

Dental Hygiene Practice in Canada 2001

**Report No. 3
Findings**

By Patricia M. Johnson, RDH, PhD

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I assume responsibility for the compilation and interpretation of results as presented in this report.

Patricia M. Johnson, RDH, PhD
PMJ Consultants

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PART I

INTRODUCTION AND METHODOLOGY

CHAPTER 1

INTRODUCTION

In 2001, the Canadian Dental Hygienists' Association / L'Association Canadienne des Hygiénistes Dentaires (CDHA/ACHD) undertook a study to investigate the deployment of dental hygienists in Canada. Termed the *Canadian Dental Hygienist Study: Profile 2001* (Profile 2001), it would provide information essential to planning oral health human resources for the health care system.

1.1 PURPOSE AND OBJECTIVES

The purpose of the study was two-fold: to identify and investigate current practice patterns of dental hygienists residing and working in Canada and to examine trends and changes over the past 12-year (and in some cases 20-year) period.

The objectives were to:

1. conduct a survey of dental hygienists registered to practice and residing in Canada,
2. establish a series of statistical profiles of dental hygienists as part of the CDHA Practice Profiles Data Base,
3. examine patterns of clinical practice and identify influencing factors,
4. examine trends and changes using comparable previous survey data, and
5. consider implications for human resource planning and oral health.

The primary focus was dental hygiene clinical practice (as opposed to teaching, administration and other roles) since approximately 85.0 percent of dental hygienists in Canada work as clinicians - that is, provide direct client care services - in private dental offices (Johnson, 1989).

1.2 BACKGROUND AND RATIONALE

CDHA established and maintains two databases to monitor the supply and deployment of dental hygienists registered to practice and residing in Canada.

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1.2.1 National Dental Hygiene Supply Data Base

To monitor the supply of dental hygienists, CDHA initiated the National Dental Hygiene Supply Database in partnership with provincial regulatory agencies. A longitudinal database, it consists of registration data supplied annually by regulatory agencies and/or professional associations. Baseline information was obtained from a 1987 supply-side study (Johnson, 1989¹).

1.2.2 National Dental Hygiene Practice Data Base

To investigate and monitor the deployment of dental hygienists (that is, work patterns, influencing factors, trends and changes), CDHA initiated a second more comprehensive longitudinal database. Baseline information was obtained through a 1987 deployment study (Johnson, 2000²). Results from the current study *Profile 2001* provide a second data point. It is the intention to replicate these surveys approximately every ten years, using stratified probability sampling procedures and a mailed survey instrument developed for the purpose.

For both databases, earlier survey information is available for selected characteristics (see Lewis et al, 1981; Statistics Canada, 1976-79, 1981, 1983).

1.2.3 Profile 2001

The current study involves a comprehensive survey of dental hygienists, including personal and professional characteristics, practice environments and clinical activities. While replicating the overall design of the earlier deployment study, the survey instrument was revised to reflect changes in practice since 1987.

Information from the profile will guide the development and implementation of quality assurance activities undertaken by and for the dental hygiene profession. It will be used to represent dental hygienists' professional interests and to plan improved access to and cost-effectiveness in the provision of essential oral health care services. Subsequent periodic profiles may be used to monitor trends and changes and evaluate outcomes of CDHA initiatives.

¹ The supply-side study (Johnson, 1989) involved a census mail survey ($n=5399$; RR=89.0%) of dental hygienists registered to practice and residing in Canada. Its purpose was to determine supply, distribution and workforce participation rates and to examine factors associated with workforce behaviour.

² The deployment study (Johnson, 2000) involved a more detailed provincially stratified probability sample survey ($n=2508$; RR=86.0%), using a subset of the 1987 population. Its purpose was to examine dental hygiene clinical practice and investigate personal, structural and environmental factors associated with practice behaviours.

1.3 PROJECT MANAGEMENT

The study was conducted under the auspices of CDHA. PMJ Consultants was contracted to conduct the survey; the principal investigator was Patricia M Johnson, Ph.D., RDH. Data collection was accomplished through the Institute for Social Research, York University. The research was supported in part by a grant awarded through Human Resources Development Canada (HRDC).

1.4 RESEARCH APPROACH

The research approach was descriptive and exploratory. The study was subject to the usual limitations of self-reported data. Cross-sectional in design, it provided a picture of the profession at one point in time, namely late May to late July 2001, the data collection period. The survey data will support further analyses.

1.5 THE REPORTS

This is the third of a series of four reports. Report No. 1 documents the methodology used for the Study. Report No. 2 consists of briefly narrated tables and graphs that present basic statistics and frequency tabulations for all items in the survey questionnaire. This report presents findings from a more detailed analysis of the data. Descriptive profiles and significant relationships are reported in narrative, tabular and graphic formats, together with major findings and recommendations.

CHAPTER 2

METHODOLOGY

In this chapter, an overview of the methodology used for this project is presented. For a more detailed report see *Dental Hygiene Practice in Canada 2001: Technical Report* (Johnson, 2001, CDHA, Ottawa).

2.1 ADVISORY PANEL

A four-member Advisory Panel was appointed to provide general consultative support for the project. It consisted of Judy Clarke, Sandra Cobban, Wendy King and Dianne Landry. These members represented various aspects of practice, dental hygiene organizations and geographic locations within Canada and were considered expert in their respective fields.

2.2 CONCEPTUAL FRAMEWORK

Concepts from the fields of dental hygiene and quality assurance served to guide data collection and analysis and ensure the usefulness of the data for further study.

2.2.1 Framework

The analytic framework consisted of three elements:

1. **Structure** – the resources needed to perform the task; in this case, the physical facilities, equipment, records and management and support processes which enable the dental hygienist to practice.
2. **Process** – the act of doing the task; in this case, the procedures and activities undertaken by the dental hygienist.
3. **Outcome** – the results, in this case of dental hygiene care.

This framework was used to develop national standards for practice and for education in both Canada (Canada, 1988; CDHA, 1995¹) and the United States (ADHA, 1996). It underlies the CDHA Code of Ethics and has guided studies of dental hygiene practice in Canada and elsewhere practice (e.g., Johnson 1989, 1995, 2001; Freed and Perry, 1992), and is inherent in the management of dental hygiene services and programs.

¹ CDHA. *Dental Hygiene: Definition and Scope*. August 1995. Ottawa. 19 pp plus 3 appendices.

METHODOLOGY

This same framework has been widely accepted for quality assurance purposes, in particular as it relates to the provision of health services (Donabedian, 1980). Quality assurance (QA) comprises both *quality assessment* and *continuous quality improvement* (CQI). QA focuses on *structure, process* and *outcome*. CQI aims at continuously improving the process of delivering services, and involves “self-assessment and improving performance even when nothing is wrong” (Forrest, 1995:115). Continuing education or professional development activities are consistent with the CQI approach.

2.2.2 Dental Hygiene Process

The primary source of information for this project, and hence the unit of analysis, is the individual dental hygienist rather than the workplace or the client. Therefore process more so than structure or outcomes was the major element of the framework.

2.2.2.1 Elements of Dental Hygiene Process

Dental hygiene practice - that is, the provision of comprehensive dental hygiene services or care – typically is conceptualized as a cyclical series of five elements that occur simultaneously or overlap when performed and thus constitute a process (Darby and Walsh, 1995; Woodall et al, 1989).

1. **assessment** - collection and documentation of subjective and objective data,
2. **dental hygiene diagnosis** - analysis and interpretation of data and diagnostic statements,
3. **planning** - priorities, goals and objectives, strategies and treatment plan,
4. **implementation** - of planned educational and therapeutic interventions, and
5. **evaluation** - of process and outcomes.

The validity of the dental hygiene process has been widely accepted. It was used previously to study dental hygiene practice in Canada (Johnson 1989, 1992)

2.2.3 Structures Of Dental Hygiene Practice

Environmental *structures* shape practice and influence outcomes. Structural aspects include work roles and relationships, decision-making responsibilities and physical and technical resources. Structural factors have been shown to influence work motivation and satisfaction and directly and indirectly affect workforce participation and work patterns among dental hygienists in Canada (Johnson, 1999). Selected measures to assess structural aspects of dental hygiene practice were included in this study.

2.2.4 Operational Definitions

Dental hygienist refers to a person who, at the time of the survey, was registered to practice and residing in a province or territory of Canada.

The terms **dental hygiene practice** and **dental hygiene work** refer to working as a clinician in clinical practice as well as to other work roles, including administrator, supervisor, educator and/or teacher.

The term **clinical dental hygiene practice** refers to the provision of clinical services directly to a client or patient. It does not include treatment of clients by a teacher as part of student clinical instruction.

2.2.5 Variables

The majority of variables specified for the project related to process and structure dimensions of dental hygiene practice.

Process variables were specific to clinical dental hygiene practice. They involved aspects of assessment and diagnosis, planning and implementation of therapeutic and preventive services, referrals, evaluation procedures, and record-keeping.

Structural variables included the type and number of work sites, management policies and procedures, resources, decision-making practices, infection control and pain control practices and procedures, and emergency protocols.

In addition, two other limited categories of variables were included. **Outcome measures** were based on respondents' comments. Future analyses could examine congruence between self-reported practices and practice standards. **Self-corrective elements** were measured in terms of respondents' reported continuing education practices. A continuing education activity index was constructed to examine potential patterns.

2.3 THE SAMPLE

The study population consisted of dental hygienists registered to practice and residing in Canada as of March 15, 2001. Graduates for the year 2001 were excluded.

2.3.1 The Sampling Frame

The sampling frame was derived from computerized lists of members and non-members maintained by CDHA and from lists of registrants provided by the College of Dental Hygienists of British Columbia (CDHBC) and the Corporation Professionnelle des Hygienistes Dentaires du Quebec (CPHDQ). Respective provincial and territorial regulatory agencies and/or professional associations validated completeness and accuracy of the list. Care was taken to screen the sampling frame for missing and/or duplicate listings.

The master file was used to manage the field work stage of the survey - for example, to produce mailing labels, monitor and update incorrect addresses, and log returns of completed questionnaires. It included basic demographic information, which was used to compare respondents with non-respondents.

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2.3.2 The Sampling Plan

A stratified random sample with unequal sampling fractions was drawn from the sampling frame using a random-start, systematic selection procedure. Six regions were established - Atlantic, Quebec, Ontario, Prairie, Alberta and British Columbia. The relatively few dental hygienists residing in the territories were included in the corresponding region. Stratum sample sizes were calculated using the method for binomial proportions (Snedecor and Cochran, 1980) and conservatively assuming an 80.0% dental hygiene employment rate and a 70.0% response rate. Results were estimated to be accurate within a margin of plus or minus 5.0%, 19 samples out of 20. Each record was assigned a unique 6-digit identifying number coded for province or territory and individual case; use of these numbers helped to ensure respondent confidentiality. Where analyses involved the use of aggregated data, responses were weighted by region according to the distribution of the actual or total survey population (Sonquist and Dunkelberg, 1977, p206).

2. 4 THE SURVEY

Information for the study came primarily from a survey conducted for the purpose.

2.4.1 Data Collection

A four-wave survey design using a self-administered questionnaire was used. (Dillman, 1987) The method - a mail questionnaire in conjunction with systematically executed follow-up procedures - had been used previously by the Principal Investigator with this population and achieved response rates of 78.0% or greater (Johnson, 1989, 1995). Advance promotion included publication of a notice of the forthcoming survey in the CDHA and CPHDQ journals.

Fieldwork was conducted through the Institute for Social Research at York University (ISR).

Data collection occurred May 25 to August 15, 2001. Returned questionnaires were logged by date in the data set maintained for data collection purposes. Final field results are summarized in Table 2.1.

Once processed, the questionnaires and subsequent computer records were assigned unique numbers for identification purposes. Only the computer record's ID number was used for all subsequent analytic procedures, assuring respondent confidentiality and anonymity

2.4.2 The Questionnaire

A 16-page, self-administered, structured questionnaire composed primarily of closed questions was developed for the purposes of the Study. It was available in both English and French languages. Copies are included as Appendices A and B. Cover letters in both official languages were provided by CDHA and, in French for Quebec, by CPHDQ. Copies are attached as Appendix C.

Specification of survey items was based on a review of the current literature, results of an item analysis of the instrument used for the 1987 *Dental Hygiene Practice* survey (Johnson, 1999), and consultation with the Advisory Panel for the Study². This procedure helped to ensure content validity and clarity. Where feasible, items used for the 1987 survey were reproduced. On the expectation that the “practice” survey will be repeated periodically, care was taken to develop items suitable for replication in future surveys.

2.4.3 The Pretest

The survey instruments were pre-tested to assess validity, response burden and ease of completing the relatively long questionnaire. First, the 4-member Advisory Panel reviewed the questionnaire and covering letters for the Study. Revisions arising from this consultative, iterative process tended to focus on the need to accommodate differences that existed between jurisdictions. Then a set of two more structured pretests was conducted in spring, 2001, using a focus group approach and involving dental hygienists purposively selected on the basis of age, education, work setting, and workforce status to represent a cross-section of the study population.

The English language questionnaire and cover letters were pre-tested in the Toronto area (n=10). Following the debriefing, forms were modified as necessary and the questionnaire was translated into the French language. The French language forms were pre-tested in Montreal (n=5). At all stages, care was taken to ensure consistency between the English and French language documents.

2.5 DATA PROCESSING

Data entry and initial cleaning procedures and preparation of a preliminary data set were accomplished through the Institute for Social Research (ISR) under the general direction of P. M. Johnson. PMJ Consultants undertook subsequent reduction and cleaning procedures plus the construction of data sets for analytic purposes.

2.5.1 Data Reduction Procedures

Responses were compiled into an electronic data set suitable for computer analysis using SPSS/PC. For verification of accuracy purposes, data were re-entered for 10 percent of the questionnaires. The data reduction and cleaning process was intensive; it included tests for internal consistency, out-of-range codes, extremely high or low values and missing values. A coding system was developed to analyze comments provided by 25.0% of the respondents on the final page of the questionnaire. Selected open-ended items also were coded for subsequent analysis.

² Reliability and content validity was enhanced through the use of the Pane. They reviewed the accuracy, appropriateness and timeliness of survey items, for example, to ensure relevance and reflect realities of and standards for clinical practice in 2001.

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2.5.2 Preparation Of Data Sets

Four data files were constructed. The first file contained records for 1730 dental hygienists; of these, 1718 were ultimately eligible to be included in the analysis. The second file contained records for 1590 respondents who were reportedly working in dental hygiene at the time of the survey. The third file contained records for 1539 dental hygienists working in clinical dental hygiene practice. The fourth file held records for those respondents working as clinicians in private dental practice.

Original variables were re-coded as needed – for example, to ensure adequate cell counts for statistical procedures and/ to ensure respondent confidentiality when data were disaggregated during analysis. New variables and indices were constructed to facilitate the analysis of, for example, professional development and clinical practice behaviours.

2.6 THE RESPONSE

The response rate was very high for a mailed survey – 79.4%. Of the 2179 eligible dental hygienists surveyed, 1730 completed and returned the questionnaire. An assessment of possible non-response bias disclosed little difference existed between the total survey population and the sample of respondents. In light of the marked similarity between the two groups, the sample survey design, and the exceptionally high response level, the probability sample was considered to be representative of the population of dental hygienists in Canada.

2.7 DATA ANALYSIS

2.7.1 Weighting Of Data

When aggregated nationally – that is, across provincial or territorial strata, the data were weighted to reflect the national distribution of the survey population ($N=14,205$). This method adjusted for the provincially stratified sampling plan and varying response rates (Moser and Kalton, 1972).

When reading the tables, the reader is cautioned that regionally reported data are unweighted and valid only for the specific region. While percentage figures for any one region may be compared to those for other regions and for Canada as a whole, the absolute numbers should not be summed across two or more regions (that is, across columns).

2.7.2 Statistical Procedures

Univariate, bivariate and multivariate techniques were used to establish a series of profiles and examine patterns and relationships. Preliminary results for the item-by-item univariate and regional bivariate analyses were presented in Report No. 2 *Dental Hygiene in Canada 2001: National Weighted Frequencies and Regional Cross-Tabulations* (Johnson, 2001, CDHA, Ottawa).

For this report, categorical data techniques primarily were used to identify groups of dental hygienists and examine similarities and differences. Data set #1 (n=1718) was used to analyze items in sections A and B of the questionnaire – that is, social-demographic, educational, and employment characteristics of respondents. Data set #2 (n=1590) was used for section C – that is, characteristics of the practice environment for those who were working in dental hygiene. Data set #3 (n=1438) was used for sections D through J – that is, characteristics of clinical practice. Statistical procedures included chi-square and measures of central tendency and variance where appropriate.

Work behaviour was examined in terms of principal work role and, for those in clinical practice, by activity. Personal variables hypothesized to influence work role included educational attainment, continuous quality improvement activities, work history, hours worked/week, satisfaction with career and remuneration, perceptions regarding educational preparation and clinical ability, and congruence between preferred and reported (1) work supervision and (2) appointment scheduling procedures. Occupational variables included educational preparation – that is, place and year of graduation.

Organizational variables included work setting (number and type), administrative policies and procedures (remuneration, decision-making, protocols), workload, and technology (resources). Using a methodology developed for the purpose (see 1987 Study, Part 2), two new summary variables or indices were constructed empirically - one to classify dental hygienists according to level of professional development activity and the other to classify based on scope of clinical practice³. These indices were used to investigate personal and environmental/structural factors associated with practice patterns. Results of a multiple regression analysis to test hypotheses related to clinical practice will be reported separately.

2.7.3 Analysis Of Respondents' Comments

A content analysis of a sample of respondents' comments was conducted. Approximately 25.0 percent of respondents (n=950) included written comments on the back page of the questionnaire. Using a sample of these questionnaires, a coding scheme was developed to identify the various topics and sub-topics addressed. Up to three topics were coded for each set of comments. Results are presented in Chapter 14.

³ A similar "Practice Index" was constructed for the Ontario Baseline Practice Profiles Project (Johnson, 1996).

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Table 2.1: Profile 2001: Final Field Report

Province	Sample	Non-Response	Completed ¹	Blank /Refusal	Bad Address/ Return-to-sender)	Invalid (deceased, out of country)	Response Rate %
BC	368	79	285	1	3	0	78.0
ALTA	350	69	274	3	4	0	79.2
SASK	116	22	93	1	0	0	80.2
MAN	199	42	152	2	0	3	77.6
ONT	424	81	342	0	2	0	81.0
QUE	423	87	331	1	2	2	79.0
NS	172	34	134	2	1	1	78.8
NB	93	17	74	0	2	0	81.3
PEI	17	2	15	0	0	0	88.2
NFLD	33	8	25	0	0	0	78.8
NWT	2	0	1	0	1	0	100.0
NUN	1	0	1	0	0	0	100.0
YUK	2	0	2	0	0	0	100.0
TOTAL	2200	439	1730²	10	15	6	79.4

1 Of the total completed returns, the assigned ID number had been removed from 15 forms. Response information was used to identify the province of residence and these 15 forms were included in the analysis.

2 Three questionnaires were subsequently deleted from the final data set; the respondents indicated they had graduated in 2001 (immediately prior to the survey) and by definition were ineligible for the purposes of the study.

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PART II

CHARACTERISTICS OF DENTAL HYGIENISTS

This section of the report presents a series of profiles describing characteristics of dental hygienists registered to practice and residing in Canada in 2001. Results are based on those dental hygienists who responded to the sample survey and were included in the analysis (n=1718).

Information regarding social-demographic characteristics is presented in Chapter 3. Professional qualifications and credentials are examined in Chapter 4 and professional development activities in Chapter 5. In Chapter 6, features of the work environment for those dental hygienists working in the field (n=1590) are examined. Characteristics of clinical practice, the predominant dental hygiene work role, are presented in Part III.

CHAPTER 3

SOCIAL DEMOGRAPHIC PROFILE

This section examines social demographic features of dental hygienists in Canada in 2001. Information was based on responses to section A of the questionnaire. Comparisons to earlier population profiles are presented where data permit.

3.1 PLACE OF RESIDENCE

The distribution of respondents by their province or territory and region of residence is presented in Table 3.1. The distribution is consistent with the actual distribution of dental hygienists for 2001 and followed the general population distribution.

3.1.1 Region

Two regions accounted for the greatest proportion of respondents – 7 out of 10 resided in either Ontario (42.8%) or Quebec (25.7%). Of the remaining dental hygienists, the majority resided in either British Columbia (13%) or Alberta (9%), with the Manitoba/Saskatchewan and Atlantic regions accounting for another 5% each.

A slight shift in distribution over the period 1977 to 2001 was apparent. (See Figure 3.1.) It was accounted for primarily by proportionate increases for Ontario and Quebec – from 37.0% to 42.8% and from 15.5% to 25.7% respectively, with corresponding decreases for the remaining provinces with the exception of New Brunswick.

3.1.2 Province and Territory

Among the four Atlantic provinces, the greatest proportion of respondents resided in Nova Scotia – 2.8% versus 5.0% for the region. For the Man/Sask. region, the greatest proportion resided in Manitoba - 3.3% versus 5.2% for the region. As noted, the vast majority of respondents resided in either Ontario or Quebec.

Relatively few dental hygienists resided in the far north. The sample included 1 respondent each for the North West Territories and Nunavut and 2 respondents for the Yukon.

3.2 AGE

Canadian dental hygienists tend to be a homogeneous population with little regional variation in either age or sex. In 2001, the profession tended to be characterized by a relatively large segment in the thirties age group.

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3.2.1 Distribution

The age distribution in five-year age groups is provided in Table 3.2 and mean age in Table 3.3. The average age of respondents was 37 years old with the youngest aged 21 years and the oldest aged 75 years. Most notably, the greatest concentration of dental hygienists (42%) was in the 30 to 39 year age group and another 38% were 40 years or older. Only 21% of the population were less than 25 years of age.

Regionally, mean age ranged from a high of 38.6 years for British Columbia to a low of 34.1 years for Quebec. Across all provinces, dental hygienists tended to be older in British Columbia where the mean age overall was 38.6 years, followed closely by Manitoba at 38.3 years.

3.2.2 Change

The dental hygienist population overall has been aging. A comparison of age distributions for 1977, 1987 and 2001 is illustrated in Figure 3.2 and presented in Table 3.4. A clear picture of the shift that occurred over the 24-year period is evident. In 1977, over two-thirds of dental hygienists (68%) were less than 30 years old. By 1987, that proportion had declined markedly to 44% and decreased even further to 21% by 2001. This decline was accompanied by a corresponding increase for the 40 years and over age group – from 4% in 1977 to 11% by 1987 and a remarkable 38% by 2001.

3.3 DEPENDENTS

Presence of dependents in the home and in particular children under 5 years of age has been shown to be a factor influencing workforce participation patterns of dental hygienists and other predominately female occupational groups. (Johnson, 1989) Respondents provided information regarding their dependents - defined as persons living at home that, because of age or disability, required the respondent's assistance for daily living.

