</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

a  Not assuming the null hypothesis.
b  Using the asymptotic standard error assuming the null hypothesis.
c  Based on normal approximation.

Table 10 Informed consent, physical * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-.023</td>
<td>.092</td>
<td>-.235</td>
<td>.815(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-.010</td>
<td>.098</td>
<td>-.100</td>
<td>.920(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>106</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a  Not assuming the null hypothesis.
b  Using the asymptotic standard error assuming the null hypothesis.
c  Based on normal approximation.
Table 11 Informed consent, verbal and physical * year of graduation from a dental hygiene program
Symmetric Measures

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>.021</td>
<td>.097</td>
<td>.213</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>.001</td>
<td>.098</td>
<td>.008</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Part III B: Practicing Safely

Table 12 Infection control when contacting blood/saliva * year of graduation from a dental hygiene program
Symmetric Measures

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.100</td>
<td>.104</td>
<td>-1.029</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.090</td>
<td>.093</td>
<td>-.925</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 13 Lead apron and thyroid collar * year of graduation from a dental hygiene program
Symmetric Measures

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.122</td>
<td>.105</td>
<td>-1.262</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.117</td>
<td>.080</td>
<td>-1.211</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
### Table 14: Safety glasses * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>-.183</td>
<td>.089</td>
<td>-1.920</td>
<td>.057(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>-.230</td>
<td>.091</td>
<td>-2.435</td>
<td>.017(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.  
b Using the asymptotic standard error assuming the null hypothesis.  
c Based on normal approximation.

### Table 15: Hearing protection * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>-.018</td>
<td>.101</td>
<td>-.185</td>
<td>.653(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>-.005</td>
<td>.097</td>
<td>-.052</td>
<td>.959(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.  
b Using the asymptotic standard error assuming the null hypothesis.  
c Based on normal approximation.

### Table 16: Use hazardous materials according to manufacturer's instructions * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
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</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>-.262</td>
<td>.097</td>
<td>-2.800</td>
<td>.006(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>-.226</td>
<td>.087</td>
<td>-2.383</td>
<td>.019(c)</td>
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<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.  
b Using the asymptotic standard error assuming the null hypothesis.  
c Based on normal approximation.

### Table 17: Store and dispose of hazardous wastes/materials according to gov't guidelines * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
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<td>.089</td>
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<td>.471(c)</td>
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<tr>
<td>Ordinal by Ordinal</td>
<td>-.045</td>
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<tr>
<td>N of Valid Cases</td>
<td>87</td>
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</tbody>
</table>

a Not assuming the null hypothesis.  
b Using the asymptotic standard error assuming the null hypothesis.  
c Based on normal approximation.
Part III C: Data Collection

Table 18 How often collect demographic info * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.122</td>
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<td>-1.250</td>
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<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.143</td>
<td>.099</td>
<td>-1.469</td>
</tr>
<tr>
<td>N of Valid Cases</td>
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<td>106</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 19 How often collect client concerns * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.201</td>
<td>.083</td>
<td>-2.118</td>
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<tr>
<td>Ordinal by Ordinal</td>
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<td>-.221</td>
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<tr>
<td>N of Valid Cases</td>
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<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 20 How often collect medical and dental histories * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.213</td>
<td>.097</td>
<td>-2.240</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.199</td>
<td>.083</td>
<td>-2.093</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 21 How often collect vital signs * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
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</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
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<td>.096</td>
<td>1.290</td>
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<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>.087</td>
<td>.096</td>
<td>.895</td>
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<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 22 How often collect head and neck examination * year of graduation from a dental hygiene program
Symmetric Measures

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
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<td>0.099</td>
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<td>0.811(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
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<td>0.730(c)</td>
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<tr>
<td>N of Valid Cases</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 23 How often collect intraoral soft tissue exam * year of graduation from a dental hygiene program
Symmetric Measures

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
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<th>Approx. Sig.</th>
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<td>0.796(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>-0.032</td>
<td>0.095</td>
<td>-3.28</td>
<td>0.744(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 24 How often collect periodontal exam * year of graduation from a dental hygiene program
Symmetric Measures