3.3.1 Presence of Dependents

Overall, 3 out of 5 respondents (58.5%) reported they had one or more dependents – a marked increase over 1987 when 2 out of 5 reported having dependents (43.0%). (See Table 3.5.) This finding is consistent with the aging of the dental hygiene population noted earlier - that is, younger aged dental hygienists were less likely to have dependents. In 2001, for example, respondents with no dependents were on average 34 years of age whereas those with a dependent in the 5 to 14 years age group were on average 39 years of age.

As noted in Table 3.5, findings varied slightly regionally. The proportion with dependents ranged from a low of 54.0% for Alberta to 66.1% for Ontario.

The proportion of dental hygienists with dependents had increased over time – from 2 out of 5 in 1987 (43%) to 3 out of 5 by 2001 (59%). This increase was evident across all regions (Table 3.5).

3.3.2 Age of Dependents

The distribution of respondents by age of their dependents if they had one is presented in Table 3.6. It should be noted that one respondent could have dependents in more than one age group.

Only one-quarter of respondents overall (23.6%) or 2 out of 5 of those that reported the presence of a dependent (40.3%) indicated they had a child under 5 years of age. Within this group, the majority reported one pre-school aged child (66.4%) and another 30.2% had two.

Approximately one-third of respondents overall (31.5%) or just over one-half of those with dependents (53.8%) reported a child aged 5 to 14 years. This group was almost equally divided between those who had one child in this age category (45.4%) and those who had two (47.0%).

Less than 1 out of 5 respondents overall (17.5%) or 29.8% of those with dependents reported the presence of one in the 15 to 60 years age group. The majority had one in this age category (61.0%) and another 31.1% had two.

Lastly, it would appear that relatively few dental hygienists have older aged dependents in the home. Only 1.3% of respondents overall or 2.2% of those with dependents reported having someone 61 years of age and over in the home who required their assistance with activities of daily living.

3.3.3 Age of the Youngest Dependent

In a previous study (Johnson, 1989), age of the youngest dependent was found to have a stronger influence on labour force participation than family size - that is, than the actual number of individuals dependent upon the respondent.

Among respondents overall, 1 out of 4 indicated they had at least one dependent under 5 years of age (23.6%). Regionally, findings varied widely. The proportion was markedly greatest for Ontario where 3 out of 5 respondents reported having at least one child under 5 years of age (61.1%). The proportion declined by approximately one-half to 32.2% for Quebec. It declined again by almost one-half to 17.1% for British Columbia. Proportions for the remaining regions were 12.0%, 10.5% and 8.2% for Alberta, Atlantic and Man/Sask. respectively.

3.4 WORKFORCE PARTICIPATION

Respondents provided information regarding their current workforce or employment status - that is, whether or not they were working in dental hygiene and how much they worked. They also indicated their work history – total number of years worked.

3.4.1 Dental Hygiene Employment Status

Full-time employment was defined consistent with the standard for Canada – namely, 30 hours or more per week, excluding lunch and break periods. Response choices were employed full-time or part-time as a dental hygienist, unemployed and seeking employment in dental hygiene, employed in another field, on temporary leave from dental hygiene, not currently employed, and retired. Findings are presented in Table 3.7.

3.4.1.1 Distribution

Overall, 9 out of 10 respondents were working either full or part time as a dental hygienist (92.6%). This proportion was remarkably high given that the vast majority of dental hygienists were female and in their child rearing years. Regionally, the employment rate varied little (Table 3.8). It ranged from a high of 95.4% for BC to a low of 90.6% for Man/Sask. The rate for Man/Sask. reflects the relatively low rate of 86.8% observed for Manitoba, offset in part by the relatively high rate of 96.8% for Saskatchewan; the latter was second only to Newfoundland with 100.0%. Respondents for the Atlantic and Quebec regions were somewhat more likely to work full rather than part time compared to their counterparts in the other regions.

Another 4.0% of respondents were on temporary leave. Unemployment in the field was low – 0.4% of respondents reportedly were unemployed and seeking employment as a dental hygienist. Only 1.2% was employed in another field and less than 2% were either not employed or retired.

The work force participation rate constitutes the proportion of dental hygienists who are either working or seeking work in dental hygiene. The rate overall was very high at 93.0. Across all regions, over 9 out of 10 respondents were working or available for work in dental hygiene. (See Table 3.8.)

3.4.1.2 Changes

Employment rates for 1977, 1987 and 2001 are presented by province in Table 3.9. Two observations are noteworthy. First is the overall increase in employment among dental hygienists – from 79.6% in 1977 (Statistics Canada, 1977) to 87.6% in 1987 (Johnson, 1989) and to 92.6% by 2001. Second is the overall decline proportionately in the group not employed in dental hygiene - from 17.0% in 1977 to 9.0% in 1987 and finally to 1.7% in 2001. In addition, the proportion working in a field other than dental hygiene declined slightly – from 3.3% to 3.0% and finally to 1.2%.

For the majority of provinces, employment in dental hygiene increased over the period 1987 to 2001. For New Brunswick, the rate remained high across each of the three survey years - 90.0% or greater. For Nova Scotia and Quebec, an increase occurred between 1987 and 2001. For Prince Edward Island, the rate for 1987 was markedly lower compared to 1977 and 2001 and to the other provinces. The greatest increase in employment rate was observed for Newfoundland and Saskatchewan, the spread between 1977 and 2001 being 27.3% and 28.0% for the two provinces respectively.

3.4.1.3 Factors Influencing Workforce Participation

The relationship of respondent age and presence of a pre-school aged child in the home with workforce participation was examined. For the group that reported having at least one child under 5 years of age, their parenting role would have been expected to limit their availability for work in dental hygiene. (It had been previously determined that presence of a pre-school aged child was a stronger determinant of workforce participation than the number or age of dependents (Johnson 1989). Results when controlling for both factors are presented in Table 3.10.

a. Respondent Age

Respondent age was not a major factor in work force participation. Across all age groups, 9 out of 10 respondents worked in dental hygiene. The rate did decline slightly to 89.0% among respondents 26 to 35 years of age – when child-rearing responsibilities typically are greatest. The rate was greatest at 98% among the 25 years and younger age group.

Age was associated with full time versus part time employment status. The group that worked full time in dental hygiene tended to be younger than those working part time – 35 years of age on average versus 39 years. The relatively small group on temporary leave (4.0%) was on average 33 years of age; their status was likely accounted for in large part by maternity leave and infant care. Respondents who were not employed were on average 37.5 years of age. Finally, respondents who either worked in another field or were retired tended to be older; mean age was 44 and 43 years respectively.

b. Presence of a Young Child in the Home

As expected, presence of a child less than 5 years of age in the home was inversely related to participation. However, it is important to note that the effect was slight – the employment rate declined very slightly to 83.6%. That is, over 8 out of 10 respondents with a very young child in the home were working in dental hygiene. Among respondents who reported only one young child, over 4 out of 5 worked in dental hygiene either part time (44.3%) or full time (41.2%); another 1.4% were unemployed and seeking work and a further 10.7% were on temporary leave. Among respondents who reported two very young children, again 4 out of 5 worked in dental hygiene. However, the proportion who worked part time increased to 53.4% while another 27.1% worked full time; a further 14.3% were on temporary leave. Employment remained high (73.4%) even among the group that

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reported 3 or more children under 5 years of age – 46.7% worked part time and another 26.7% worked full time; a further 26.7% were on temporary leave.

3.4.2 Hours Worked Per Week

Work patterns of the 92.6% of respondents who were participating in the dental hygiene work force were examined. Respondents reported the total number of hours they worked per week, on average, in dental hygiene (excluding lunch period). Findings are presented in Table 3.11.

3.4.2.1 Distribution

In 2001, dental hygienists worked on average a total of 28.2 hours per week ($s.d.=8.92$). One-half worked 30 hours or more; most frequently cited was 35 hours, and the total number ranged from 1 to 75.

Little regional variation was apparent for hours worked per week ($Eta^2 = .01$). The mean average ranged from a high of 30 hours for the Atlantic region, followed by 29 for Quebec, 28 for Ontario, Alberta and B.C., and lastly 27 for Man/Sask.

The total number of hours worked per week was inversely associated with respondent age although the relationship was slight. On average, the youngest age group - 21-25 years - worked 32 hours per week and the mean declined gradually to a low of 26 hours among those aged 36 years-and-over; the exception was a slight increase to 27 hours for the 41-to-45 year age group.

While as expected, respondents with children under 5 years of age tended to work fewer hours per week on average compared to results overall, the difference was surprisingly slight - 24.7 versus 28.2 hours. Total hours worked was inversely associated with the total number of very young children in the home. The group that reported only one child under 5 years of age worked on average more hours per week compared to those with two or three young children - 26.1 versus 22.9 and 22.4 hours respectively.

3.4.2.2 Changes

Over the period 1987 to 2001, the average number of hours worked per week in dental hygiene had declined slightly - from 30.5 hours ($s.d.=8.56$) to 28.2 hours ($s.d.=9.64$). The median and mode remained unchanged at 30 and 35 respectively. Regional variation remained constant – that is, findings for both surveys indicated only slight variation. Respondents for the Atlantic and Quebec regions continued to report more hours worked per week on average compared to the other regions.

3.4.3 Total Number Of Years Worked

Respondents were asked to indicate the total number of years they had worked as a dental hygienist either full time or part time. By definition, it included working as a clinician, educator, administrator, researcher or community health promoter. Findings are presented in Tables 3.15 and 3.16 and illustrated in Figure 3.5.

3.4.3.1 Distribution

Overall, workforce retention appears to be high. Even given the increased numbers of graduates in the last decade, one half of the respondents reported working 10 years or more in dental hygiene. Almost 1 out of 5 had worked 21 years or more. The total number of years ranged from less than 1 to 37, with a mean of 11.9 and standard deviation of 7.9.

Regionally, respondents for Alberta, B.C. and Ontario reported the greatest number of years worked on average. The mean ranged from a high of 12.7 for Alberta to a low of 10.8 for Quebec.

3.4.3.2 Changes

Work experience was measured as the number of years worked in dental hygiene. Dental hygienists on the whole tended to be active in their profession for a considerable length of time. The profession was (and remains) predominately female and thereby sensitive to variations introduced through the dual demands of marriage and parenting. In addition, the increased number of graduates since the mid-1980's exerted a downward pull on the average number of years worked. Even given these factors, the proportion of dental hygienists who have worked five years or more remains remarkably high.

It was not unexpected, given the 14-year lapse in time, to find that the length of time a dental hygienist typically has been in the workforce had increased since 1987. In 1987, 6 out of 10 respondents indicated they had worked in dental hygiene for more than five years. This proportion had increased to three-quarters by 2001.

3.5 SUMMARY

In 2001, dental hygienists in Canada tended to be a homogeneous population with little regional variation in age. However, the population had been aging – the proportion under 30 years of age declined from 68% in 1977 to 21% by 2001 with a corresponding increase among the 40 years and older group – from 4% in 1977 to 38% by 2001.

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As in 1987 and consistent with the general population distribution, the vast majority of respondents (78.5%) resided in either Ontario or Quebec. Almost 3 out of 5 respondents reported the presence of a dependent in the home (58.5%) – an increase from 43.0% in 1987. Regarding the group with dependents, overall there had been a shift in age distribution of the dependents. Whereas in 1987 the group reporting the presence of a child less than 5 years of age was predominant, by 2001 the group with dependents aged 5-to-14 years was predominant.

Workforce participation was very high – 9 out of 10 respondents were working full time or part time in dental hygiene. At 92.6%, the rate had increased slightly from the 87.6% observed in 1987. Unemployment was low at less than 1.0%. There was little variation regionally. Dental hygienists worked on average a total of 28.1 hours per week, again with little variation regionally. Among dental hygienists 35 years and older, there was a slight reduction in time worked - 26 hours on average. While presence of a dependent in the

home and, in particular of a child under 5 years of age, exerted a downward pull on the rate of participation, their effect was slight. In contrast, they had a greater effect on the total number of hours worked per week. One-half of dental hygienists who had a child under 5 years of age worked on average 25 hours per week.

Over the 24-year period 1977 to 2001, workforce participation increased – from 79.6% to 92.6%. During the period 1987 to 2001, the increase was accounted for in large part by increased workforce retention; that is, the proportions that either were not employed or working in another field declined and there was a corresponding increase in the proportion working part-time – from 27.8% to 35.3%. During the same period, the proportion working full-time declined slightly - from 59.8% to 57.3%.

Table 3.1: Distribution of Survey Respondents by Province or Territory and Region of Residence, Canada, 2001

Province or Territory	Region	Percent
Newfoundland	Atlantic	0.5
Prince Edward Island		0.3
Nova Scotia		2.8
New Brunswick		1.4
Quebec	Quebec	25.7
Ontario	Ontario	42.8
Manitoba	Man/Sask.	3.3
Saskatchewan		1.9
Alberta	Alberta	8.6
British Columbia	BC	12.6
Nunavut	Quebec	0.0
North West	Alberta	0.0
Yukon	BC	0.1
Total		100.0

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Figure 3.1: Dental Hygienists by Province of Residence, 1977, 1987, 2001, Canada

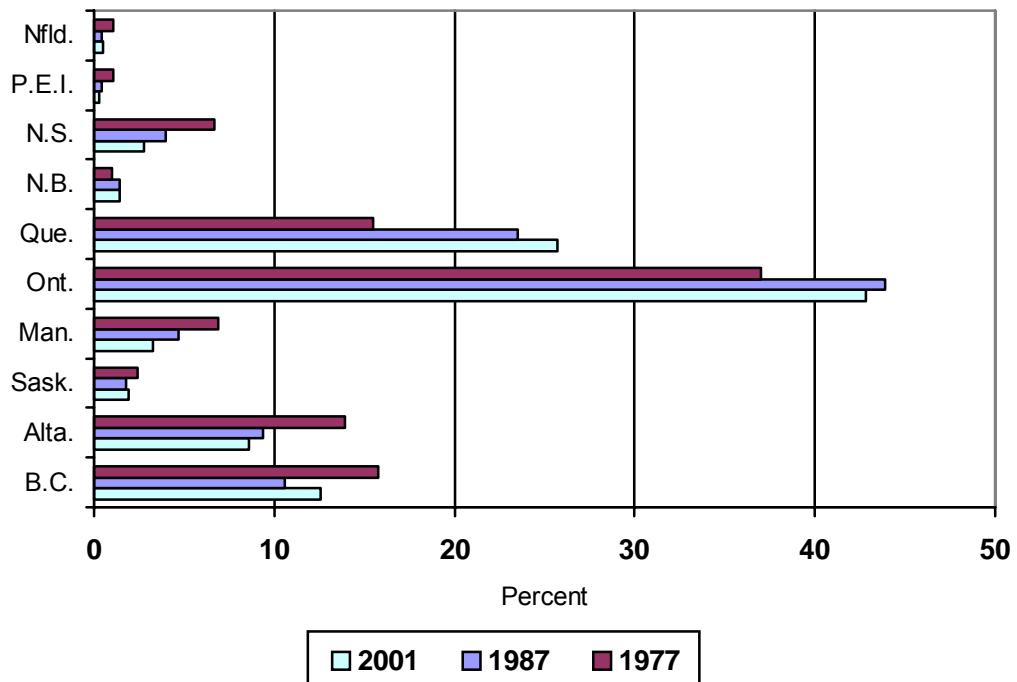


Table 3.2: Dental Hygienists by Age Group and Region, Canada, 2001 (percent)

AGE GROUP (years)	REGION						CANADA (regionally weighted)
	Atlantic	Quebec	Ontario	Man/ Sask.	Alberta	B.C.	
21-25	4.1	18.1	5.6	6.1	2.6	2.8	8.2
26-30	23.6	17.2	14.2	11.5	20.6	15.7	16.0
31-35	29.3	25.0	23.0	19.3	20.2	22.0	23.3
36-40	17.5	16.6	18.6	22.1	22.4	21.7	18.9
41-45	9.8	14.7	22.1	25.4	13.6	15.0	18.1
46 AND OVER	15.9	8.4	16.5	15.6	20.6	22.7	15.5
	246	320	339	244	272	286	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

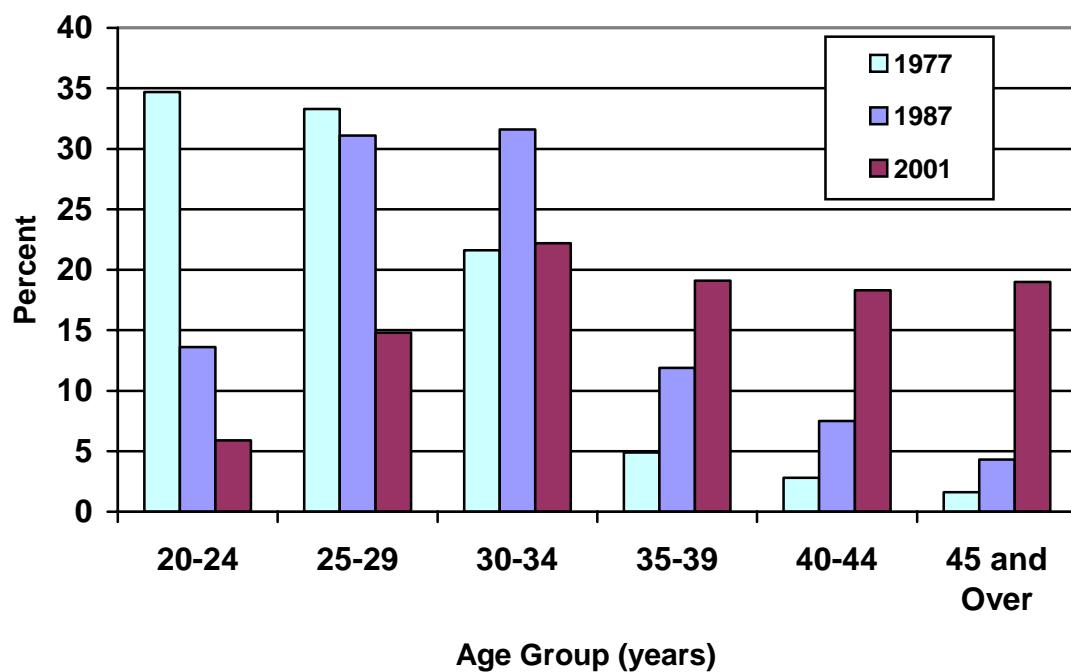
Missing observations = 11

p=.000; Eta = .196

**Table 3.3: Average Age of Dental Hygienists by Region, Canada, 2001
(Years, mean and standard deviation)**

AGE	REGION						CANADA (est'd)
	Atlantic	Quebec	Ontario	Man/ Sask.	Alberta	B.C.	
Mean	35.8	34.1	37.8	38.2	37.9	38.6	36.9
Number	246	320	339	244	272	286	
Standard Deviation	7.57	7.86	8.26	7.58	8.33	8.34	8.29

Figure 3.2: Dental Hygienists by Age Group and Year, 1977, 1987 and 2001, Canada



**Table 3.4: Dental Hygienists by Age Group and Year 1977, 1987 and 2001, Canada
(number and percent)**

AGE GROUP	SURVEY YEAR					
	1977		1987		2001	
	N	%	N	%	n	%
Under 25 years	674	34.7	727	13.4	101	5.9
25-29 years	648	33.3	1681	31.0	254	14.8
30-34 years	421	21.6	1714	31.6	381	22.2
35-39 years	96	4.9	694	12.8	329	19.1
40-44 years	54	2.8	407	7.5	314	18.3
45 years and over	52	1.6	201	3.7	327	19.0
Total	1945	99.9	5424	100.0	1706	100.0

Data for 1977 and 1987 are derived from a census survey of dental hygienists and for 2001 from a regionally stratified sample survey.

Table 3.5: Percent of Dental Hygienists with Dependents,* by Region, Canada, 1987 and 2001

No Dependents Present	Region						CANADA (est'd)
	Atlantic	Quebec	Ontario	Man/ Sask.	Alberta	B.C.	
1987	47.6	32.1	45.8	45.7	48.7	43.0	
2001	56.0	57.9	66.1	57.9**	56.1	61.0	

*A dependent was defined as a person, living in the home, who because of age or disability, requires the respondent's assistance with activities of daily living.

** The proportion for the Man/Sask. and Alberta regions was re-calculated to correspond with the Prairie region used in the 1987 study.

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Table 3.6: Dental Hygienists by Number of Dependents* and Region, Canada, 2001

Age of Dependents	Region						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
No Dependents	109 44.0	136 42.1	116 33.9	92 37.7	126 46.0	126 43.9	41.5
Have Dependents:							
Under 5 years: N	75 One Two Three	76 76.3 21.1 2.6	97 63.9 32.0 4.1	54 64.8 31.5 3.7	60 63.3 35.0 1.7	63 54.0 42.9 3.2	66.4 30.2 3.4
5 to 14 years: N	75 One Two Three Four	109 42.2 44.0 11.9 1.8	131 46.6 48.1 5.3	91 47.3 44.0 6.6	77 41.6 49.4 7.8	75 48.0 49.3 1.3	45.4 47.0 6.8 0.8
15 to 60 years: N	31 One Two Three Four	72 72.2 18.1 9.7	54 53.7 38.9 5.6	50 42.0 52.0 6.0	50 70.0 22.0 6.0	43 65.1 30.2 4.7	61.0 31.1 7.0 0.9
61 years and over: N	4 One Two	4 100.0 100.0	5 60.0 40.0	2 100.0	1 100.0	4 66.7 33.3	1.4 75.2 24.8

Table 3.7: Employment Status of Dental Hygienists by Region, Canada, 2001

EMPLOYMENT STATUS IN DENTAL HYGIENE	REGION						NATIONAL WEIGHTED TOTAL
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Full Time / DH	67.2	67.0	52.5	52.9	51.7	56.1	57.3
Part Time / DH	27.1	25.5	39.0	37.7	42.4	39.3	35.3
Unemployed / Seeking DH	0.4	0.6	0.3	--	0.4	0.4	0.4
On Temporary Leave / DH	4.5	3.7	4.7	3.7	4.1	2.1	4.0
Employed Other Field	--	0.9	1.8	2.5	0.4	0.4	1.2
Not Employed	0.8	1.9	1.8	2.5	1.1	1.8	1.7
Retired	--	0.3	--	0.8	--	--	0.1
Total	247	321	341	244	271	235	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 3.8: Dental Hygiene Work Force Participation Rate by Region, 2001

PARTICIPATION RATE	REGION						NATIONAL WEIGHTED TOTAL
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Working or available for work in dental hygiene	94.7	93.1	91.8	90.6	94.5	95.8	93.0
Total	247	321	341	244	271	235	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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Table 3.9: Dental Hygiene Employment Rate by Province, 1977, 1987, 2001, Canada

PROVINCE	EMPLOYMENT RATE		
	1977	1987	2001
Newfoundland	72.7	91.3	99.9
Prince Edward Island	77.3	65.2	93.3
Nova Scotia	82.5	82.0	94.0
New Brunswick	90.5	90.1	93.2
Quebec	89.4	87.4	92.5
Ontario	79.4	91.0	91.5
Manitoba	69.6	79.1	86.8
Saskatchewan	68.7	76.2	96.7
Alberta	74.2	83.7	94.5
British Columbia	80.0	85.9	95.4
Canada	79.6	87.6	92.6*

* Weighted estimate based on provincially stratified national sample survey data.