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>-0.065</td>
<td>0.090</td>
<td>-1.667</td>
<td>0.507(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>-0.075</td>
<td>0.094</td>
<td>-0.772</td>
<td>0.442(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 25 How often collect dental exam * year of graduation from a dental hygiene program
Symmetric Measures

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>-0.102</td>
<td>0.093</td>
<td>-1.054</td>
<td>0.294(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>-0.096</td>
<td>0.097</td>
<td>-0.990</td>
<td>0.325(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 26 How often collect occlusal exam * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-0.064</td>
<td>0.097</td>
<td>-0.657</td>
<td>0.512(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-0.054</td>
<td>0.099</td>
<td>-0.555</td>
<td>0.580(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Not assuming the null hypothesis.
(b) Using the asymptotic standard error assuming the null hypothesis.
(c) Based on normal approximation.

Table 27 How often collect diagnostic results and interpretations * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>0.029</td>
<td>0.095</td>
<td>0.297</td>
<td>0.767(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>0.023</td>
<td>0.095</td>
<td>0.238</td>
<td>0.812(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Not assuming the null hypothesis.
(b) Using the asymptotic standard error assuming the null hypothesis.
(c) Based on normal approximation.

Table 28 How often collect oral hygiene routines and techniques * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-0.157</td>
<td>0.090</td>
<td>-1.637</td>
<td>0.105(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-0.174</td>
<td>0.092</td>
<td>-1.815</td>
<td>0.072(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Not assuming the null hypothesis.
(b) Using the asymptotic standard error assuming the null hypothesis.
(c) Based on normal approximation.

Table 29 How often collect client anxiety and pain levels * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-0.149</td>
<td>0.113</td>
<td>-1.548</td>
<td>0.125(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-0.124</td>
<td>0.102</td>
<td>-1.285</td>
<td>0.201(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Not assuming the null hypothesis.
(b) Using the asymptotic standard error assuming the null hypothesis.
(c) Based on normal approximation.
### Table 30 How often record the DH diagnosis, discussion, implications * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-.226</td>
<td>.089</td>
<td>-2.389</td>
<td>.019(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-.222</td>
<td>.089</td>
<td>-2.350</td>
<td>.021(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td>108</td>
<td>108</td>
<td>108</td>
</tr>
</tbody>
</table>

*a* Not assuming the null hypothesis.
*b* Using the asymptotic standard error assuming the null hypothesis.
*c* Based on normal approximation.

### Table 31 How often discuss abnormal/unhealthy findings * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-.100</td>
<td>.087</td>
<td>-1.032</td>
<td>.305(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-.133</td>
<td>.093</td>
<td>-1.385</td>
<td>.169(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td>108</td>
<td>108</td>
<td>108</td>
</tr>
</tbody>
</table>

*a* Not assuming the null hypothesis.
*b* Using the asymptotic standard error assuming the null hypothesis.
*c* Based on normal approximation.

### Table 32 How often discuss implications of assess findings * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-.118</td>
<td>.088</td>
<td>-1.224</td>
<td>.224(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-.130</td>
<td>.091</td>
<td>-1.349</td>
<td>.180(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td>108</td>
<td>108</td>
<td>108</td>
</tr>
</tbody>
</table>

*a* Not assuming the null hypothesis.
*b* Using the asymptotic standard error assuming the null hypothesis.
*c* Based on normal approximation.

### Table 33 How often establish a DH diagnosis * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-.094</td>
<td>.097</td>
<td>-1.970</td>
<td>.334(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-.082</td>
<td>.095</td>
<td>-0.848</td>
<td>.399(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td>108</td>
<td>108</td>
<td>108</td>
</tr>
</tbody>
</table>

*a* Not assuming the null hypothesis.
*b* Using the asymptotic standard error assuming the null hypothesis.
*c* Based on normal approximation.
Part III E: Dental Hygiene Care Plan

Table 34 How often integrate findings and diagnosis into care plan * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-0.220</td>
<td>0.088</td>
<td>-2.314</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-0.199</td>
<td>0.092</td>
<td>-2.075</td>
</tr>
</tbody>
</table>

N of Valid Cases

107

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 35 How often consult client's dentist to integrate dental hygiene care into total health care plan * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-0.089</td>
<td>0.089</td>
<td>-0.917</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-0.114</td>
<td>0.096</td>
<td>-1.185</td>
</tr>
</tbody>
</table>

N of Valid Cases

108

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 36 How often integrate dh tx plan with dentist's plan * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-0.079</td>
<td>0.094</td>
<td>-0.810</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-0.117</td>
<td>0.095</td>
<td>-1.211</td>
</tr>
</tbody>
</table>

N of Valid Cases

107

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 37 How often consult other health care providers * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-0.034</td>
<td>0.096</td>
<td>-0.346</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-0.029</td>
<td>0.095</td>
<td>-0.295</td>
</tr>
</tbody>
</table>

N of Valid Cases

107

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 38 How often discuss oral health and wellness information/techniques * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.128</td>
<td>.096</td>
<td>-1.324</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.152</td>
<td>.095</td>
<td>-1.575</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>107</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 39 How often discuss treatment options * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.209</td>
<td>.103</td>
<td>-2.195</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.197</td>
<td>.097</td>
<td>-2.069</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 40 How often discuss number of appts recommended * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.247</td>
<td>.093</td>
<td>-2.623</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.227</td>
<td>.084</td>
<td>-2.402</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 41 How often discuss recommended time interval between appts * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.035</td>
<td>.106</td>
<td>- .362</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.029</td>
<td>.099</td>
<td>-.294</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
### Table 42 How often discuss services provided at each appt * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-.057</td>
<td>.095</td>
<td>-.592</td>
<td>.555(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-.077</td>
<td>.097</td>
<td>-.792</td>
<td>.430(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

### Table 43 How often discuss risks associated with recommended services * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-.162</td>
<td>.097</td>
<td>-1.686</td>
<td>.095(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-.157</td>
<td>.096</td>
<td>-1.640</td>
<td>.104(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

### Table 44 How often discuss referrals to dentists and other health care professionals * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-.156</td>
<td>.093</td>
<td>-1.621</td>
<td>.108(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-.129</td>
<td>.094</td>
<td>-1.343</td>
<td>.182(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

### Table 45 How often discuss risks of client declining recommended services * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval Pearson's R</td>
<td>-.151</td>
<td>.089</td>
<td>-1.569</td>
<td>.120(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal Spearman Correlation</td>
<td>-.152</td>
<td>.091</td>
<td>-1.581</td>
<td>.117(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 46 How often discuss long term goals * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>.016</td>
<td>.094</td>
<td>.168</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>.021</td>
<td>.097</td>
<td>.219</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 47 How often discuss short term goals * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.080</td>
<td>.091</td>
<td>-.818</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.067</td>
<td>.094</td>
<td>-.685</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 48 How often discuss how short term goals will be evaluated * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.025</td>
<td>.093</td>
<td>-.255</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.027</td>
<td>.095</td>
<td>-.273</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Part III F: Implementation of Dental Hygiene Care