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Table 3.10: Employment Rate of Dental Hygienists, by Number of Children Under 5 years of Age and Respondent's Age, Canada, 2001 (% and n)

RESPONDENT'S AGE GROUP	NUMBER OF DEPENDENTS <5 YEARS OF AGE			TOTAL
	1	2	3	
21 to 25 years	75.0	--	--	97.8 137
26 to 30	78.3	65.5	--	89.0 272
31 to 35	81.5	81.3	80.0	89.4 396
36 to 40	92.7	85.2	71.4	92.8 320
41 to 45	100.0	100.0	100.0	95.8 310
46 years and over	--	--	--	93.6 264
Total: Dependents	85.5	80.5	73.4	83.6
Age group				92.5

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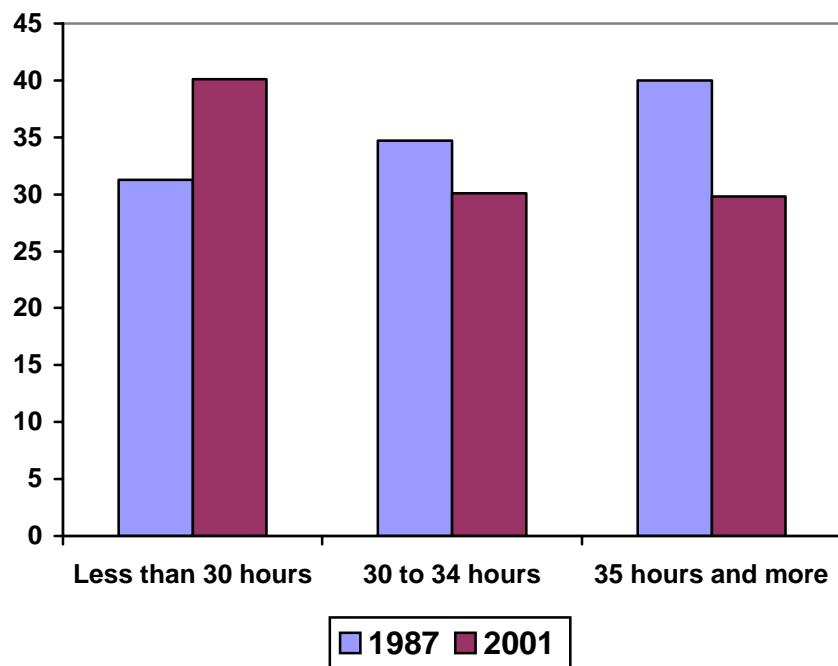
Table 3.11: Total Hours Worked Per Week, on Average, in Dental Hygiene, by Region, Canada, 2001

STATISTICS	REGION						NATIONAL WEIGHTED TOTAL
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Mean	29.98	29.34	27.57	27.18	27.86	27.54	28.15
Median	32	32	30	30	30	30	30
Standard deviation	8.5	8.6	9.92	10.66	10.85	9.65	9.64
Range	0 - 68	0 - 48	0 – 56	0 - 72	0 - 75	0 - 65	0 – 75
Total	248	318	328	239	267	283	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Missing: 35 (2.0%)

* By definition, excludes lunch period.

Figure 3.3: Dental Hygienists Working in Dental Hygiene, by Total Number of Hours Worked Per Week, Canada, 1987 and 2001 (Percent)



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Table 3.12: Total Hours Worked Per Week on Average by Region, Canada 2001

HOURS	REGION						NATIONAL WEIGHTED TOTAL
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Less than 30	29.1	30.2	45.0	41.7	44.1	44.8	40.1
30 to 34	38.1	38.3	24.5	32.2	25.5	30.8	30.1
35 hours and more	32.8	31.5	30.4	26.1	30.4	24.4	29.8
Total	244	311	322	230	263	279	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Missing = 8 (0.5%) p=.000 Eta=.109

Table 3.13: Total Hours Worked Per Week on Average in Dental Hygiene by Respondent Age Group, Canada, 2001 (mean, median, s.d. and n)

AGE GROUP	MEAN	MEDIAN	STANDARD DEVIATION	NUMBER
21 to 25 years	32.18	33.2	8.37	139
26 to 30	30.97	33	8.75	266
31 to 35	28.6	30	9.36	385
36 to 40	26.08	28	9.62	314
41 to 45	26.98	30	9.77	303
46 years and over	26.33	28	10.13	254
Total	28.15	30	9.64	

Table 3.14: Total Hours Worked Per Week on Average by Presence of a Child Less Than 5 Years of Age, Region, Canada 2001 (mean, median, s.d.)

HOURS	REGION						NATIONAL WEIGHTED TOTAL
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Mean	27.41	27.08	25.2	22.87	20.13	22.58	24.74
Median	30	30	25	22	18	21	25.33
Standard deviation	8.1	8.08	9.78	9.61	9.46	8.89	9.99
Total	61	65	80	45	47	55	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

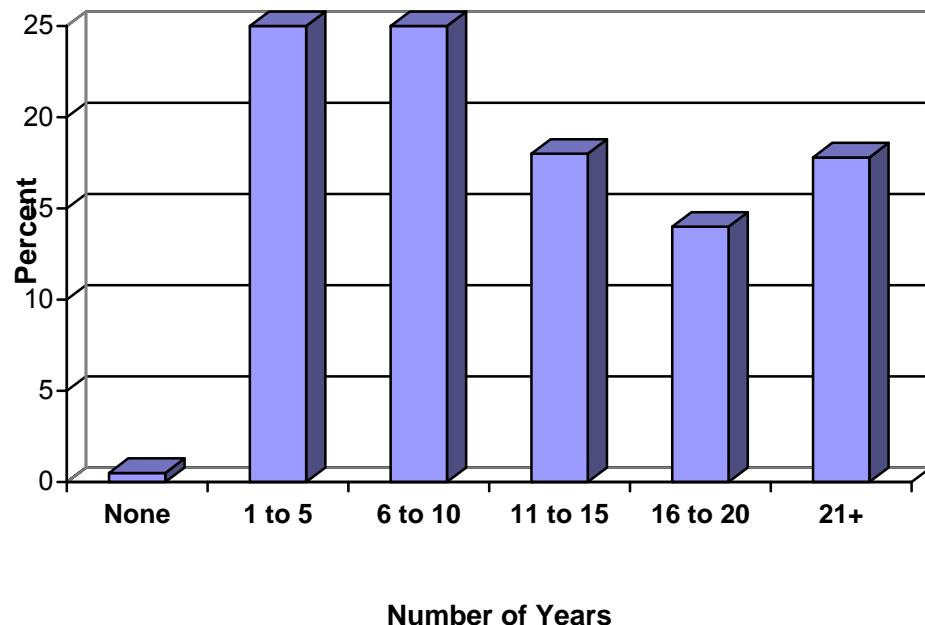
Table 3.15: Total Years Worked in Dental Hygiene by Region, Canada 2001 (mean, median, s.d., n and range)

YEARS	REGION						NATIONAL WEIGHTED TOTAL
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Mean	11.32	10.81	12.42	11.24	12.71	12.51	11.93
Median	10	10	11	10	11	10	10
Standard deviation	7.86	7.18	7.95	7.12	8.15	9.04	7.91
Range	1-33	0-26	0-37	1-32	1-36	1-37	0-37
Total	247	320	339	244	272	285	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Missing = 11 (0.6%)

SOCIAL DEMOGRAPHIC PROFILE

**Figure 3.4: Total Years Worked in Dental Hygiene by Dental Hygienists, Canada, 2001
(percent)**



**Table 3.16: Total Number of Years Worked in Dental Hygiene by Region,
Canada 2001 (% and n)**

YEARS	REGION						NATIONAL WEIGHTED TOTAL
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
None	--	0.3	0.9	--	--	--	0.5
1 to 5 years	26.3	29.4	22.7	27.0	20.2	25.6	25.0
6 to 10	25.5	22.2	24.5	25.8	27.9	27.0	24.7
11 to 15	22.7	20.0	17.4	19.3	18.0	15.1	18.1
16 to 20	9.7	15.3	14.5	15.6	13.6	10.5	13.9
21 and over	15.8	12.8	20.1	12.3	20.2	21.8	17.8
Total	247	320	339	244	272	285	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

CHAPTER 4

PROFESSIONAL QUALIFICATIONS

To qualify to practice dental hygiene in Canada typically requires successful completion of a recognized post-secondary educational program in dental hygiene and subsequent registration at the provincial or territorial level. In this chapter, educational attainments in both dental hygiene and other fields and registration credentials of the dental hygienist are described.

4.1 BASIC DENTAL HYGIENE EDUCATION

Respondents provided information regarding their educational background that prepared them for entry to the dental hygiene profession. While the educational profile varied little, the program setting did. This was due in large part to a shift in the mid-1970's in some provinces from a university to a community college-based program. This shift was accompanied by an increase in number of programs, which helped to account for a large increase in the supply of dental hygienists, in those provinces in particular, and for the relatively young age of the workforce.

4.1.1 Program Setting

Dental hygiene education is offered in a variety of settings. As illustrated in Figure 4.1, almost all respondents had graduated from a Canadian dental hygiene program - 72.4% from a college-based program, another 21.6% from a university-based program, and a further 0.6% from the Canadian Armed Forces' dental hygiene program; a very few respondents (n=4) indicated an unknown program. The remaining 5.2% indicated they had graduated from a program outside Canada – most typically in the U.S.A.

Of the 94.6% who graduated from a Canadian program, three-quarters (76.5%) had graduated from a total of 17 community/technical college-based programs and another 22.8% from five university-based programs. Less than 1% graduated from the Canadian Armed Forces dental hygiene program. The shift in program setting is evident when comparable results are examined for 1987. (See Table 4.2.) Proportionately, the group that had graduated from a university-based program had decreased by almost one-half overall - from 40.3% in 1987 to 22.8% by 2001 whereas college-based graduates had increased overall – from 59.7% in 1987 to 76.5% in 2001.

Findings varied regionally and by province. (See Table 4.1.) The university-based program was most prevalent among respondents for the Atlantic and Alberta regions (78.9% and 73.5% respectively) and to a lesser extent Man/Sask. (56.6%). The college-based program was most prevalent for Quebec (97.2%) followed by Ontario (83.8%). Respondents who had graduated from a program outside Canada tended to reside in Ontario followed by Alberta and British Columbia.

PROFESSIONAL QUALIFICATIONS

The shift in program setting is evident when year of graduation is taken into account (Table 4.2). Among respondents who graduated from a Canadian program, approximately one-half of those who graduated from a university-based program graduated in 1985 or earlier (55.1%). Conversely, one-half of those who graduated from a college-based program graduated after 1990 (52.7%).

4.1.2 Location of Program

Not surprising given the national distribution for respondents, overall the vast majority had graduated from a dental hygiene program located in Ontario (40.8%), followed by Quebec (27.6%). (See Table 4.3.) Across all regions, the greatest proportion of respondents had graduated from a program located in the region in which they currently resided. That is, there apparently has been little inter-regional migration of the potential workforce.

The exception was British Columbia where one-half of respondents (50.5%) had graduated from a program outside the region. Second lowest was the proportion for Alberta (61.8%). Dental hygiene migration for B.C. came primarily from Ontario and Alberta; for Alberta, it tended to come from Manitoba and Saskatchewan, followed by Ontario.

4.1.3 Year of Graduation

As illustrated in Figure 4.3, almost one-half of respondents (48.5%) had graduated from a basic-level dental hygiene program within the past decade - in 1991 or later. The proportions for those who graduated in 1975 or earlier were slightly higher for Alberta and B.C. (Table 4.3.).

4.2 MIGRATION

Information provided in Table 4.1 provides an indicator of migration patterns of dental hygienists. Based on school of first graduation and place of residence in 2001, the dental hygiene population appeared to be relatively stable. For five of six regions, out-migration was slight. Where movement had occurred, it tended to be to British Columbia.

Quebec, Ontario and British Columbia were the regions most likely to retain their graduates - 92%, 92% and 97% respectively graduated from and resided in the particular region. For the Atlantic region, 8 out of 10 respondents who graduated there remained in the region (79%); of the remaining, one-half resided in British Columbia in 2001. For Alberta, the proportion that graduated from and resided in the region declined slightly to 75%; with few exceptions, those that had moved tended to move to British Columbia.

The greatest movement was noted among dental hygienists that graduated from a dental hygiene program in either Manitoba or Saskatchewan. Three out of 5 respondents who graduated in the Man/Sask. region (63.8%) remained in the region. Another 16% resided in Alberta and a further 11% in British Columbia. Graduates from a dental hygiene program located outside Canada were most likely to reside in Ontario (69%), followed by British Columbia (16%) and then Alberta (12%).

4.3 HIGHEST LEVEL OF DENTAL HYGIENE EDUCATION ATTAINED

Across all regions, over 9 out of 10 respondents indicated that the diploma or associate degree was the highest level of dental hygiene education they had attained. (See Table 4.4.) This finding was not unexpected given that, at the time of the survey, only three degree-level dental hygiene programs had existed for dental hygienists in Canada and the French-language one in Quebec, since discontinued, was offered for relatively few years.

There had been little change in distribution since 1977 when 94.1% of respondents reported a diploma or certificate as the highest level attained in dental hygiene

4.4 TRAINING IN SPECIALIZED FIELDS OF PRACTICE

Participants indicated whether they had completed training in any of four specialized fields of clinical practice – namely, restorative, orthodontic, local anaesthesia and residential care. (Those four areas were denoted specialized in that, for some provinces, they were not part of the basic dental hygiene curriculum and/or scope of practice.) A new variable was created to examine the total number of fields of specialized training reported by each respondent.

4.4.1 Number of Specialized Fields

Regarding the total number of specialized fields in which a dental hygienist had received training, findings are presented in Table 4.6 and illustrated in Figure 4.3. Overall, the largest group of respondents – almost 3 out of 5 – indicated they had no training in any one of the four fields. Another 30.1% reported training in one field only. Findings varied regionally. Respondents for the Man/Sask. and Atlantic regions were far more likely to report two or more fields compared to their colleagues in the other three regions and to findings overall – 37.3% and 29.5% respectively versus 12.7% overall.

4.4.2 Type of Field

Regarding dental hygienists who have received training to perform specialized procedures, distribution by type of specialization is presented in Table 4.7 and illustrated in Figure 4.4. For three of the four fields examined, respondents for the Atlantic region were proportionately the most likely to report specialized training. The exception was local anaesthesia which was most predominant among respondents for B.C.

4.4.2.1 Restorative Procedures

Of the four fields examined, restorative was predominant among respondents that had received specialized training – just over one-third reported this field (34.9%). Regionally, findings varied widely. Training in the restorative field was much more prevalent among respondents for the Atlantic and Man/Sask. regions that had specialized training (8 out of 10) and declined to a low of just over 1 out of 10 for Ontario.

PROFESSIONAL QUALIFICATIONS

4.4.2.2 Orthodontic Procedures

Among the group that reported specialized training, one-quarter reported training in orthodontic procedures (25.8% overall). Again, findings varied widely by region. Training in orthodontic procedures was reportedly most prevalent for the Atlantic and Man/Sask. regions at 48% and 41% respectively. It declined to a low of 15% for both Quebec and B.C.

4.4.2.3 Local Anaesthesia

Overall, training in local anaesthesia was as prevalent as for orthodontic procedures - 25.8% versus 24.0%. However, it was evident primarily among respondents for the three western regions and tended to be almost non-existent in the east. The procedure was most prevalent for B.C., being reported by virtually all respondents (95.4%). It was reported by two-thirds of respondents for Man/Sask. and one-half for Alberta. However, the proportion declined to less than 5.0% for the Atlantic, Quebec, and Ontario regions.

4.4.2.4 Residential Care

Compared to the other three fields examined, training in residential care was far less evident among dental hygienists. It was reported by fewer than 1 out of 10 respondents with specialized training. It tended to be most prevalent among respondents for the two coastal regions - 27.6% and 16.0% respectively for the Atlantic and B.C. regions.

4.4.3 Changes

As noted in Table 4.8, over the period 1987 to 2001, some change occurred in the distribution of respondents that reported specialized training. Regarding the two "traditional" procedures, change was slight – an increase from 29% to 35% for restorative and a decrease from 31% to 26% for orthodontic procedures. On the other hand, the proportion trained in local anaesthesia doubled from 12% in 1987 to 24% by 2001. Comparable data was not available for training in residential care, a relatively new field of training for dental hygienists.

4.5 ADDITIONAL ACADEMIC QUALIFICATIONS

Respondents were asked to indicate whether they had attained educational qualifications in fields other than dental hygiene and, if yes, the highest qualification attained. It should be noted that the findings do not include those dental hygienists that were pursuing but had not yet completed formal studies at the time of the survey. They also do not reflect the relatively few persons who had permanently withdrawn from the dental hygiene workforce to pursue an alternate career in, for example, dentistry or law, and who thus were excluded from the analysis.

4.5.1 Additional Qualification

Relatively few dental hygienists held academic qualifications in a field other than dental hygiene.

4.5.1.1 Distribution

Three out of 10 respondents (29.8%) reportedly held one or more academic qualifications in a field other than dental hygiene. (See Table 4.9.) Findings varied considerably by region. The proportion that reportedly had attained further qualifications ranged from a high of 45.1% and 43.9% for the Man/Sask. and Atlantic regions respectively to a low of 23.7% and 25.4% for Quebec and Ontario respectively. Overall, there was little age difference between respondents that had obtained academic qualifications in addition to dental hygiene and the general population of dental hygienists.

4.5.1.2 Change

There had been a two-and-one-half-fold increase in the proportion of respondents that reported an academic qualification in another field – from 12% in 1987 to 30% by 2001. The increase occurred across all regions (Table 4.9).

Most dramatic was the almost eight-fold increase apparent for the Atlantic region – from 6% to 44%. In 1987, the proportion was greatest for Ontario and British Columbia with 17% each and least for the Atlantic and Quebec regions with 5% and 6% respectively.

4.5.2 Level of Academic Attainment

As indicated in Table 4.10, among the group of respondents that reported having attained additional non-dental-hygiene qualifications, almost one-half reported their highest qualification was a certificate or diploma (46.0%). Another 33.8% indicated the baccalaureate degree and a further 4.4% indicated the master's degree; the remaining 15.9% indicated the "other" category. The relatively small group that reported the masters degree as their highest qualification tended to be older – 46 years of age on average versus 37 years for the baccalaureate group and 36 years for the certificate/diploma group.

As indicated in Table 4.10, regional variation was evident. Respondents for the Atlantic region were the most likely to indicate the baccalaureate degree as the highest level attained - 61% versus 34% overall; they were also least likely to report a certificate or diploma - 23% versus 46% overall. Regarding the masters degree, although respondents for Quebec overall were the least likely to report non-dental-hygiene educational qualifications, among those that did, they were more than twice as likely to report a masters degree - 10% versus 4% overall. The Quebec group was also the most likely to select the "other" category.

PROFESSIONAL QUALIFICATIONS

4.6 REGISTRATION AND LICENSURE

To practice in a province or territory of Canada in 2001, a dental hygienist was required to be registered to practice with the appropriate regulatory agency and to hold a current license or certificate that typically must be renewed annually. The exception was dental hygienists in the Canadian Armed Forces who, as federal employees, did not require provincial or territorial registration. An individual might be licensed to practice in more than one jurisdiction in Canada in any one year.

4.6.1 Number of Jurisdictions

Respondents were asked to indicate, for the year 2001, all provinces and territories in which they were currently licensed and/or registered to practice dental hygiene.

4.6.1.1 Distribution

The vast majority of respondents (95.9%) were licensed to practice in only one province or territory. A further 2.7% reported holding a permit to practice in two jurisdictions. (See Table 4.11.)

Findings varied slightly by region. Although proportions were relatively small, respondents for Man/Sask., followed by B.C., were slightly more likely to indicate two or more jurisdictions – 11.0% and 8.0% respectively. In contrast, only 2.0% of respondents for Ontario cited more than **one jurisdiction**.**-2%**

4.6.1.2 Change

Over the period 1987 to 2001, the relatively small proportion registered in two or more jurisdictions declined even further - from 10.0% to 4.0%.

4.6.2 Distribution

The distribution of respondents by jurisdiction(s) in which they were registered in 2001 and their place of residence at the time of the survey is presented in Table 4.12. The findings confirm that, for dental hygiene, registration totals tend to inflate estimates of current supply and hence are not a reliable indicator for planning human resource requirements.

For six provinces, the vast majority of registrants actually resided in the province in 2001. The proportion was greatest for Quebec, Ontario and British Columbia - 9 out of 10 registrants. It declined slightly to 8 out of 10 for Alberta, Manitoba and Nova Scotia, and to 7 out of 10 for New Brunswick and Saskatchewan. In contrast, for Newfoundland and Prince Edward Island, fewer than one-half of registrants were residents – 46% and 39% respectively.

Findings were even more extreme for the territories. While up to 18 respondents indicated they were registered in one or more of the territories, only one resided in each of the North West Territory and Nunavut and two in the Yukon.

4.7 SUMMARY

In summary, in 2001 the educational background of dental hygienists showed little variation. The vast majority graduated from a diploma program in dental hygiene. Among graduates of Canadian programs, three-quarters had graduated from a community or technical college-based program. This probability increased among more recent graduates and was a marked increase over the 60% observed in 1987. Almost 7 out of 10 received their dental hygiene education in either Ontario or Quebec, the provinces in which most of the programs were located. Labour supply was relatively stable; little movement was noted for dental hygienists from the province of first graduation to the region of 2001 registration.

Seven out of 10 did not hold an academic qualification in a field other than dental hygiene. Just over 40% had received training to perform specialized procedures, primarily in restorative and orthodontic dental hygiene and local anaesthesia. The majority were qualified in only one area and that area varied markedly by region.

Regarding registration and licensure, in 2001 over 9 out of 10 dental hygienists held a current license to practice in only one province or territory and that province most typically was either Ontario or Quebec. For 8 provinces, at least 8 out of 10 registrants resided in the province in 2001. Exceptions were Prince Edward Island and Newfoundland where the proportion declined to less than one-half and the three territories where the proportion was less than 1 out of 20.

PROFESSIONAL QUALIFICATIONS

Figure 4.1: Dental Hygienists by Setting of Basic Dental Hygiene Program of Graduation, Canada, 2001

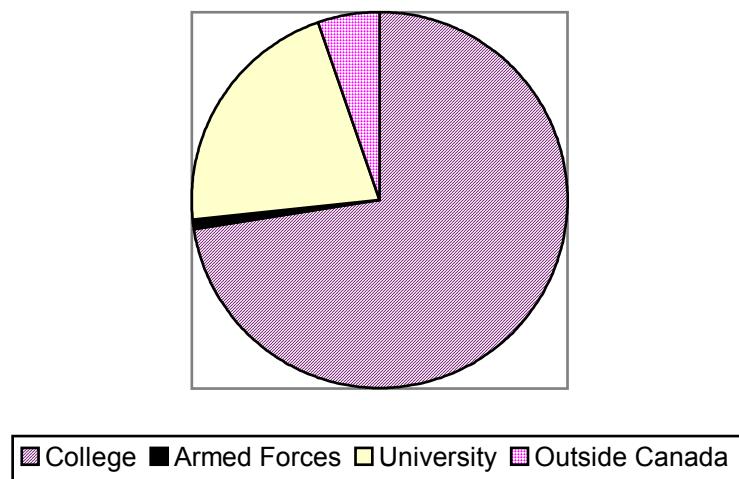


Table 4.1: Dental Hygienists by Setting of Basic Dental Hygiene Program of Graduation and Region of Current Residence, Canada, 2001

Program Setting	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Canadian University	194 78.9	7 2.2	24 7.1	138 56.6	200 73.5	104 36.5	21.6
Canadian College	43 17.5	312 97.2	284 83.8	104 42.6	48 17.6	159 55.8	72.4
Canadian Forces Dental School	3 1.2		3 0.9	1 0.4	3 1.1	2 0.7	0.6
Outside Canada	6 2.4	1 0.3	28 8.3	1 0.4	19 7.0	19 6.7	5.2
"Other" in Canada		1 0.3			2 0.7	1 0.4	0.2
Total	246 100.0	321 100.0	339 100.0	244 100.0	272 100.0	285 100.0	100.0

Missing = 11 (0.6)

Table 4.2: Graduates of Canadian Dental Hygiene Programs by Type of Program Setting, Canada, 1987 and 2001

PROGRAM SETTING	SURVEY YEAR	
	1987	2001
University	40.3	22.8
Community or Technical College	59.7	76.5
Canadian Forces Dental School	2.0	0.7
Sample size	2389	1614*

- Weighted data from regionally stratified national probability sample survey

PROFESSIONAL QUALIFICATIONS

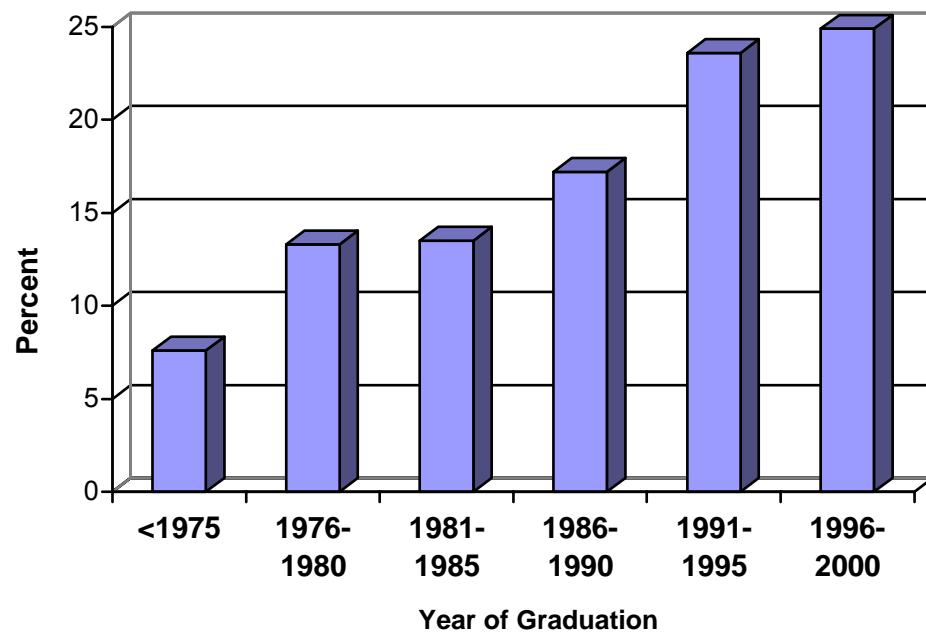
Table 4.3: Movement of Dental Hygienists Between Place of Graduation (Basic Dental Hygiene Program) and Region of Current Residence, Canada, 2001

REGION OF RESIDENCE	PLACE OF GRADUATION (BASIC DENTAL HYGIENE PROGRAM)							TOTAL (Est'd)
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	Outside Canada	
Atlantic	77.6	11.4	6.9	1.2	0.4	--	2.4	100.0 246
Quebec	--	98.8	0.6	--	--	--	0.6	100.0 321
Ontario	0.6	2.1	87.6	1.5	--	--	8.3	100.0 339
Man/Sask.	0.4	0.8	5.3	91.4	1.6	--	0.4	100.0 244
Alberta	2.6	2.2	9.2	14.3	61.8	2.2	7.4	100.0 272
B.C.	4.2	4.2	15.1	6.7	13.3	49.5	7.1	100.0 285
National Weighted Total	4.9	27.6	40.8	7.6	7.1	6.5	5.4	100.0

Note: Percentages may not total

100.0 due to rounding.

Figure 4.2: Dental Hygienists by Year of First Graduation in Dental Hygiene, Canada, 2001 (percent)



PROFESSIONAL QUALIFICATIONS

Table 4.4: Dental Hygienists by Year of First Graduation in Dental Hygiene by Region, Canada, 2001

Year of Graduation	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Before 1975	9.3	3.8	6.9	7.1	12.7	13.9	7.6
1976 to 1980	8.9	14.6	14.5	11.8	11.5	9.6	13.3
1981 to 1985	8.0	12.7	15.4	15.1	12.7	10.3	13.5
1986 to 1990	22.8	20.4	15.4	20.2	15.9	14.6	17.2
1991 to 1995	26.2	19.1	25.1	20.6	27.4	25.3	23.6
1996 to 2000	24.9	29.3	22.7	25.2	19.8	26.3	24.9
Total	237	314	331	238	252	281	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

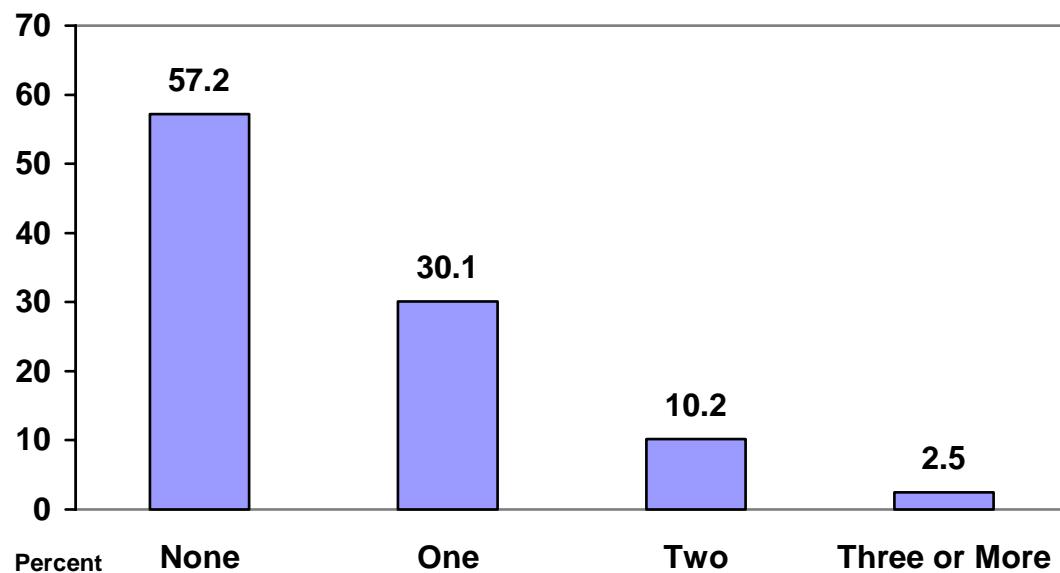
Missing: 65 (3.8) P=.000 Eta=.065

Table 4.5: Dental Hygienists by Highest Level of Dental Hygiene Education Attained and by Region, Canada 2001

Highest Level Attained in DH	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Diploma or Equivalent	98.0	94.4	94.7	96.3	97.1	95.1	95.1
Baccalaureate	0.8	2.2	0.9	--	2.2	4.2	1.7
Masters	--	0.3	--	0.4	0.4	--	0.1
Other	1.2	3.1	4.4	3.3	0.4	0.7	3.0
Total	248	323	340	243	273	287	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Missing = 4 (0.2%)

Figure 4.3: Dental Hygienists by Total Number of Specialized Fields of Clinical Practice in Which They are Trained, Canada, 2001 (percent)

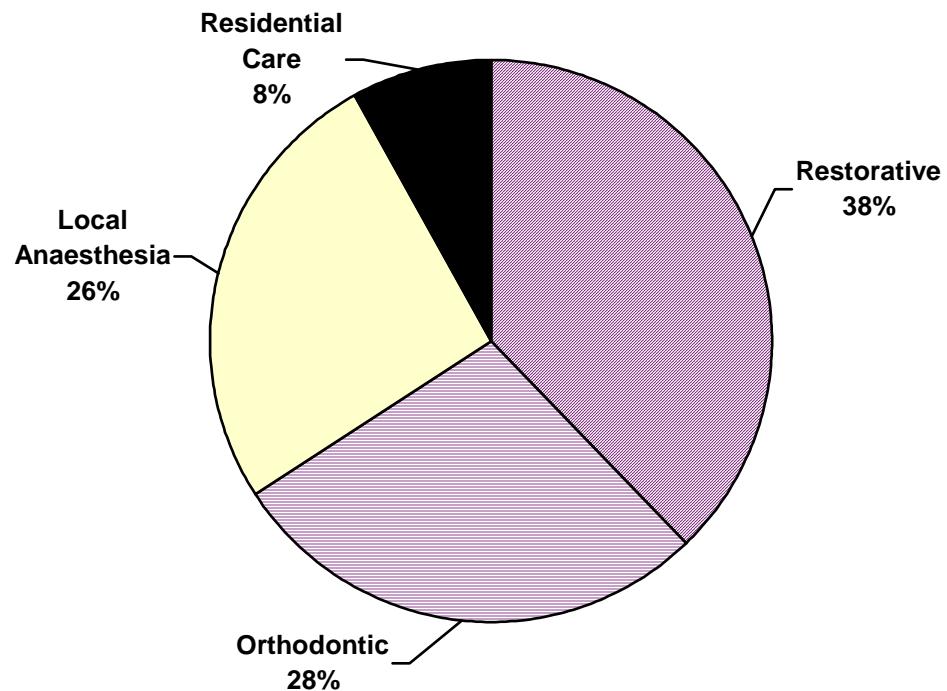


PROFESSIONAL QUALIFICATIONS

Table 4.6: Dental Hygienists with Specialized Training by Total Number of Fields Qualified and by Region, Canada 2001

Number of Fields	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
None	43.5	42.7	75.4	36.5	59.9	38.0	57.2
One	27.0	42.4	18.1	26.2	33.2	46.0	30.1
Two	21.4	13.0	5.0	29.9	5.5	12.5	10.2
Three or More	8.1	1.8	1.5	7.4	1.5	3.4	2.5
Total	248	323	342	244	274	287	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Figure 4.4: Dental Hygienists That have Completed Training in Specialized Fields of Clinical Practice, by Field, Canada, 2001



PROFESSIONAL QUALIFICATIONS

Table 4.7: Dental Hygienists That Have Completed Training in Specialized Fields of Clinical Practice, by Field, Canada, 2001 (percent “yes”)

“Yes”	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
a. Restorative	199	187	39	178	42	54	34.9
	81.6	59.2	12.8	79.5	17.6	25.1	
b. Orthodontic	102	46	108	78	24	31	25.8
	47.9	14.7	33.8	41.3	10.7	15.3	
c. Local Anaesthetic	6	8	12	149	133	268	24.0
	3.3	2.6	4.2	66.8	51.2	95.4	
d. Residential Care	54	20	12	15	9	33	7.5
	27.6	6.5	4.2	8.9	4.1	16.0	

Missing and significance levels:

- a. Restorative: Missing = 177 (10.3%); p=.000
- b. Orthodontic: Missing = 255 (14.8%); p=.000
- c. Local Anaesthetic: Missing = 179 (10.4%); p=.000
- d. Residential Care: Missing = 338 (19.7); p=.000

Table 4.8: Dental Hygienists That Have Completed Training in Specialized Fields of Clinical Practice, by Field, Canada, 1987 and 2001

FIELD TYPE	SURVEY YEAR	
	1987	2001*
Restorative	28.6	34.9
Orthodontic	31.1	25.8
Local Anaesthetic	11.9	24.0

- Weighted data from regionally stratified national probability sample survey

PROFESSIONAL QUALIFICATIONS

Table 4.9: Dental Hygienists by Attainment of Educational Qualifications in Fields Other than Dental Hygiene and by Region, Canada, 2001

Non-Dental Hygiene Education Attained	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
1987	6.4	8.5	17.0	11.6		16.7	12.1
2001:							
Yes	43.9	23.7	25.4	45.1	34.3	41.8	29.8
No	56.1	76.3	74.6	54.9	65.7	58.2	70.2
Total	246	317	338	244	271	282	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Missing = 20 (1.2%); p=.000

Table 4.10: Dental Hygienists With Educational Qualification in Another Field by Highest Academic Level Attained and by Region, Canada, 2001

HIGHEST LEVEL ATTAINED	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Diploma or Certificate	23.1	51.4	44.2	48.1	46.2	52.6	46.0
Baccalaureate	61.1	15.3	37.2	29.2	35.5	36.2	33.8
Masters	2.8	9.7	2.3	4.7	4.3	3.4	4.4
Other	13.0	23.6	16.3	17.9	14.0	7.8	15.9
Total	108	72	86	106	93	116	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Missing = 1137 (66.2%)

PROFESSIONAL QUALIFICATIONS

Table 4.11: Dental Hygienists by Number of Provinces Currently Licensed and/or Registered to Practice and by Region, Canada, 2001

NUMBER OF PROVINCES	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
One	92.7	96.6	98.2	88.9	93.4	92.2	95.9
Two	4.6	1.6	0.9	7.4	6.2	6.7	2.7
Three	2.4	--	0.3	1.2	--	0.7	0.3
Four or More	2.4	1.8	0.6	1.6	0.4	0.4	1.0
Total	247	320	337	244	273	282	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 4.12: Dental Hygienists by Province of Registration and Province of Current Residence, Canada 2001

PLACE OF REGISTRATION	PLACE OF RESIDENCE													National Wgt'd Total n (100.0)
	NF	PE	NS	NB	QU	ON	MN	SA	AB	BC	NW	NU	YU	
Newfoundland	45.6	1.8	8.8	3.5	10.5	8.8	8.8	3.5	5.3	3.5				57
Prince Edward Island		38.9	8.3	8.3	16.7	5.6	13.9	2.8	2.8	2.8				36
Nova Scotia		1.3	84.0	3.2	3.8	1.9	3.8	0.6	0.6	0.6				156
New Brunswick			7.1	75.5	6.1	3.1	5.1	1.0	1.0	1.0				98
Quebec			0.6	0.9	95.0	1.2	1.2	0.3	0.3	0.6				337
Ontario			1.1	0.5	2.7	90.8	1.9	0.5	0.8	1.3	(n=1)			371
Manitoba			1.7	1.1	3.4	2.8	85.3	2.8	2.3	0.6				177
Saskatchewan			1.7	1.7	5.0	1.7	4.1	75.2	7.4	3.3				121
Alberta			0.6	0.6	1.9	0.6	2.2	2.9	85.6	5.4				312
British Columbia	0.3		0.6	1.0	1.6	0.6	2.2	1.3	2.2	89.8		(n=1)		314
North West			(1)	(2)	(5)	(1)	(4)	(1)	(1)	(1)	(n=1)	(n=1)		18
Nunavut			(1)	(1)	(5)	(1)	(4)	(1)	(1)	(1)		(n=1)		16
Yukon			(1)	(2)	(5)	(1)	(4)	(1)	(1)	(1)		(n=2)		18
TOTAL (n)	26	15	133	74	322	342	151	322	273	285	2	2	3	

CHAPTER 5

PROFESSIONAL DEVELOPMENT

In this chapter, professional development (i.e., continuing education) activities of dental hygienists are described. Three aspects were examined – work-related activities, intensity of reading profession-related publications, and professional development (PD) topics they had pursued in the past two years. Respondents that reported they had not pursued any of these activities were asked to indicate their reasons for not doing so.

Information was taken from responses to Section B of the questionnaire. The total sample of dental hygienists ($n=1718$) was included in the analysis.

5.1 TYPES OF ACTIVITIES

Survey participants were asked to indicate, from a set of 10 response choices, the types of work-related professional development activities, if any, they had pursued over the past two years.

Virtually all respondents reported they had pursued professional development within the past two years; only 1.3% overall indicated *none*. This pattern was consistent across all regions.

5.1.1 Distribution

The distribution of respondents by participation in and type of PD activity is presented in Table 5.1. Results varied regionally and may reflect availability for some of the types of activities listed.

One activity was predominant – 9 out of 10 respondents reportedly read dental hygiene and dental publications (96%). Next most prevalent was attendance at professional conferences, reported by 3 out of 4 respondents (77%). Third was attendance at continuing education courses, cited by 2 out of 3 respondents (67%), followed by local dental hygienist and dental society presentations at 57%. Only 1 out of 2 respondents reported self-study activities such as books, videos and tapes (50%). The remaining three activities listed - namely, study club membership, “hands-on” participatory courses and distance study (e.g., mail, internet) - were each reported by less than 20% of the respondents. The distribution for all activities is illustrated in Figure 5.1; the exception was “reading publications” which is addressed in greater detail in the following section.

As noted in Table 5.1, regional variation was evident for all activities except profession-related reading. Regarding self-study, it was cited most frequently by respondents for Ontario – 63% versus 50% overall. The proportion exceeded by one-half the next greatest proportions, observed for BC and Quebec, and was double the proportion for the Atlantic region which was lowest at 32%. Regarding professional conferences (which, as noted, ranked second overall), attendance tended to be greatest among respondents for BC (90%), followed by Quebec (80%), and lowest among respondents for the Atlantic and Man/Sask. regions (65% and 67% respectively). In comparison, attendance at dental

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hygiene and dental local society presentations tended to be proportionately less for all regions except the Atlantic. Two groups were evident - attendance ranged from 63% to 68% for four regions – namely, Atlantic, Ontario, Alberta and BC, and decreased to 37% and 40% for Quebec and Man/Sask. respectively. Regarding continuing education courses, three widely varying groups were apparent. Participation was greatest for three regions – namely, BC, Atlantic and Alberta, where 9 out of 10 respondents reported courses. It decreased to approximately 3 out of 4 respondents for Ontario and Man/Sask. and then declined markedly to a low of 27% for Quebec. Regarding the remaining three PD activities, while proportions overall were relatively low, some regional variation was evident. Study club membership tended to be greatest among respondents for BC, Alberta and Ontario (22% to 27%) and least for Quebec (0.3%). "Hands-on" participatory courses were most likely to be reported for Alberta (30%) and to a slightly lesser extent the remaining regions (22%-23%); the exception was Quebec with 10%. Distance study reportedly was greatest among respondents for Ontario (18%), followed by BC (14%); it was least for Quebec and Man/Sask. at 2% and 3% respectively.

5.1.2 Change

Comparable information was not available from the 1987 survey. At that time, respondents were asked to indicate the amount of time they spent at three types of activities – continuing education courses, conventions and conferences, and reading and using audio-visual materials.

Regarding continuing education courses, it would appear that participation increased by 2001. Just over one-half of respondents in 1987 (54%) reported they had spent some within the previous 12-month period; 23% had spent more than 20 hours. Regionally, the pattern was similar; the proportion that reported zero hours ranged from a high of 67% for Quebec to a low of 7% for British Columbia.

Regarding conferences and conventions, there appeared to be little change. The largest proportion of respondents in 1987 spent zero hours within the past 12-month period (44%) and another 27% spent 16 hours or more. However, regionally the distribution was reversed – the proportion that reported zero hours ranged from a low of 35% for Quebec to a high of 55% for British Columbia.

Regarding hours in the past month spent reading and using A/V materials, three equally distributed groups were evident – 33% reported zero hours, 34% 1-to-5 hours, and a further 33% more than 5 hours. Proportionately, the group that reported zero hours was greatest for Quebec (40%) and least for Ontario (28%).

5.1.3 Professional Development Activity Index

An index *PD-Activity* was constructed to summarize the range (that is, the number) of different types of work-related professional development activities. To calculate it, the activities reported on the questionnaire in response to item B1 were summed. Missing responses were set to zero. Findings overall are illustrated in Figure 5.2 and presented by region in Table 5.2.

Overall, the total number of activity types ranged from 0 to 8. The mean score was 3.88, median 4, and standard deviation 1.57. That is, over a two-year period, respondents on average pursued in total four out of the eight PD activities examined. The range of activity varied regionally. For example, whereas 8 out of 10 respondents for BC and 7 out of 10 for Alberta and Ontario reported having participated in 4 or more activities, the portion decreased to 3 out of 10 respondents for Quebec and Man/Sask.

Mean reading scores were categorized by age group of the respondent, region of residence, school of graduation, highest level of educational attainment, and total hours worked per week. Findings are presented in Table 5.3. Slight but statistically significant between-group differences in the range of professional development activities were detected ($p \leq .006$). Of the 6 factors examined, region of residence accounted for the greatest proportion of variance observed in PD activities of dental hygienists.

The range of activities tended to increase with age – from 3 among the 25-years-and-under age group to 4.2 for those aged 46 years and over. As expected given the relationship with age, the range of activities also was associated with year of graduation – for example, the group that graduated in 1980 or earlier reported 4.3 activities on average whereas those that graduated in the period 1996 to 2000 reported 3.6 activities. Range of PD activity was associated with school of graduation. Graduates of the CFDS ranked first with a mean of 5.2 activities, followed by those that graduated outside Canada (4.2); ranked last were graduates of a Canadian college-based and university based programs – 3.8 and 3.9 activities respectively. In terms of educational attainment, the relationship with range of PD activities, while statistically significant, was slight. Respondents whose highest attainment was either a baccalaureate or a master's degree in another field reported 4.4 types of activities on average whereas respondents whose highest attainment was a diploma in dental hygiene reported, on average, 3.9. Similarly, the relationship with total hours worked per week in dental hygiene was significant but slight and non-linear. That is, the group that worked the most hours (35+) pursued the greatest variety of activities, followed by the group that worked the least (less than 30 hours) – mean averages were 4.1 and 3.9 respectively. Ranked lowest at 3.8 was the group that worked 30-to-34 hours per week.