Table 49 How often carry out services in care plan * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.175</td>
<td>.097</td>
<td>-1.832</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.167</td>
<td>.096</td>
<td>-1.747</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
<table>
<thead>
<tr>
<th>Table 50 How often consult prior to adjusting plan * year of graduation from a dental hygiene program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symmetric Measures</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Interval by Interval</strong> Pearson's R</td>
</tr>
<tr>
<td>Value</td>
</tr>
<tr>
<td>-.077</td>
</tr>
<tr>
<td><strong>Ordinal by Ordinal</strong> Spearman Correlation</td>
</tr>
<tr>
<td>Value</td>
</tr>
<tr>
<td>-.087</td>
</tr>
<tr>
<td><strong>N of Valid Cases</strong></td>
</tr>
<tr>
<td>a Not assuming the null hypothesis.</td>
</tr>
<tr>
<td>b Using the asymptotic standard error assuming the null hypothesis.</td>
</tr>
<tr>
<td>c Based on normal approximation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 51 How often reobtain informed consent * year of graduation from a dental hygiene program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symmetric Measures</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Interval by Interval</strong> Pearson's R</td>
</tr>
<tr>
<td>Value</td>
</tr>
<tr>
<td>-.257</td>
</tr>
<tr>
<td><strong>Ordinal by Ordinal</strong> Spearman Correlation</td>
</tr>
<tr>
<td>Value</td>
</tr>
<tr>
<td>-.272</td>
</tr>
<tr>
<td><strong>N of Valid Cases</strong></td>
</tr>
<tr>
<td>a Not assuming the null hypothesis.</td>
</tr>
<tr>
<td>b Using the asymptotic standard error assuming the null hypothesis.</td>
</tr>
<tr>
<td>c Based on normal approximation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 52 How often offer pain control (if required) * year of graduation from a dental hygiene program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symmetric Measures</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Interval by Interval</strong> Pearson's R</td>
</tr>
<tr>
<td>Value</td>
</tr>
<tr>
<td>-.262</td>
</tr>
<tr>
<td><strong>Ordinal by Ordinal</strong> Spearman Correlation</td>
</tr>
<tr>
<td>Value</td>
</tr>
<tr>
<td>-.200</td>
</tr>
<tr>
<td><strong>N of Valid Cases</strong></td>
</tr>
<tr>
<td>a Not assuming the null hypothesis.</td>
</tr>
<tr>
<td>b Using the asymptotic standard error assuming the null hypothesis.</td>
</tr>
<tr>
<td>c Based on normal approximation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 53 How often offer other anxiety reduction * year of graduation from a dental hygiene program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symmetric Measures</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Interval by Interval</strong> Pearson's R</td>
</tr>
<tr>
<td>Value</td>
</tr>
<tr>
<td>-.051</td>
</tr>
<tr>
<td><strong>Ordinal by Ordinal</strong> Spearman Correlation</td>
</tr>
<tr>
<td>Value</td>
</tr>
<tr>
<td>-.081</td>
</tr>
<tr>
<td><strong>N of Valid Cases</strong></td>
</tr>
<tr>
<td>a Not assuming the null hypothesis.</td>
</tr>
<tr>
<td>b Using the asymptotic standard error assuming the null hypothesis.</td>
</tr>
<tr>
<td>c Based on normal approximation.</td>
</tr>
</tbody>
</table>
Part III G: Evaluation of Dental Hygiene Care

Table 54 How often explain need for follow up * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-0.059</td>
<td>.103</td>
<td>-0.608</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-0.036</td>
<td>.096</td>
<td>-0.371</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 55 How often recommend time interval for next dh appt * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>0.081</td>
<td>.078</td>
<td>0.837</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>0.060</td>
<td>.084</td>
<td>0.615</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 56 How often refer client to other health care professionals * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>0.012</td>
<td>.095</td>
<td>0.120</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>0.016</td>
<td>.097</td>
<td>0.162</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 57 How often provide all services as outlined in care plan * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-0.200</td>
<td>.085</td>
<td>-2.096</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-0.177</td>
<td>.090</td>
<td>-1.846</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>107</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 58 How often discuss outcome of dh services * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson's R</td>
<td>-1.54</td>
<td>.099</td>
<td>-1.602</td>
<td>.112(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spearman Correlation</td>
<td>-1.57</td>
<td>.095</td>
<td>-1.628</td>
<td>.107(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Part III H: Documentation