5.2 THOROUGHNESS OF READING SELECTED PUBLICATIONS

Respondents reported the thoroughness or intensity with which they read four specified dental hygiene publications – namely, the CDHA journal *Probe*, the provincial or territorial association newsletter, the component society newsletter (if applicable), and the regulatory authority newsletter (if applicable). For Quebec, Ontario Alberta and British Columbia where dental hygienists are self-regulating, the regulatory authority newsletter would be published through the relevant dental hygiene regulatory body; for the remaining provinces and territories, it would be published through the dental body responsible for the regulation of dental hygienists. For each publication, the response choices were “never read”, “skim read”, “selected items”, and “cover-to-cover”. Findings are summarized in Tables 5.4 and Figure 5.3.

In Table 5.4, two sets of results are presented for the national weighted total. Missing responses were excluded from the analysis for the “raw data” column whereas they were re-coded as *never read* for the “re-code” column. It is apparent from the national results

that the re-coding exerted a slight downward pull on the proportions for the other three response categories and for two publications in particular, both of which were not available to all respondents. Raw data were used for the regional results and for the following description.

5.2.1 Distribution

As illustrated in Figure 5.3, variation was apparent overall in the selection and intensity with which the four publications were read. Readership (that is, the proportion of respondents that reported reading the publications) was 8 out of 10 for the CDHA journal *Probe*, the provincial association newsletter and the regulatory body's newsletter; it declined to 6 out of 10 for the component society newsletter. (See Table 5.4)

Intensity of reading for each publication was relatively low. Depending on the publication, 40% or less read them *cover-to-cover* and the proportion declined to less than one-third when "missing" responses were included in the analysis (see Table 5.4). When results for the two most intense reading levels were combined into a new *thorough* reading category (that is, the respondent read either *selected items* or *cover-to-cover*), the CDHA journal *Probe* ranked first¹, followed closely by the regulatory authority newsletter – proportions were 74% and 73% respectively. The provincial association newsletter ranked third with 67% of respondents reading it thoroughly and the component society newsletter was last with 49%.

Regarding ***Probe***, across all regions the greatest proportion of respondents tended to read it *selectively* (45% overall). The exception was Quebec where 6 out of 10 respondents never read it. Respondents for Ontario were considerably more likely to read the publication *cover-to-cover* compared to their colleagues in the other regions – 44% versus 29% overall.

Regarding the **provincial association newsletter**, across all regions the vast majority of respondents (9 out of 10) reportedly do read it. The exception was Quebec where the proportion of readers declined to 4 out of 10; this was likely accounted for by the absence of a voluntary professional association for dental hygienists in that province, the typical source for such a publication. The distribution overall was almost equally divided between the group that read it *selectively* and the one that read it *cover-to-cover* – 35% and 33% respectively. Respondents for the Man/Sask., Atlantic and Ontario regions were the most likely to read it *cover-to-cover*; proportions were 46%, 44% and 41% respectively.

Regarding the **component society newsletter**, across all regions only approximately 2 out of 3 respondents indicated they read it (64%). Readership was greatest among respondents for BC and Ontario (approximately 9 out of 10), followed by the Atlantic region (8 out of 10). It was not surprising to find that, in light of the absence of a professional association, readership was only 1 out of 10 respondents for Quebec.

¹ The difference in intensity with which respondents reportedly read the CDHA journal *Probe* and the regulatory body's newsletter was most noteworthy when missing responses were re-coded as *never read* for the analysis. In this situation, the proportions that read these two publications either selectively or completely totaled 69% and 53% respectively.

However, the relatively low rate observed for Man/Sask. was unexpected - 3 out of 10. Readers in the Ontario, BC and Atlantic regions were not only the most likely to read the local society newsletter but they also tended to read it *cover-to-cover*. In contrast, among the 6 out of 10 respondents for Alberta who reportedly read a local society newsletter, the greatest proportion tended to skim read it.

Regarding the **regulatory authority newsletter**, overall readership was high – almost 9 out of 10 respondents. Readership tended to be greatest in those provinces where a separate regulatory body for dental hygienists existed (i.e., where they self-regulate); approximately 9 out of 10 respondents for BC, Ontario and Quebec reportedly read the newsletter. The exception was Alberta where only approximately two-thirds of respondents read a regulatory newsletter.

Regarding the **regulatory authority newsletter**, overall readership was high – almost 9 out of 10 respondents. Readership tended to be greatest in those provinces where a separate regulatory body for dental hygienists existed (i.e., where they self-regulate); approximately 9 out of 10 respondents for BC, Ontario and Quebec reportedly read the newsletter. The exception was Alberta where the proportion decreased to two-thirds of respondents; the lower rate likely was due in part to dental hygiene regulation, at the time of the survey, being accomplished through the Alberta Dental Hygienists Association which did not publish a separate regulatory newsletter. Among readers in Quebec, Ontario and BC, the majority tend to read the newsletter very thoroughly – i.e., *cover-to-cover*.

5.2.2 Change

Data for the 1987 and 2001 surveys did not permit direct comparison. In 1987, respondents reported the number of hours they spent reading and using audio/visual materials within the past month.

5.2.3 Reading Intensity Index

A reading intensity index *PD-Index* was constructed to summarize the findings. It was derived from the sum of the reading intensity scores for the four publications examined. Missing responses were re-coded as *Never read*.²

Totally over all publications, scores ranged from 0 to 12. The mean average was 5.69, with a median of 5, mode 6 and standard deviation of 3.2. Regionally, the mean ranged from a high of 7.1 for BC to a low of 3.32 for Quebec. Out of a maximum score of 12, approximately 1 out of 4 respondents for Ontario (24.6%) and 1 out of 5 for BC (21.6%)

² Missing responses were re-coded as *never read* to adjust for two factors. First, the rate of “missing” responses was relatively high for two of the four publications – 43% for the component society newsletter and 38% for the regulatory authority newsletter. It had been anticipated that some respondents might not have access to those publications and thus respondents were asked to reply “if applicable”. It is likely that some portion of the “missing” responses were attributable to the group that considered the publications were not applicable. Secondly, across all publications, it was assumed that, where the respondent chose not to respond, they likely did not read the publication and thus should be included in the analysis.

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scored 10 or more. The proportion for the “10+” group was lowest for Quebec, Man/Sask. and Alberta, with 0.3%, 1.6% and 4.0% respectively; it was 10.5% for the Atlantic region.

Mean reading scores were categorized by age group of the respondent, region of residence, school of graduation, highest level of educational attainment, and total hours worked per week. Findings are presented in Table 5.5. Based on age group, region of residence, and hours worked, slight but statistically significant between-group differences in reading intensity were detected ($p=.000$). No significant differences were found based on school of graduation or educational attainment.

Respondents in the 25-years-or-under age group tended to read fewer profession-related publications and to read them less thoroughly. The mean score for this group was 4.5, compared to 5.7 overall. Scores increased steadily to 6.7 for the 46-years-and-over age group. The reading score was a high of 7.1 for BC and Ontario and declined to a low of 3.3 for Quebec. Although reading intensity was associated statistically with the number of hours worked per week, the relationship was not linear. Respondents who worked fewer than 30 hours per week scored the highest whereas those that worked 30-to-34 hours scored the least – 6.2 versus 5.2.

5.3 TOPICS PURSUED FOR PROFESSIONAL DEVELOPMENT

Respondents provided information regarding topics undertaken as part of their professional development activity within the past two years. From a set of ten topics plus an “other” category, respondents indicated all topics that applied to themselves. The reader is cautioned that relatively low proportions observed for some topics may indicate lack of availability more so or in addition to lack of interest or perceived need on the part of dental hygienists.

5.3.1 Distribution

The vast majority of respondents indicated one or more topics they had pursued as part of their professional development within the past two years. (See Table 5.6.) Only 1 out of 10 respondents indicated they had pursued no topics (11%)³. If it is assumed that some, if not all, of the *missing* responses (12%) could be re-coded as *none*, the portion of respondents that indicated they had pursued a variety of work-related PD topics within the past two years likely was closer to 8 out of 10.

The distribution of respondents that indicated they had pursued a particular topic for professional development within the past two years is presented in Table 5.6. The predominant topic overall was soft tissue management (62%), followed by dental hygiene process (50%) and communications (49%). The exception was Quebec where

³ Some inconsistencies in the data were evident. In response to survey item B1, 1.3% of respondents indicated they had pursued *no* professional development activities within the past two year period. Another 1.4% of the total sample did not respond (i.e., were coded as *missing*) and it could be assumed they also pursued *no* PD activities. However, the corresponding proportions for survey item B3 were 10.6 and 12.5, giving a much larger group that had pursued *no* PD over the same time period.

communications was predominant (62%). Two topics were each cited by approximately one-third of respondents - the medically compromised client and nutrition. The proportion decreased to 3 out of 10 respondents for another two topics – record keeping and smoking cessation techniques. Least frequently cited were administration/business skills and gerontology, followed by managing cultural diversity. The list was certainly not all-inclusive; 28% indicated they had pursued another topic.

As indicated in Table 5.6, regional variation was apparent. Respondents for BC tended to pursue the topics listed in proportionately greater numbers – for 7 of the 10 topics they ranked first, one of which was a tie with Quebec. In contrast, respondents for Quebec were least likely to pursue the topics listed – they ranked last for 6 of the 10 topics, one of which was a tie with the Atlantic region.

Three topics were cited by one-half or more of the respondents overall; for all three, findings varied regionally. Regarding soft tissue management, three groups were apparent – the proportion was highest for BC with 76%, followed by Alberta, the Atlantic, Man/Sask. and Ontario with from 64% to 69%, and lowest for Quebec with 44%. While the other two topics were each cited by approximately one-half of respondents overall, their distributions differed regionally. Dental hygiene process was cited by 65% of respondents for BC and the proportion decreased gradually among the remaining regions to less than one-half for Quebec (30%). In contrast, the distribution for communications tended to cluster into three groups – first were Quebec and BC with 62% and 61% respectively, followed by Alberta, Ontario and Man/Sask. with 47%, 43% and 40% respectively, and lastly the Atlantic region with 32%.

Another two topics – namely, the medically compromised client and nutrition - were each cited by approximately 1 out of 3 respondents overall. As a topic, the medically compromised client was most prevalent among respondents for BC (3 out of 5 respondents); this likely reflected an increased role in residential care for dental hygienists in that province. Proportions decreased to approximately 2 out of 5 respondents for Alberta, the Atlantic region and Ontario, and declined even further to 24% and 17% for Man/Sask. and Quebec respectively. Regarding the topic of nutrition, it also was most prevalent among respondents for BC; at 60%, the proportion was almost double that for Canada overall - 33%. The proportion decreased to 36% to 39% for Ontario, the Atlantic region and Alberta, and declined even further for Quebec and Man/Sask. - 28% and 25% respectively.

The remaining five topics were each cited by less than one-third of respondents overall. Record keeping was considerably more prevalent among respondents for Ontario – 39% compared to 23% for Quebec and less than 18% for the remaining four regions. Smoking cessation techniques was cited proportionately more often among respondents for Ontario and Alberta (41% and 31% respectively) and least often for Quebec (6%). The proportion that cited administration or business skills was 20% overall and there was little variance regionally. Gerontology was cited by only 19% of respondents overall; however, the proportion was three times greater for BC than for Man/Sask., Alberta and Quebec - 35% versus 10%, 10% and 12% respectively. The proportion that cited the lowest ranked topic – managing cultural diversity – was 5% overall and there was little regional variation.

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5.3.2 Change

Comparable information was not available from the 1987 survey.

5.3.3 PD Topics Index

A new variable *PD-Topics* was constructed to summarize the number of PD topics pursued by respondents over the past two years. It was calculated by summing the number of topics cited in response to item B3 on the questionnaire. Missing responses were set to zero on the assumption those respondents had not pursued any topics listed within the past two years.

Values ranged from 0 to 10, with a mean of 2.8, median of 3, mode of 2, and standard deviation of 2.04. Average scores (mean and standard deviation) categorized by age group, region, setting for school of graduation, level of educational attainment, and hours worked per week are presented in Table 5.7. The distribution of respondents by number of topics pursued is illustrated in Figure 5.5. For all factors examined except educational attainment, findings were statistically significant ($p \leq .01$) although the amount of variation explained in number of topics pursued tended to be slight.

On average and over a two-year period, dental hygienists pursued three of the PD topics listed. Number of topics tended to increase with age, peaking among the 46 years and over age group. The number of topics on average was higher for BC, followed by Ontario, and lower for Quebec, compared to the average for Canada. Those who graduated from the Canadian Forces dental hygiene program tended to have pursued more topics on average (3.6) and those that graduated from a college-based program pursued the least number (2.7). The number of topics tended to be higher among those who worked the most hours (3.2) and lower among those working 30 to 34 hours per week (2.7).

5.4 PROFESSIONAL DEVELOPMENT INDEX

A new variable *PD-INDEX* was constructed to summarize overall professional development activity and examine possible associations with dental hygiene practice patterns. The index had three components – PD-Activity to summarize the number of PD activities specific to dental hygiene, PD-Read to summarize intensity of reading activity, and PD-Topics to summarize the number and range of work-related topics pursued.

As illustrated in Figure 5.6, respondents' scores ranged from 0 to 28. The mean average was 12.4, median 12.0, and mode 9.0, with a standard deviation of 5.51.

The distribution of scores classified by age group, region, setting for school of graduation, level of educational attainment, and hours worked per week are presented in Table 5.8. As expected given the findings for the component variables, between-group differences were statistically significant for all characteristics examined although actual differences tended to be slight.

On average, PD-Index increased with age and attainment of educational qualifications, in particular to the baccalaureate level. Scores tended to vary by the region in which respondents resided more so that the other characteristics examined ($\eta^2 = .274$). They were higher among respondents for BC, followed by Ontario. They were also higher among those that worked at least 35 hours per week.

5.5 PROFESSIONAL DEVELOPMENT SCORE

Based on the frequency distribution of responses for the PD-Index, scores were re-categorized into three groups of approximately the same size - that is, the data established the categories. The categories were defined as Low (scores 0 to 9), Moderate (10 to 14), and High (15-28). This set of scores will be useful for examining factors associated with clinical practice patterns. The distribution of scores for Canada is illustrated in Figure 5.7 and presented by region in Table 5.9.

Among the 1718 dental hygienists included in the analysis, 34.3% scored High, 32.5% Moderate, and the remaining 33.2% Low. As illustrated in Table 5.9, regional variation was apparent. Among respondents for BC and Ontario, the greatest proportion scored High with 56.1% and 52.0% respectively. Among respondents for the Atlantic region and Alberta, the greatest portion scored in the Moderate range with 42.7% and 51.8% respectively. Among respondents for Quebec and Man/Sask., the greatest portion scored Low with 68.4% and 47.5% respectively.

5.6 BARRIERS TO CONTINUING EDUCATION ACTIVITY

Respondents that had answered *None* in response to item B1 (regarding professional development activities within the past two years) were asked to indicate their reasons for not pursuing PD. A list of 11 known and potential barriers plus an *other* category was provided and they were asked to indicate all that applied. Responses, categorized by region, are presented in Table 5.10.

The group that had not participated in PD within the past 2 years was relatively small – approximately 1.3%. Time constraints and family obligations were by far the primary reasons cited for not pursuing professional development, followed by cost. Overall, “lack of time” was cited by 1 out of 2 respondents (51.2%), followed closely by “family obligations” (45%). Next were “too costly” and “not encouraged in the workplace (i.e., no time off or funding)”, at 37.0% each.

Very few respondents indicated that their non-participation was due to a lack of either perceived need or access. Specifically, only approximately 1 out of 10 cited “too far to travel” (13.0%), “no access to the internet” (11.0%), and “not motivated” (8.0%). The proportion declined even further for the remaining four reasons – “no access to professional library” (5.0%), “no topics of interest” (5.0%), or not necessary because either “nothing changed” (3.0%) or “have practiced for many years” (2.0%).

The list was certainly not all-inclusive. Although 11 options were provided, 21.0% of respondents indicated some “other” reason existed to explain their non-participation.

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As indicated in Table 5.10, reasons for non-participation varied widely by region. Across all regions, with the exception of the Atlantic, two reasons were predominant – “not sufficient time” and “family obligations”.

For the Atlantic region, the distribution tended to be dispersed across the majority of reasons and proportions were relatively low. Cited most frequently were “too far to travel” (36.0%), “family obligations” (32.0%), “insufficient time” (27.0%), and at 23.0% each, “too costly” and “no access to the internet”. In addition, the proportion for the “other” category was relatively high (27.0%).

In contrast, for the Quebec region, over one-half of respondents indicated “not sufficient time” (55.0%) and 2 out of 5 cited “not encouraged in the workplace” (i.e., no time off, no funding). Another two reasons ranked relatively high were “too costly” (36.0%) and “family obligations” (34.0%). Relatively few selected the “other” category.

For Ontario, “family obligations” was predominant, being cited by 3 out of 5 respondents (59.0%). Three other reasons were almost equally prominent - “not sufficient time”, “too costly” and “not encouraged in the workplace” (46.0%, 46.0% and 41.0% respectively). Interestingly, the group that selected the response choice “other” was proportionately greatest for Ontario (36.0%).

The pattern for the three western regions was similar. The same two reasons were predominant by a large margin, although the proportion of respondents that selected them varied by region. Also, for each region, the response for only one other reason was noteworthy. Of the two predominant reasons, not surprisingly given results overall, one was “family obligations”, cited by 54.0% of respondents for Man/Sask., 64.0% for Alberta, and 55.0% for BC. The other reason was “not sufficient time”, cited by 50.0% of respondents for Man/Sask., 64.0% for Alberta, and 55.0% for BC. Ranked a distant third were “not encouraged in the workplace” for Man/Sask. (28.0%) and Alberta (46.0%) and “too costly” for BC (18.0%).

The results suggest that regional disparities should be considered when planning policies and programs related to professional development.

Perceived barriers varied little by CE-SCORE with the exception of the category “too far to travel”. Interestingly, among those respondents who scored High on CE-SCORE, 55.0% reported distance as a barrier, whereas only 42.5% of those scoring Low cited distance.

5.7 SUMMARY

In summary, dental hygienists demonstrate a wide range of professional development activity (PD). Three aspects were examined – type of activities, intensity of professional reading and range of topics studied over a two-year period.

Regarding types of activities pursued, professional reading (96%) and professional conferences (77%) are predominant, followed by continuing education courses (67%), local society presentations (57%) and self-study (50%). Relatively low participation (less than 20%) in study clubs, participatory courses, and distance education may reflect scarcity of these types of activity rather than lack of interest or motivation on the part of the dental hygienist. It is noteworthy that only 1 out of 10 dental hygienists typically do not participate in professional development over a two-year period.

The range of PD activities tends to vary by region in Canada. For example, self-study is proportionately greater among dental hygienists in Ontario, whereas attendance at professional conferences is greater for BC and Quebec and attendance at local society presentations greater for the Atlantic region. Overall, the number and range of PD activities pursued tended to be proportionately greatest for BC and lowest for Quebec.

Regarding professional reading (that is, reading dental hygiene-related literature), for the four selected Canadian publications, readership tends to be high but intensity of reading overall is low. Over 8 out of 10 dental hygienists read the CDHA journal *Probe*, the provincial or territorial association newsletter, and the regulatory authority newsletter and 6 out of 10 read a component society newsletter. However, less than 30% of dental hygienists overall read the publications *cover-to-cover*, with the exception of the regulatory authority newsletter for which the proportion increases to 41%. On the other hand, when results for both *cover-to-cover* and *selectively* are combined, the proportions increase to three-quarters of dental hygienists for *Probe* and the regulatory authority newsletter, almost 7 out of 10 for the provincial newsletter, and one-half for the component association newsletter.

Findings varied regionally. Readership for the three professional association publications is extremely low among dental hygienists in Quebec, where the presence of the Canadian Dental Hygienists Association is virtually non-existent and provincial and local voluntary professional associations do not exist. On the other hand, 8 out of 10 dental hygienists in Quebec read the CPHDQ (regulatory authority) newsletter either cover-to-cover or selectively. *Probe* is most likely to be read *cover-to-cover* by dental hygienists in Ontario – 44% versus 29% overall. With the exception of Quebec, there is little variation in intensity of reading the provincial association newsletter. Across the remaining five regions, at least 7 out of 10 dental hygienists read it *cover-to-cover* or selectively. Greater variation is evident for the component society newsletter. Readership is markedly lower among dental hygienists in Man/Sask. – 30%, followed by Alberta – 58%, compared to 80%, 87% and 93% for the Atlantic, Ontario and BC regions respectively. For the regulatory authority newsletter, among those provinces where dental hygienists self-regulate, the readership rate is approximately 90% and at least 3 out of 4 dental hygienists read it either *cover-to-cover* or selectively. The exception is Alberta where readership and reading intensity are reported to be markedly lower – not surprising given that the provincial association functions as both the professional association and the regulatory authority and a unique “regulatory” newsletter apparently is not published.

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The third aspect involves the number and variety of dental hygiene-related PD topics pursued over a two-year period. Over 8 out of 10 dental hygienists have pursued at least one topic and approximately one-half have pursued three topics. Of a set of ten topics, three are predominant across all regions - soft tissue management (62%), followed by dental hygiene process (50%) and communications (49%). The exception is Quebec where communications is predominant (62%), followed by soft tissue management (45%). Dental hygienists in BC tend to pursue a greater number and range of topics compared to colleagues in the other regions whereas those in Quebec ranked lowest in both categories.

Variance in level and range of professional development activity has implications for dental hygiene practice and education and for planning quality assurance programs for the profession. Using indices constructed to summarize the three aspects of PD examined – namely, PD-Activities, PD-Read and PD-Topics, an overall PD-Activity Score was calculated. Consistent with the findings for the three individual indices, we find that overall PD activity among dental hygienists tends to increase with age and level of educational attainment. While PD is associated with the number of hours worked per week the relationship is non-linear; the group that works 30-to-34 hours per week tends to score lower than those that work either 35-and-more hours or less-than-30 hours. While school of graduation is significant for two of the three component indices, differences are slight and not significant in terms of overall PD activity – that is, the PD score.⁴ While statistically significant, differences in PD activity based on age, school of graduation, educational attainment and hours worked per week tend to be slight compared to region of residence – that is, PD tends to vary more by region than by the other factors noted. It is associated with location of the dental hygiene program;

Several reasons exist to explain why a relatively small proportion of dental hygienists does not undertake professional development. The predominant themes are time constraints and family obligations, followed by cost. Few dental hygienists perceive lack of need or of access to be barriers to their participation. It would appear that, for some dental hygienists, professional development is not a priority; further analysis would establish the characteristics of this sub-group.

5.7.1 Implications

Given that professional development is undertaken in large part to ensure continued competence and quality and safety of practice, reasons for the regional variation evident in these findings merit further investigation. Findings for Quebec in particular are noteworthy.

⁴ In terms of number and range of professional development activities and topics pursued (that is, using the PD-Activity and PD-Topic indices), graduates of the Canadian Forces program and from outside Canada score higher on average compared to graduates of Canadian university- and, in particular, college-based programs.