Table 59 How often record baseline findings * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson's R</td>
<td>-1.14</td>
<td>.097</td>
<td>-1.177</td>
<td>.242(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spearman Correlation</td>
<td>-0.70</td>
<td>.096</td>
<td>-.718</td>
<td>.474(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 60 How often record interpretation of dh assessment findings * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson's R</td>
<td>-0.54</td>
<td>.096</td>
<td>-.552</td>
<td>.582(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spearman Correlation</td>
<td>-0.54</td>
<td>.095</td>
<td>-.556</td>
<td>.579(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 61 How often record plan for services * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson's R</td>
<td>-1.59</td>
<td>.095</td>
<td>-1.645</td>
<td>.103(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spearman Correlation</td>
<td>-1.03</td>
<td>.094</td>
<td>-1.085</td>
<td>.290(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 62 How often record notes of services provided * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.263</td>
<td>.091</td>
<td>-2.808</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.207</td>
<td>.098</td>
<td>-2.182</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 63 How often record amount of time spent with client * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>.020</td>
<td>.085</td>
<td>.201</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.021</td>
<td>.092</td>
<td>-.210</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 64 How often record evaluation findings * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.061</td>
<td>.087</td>
<td>-.633</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.070</td>
<td>.094</td>
<td>-.728</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 65 How often record next appt planning details * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.074</td>
<td>.106</td>
<td>-1.762</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.061</td>
<td>.101</td>
<td>-.630</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 66 How often record precautions/instructions given * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Symmetric Measures</th>
<th></th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.063</td>
<td>.094</td>
<td>-.651</td>
<td>.517(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.072</td>
<td>.096</td>
<td>-.741</td>
<td>.460(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 67 How often record risks of services and risks of not receiving rec services * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Symmetric Measures</th>
<th></th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.091</td>
<td>.096</td>
<td>-.941</td>
<td>.349(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.090</td>
<td>.097</td>
<td>-.932</td>
<td>.353(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 68 How often record recommended referrals * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Symmetric Measures</th>
<th></th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.100</td>
<td>.088</td>
<td>-1.028</td>
<td>.306(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.100</td>
<td>.095</td>
<td>-1.025</td>
<td>.308(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 69 How often enter info in ink * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th></th>
<th>Symmetric Measures</th>
<th></th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.233</td>
<td>.084</td>
<td>-2.464</td>
<td>.015(c)</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.206</td>
<td>.077</td>
<td>-2.167</td>
<td>.032(c)</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 70 How often initial or sign all entries * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-0.035</td>
<td>.086</td>
<td>-0.356</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-0.082</td>
<td>.096</td>
<td>-0.842</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>106</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 71 How often ensure original entry is legible if corrections needed * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-0.144</td>
<td>.123</td>
<td>-1.500</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-0.062</td>
<td>.107</td>
<td>-0.638</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 72 How often corrections are signed or initialed * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-0.226</td>
<td>.100</td>
<td>-2.390</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-0.265</td>
<td>.094</td>
<td>-2.826</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 73 How often record discussions/communications with client* year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-0.338</td>
<td>.123</td>
<td>-3.703</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-0.338</td>
<td>.091</td>
<td>-3.698</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td></td>
<td>108</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Table 74 How often maintain copies of all correspondence * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.081</td>
<td>.123</td>
<td>-.837</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.080</td>
<td>.105</td>
<td>-.826</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>108</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 75 How often record client's refusal for care * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.038</td>
<td>.097</td>
<td>-.386</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.118</td>
<td>.102</td>
<td>-1.214</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.

Table 76 How often retain clients' records * year of graduation from a dental hygiene program

<table>
<thead>
<tr>
<th>Symmetric Measures</th>
<th>Value</th>
<th>Asymp. Std. Error(a)</th>
<th>Approx. T(b)</th>
<th>Approx. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval by Interval</td>
<td>Pearson's R</td>
<td>-.054</td>
<td>.088</td>
<td>-.507</td>
</tr>
<tr>
<td>Ordinal by Ordinal</td>
<td>Spearman Correlation</td>
<td>-.029</td>
<td>.090</td>
<td>-.269</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>89</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.
c Based on normal approximation.
Appendix I

Kruskal-Wallis Data Tables

Kruskal-Wallis

This was used to determine the association between geographical location of the dental hygienist and his/her perceptions of his/her adherence to the standards.

Part III A: Informed Consent

Table 77 Informed consent Test Statistics(a,b)

<table>
<thead>
<tr>
<th></th>
<th>informed consent, verbal</th>
<th>informed consent, physical</th>
<th>informed consent, verbal and physical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>2.995</td>
<td>7.548</td>
<td>11.201</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.559</td>
<td>.110</td>
<td>.024</td>
</tr>
</tbody>
</table>

a Kruskal Wallis Test  

b Grouping Variable: geographical location

Part III B: Practicing Safely

Table 78 Practicing Safely Test Statistics(a,b)