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For example, as a group, dental hygienists in that province ranked lowest in terms of participation in continuing education courses (27% versus from 72% to 95% for the remaining regions), dental hygiene or dental society presentations, study clubs, “hands-on” participatory courses, and distance study. On the other hand, the group ranked second after BC regarding professional conferences - 80% versus 90% for BC and 77% overall. As a mechanism for quality assurance, professional development should target sub-groups nationally, provincially and locally within the population of dental hygienists and address concerns about perceived barriers to PD activities.

The variation evident for Quebec and, to a lesser extent, the other regions may reflect differences in availability and accessibility of the various PD modes. It may also reflect differences in educational preparation and professionalization, as well as the respective roles of regulatory bodies and voluntary professional associations. These potential relationships with professional development should be investigated and their direct implications for quality of dental hygiene practice and health outcomes identified.

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Table 5.1: Dental Hygienists' Work-Related Professional Development Activities in the Past Two Years, by Region, Canada 2001 (percent reporting "yes")

Type of Activity	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
None N %	1	7	3	12	0	1	1.3
1 Reading dental hygiene/dental publications	91.5	93.9	99.1	93.5	92.7	92.3	95.7
2 Self study** (e.g., books, video, tapes)	31.6	42.0	63.4	35.8	37.2	43.4	50.1
3 Attend professional conferences**	64.8	80.3	74.3	66.8	74.8	89.5	76.9
4 Attend local DH/DDS society presentations**	62.8	37.3	65.8	39.7	67.9	65.0	57.1
5 Continuing Education courses**	94.7	27.1	72.0	76.7	91.2	94.8	66.5
6 Study club member**	14.6	0.3	22.4	6.9	23.7	26.9	16.3
7 Hands-on participation courses**	23.1	9.6	21.5	21.6	29.9	22.4	19.4
8 Distance study** (e.g., mail, internet)	8.1	2.2	18.3	3.4	5.1	13.6	11.2
9 Other*	4.0	4.8	8.3	3.0	3.3	4.5	6.0
Total N	247	314	339	232	274	286	

Missing = 24 (1.4%)

Chi square: **p=.000, * p=.033

Figure 5.1: Percent of Dental Hygienists Participating in Selected Professional Development Activities over the Past Two Years, Canada 2001

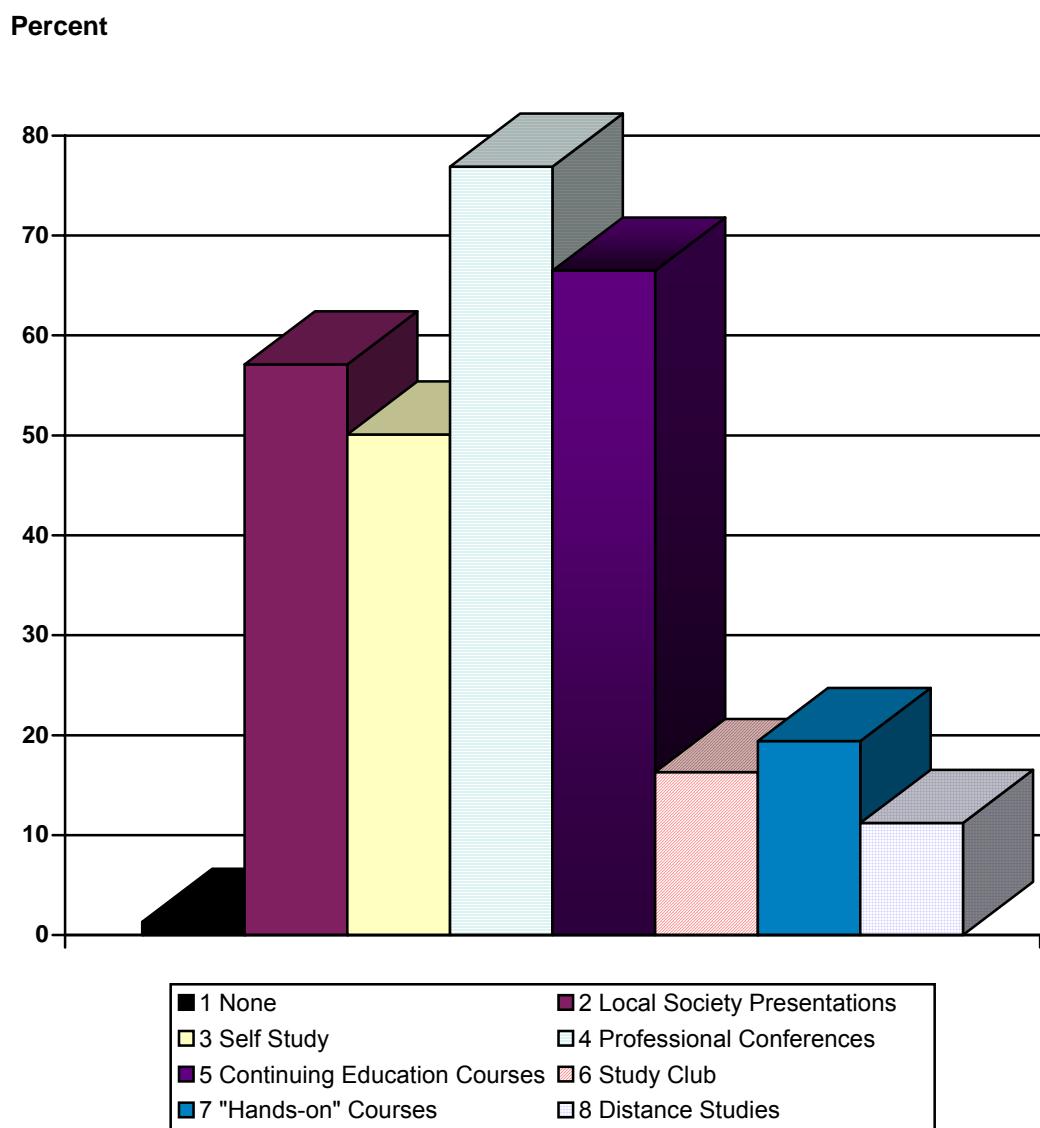


Figure 5.2: Percent Distribution of Dental Hygienists by Number of Selected Types of PD Activities (i.e., PD Activities Score), Canada 2001

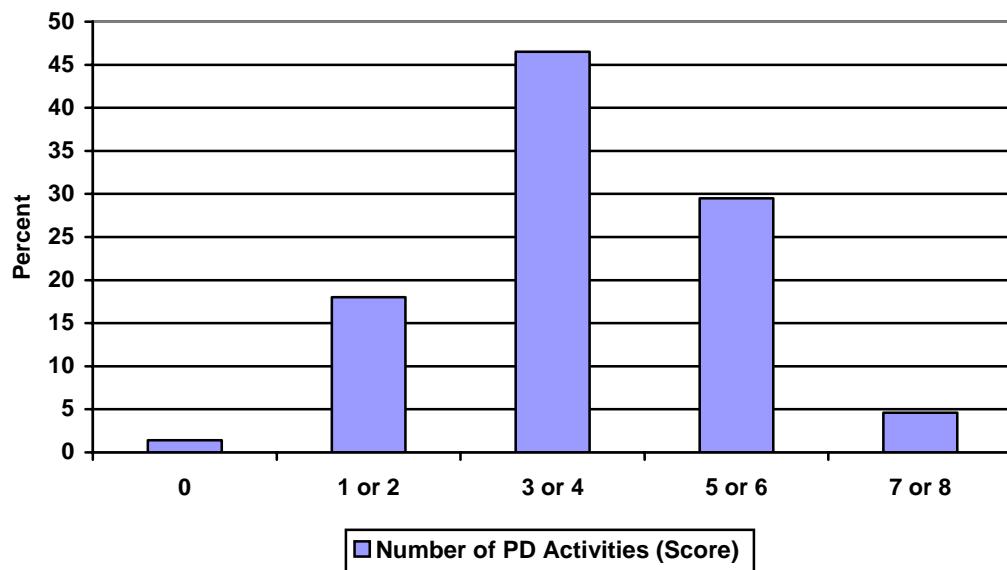


Table 5.2: Dental Hygienists> Professional Development Activities Index *, by Region, Canada 2001

PD ACTIVITIES SCORE	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
0	0.8	2.8	0.9	4.9	--	0.3	1.4
1	2.4	10.5	1.8	9.0	1.5	1.0	4.3
2	9.7	29.7	7.9	18.0	8.0	3.8	13.7
3	25.4	26.0	19.3	24.6	20.1	15.3	21.2
4	30.2	20.1	26.3	19.7	26.6	32.1	25.3
5	20.2	9.3	19.9	15.6	27.4	27.9	18.6
6	9.3	1.2	16.4	5.7	13.5	13.6	10.9
7	2.0	0.3	6.1	2.0	2.9	4.9	3.8
8	--	--	1.5	0.4	--	1.0	0.8
Total	248 100.0	323 100.0	342 100.0	244 100.0	274 100.0	287 100.0	100.0

* The index was constructed based on responses to item B1 in the questionnaire. Missing responses were set to zero.

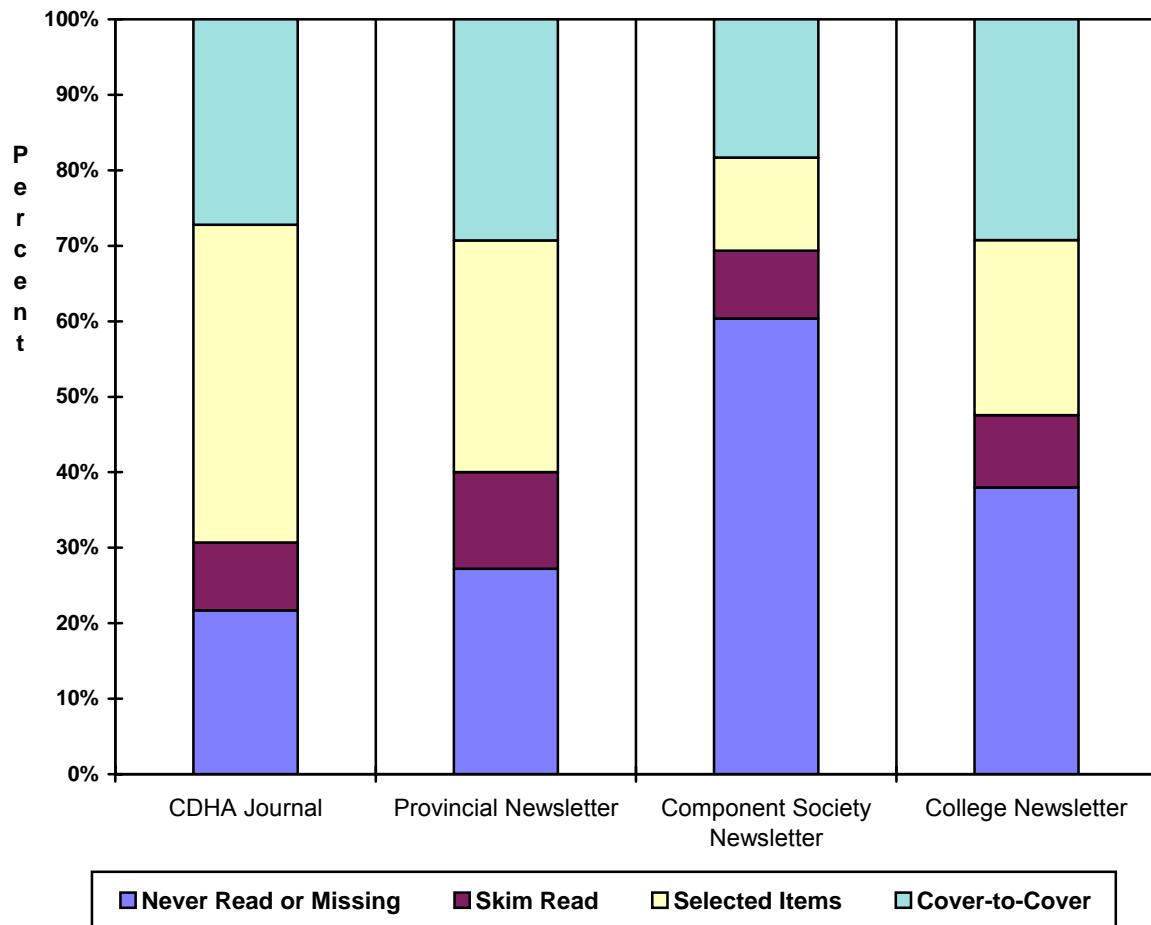
PROFESSIONAL DEVELOPMENT

Table 5.3: Dental Hygienists> Professional Development Activities Index, by Age, Region, School and Year of Graduation, Level of Educational Attainment and Total Hours Worked Per Week (mean, std. deviation, number, Eta² and p values)

Characteristic (Eta ² and Significance)*	Category	Mean	Standard Deviation	Number
Respondent's Age Group (Eta ² = .048; p=.000)	21 -- 25 Years	3.04	1.5	139
	26 – 30 Years	3.60	1.45	273
	31 – 35 Years	3.76	1.53	397
	36 - 40 Years	4.00	1.58	322
	41 – 45 Years	4.24	1.57	310
	46 Years or Over	4.23	1.5	265
Region (Eta ² = .158; p=.000)	Atlantic	3.90	1.32	248
	Quebec	2.85	1.30	323
	Ontario	4.33	1.53	342
	Man/Sask.	3.28	1.64	244
	Alberta	4.23	1.30	274
	BC	4.46	1.30	287
	Canada (weighted)	3.88	1.57	
School of Graduation (Eta ² = .008; p=.006)	Canadian University	3.92	1.48	368
	Canadian College	3.82	1.59	1236
	CFDS	5.23	1.02	11
	Outside Canada	4.22	1.62	89
Year of Graduation (Eta ² = .03; p=.000)	Before 1975	4.27	1.35	124
	1976 – 1980	4.3	1.57	214
	1981 – 1985	4.06	1.37	220
	1986 – 1990	3.97	1.5	282
	1991 – 1995	3.98	1.6	388
	1996 - 2000	3.55	1.41	409
Highest Level of Educational Attainment (Eta ² = .032; p=.001)	Dental hygiene: Diploma	3.87	1.56	1630
	Other Field:			
	Diploma / Certificate	3.91	1.54	229
	Baccalaureate	4.36	1.48	168
	Masters	4.40	1.71	22
Total Hours Worked Per Week (Eta ² = .009; p=.001)	Other	3.61	1.65	79
	Less than 30 hours	3.93	1.55	659
	30 to 34 hours	3.75	1.48	494
	35 Hours or Over	4.12	1.57	488

* Eta² = proportion of variance in the dependent variable that is explained by differences among groups.

Figure 5.3: Intensity of Reading Four Dental Hygiene Related Publications, Canada 2001



PROFESSIONAL DEVELOPMENT

Table 5.4: Dental Hygienists> Intensity of Reading Four Dental Hygiene-Related Publications, by Region, Canada, 2001 (N and %)

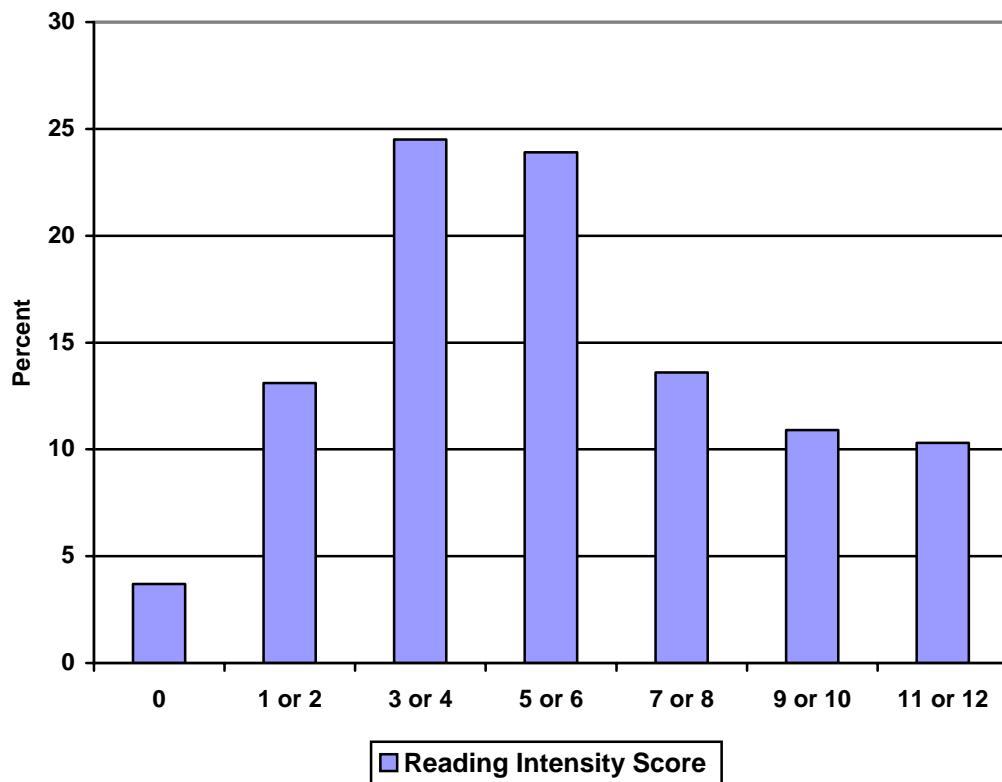
Publication and Intensity	REGION						National Weighted Total	
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	Raw Data*	Re-Code*
Number	248	323	342	244	274	287		
1 Probe (CDHA journal)		Missing = 5.5						
Never read	1.2	64.0	0.9	4.4	0.4	3.2	16.3	21.7
Skim read	13.9	9.7	7.3	12.4	13.3	11.5	9.6	9.0
Selected items	66.0	20.5	47.4	56.2	63.0	55.6	45.0	42.1
Cover-to-cover	18.9	5.8	44.3	27.0	23.3	29.7	29.1	27.2
2 Provincial/ Territorial Association Newsletter		Missing = 9.9						
Never read	9.5	57.4	5.3	10.2	4.6	5.1	18.2	27.2
Skim read	19.1	9.6	11.8	15.7	21.8	23.6	14.4	12.8
Selected items	27.7	19.6	41.8	28.2	41.2	38.0	34.5	30.7
Cover-to-cover	43.6	13.3	41.1	45.8	32.4	33.3	32.9	29.3
3 Component Society Newsletter (if applicable)		Missing = 43.1						
Never read	18.2	88.2	12.7	70.2	42.4	7.4	36.4	60.3
Skim read	23.4	5.9	14.9	9.5	27.3	23.1	14.5	9.0
Selected items	21.9	5.0	25.8	14.3	18.2	30.1	19.7	12.3
Cover-to-cover	36.5	0.9	46.6	6.0	12.1	39.4	29.3	18.3
4 Regulatory Authority newsletter (if applicable)		Missing=37.5						
Never read	24.6	13.1	8.8	60.0	36.0	7.4	13.2	38.0
Skim read	23.0	6.9	14.1	11.8	32.5	17.2	13.4	9.6
Selected items	27.9	38.8	32.5	11.8	14.9	28.8	32.4	23.2
Cover-to-cover	24.6	41.2	44.6	16.5	16.7	46.5	41.0	29.3

For each publication, p=.000.

Missing totaled across all 4 publications = 862 (50.2%)

* For the weighted national distribution, two columns are presented – in the first, missing responses are excluded and, in the other, missing responses have been collapsed into the results for “never read”.

**Figure 5.4: Percent Distribution of Dental Hygienists by Reading Intensity Score,
Canada 2001**



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Table 5.5: Dental Hygienists> Intensity of Professional Reading Index, by Age, Region, School of Graduation, Level of Educational Attainment and Total Hours Worked Per Week (mean, std. deviation, number, Eta² and p values)

Characteristic (Statistics)	Category	Mean Score	Standard Deviation	Number (n)
Respondent's Age Group (Eta ² = .045; p=.000)	21 -- 25 Years	4.46	2.51	139
	26 -- 30 Years	4.96	2.79	273
	31 -- 35 Years	5.36	3.20	397
	36 - 40 Years	5.94	3.31	322
	41 -- 45 Years	6.29	3.23	310
	46 Years or Over	6.67	3.25	265
Region (Eta ² = .23; p=.000)	Atlantic	5.54	2.73	248
	Quebec	3.32	2.04	323
	Ontario	7.08	3.14	342
	Man/Sask.	4.25	2.27	244
	Alberta	4.82	2.23	274
	BC	7.10	3.10	287
	Canada (weighted)	5.69	3.20	
School of Graduation (p=n.s.)	Canadian University	5.76	3.02	368
	Canadian College	5.65	3.23	1236
	CFDS	6.29	2.96	11
	Outside Canada	5.98	3.48	89
Highest Level of Educational Attainment (p=n.s.)	Dental hygiene: Diploma	5.70	3.21	1630
	Other Field:			
	Diploma / Certificate	5.66	3.13	229
	Baccalaureate	6.44	3.20	168
	Masters	6.46	2.55	22
Total Hours Worked Per Week (Eta ² = .015; p=.000)	Less than 30 hours	6.16	3.35	659
	30 to 34 hours	5.23	3.01	494
	35 Hours or Over	5.73	3.12	488

* Eta² = proportion of variance in the dependent variable that is explained by differences among groups.

Table 5.6: Professional Development Topics Pursued by Dental Hygienists in the Past Two Years, by Region, Canada 2001 (number and percent reporting "yes")

TOPIC	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
None N %	21	74	21	37	12	11	10.6
Nutrition	84 37.5	66 27.8	114 35.8	49 25.3	102 38.9	161 59.2	32.5
Communication	71 31.7	147 62.0	137 43.1	77 39.7	124 47.3	167 61.4	49.3
Dental hygiene process	104 46.4	71 30.0	178 56.0	77 39.7	139 53.1	178 65.4	50.0
Record keeping	40 17.9	55 23.2	124 39.0	24 12.4	29 11.1	48 17.6	27.7
Soft tissue management**	151 67.4	103 43.5	204 64.2	128 66.0	181 69.1	206 75.7	62.0
Medically compromised client**	86 38.4	40 16.9	120 37.7	47 24.2	107 40.8	158 58.1	35.7
Managing cultural diversity	9 4.0	5 2.1	18 5.7	11 5.7	18 6.9	18 6.6	5.0
Gerontology**	42 18.8	29 12.2	67 21.1	20 10.3	27 10.3	95 34.9	19.4
Administration/business skills	39 17.4	41 17.3	65 20.4	39 20.1	53 20.2	62 22.8	19.9
Smoking cessation techniques**	31 13.8	14 5.9	131 41.2	37 19.1	82 31.3	60 22.1	27.5
Other*	49 21.9	61 25.7	101 31.8	36 18.6	59 22.5	54 19.9	26.8

Missing = 211 (12.3)
Chi-square: ** p=.000, * p=.004

Figure 5.5 Percent Distribution of Dental Hygienists by Number of Topics Pursued for Professional Development, Canada 2001

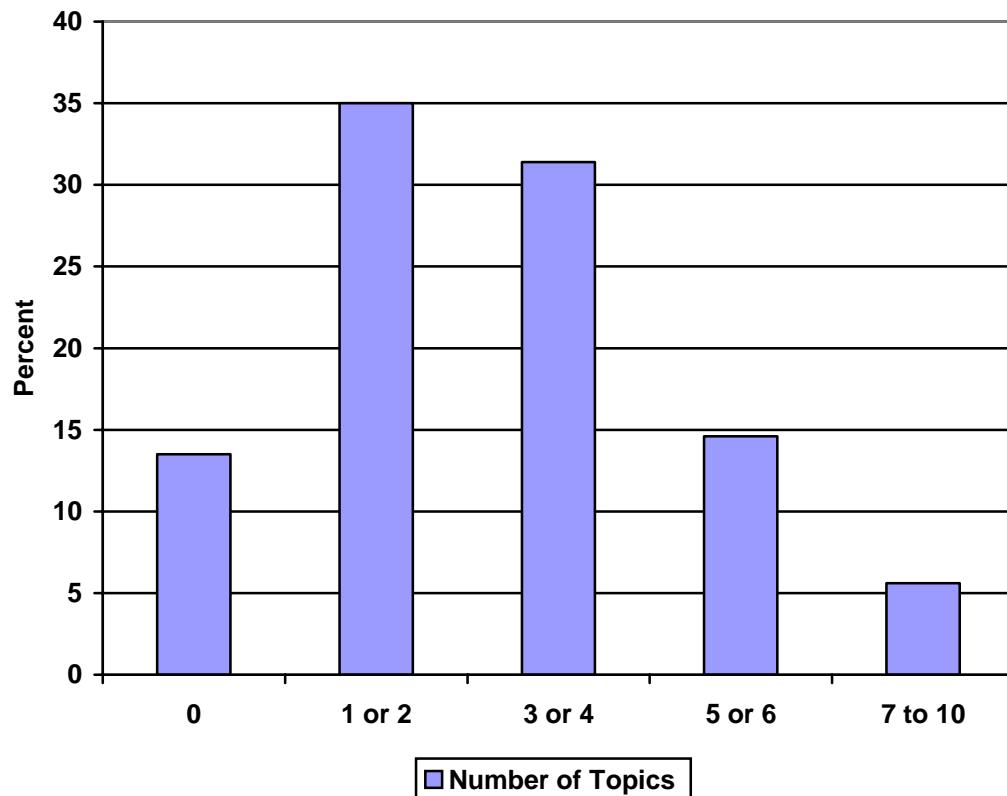


Table 5.7: Dental Hygienists> PD Topics Index, by Age, Region, School of Graduation, Level of Educational Attainment and Total Hours Worked Per Week (mean, std. deviation, number, Eta² and p value)

Characteristic (Statistics)	Category	Mean Score	Standard Deviation	Number (n)
Respondent's Age Group (Eta ² = .039; p=.000)	21 -- 25 Years	1.96	1.82	139
	26 – 30 Years	2.59	1.89	273
	31 – 35 Years	2.60	1.89	397
	36 - 40 Years	2.95	2.07	322
	41 – 45 Years	3.07	2.11	310
	46 Years or Over	3.48	2.13	265
Region (Eta ² = .135; p=.000)	Atlantic	2.51	1.78	248
	Quebec	1.75	1.59	323
	Ontario	3.35	2.10	342
	Man/Sask.	2.03	1.73	244
	Alberta	2.99	1.73	274
	BC	3.65	2.01	287
	Canada (weighted)	2.83	2.04	
School of Graduation (Eta ² = .008; p=.007)	Canadian University	3.01	2.05	368
	Canadian College	2.73	2.03	1236
	CFDS	3.60	1.55	11
	Outside Canada	3.28	1.94	89
Highest Level of Educational Attainment (DH Dip: Eta ² = .002; p=n.s.) (Other: Eta ² = .012; p=n.s.)	Dental hygiene: Diploma	2.85	2.04	1630
	Other Field:			
	Diploma / Certificate	2.82	1.99	229
	Baccalaureate	3.28	1.98	168
	Masters	2.73	2.28	22
Total Hours Worked Per Week (Eta ² = .009; p=.001)	Less than 30 hours	2.82	1.91	659
	30 to 34 hours	2.66	2.02	494
	35 Hours or Over	3.15	2.15	488

* Eta² = proportion of variance in the dependent variable that is explained by differences among groups.

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Figure 5.6: Percent Distribution of Dental Hygienists by Professional Development Score, Canada 2001 (range 0 to 28)

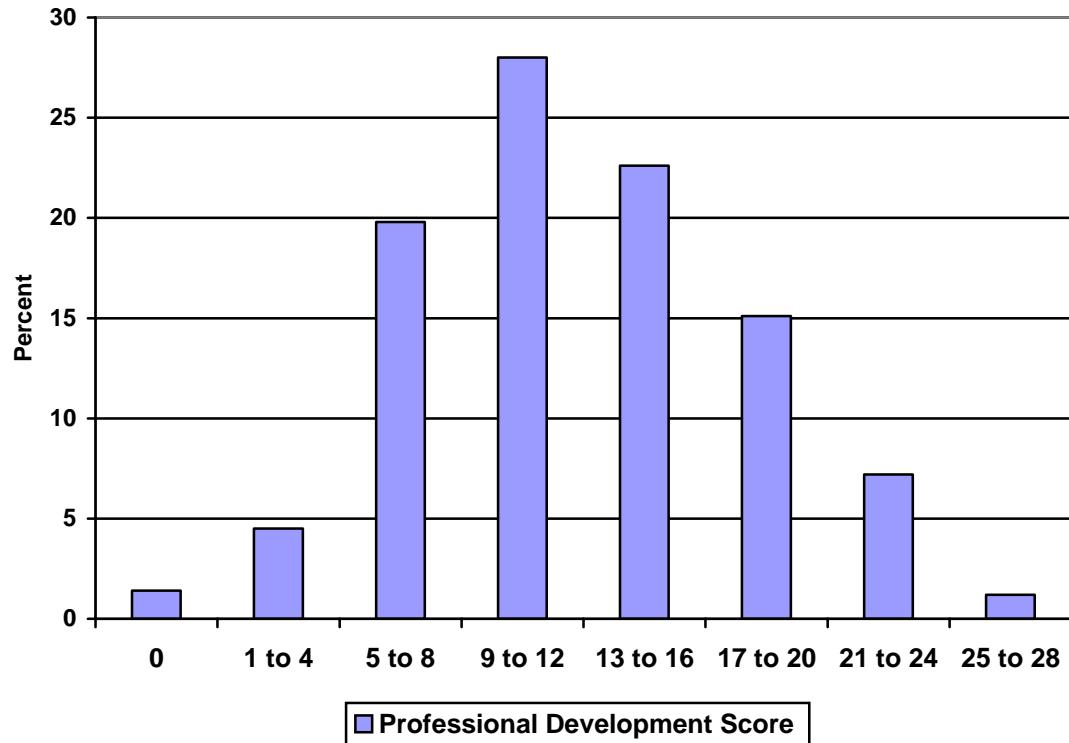
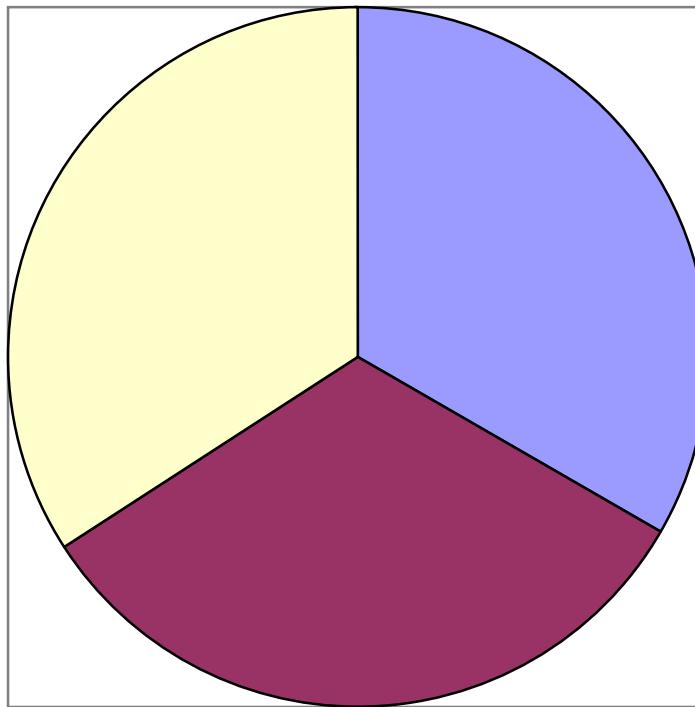


Table 5.8: Dental Hygienists> Professional Development Index, by Age, Region, School of Graduation, Level of Educational Attainment and Total Hours Worked Per Week (mean, std. deviation, number, Eta² and p value)

Characteristic (Statistics)	Category	Mean Score	Standard Deviation	Number (n)
Respondent's Age Group (Eta ² = .066; p=.000)	21 – 25 Years	9.48	4.51	139
	26 – 30 Years	11.15	4.69	273
	31 – 35 Years	11.73	5.32	397
	36 - 40 Years	12.89	5.7	322
	41 – 45 Years	13.6	5.6	310
	46 Years or Over	14.39	5.46	265
Region (Eta ² = .274; p=.000)	Atlantic	11.94	4.24	248
	Quebec	7.91	3.6	323
	Ontario	14.75	5.3	342
	Man/Sask.	9.56	4.3	244
	Alberta	12.03	3.79	274
	BC	15.21	4.81	287
	Canada (weighted)	12.40	5.51	
School of Graduation (Eta ² = .005; p=.07)	Canadian University	12.69	5.13	368
	Canadian College	12.2	5.57	1236
	CFDS	15.12	4.45	11
	Outside Canada	13.48	5.87	89
Highest Level of Educational Attainment (Other: Eta ² = .021; p=.014)	Dental hygiene: Diploma	12.42	5.52	1630
	Other Field:			
	Diploma / Certificate	12.40	5.26	229
	Baccalaureate	14.08	5.31	168
	Masters	13.59	5.25	22
Total Hours Worked Per Week (Eta ² = .012; p=.000)	Less than 30 hours	12.91	5.48	659
	30 to 34 hours	11.64	5.29	494
	35 Hours or Over	13.00	5.48	488

* Eta² = proportion of variance in the dependent variable that is explained by differences among groups.

Figure 5.7: Percent of Dental Hygienists by Professional Development Score, Canada 2001



■ Low (1-9) ■ Moderate (10-14) □ High (15-28)

**Table 5.9: Dental Hygienists> Level of Professional Development Activity by Region,
Canada 2001 (% of Respondents)**

PD LEVEL	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Low	31.0	68.4	18.7	47.5	24.5	11.1	33.2
Moderate	42.7	27.8	29.2	41.0	51.8	32.8	32.5
High	26.2	4.0	52.0	11.5	23.7	56.1	34.3
Total	248	323	342	244	274	287	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Chi-square: p=.000

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Table 5.10: Respondents' Reasons for Not Pursuing Professional Development in the Past Two Years, by Region, Canada 2001 (number and % of non- PD participants)

REASON	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
A Not sufficient time	6 27.3	37 55.2	10 45.5	23 50.0	7 63.6	6 54.5	51.2
B Too costly	5 22.7	24 35.8	10 45.5	18 39.1	4 36.4	2 18.2	37.4
C Family obligations	7 31.8	23 34.3	13 59.1	25 54.3	7 63.6	6 54.5	44.7
D Not necessary, have practiced many years		1 1.5	1 4.5	1 2.2			2.2
E Not necessary, nothing changed	1 4.5	2 3.0	1 4.5	1 4.5			3.1
F Not encouraged in workplace (e.g., no time off, no funding)	4 18.2	27 40.3	9 40.9	13 28.3	5 45.5	1 9.1	37.1
G No access to professional library	3 13.6	4 6.0	1 4.5			1 9.1	5.3
H No access to internet	5 22.7	7 10.4	3 13.6	2 4.3	1 9.1	1 9.1	11.1
I Not motivated	2 9.1	6 9.0	2 9.1	3 6.5	1 9.1		8.3
J Too far to travel	8 36.4	5 7.5	4 18.2	6 13.0	3 27.3	1 9.1	12.7
K No topics of interest	3 13.6	2 3.0	1 4.5	3 6.5	2 18.2		4.6
L Other	6 27.3	9 13.4	8 36.4	10 21.7		2 18.2	20.7

PART III

WORK ENVIRONMENT

This section of the report presents a series of profiles describing characteristics of the dental hygiene work environment. Results are based on the portion of the sample of dental hygienists that were working in dental hygiene at the time of the survey (n=1590). By definition, this group included those working, for example, in clinical practice, education, community health and administration.

Just over one-quarter of the respondents (27.6%) indicated they worked as a dental hygienist in two or more workplaces. They were asked to identify their *principal workplace* - that is, the one at which they worked the most hours and to answer most of the questions in Chapter 6 and all of the remaining questions for Part III with this workplace only in mind. If their hours were the same in two workplaces, they were to select one as the principal workplace.

Information describing the work environment in general is presented in Chapter 6. The clinical practice setting is examined in Chapter 7. Characteristics of clinical practice – the predominant dental hygiene work role, are examined in Part IV.

CHAPTER 6

WORK ENVIRONMENT: ALL SETTINGS

Structural aspects of the work environment have been shown to influence work behaviour of dental hygienists (e.g., Johnson, 1995). In this chapter, the work environment for the dental hygienist is described. Features include the number and type of dental hygiene workplaces and aspects of dental hygiene remuneration – that is, wage income and employment benefits. Information provided pertains primarily to the principal workplace, defined as the one at which the respondent worked the most hours. Corresponding survey items are found in Section C of the questionnaire.

For dental hygienists in clinical practice – that is, those who provide direct client care services, additional work environment characteristics specific to their primary clinical practice setting are described in Chapter 7.

6.1 DENTAL HYGIENE WORKPLACES

The dental hygiene workplace was defined as the setting in which the respondent currently practiced dental hygiene, whether self-employed or working for others. Examples of workplaces provided included private dental offices, educational institutions, government agencies and the dental industry. Respondents with more than one workplace were asked to indicate their *principal workplace* – that is, the one at which they worked the most hours.

6.1.1 Number of Workplaces

Dental hygienists were asked to indicate the number of workplaces at which they practiced dental hygiene for pay. Where a job involved working at two or more locations for one employer, this comprised one workplace.

As illustrated in Figure 6.1, dental hygienists in 2001 typically had a single rather than multiple workplaces. Approximately 3 out of 4 respondents (72.5%) reported only one place of employment and another 21.1% reported two places. Only 6.4% indicated they worked in three or more separate workplaces.

There was little change since 1987. In that year, the corresponding distributions were 76.5% for the group with only one dental hygiene workplace, 20.0% with two and 3.4% with three workplaces.

6.1.2 Types of Workplaces

The private dental office is the predominant type of dental hygiene workplace. Table 6.1 presents the distribution of respondents by their principal workplace and, where applicable, second and third workplaces, for both 1987 and 2001. Figure 6.2 illustrates the percentage distribution for 2001 for respondents working in dental hygiene, by type and

size of their principal workplace. Regional distributions by type of principal workplaces are presented in Table 6.2 and illustrated in Figure 6.3. (Distributions for respondents reporting two or more workplaces are available in Report No. 2 *Dental Hygiene Practice in Canada 2001: National Weighted Frequencies and Regional Cross-Tabulations*.) Comparative distributions for the principal workplace for 1977, 1987 and 2001 are summarized in Figure 6.4 and, for 1987 and 2001, in Table 6.3. The distribution for the specialty practice as principal workplace is presented in Table 6.4 and illustrated in Figure 6.5; comparison data for 1987 and 2001 is illustrated in Figure 6.6. Information regarding solo versus group practice is presented by region in Table 6.5 and by year in Table 6.6.

6.1.2.1 The Dental Office

By far the most predominant workplace was the private dental office; 9 out of 10 respondents (93.4%) reported it as principal workplace. It accounted for 88.1% of second workplaces and 74.6% of third workplaces. Regardless of number of workplaces, the majority of respondents were slightly more likely to work in solo rather than group practice dental offices – for the principal workplace, the distribution was 54.4% versus 45.6%.

Regionally, as indicated in Table 6.2 and illustrated in Figure 6.3, the dental office was predominant. This pattern was consistent regardless of the number of workplaces per respondent. As principal workplace, the solo practice configuration was prevalent across all regions (see Table 6.6); the exception was Man/Sask. where group practice accounted for 58.6%.

General versus Specialty Dental Practice

Over all workplace types, the general practice dental office is by far the most prevalent. Distributions are summarized in Table 6.3 by region, detailed in Tables 6.1 and 6.2, and illustrated in Figure 6.3.

The *general* office comprised 85.3% of principal workplaces overall, whether in a solo or a group practice arrangement or in combination with a specialty practice. It was also predominant as the second (79.6%) and third (59.0%) workplace. As noted in Table 6.2 and 6.3, this pattern held across all regions. General dental practice had grown in predominance - from 75.8% of principal workplaces in 1977 to 83.3% in 1987 and 85.3% by 2001 (see Table 6.1.)

Specialty dental practice accounted for approximately 15% of respondents regardless of whether it was the principal, second or third workplace – proportions were 14.5%, 13.7% and 16.6% respectively. As a principal workplace, 5.6% of respondents overall worked in a solo specialist practice, another 2.5% in a group specialty practice, and a further 6.4% in a *combination* general–specialty practice.

Type of Specialty Practice

Among respondents whose principal workplace was a specialty dental office (n=229), two types of specialty were predominant – namely, periodontics and orthodontics. (See Figure 6.5.) Each type was cited by approximately one-half of respondents in the specialty group - 54.8% and 50.0% respectively. Proportions declined markedly for the remaining types of specialty - paedodontics 12.2%, prosthodontics 12.6% and the *other* category 20.7%. (Multiple responses were possible. Since proportions totaled more than 100.0%, presumably some respondents worked in a multiple-type specialty practice.)

As indicated in Table 6.4, among respondents that reported their principal workplace was a specialty dental practice, findings varied regionally. (Absolute numbers are small for some categories and should be interpreted accordingly.) For periodontics, for example, proportions were highest at 75.0% for B.C. and decreased steadily across the country to a low of 26% for the Atlantic region. In contrast, orthodontics was most prevalent for Quebec (81.0%) and to a lesser extent the other two eastern regions, compared to the three western regions where fewer than 5 respondents in total cited orthodontics. Among the relatively smaller groups that cited paedodontics and prosthodontics and for “other” category, less regional variance was evident.

6.1.2.2 Other Types of Workplaces

In contrast to the private dental office, other types of workplaces comprised less than 7% of principal workplaces overall. Proportions were similarly small regardless of whether it was a second or third workplace. Over the period 1977 to 2001 and consistent with the increase for the private dental office, an overall decline was noted for the other types of workplaces - in particular, community health and the educational institution.

Community Health

Community health was reported as the principal workplace by 3.8% of respondents, as the second by 2.0% and, as the third workplace, only for Quebec. As a principal workplace, community health was more prevalent among respondents for Alberta and Quebec although proportions remained small overall - 7.1% and 5.4% respectively.

Educational Institution

The educational institution was cited as principal workplace by less than 2.0% of respondents; the proportion increased slightly to 5.5% as a second workplace. Very low cell counts precluded comparison regionally.

Other

Collectively, the remaining types of workplaces, including independent dental hygiene practice, the Canadian Armed Forces and acute and long-term care hospitals, were reported as principal workplaces by only 1 out of 100 respondents. Again, individual cell counts were low.

6.1.2.3 1987 versus 2001

Over the period 1977 to 2001, the private dental office remained predominant, followed distantly by community health and the the educational institution. As principal workplace, the dental office increased in prevalence from 77.3% in 1977 to 85.4% in 1987 and 93.4% by 2001. Employment in a group dental practice became more prevalent and accounted, for example, for 42.6% of principal workplaces in 2001 compared to 31.4% in 1987 (see Table 6.6).

As a second workplace (see Table 6.1), proportions for the dental office remained essentially the same. However, as a third workplace, it decreased from 86.1% in 1987 to 72.5% in 2001 and business, industry and other non-specified types of workplaces increased, although their proportion overall remained small.

Regionally, the pattern for the principal workplace was essentially the same for 1987 and 2001 (see Table 6.3). There were two notable exceptions. For the Atlantic and Quebec regions, the dental office increased dramatically – from 66.4% to 88.7% and from 68.0% to 83.1% respectively and there was a major decline for community health in particular – from 13.7% to 1.7% and from 18.3% to 5.4% respectively. The implications of this shift in terms of availability and delivery of publicly funded oral health care services merits consideration.

Regarding specialty dental practices, there was little difference in distributions, as estimated for 1987 and 2001¹. (See Figure 6.6.) For both years, periodontics was most prevalent, followed closely by orthodontics. Regionally, two observations were noteworthy. First, in Quebec, the proportion that worked in an orthodontics practice appeared to increase markedly and by 2001 orthodontics was predominant among respondents whose principal workplace was a specialty practice. Second, in the Atlantic region, the proportion of dental hygienists working in a periodontics office apparently declined markedly and, by 2001, accounted for just under one-quarter of specialty practice principal workplaces.

6.1.3 Community Size

Dental hygienists were asked to indicate the size of the community in which their principal dental hygiene workplace was located. Findings overall are illustrated in Figure 6.7.

¹ For comparison purposes, a new variable for 2001 was constructed. Multiple responses were excluded and, based on answers to other items, a single specialty type was identified where possible as the respondent's principal workplace. This reduced the total count for specialty practice as a principal workplace from 229 to 157. Results are presented as estimates only.

It was not surprising to find that the distribution was consistent with that of the population at large. Just over one-third of respondents (34.9%) indicated their principal workplace was situated in a relatively large community with a population of at least one-quarter million. Almost one-half of respondents (45.2%) worked in a mid-sized community of from 25,000 to 249,999. Fewer than 1 out of 5 respondents worked in a relatively small community of less than 25,000 people.

As expected, findings tended to vary regionally. (See Table 6.4.) For example, principal workplaces for respondents for the Atlantic region were more than twice as likely to be in smaller communities of less than 25,000 – 43.6% versus 19.9% overall. On the other hand, among the group reporting a slightly larger community of 25,000 to almost 100,000, the proportion for Quebec greatly exceeded the other regions - 40.1% versus 23.8% overall. Not surprisingly, workplaces in very large communities of one million and over were most evident among respondents for Ontario and B.C. – 18.2% and 16.9%, and least evident for the Atlantic (0.4%), Man/Sask. (1.9%) and Alberta (2.4%) regions.