<table>
<thead>
<tr>
<th></th>
<th>infection control when contacting blood/saliva</th>
<th>lead apron and thyroid collar</th>
<th>safety glasses</th>
<th>hearing protection</th>
<th>use hazardous materials according to manufacturer's instructions</th>
<th>store and dispose of hazardous wastes/materials according to gov't guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>2.583</td>
<td>1.706</td>
<td>2.543</td>
<td>5.882</td>
<td>2.414</td>
<td>12.609</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.630</td>
<td>.790</td>
<td>.637</td>
<td>.208</td>
<td>.660</td>
<td>.013</td>
</tr>
</tbody>
</table>

a Kruskal Wallis Test  

b Grouping Variable: geographical location
### Part III C: Data Collection

**Table 79 Data Collection Test Statistics**

<table>
<thead>
<tr>
<th></th>
<th>how often collect demographic info</th>
<th>how often collect client concerns</th>
<th>how often collect medical and dental histories</th>
<th>how often collect vital signs</th>
<th>how often collect head and neck examination</th>
<th>how often collect intraoral soft tissue exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>3.211</td>
<td>1.302</td>
<td>1.450</td>
<td>6.998</td>
<td>2.792</td>
<td>1.110</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.523</td>
<td>.861</td>
<td>.835</td>
<td>.136</td>
<td>.593</td>
<td>.893</td>
</tr>
</tbody>
</table>

a Kruskal Wallis Test  
b Grouping Variable: geographical location

**Table 80 Data Collection (continued) Test Statistics**

<table>
<thead>
<tr>
<th></th>
<th>how often collect periodontal exam</th>
<th>how often collect dental exam</th>
<th>how often collect occlusal exam</th>
<th>how often collect diagnostic results and interpretation</th>
<th>how often collect oral hygiene routines and techniques</th>
<th>how often collect client anxiety and pain levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>6.891</td>
<td>12.318</td>
<td>8.097</td>
<td>7.989</td>
<td>5.979</td>
<td>2.480</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.142</td>
<td>.015</td>
<td>.088</td>
<td>.092</td>
<td>.201</td>
<td>.648</td>
</tr>
</tbody>
</table>

a Kruskal Wallis Test  
b Grouping Variable: geographical location

### Part III D: Dental Hygiene Diagnosis

**Table 81 Dental Hygiene Diagnosis Test Statistics**

<table>
<thead>
<tr>
<th></th>
<th>how often establish a dh diagnosis</th>
<th>how often discuss implications of assess findings</th>
<th>how often discuss abnormal/unhealthy findings</th>
<th>how often record the dh diagnosis, discussion, implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>1.215</td>
<td>2.953</td>
<td>6.135</td>
<td>3.686</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.876</td>
<td>.566</td>
<td>.189</td>
<td>.450</td>
</tr>
</tbody>
</table>

a Kruskal Wallis Test  
b Grouping Variable: geographical location
### Table 82 Dental Hygiene Care Plan

<table>
<thead>
<tr>
<th></th>
<th>how often integrate findings and diagnosis into care plan</th>
<th>how often consult client's dentist to integrate dental hygiene care into total health care plan</th>
<th>how often integrate dh tx plan with dentist's plan</th>
<th>how often consult other health care providers</th>
<th>how often discuss oral health and wellness information/techniques</th>
<th>how often discuss treatment options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>4.377</td>
<td>.763</td>
<td>1.069</td>
<td>4.457</td>
<td>1.895</td>
<td>3.866</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.357</td>
<td>.943</td>
<td>.899</td>
<td>.348</td>
<td>.755</td>
<td>.424</td>
</tr>
</tbody>
</table>

a Kruskal Wallis Test  
b Grouping Variable: geographical location

### Table 83 Dental Hygiene Care Plan (continued)

<table>
<thead>
<tr>
<th></th>
<th>how often discuss how short term goals will be evaluated</th>
<th>how often discuss short term goals</th>
<th>how often discuss long term goals</th>
<th>how often discuss fees associated with dental hygiene recommendations</th>
<th>how often discuss risks of client declining recommended services</th>
<th>how often discuss referrals to dentists and other health care professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>7.055</td>
<td>1.276</td>
<td>1.988</td>
<td>9.474</td>
<td>1.994</td>
<td>5.960</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.133</td>
<td>.865</td>
<td>.738</td>
<td>.050</td>
<td>.737</td>
<td>.202</td>
</tr>
</tbody>
</table>

a Kruskal Wallis Test  
b Grouping Variable: geographical location

### Table 84 Dental Hygiene Care Plan (continued)

<table>
<thead>
<tr>
<th></th>
<th>how often discuss number of appts recommended</th>
<th>how often discuss recommended time interval between appts</th>
<th>how often discuss services provided at each appt</th>
<th>how often discuss risks associated with recommended services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>3.290</td>
<td>2.404</td>
<td>6.424</td>
<td>2.251</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.510</td>
<td>.662</td>
<td>.170</td>
<td>.690</td>
</tr>
</tbody>
</table>

a Kruskal Wallis Test  
b Grouping Variable: geographical location
### Part III F: Implementation of Dental Hygiene Care

Table 85 Implementation Test Statistics (a, b)

<table>
<thead>
<tr>
<th></th>
<th>how often carry out services in care plan</th>
<th>how often consult prior to adjusting plan</th>
<th>how often reobtain informed consent</th>
<th>how often offer pain control (if required)</th>
<th>how often offer other anxiety reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>5.371</td>
<td>.697</td>
<td>1.051</td>
<td>3.964</td>
<td>7.495</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.251</td>
<td>.952</td>
<td>.902</td>
<td>.411</td>
<td>.112</td>
</tr>
</tbody>
</table>

a: Kruskal Wallis Test  
b: Grouping Variable: geographical location

### Part III G: Evaluation of Dental Hygiene Care

Table 86 Evaluation Test Statistics (a, b)

<table>
<thead>
<tr>
<th></th>
<th>how often explain need for follow up</th>
<th>how often recommend time interval for next dh appt</th>
<th>how often refer client to other health care professionals</th>
<th>how often provide all services as outlined in care plan</th>
<th>how often discuss outcome of dh services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>7.337</td>
<td>4.957</td>
<td>8.026</td>
<td>2.049</td>
<td>1.671</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.119</td>
<td>.292</td>
<td>.091</td>
<td>.727</td>
<td>.796</td>
</tr>
</tbody>
</table>

a: Kruskal Wallis Test  
b: Grouping Variable: geographical location

### Part III H: Documentation

Table 87 Documentation Test Statistics (a, b)

<table>
<thead>
<tr>
<th></th>
<th>how often ensure original entry is legible if corrections needed</th>
<th>how often corrections are signed or initialled</th>
<th>how often record discussions/communications with client</th>
<th>how often maintain copies of all correspondence</th>
<th>how often record client's refusal for care</th>
<th>how often retain clients' records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>8.483</td>
<td>5.704</td>
<td>3.661</td>
<td>3.812</td>
<td>11.036</td>
<td>6.371</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.075</td>
<td>.222</td>
<td>.454</td>
<td>.432</td>
<td>.026</td>
<td>.173</td>
</tr>
</tbody>
</table>

a: Kruskal Wallis Test  
b: Grouping Variable: geographical location
Table 88 Documentation (continued)  
Test Statistics(a,b)

<table>
<thead>
<tr>
<th></th>
<th>how often record next appt planning details</th>
<th>how often record precautions/instructions given</th>
<th>how often record risks of services and risks of not receiving rec services</th>
<th>how often record recommended referrals</th>
<th>how often enter info in ink</th>
<th>how often initial or sign all entries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>1.354</td>
<td>1.259</td>
<td>6.415</td>
<td>3.379</td>
<td>2.539</td>
<td>3.914</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.852</td>
<td>.868</td>
<td>.170</td>
<td>.497</td>
<td>.638</td>
<td>.418</td>
</tr>
</tbody>
</table>

a  Kruskal Wallis Test  
b  Grouping Variable: geographical location

Table 89 Documentation (continued)  
Test Statistics(a,b)

<table>
<thead>
<tr>
<th></th>
<th>how often record baseline findings</th>
<th>how often record interpretation of dh assessment findings</th>
<th>how often record plan for services</th>
<th>how often record notes of services provided</th>
<th>how often record amount of time spent with client</th>
<th>how often record evaluation findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>2.629</td>
<td>2.748</td>
<td>4.085</td>
<td>7.305</td>
<td>6.243</td>
<td>5.620</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.622</td>
<td>.601</td>
<td>.395</td>
<td>.121</td>
<td>.182</td>
<td>.229</td>
</tr>
</tbody>
</table>

a  Kruskal Wallis Test  
b  Grouping Variable: geographical location