Findings varied also by type of workplace. Overall, 2 out of 3 general practice and community health workplaces were in communities of less than 250,000 - 68.4% and 65.0% respectively. Conversely, one-half of specialty practice and combined general/specalty practice workplaces were in communities of 250,000 and over - 48.7% and 50.0% respectively.

6.2 MAJOR WORK ACTIVITY

For their principal dental hygiene workplace, dental hygienists were asked to indicate, from a set of 5 activities plus an “other” category, the one at which they spent the most time – that is, their major work activity. Results are presented in Table 6.8.

As expected, the vast majority of respondents - 9 out of 10 - cited clinical dental hygiene services as their major activity. Overall, they had relatively little involvement in post-secondary teaching and administration/management functions and negligible participation in research or consulting.

Major work activity varied little regionally (Table 6.8). There was also little variation based on the number of workplaces or years of employment, hours worked per week or weeks worked per year in the principal workplace. Regardless of the year of graduation, the occupational demand for clinical services remained central to the work of dental hygienists. A full 97.9% of respondents that graduated between 1996 and 2001 listed this service as their primary work function. The proportion declined to 7 out of 10 among respondents that graduated prior to 1976. This group was proportionately more likely to work in community health compared to respondents overall.

WORK ENVIRONMENT

As expected, work activity varied by type of workplace. (See Table 6.9.) At least 9 out of 10 respondents whose principal workplace was a private dental office (solo or group, general or specialty) or the Canadian Armed Forces reported clinical services to be their major work activity. On the other hand, clinical services was cited by only one-half of respondents in hospitals and long term care facilities; another 17% cited administration/management as the major activity and a further one-third indicated the “other” category. Not surprisingly, community health service was highest among those in community health (87%) and teaching among those in post-secondary educational institutions (88.5%).

The primary role of the dental hygienist changed little over the period 1987 to 2001. (See Table 6.10.) Provision of clinical dental hygiene remained the predominant work activity for at least 9 out of 10 dental hygienists.

6.3 EMPLOYMENT IN THE PRINCIPAL WORKPLACE

Respondents were asked to provide information regarding their employment history and time currently worked in their principal workplace. Aspects examined were the number of years employed, hours worked per week on average, and number of weeks worked in the previous year – i.e., 2000.

6.3.1 Length of Employment

Respondents reported the year they commenced employment in their principal workplace. Assuming employment was continuous (including temporary leaves, for example maternity leave), the total number of years worked in that workplace was calculated.

Overall, the length of employment in the one workplace was from 1 to 43 years. The increased number of recent graduates exerted a downward pull on the average number of years employed. Even given this factor, the dental hygiene workforce appears to have been stable; job turnover was not high.

As noted in Table 6.11, one-half of respondents had worked in their principal workplace for more than 10 years (50.5%). Another one-quarter had worked for 5 years or less (26.3%); this latter group reflected the impact of recent graduates – almost 8 out of 10 had graduated within the previous 5 years (78.3%). The remaining group (23.0%) had worked in the one workplace for 6 to 10 years.

While there was little variation regionally, findings did vary by type of workplace. One-half of respondents working in community health had been at that workplace at least 20 years. Similarly, one-half of the group in an educational institution had been employed at least 22 years.

6.3.2 Number of Hours Worked Per Week

As indicated in Tables 6.12 and 6.13, dental hygienists tend to work full-time - that is, 30 or more hours per week excluding lunch hour, in their principal workplace. Respondents overall indicated they worked from 1 to 70 hours per week, with a mean of 27.99 and standard deviation of 9.14. One-half (the median) worked 30 hours per week; 35 hours per week was reported the most frequently (the mode). Hours worked in the principal workplace were essentially unchanged from 1987 when the average was 27.8 hours and the mode 35.

Regional variation was evident. The mean ranged from a high of 30.09 for the Atlantic region to a low of 26.71 hours for BC. Proportionately, the group working full-time was highest for Quebec (69%) and Atlantic (68%), declining to 50% to 56% for BC, Ontario, Alberta, and Man/Sask.

Findings varied also by type of workplace. Respondents in community health and educational institutions tended to work more hours per week – the median was 35 and 33 hours respectively versus 30 hours among respondents overall.

6.3.3 Number of Weeks Worked in 2000

There was little evidence of seasonal or short-term employment in the principal workplace - dental hygienists tend to work a full year (excluding vacation and sick leave). (See Tables 6.14 and 6.15.) Just over one-quarter (28%) worked 49 to 52 weeks – that is, had 4 weeks or less for vacation or other reasons. Another 41% worked from 44 to 48 weeks in the preceding year. Respondents overall indicated they worked from 1 to 52 weeks per year, with a mean of 43.7, median of 47, mode of 48 and standard deviation of 9.7. The number of weeks worked was essentially the same as 1987 when the mean was 42 weeks and the mode 48.

Regionally there was little variation (Table 6.15). Findings varied only slightly by type of workplace.

6.4 REMUNERATION - INCOME

Respondents provided information regarding the remuneration (that is, income and employment benefits) they received at their principal dental hygiene workplace as well as their total income from dental hygiene employment.

WORK ENVIRONMENT

6.4.1 Payment Method

Dental hygienists tend to work on a fixed salary rather than commission or other method of payment. (See Table 6.17.) In 2001, 3 out of 5 respondents (60%) indicated they received earnings via a fixed salary. Another 1 out of 10 reported salary plus commission (4.6%) or straight commission/percentage (5.3%), and a further 7.5% cited self-employment. In addition, a somewhat surprising 22.6% indicated the “other” category, suggesting that dental hygienists’ perceptions of how they are paid should be investigated in greater detail.

While fixed salary was predominant across all regions, some variation was evident (Table 6.16). Fixed salary ranged from a high of 74.3% respondents for Quebec to a low of 51.1% for Ontario. While proportions remained relatively low, respondents for Quebec were the most likely to receive salary plus commission but the least likely to receive straight commission. Self-employment was twice as likely to be reported among respondents for Ontario compared to Alberta which ranked second - 13.9% and 5.9% respectively; no respondent for Quebec cited self-employment.

Payment method varied by type of principal workplace. Fixed salary was virtually the only method reported for community health (96.7%), with the remainder citing the “other” category. Self-employment was most likely to be cited by respondents working in a hospital, long term care facility or “other” category including business and industry.

Method of payment varied from 1987 when fixed salary was much more predominant – 84.4% versus 60% in 2001. As noted in Table 6.17, the decline for fixed salary was greatest for Ontario – from 89% to 51%. Self-employment showed a slight proportionate increase overall, in particular among respondents for Ontario. Little difference was noted for the other specified methods of payment. Surprisingly, only 6.4% of respondents had cited the “other” category in 1987, compared to 22.6% in 2001.

6.4.2 Weekly Income and Hourly Wage Rate

Respondents indicated their income earned in an average week, before taxes and other deductions, at their principal dental hygiene workplace. A new variable was constructed to identify whether that income was differentiated on the basis of work experience (QA10), educational attainment in dental hygiene (QA2) and in other fields (QA4), full versus part time status (QC6), and type of workplace, while controlling for the number of hours worked. The average weekly wage (QC9) was divided by the number of hours worked per week on average in the principal workplace (QC6). Extreme values (that is, those in the lower and upper 1.0 percentiles of the array) were set conservatively to missing. Since the principal workplace was the only workplace for 73% of respondents and was the one in which the remainder spent the most hours per week, the wage for the principal workplace may be accepted as an indicator of the dental hygiene wage rate.

The average hourly wage rate for dental hygienists in 2001 was \$29.85 with a standard deviation of \$9.93. (See Table 6.18.) The wage rate ranged from \$9.83 to \$75.00. One-half of respondents earned \$30.59 or more.

As indicated in Table 6.18 and illustrated in Figure 6.8, the wage rate varied regionally. On average, it was almost twice as high for B.C. compared to Quebec - \$35.93 ($\pm \7.23) versus \$18.97 ($\pm \6.67). Wages tended to be higher for Alberta and Ontario also and lower for the Atlantic and Man/Sask. regions.

6.4.2.1 Factors Influencing Hourly Wage Rate

The average hourly wage for the principal workplace is presented in Table 6.19, for both 1987 and 2001. Regarding the year 2001, wages were highest on average among respondents working in an independent dental hygiene practice (\$42.48), followed by those in a group practice specialty dental office (\$37.16). The wage rate was lowest for those working in hospitals (\$15.36), followed by business and industry (\$19.00). However, as demonstrated in the following section, low wages often were offset by entitlement to employment benefits.

Wage differentials were not evident based on either years of work experience or hours worked per week in the particular workplace. The relationship with educational attainment was very weak.

6.4.2.2 Wages Rates - 1987 and 2001

The relative distribution of wage rates was the same in 1987 as in 2001 - highest for British Columbia, followed by Alberta and lowest for Quebec, followed by the Atlantic region. Similar to 2001, wages were not discriminated on the basis of work experience, educational attainment or hours of work.

6.5 REMUNERATION - EMPLOYMENT BENEFITS

Most employment benefits have a pecuniary value and may be perceived by the employee as an extrinsic reward of working; entitlement to coverage may be of intrinsic value also to the employee. Thus availability of job benefits – or the lack thereof – may affect one's job satisfaction (or dissatisfaction), regardless of whether the employee actually uses the benefit or is otherwise covered – for example, through a spouse's benefit program.

Respondents reported on three types of benefits. The first group involved payment of premiums and fees (QC10); the second the pay schedule (QC11); and the third payment for time off work (QC13). As noted in Tables 6.20 to 6.28, and similar to 1987, it would appear that dental hygienists in 2001 typically were not covered through their workplaces for employment benefits common to other industries and occupations.

6.5.1 Premium-Type Benefits

Information on premium-type benefits is presented in Table 6.20. At least 8 out of 10 respondents reportedly were not entitled to coverage for extended health, life and/or disability insurance or a retirement plan. Almost 8 out of 10 were not covered under a provincial or territorial Workers Compensation Plan.

6.5.1.1 Factors

Findings varied regionally for several items. Respondents for Quebec were considerably less likely to be entitled to receive dental services, Workers Compensation and professional development costs as part of their employment compared to colleagues in other regions; however, they were most likely to be entitled to convention registration fees.

Findings did vary by type of workplace, as indicated in Table 6.21. For the majority of benefits examined, respondents in community health and educational institutions were many times more likely to be entitled to them compared to the group in private dental practice. There were three exceptions. Dental services tended to be cited proportionately more frequently by respondents in a general practice dental office or community health whereas convention registration fees were considerably more prevalent among those in community health and a uniform allowance among those in a specialty dental office.

6.5.1.2 Benefit Score

Employment benefit coverage was examined using a summary score constructed for the purpose. The new variable BENEF10 included all items in QC10 except the *other* category. The remaining 10 items were assigned a value of 1 if the respondent had checked it – i.e., indicated they were entitled to receive it. Values were summed to produce a BENEF10 score for each respondent.

Descriptive statistics are presented in Table 6.22. On average, respondents received 2 of the 10 benefits listed; the mean was 2.53 and the median 2. Exceptions were the Atlantic region and B.C. where one-half were entitled to 3 or fewer benefits. As expected, scores ranged widely; standard deviation was 2.19.

6.5.1.3 Factors Associated with Benefit Score

There was little regional variation in the benefit score ($\text{Eta}^2 < .10$). On the other hand, type of workplace was an influencing factor (Table 6.23). A statistically significant difference was evident between the group working in private dental offices versus those in other primarily public sector workplaces ($p < .0001$). One-half of respondents in dental offices were entitled to 2 benefits on average whereas there was a four-fold increase for those in community health where one-half were entitled to 8 benefits; the educational setting followed with 7 benefits on average. Benefit entitlement did not vary by type of specialty if working in a specialty practice. A very weak relationship was evident between benefit scores and hours worked per week in the principal workplace ($r = .21$). On average, the

group that worked less than 20 hours per week were entitled to 1 benefit, the 20-to-34-hours group to 2 benefits, and the 35-and-more-hours to 3 benefits.

While scores tended to be greater on average among respondents with either a baccalaureate degree in dental hygiene (3.39) or a masters degree in another field (3.75), this was due to type of workplace more so than educational attainment. That group was most likely to be working in public sector workplaces where the range of employment benefits was more extensive.

Compared to other occupations, the employment relationship for the majority of dental hygienists – that is, those working in private dental practice, appeared to be that of a contractor of services more than that of employee. Findings pertaining to pension and other contributions may have implications for retirement planning and workforce retention and stability.

6.5.1.4 1987 versus 2001

For the 1987 survey, respondents were asked to indicate those benefits they were entitled to receive in their principal workplace and those they were not. For benefits they were entitled to, they were to indicate whether or not the benefit was fully paid, partially paid, or not paid by the employer. For this analysis, a benefit was counted as “entitled” regardless of whether the premium was paid by the employer. Findings for 1987 and 2001 are presented in Table 6.24.

It would appear that entitlement to commonly accepted employment benefits decreased many-fold for dental hygienists over the period 1987 to 2001. For example, the proportion entitled to a retirement plan decreased from 51.6% in 1987 to 9.5% in 2001. The one exception was entitlement to dental services, which increased slightly.

6.5.2 Income-Type Benefits

Dental hygienists were asked to indicate whether commonly available income-related benefits were offered in their principal workplace – that is, to check all that applied. Findings are illustrated in Figure Table 6.9.

Apparently dental hygiene workplaces typically do not offer common income-type benefits. Only 1 out of 5 respondents overall indicated cost of living increases were offered and 1 out of 4 cited merit increases and/or bonuses; this was consistent with the finding that only approximately one-half had received a wage increase within the past 12-month period (Table 6.25). Similarly, less than 1 out of 5 respondents indicated overtime payment was offered, yet almost 7 out of 10 reportedly worked overtime either all the time (9.5%) or sometimes (58.5%). (See Table 6.25.)

6.5.2.1 Factors Associated with Availability

Factors associated with availability of income-type benefits are identified in Table 6.26. Two of the three benefits varied regionally in terms of availability – namely, cost of living increases and payment for working overtime. Both benefits were most likely to be reported for Quebec and least likely for Ontario and Alberta; even for Quebec, availability remained relatively low (35% or less). The third benefit examined - merit pay and/or bonuses, did not vary significantly by region.

Availability of income-related benefits was associated with type of workplace. Apparently, community health was least likely to offer cost of living and merit increases (21.7% and 5.0% respectively) but most likely to offer overtime payments – 41.0% versus 17.9% overall. Private dental offices – both general and specialty - were more than twice as likely to offer merit increases and/or bonuses. Educational institutions were the most likely to offer cost of living increases – 42.3% versus 19.6% overall.

Both cost-of-living increases and merit pay were positively associated with the number of hours a respondent worked per week in the principal workplace – the likelihood of the benefit being offered increased as the hours worked increased. As noted in Table 6.26, the relationship was strongest for merit pay – respondents working 35 or more hours per week were twice as likely to be offered it compared to those working fewer than 20 hours.

Two of the benefits were associated with length of time since graduation. Access to cost of living increases were the most likely to be reported by respondents that had been graduated the longest and the proportion declined as the years decreased – for example, from 45.9% for the 1980-or-earlier group to 28.7% for the 1996-2000 group. While access to merit pay or bonus was least likely among those that been graduated the longest – prior to 1976 (10.0%), and most likely among recent graduates – 1996-2000 (32.1%), the relationship was non-linear.

There was little if any relationship between availability of income-related benefits and, specific to the principal workplace, a dental hygienist's years of employment or hours worked per week.

6.5.2.2 1987 versus 2001

As indicated in Figure 6.9, the three income-type benefits examined apparently were more available to dental hygienists in 1987 compared to 2001. On the other hand, the proportion that indicated the “other” response category had increased slightly.

6.5.3 Time Off-with-Pay Benefits

Dental hygienists were asked to indicate their entitlement to receive paid-time-off for sick leave, professional conferences and conventions and, lastly, other types of professional development by checking all that applied. Findings overall are illustrated in Figure 6.11. As with the other sets of benefits examined, the proportion of dental hygienists entitled to time off with pay appears to be very small compared to many other occupations.

Approximately 3 out of 10 respondents reported being entitled to paid sick leave (28.7%). The proportion decreases to 1 out of 5 for paid leave for professional conferences and conventions (20.5%). Only 1 out of 10 respondents reported they were entitled to paid time off for professional development other than conferences and conventions, such as educational leave (10.9%).

6.5.3.1 Factors

A number of factors were examined for their relationship to entitlement to paid time off. Findings are presented in Table 6.27.

Regionally, entitlement to paid time off varied widely. Overall across the three benefits examined, although proportions overall were small, entitlement tended to be higher among respondents for Quebec and lower among the B.C. group. Proportions for sick leave ranged from a high of almost one-half for the Atlantic region (45.1%) to approximately 1 out of 4 respondents for Alberta and Ontario. Paid time off to attend conferences and conventions was three times more likely for Quebec (36.4%) than for B.C. (10.7%) and the Atlantic region (12.4%). Paid time off for other professional development activities was twice as likely for Quebec (15.2%) compared to B.C. (6.3%).

Time off with pay varied by type of workplace. Across all three benefits examined, proportions were at least three times higher for community health and the educational institution compared to both the general and specialty dental office.

Again for all three paid-time-off benefits, entitlement increased proportionately as the number of hours worked per week in the principal workplace increased.

Entitlement to sick leave was twice as likely among the group that graduated prior to 1976 compared to the most recent 1996-2000 group – 40.0% and 20.1% respectively. The pattern was similar regarding entitlement to professional development other than conferences and conventions – 20.8% and 9.6% respectively. No significant relationship between paid-time-off for conferences and years since graduation was observed.

6.5.3.2 1987 versus 2001

Similar to the findings for the other types of employment benefits noted above, entitlement to paid-time-off for sick leave and professional development had declined in the period since 1987. (See Figure 6.10.)

6.5.4 Employment Benefit Score

Employment benefit coverage was examined using a summary score constructed for the purpose - EMPBENEF. Summing responses to benefit-related survey items – namely, QC10, QC11and QC13 derived the score. The construction of the variable to summarize responses to QC10 has already been described – that is, BENEF10. Added to this score were positive responses for QC11 and QC13 – that is, those responses that indicated a particular benefit was available to the respondent. Summed across the three benefit items, the total potential score was 16.

Descriptive statistics are presented in Table 6.28. On average, respondents received 3 of the 16 benefits included in the score; the mean was 3.75 and the median 3, with a standard deviation of 3.02. The minimum number was 1 and the maximum 15.

6.5.4.1 Factors

There was little regional variation in entitlement to employment benefits overall ($\text{Eta}^2 < .10$). The mean score ranged from a high of 4.24 for the Atlantic region to a low of 3.34 for Ontario. As expected given the findings reported previously, the score was at least three times greater among respondents working in community health and educational institutions compared to those in general and specialty dental offices. The score did not vary meaningfully by type of specialty practice or size of the dental office (solo versus group). There was little variation based on the number of hours/ worked per week in the principal workplace - one-half of the respondents that worked full time (30 and more hours/ week) scored 4 compared to 3 for those that worked part-time. Respondents that had worked 21 and more years in their principal workplace or a total of 21 years and more in dental hygiene tended to score slightly higher – the median average was 4 compared to 3 for the other groups.

6.6 PRACTICE-RELATED STRUCTURAL CHARACTERISTICS

Several structural characteristics (and related indicators) of the workplace and employment situation have been found to be associated with practice patterns and quality of practice among dental hygienists in Ontario (see Johnson, 1995). Respondents provided information about four key indicators of these characteristics – namely, presence of a written job description, opportunity to use new technology and equipment related to their work, and participation in decisions regarding 1) the purchase of dental hygiene-related equipment and supplies and 2) new projects and programs.

Findings overall are illustrated in Figure 6.11. Overall, only 1 out of 3 respondents indicated they had a written job description (defined as a document that details their work role and responsibilities). At least 7 out of 10 respondents indicated they had opportunity to use new technology and equipment related to their work (71.5%) and that they participated in decisions regarding the purchase of equipment and supplies (84.6%) and new projects and programs (68.6%).

Given recent trends in practice management, it was surprising to find that the proportion of respondents with a written job description had decreased – from 57.2% in 1987 to 32.8% in 2001. On the other hand, participation in decision-making appears to have increased, based on findings regarding the purchase of work-related equipment and supplies; the portion of respondents that indicated participation increased from 53.4% in 1987 to 84.6% in 2001.

6.6.1 Factors

Regionally, some variation was evident. (See Table 6.29.) Respondents for Ontario were somewhat more likely to have a written job description - 43.2% compared to 32.8% overall; fewer than 1 out of 4 respondents for Quebec, Man/Sask. and B.C. reported one. The opportunity to use new technology and equipment tended to be less among respondents for the Atlantic and Quebec regions – 60.2% and 62.4% versus 71.5% overall and 77.5% for B.C. Regarding participation in decision-making, findings tended to vary less regionally. For the purchase of equipment and supplies, participation ranged from a high of 91.1% of respondents for B.C. to a low of 79.3% for Quebec. The pattern was similar but the proportionate difference greater for new projects and programs - 74.3% for B.C. and 58.0% for Quebec.

It was not surprising to find that the structural factors examined varied by type of workplace. Contrary to expectations, little variance by type of dental office configuration (that is, solo versus group) was evident. As noted in Table 6.30, respondents in community health and educational institutions were at least twice as likely to have a written job description; those in general dental offices were least likely. On the other hand, respondents in community health were the least likely to have opportunities to use new technology and equipment related to their work. Participation in decisions regarding purchases and programs reportedly was greater among respondents in educational institutions, followed by community health. There was little variation based on hours worked, years worked or year of graduation.

6.7 TOTAL ANNUAL DENTAL HYGIENE INCOME

Respondents were requested to provide information about their total annual income in 2000, totaled across all their dental hygiene workplaces and calculated before taxes. Given sensitivity about disclosing personal information, it was gratifying to note that virtually all respondents (97%) answered this item. Results are presented in Table 6.31.

Overall and without adjusting for full-time versus part-time employment, approximately 4 out of 10 respondents (39.5%) indicated they earned between \$30,000 to \$49,999. The proportion earning in this income range was greatest for the Atlantic region followed by Quebec and least for Alberta followed by BC.

WORK ENVIRONMENT

An income of \$50,000 and more tended to be reported more among respondents for BC (47%) followed by Alberta (40%) and Ontario (36%). The proportion decreased to 4% for Quebec.

6.8 SATISFACTION WITH REMUNERATION

Dental hygienists were asked to indicate, on a 7-point scale, their satisfaction (or dissatisfaction) with their dental hygiene wage income (QC19) and job security and employment benefit coverage (QC20). Findings are illustrated in Figure 6.12 and tabulated by region in Table 6.32.

Respondents tended to be moderately satisfied with their wage income (mean average was 4.6, with a standard deviation of 1.5). However, they were less satisfied with their job security and employment benefits (mean=3.5, s.d.=1.8).

6.8.1 Factors

Level of satisfaction with dental hygiene income and employment benefits tended to be relatively constant across the survey population, based on the factors examined. Consistent with the variance in employment income and benefits noted previously, regional variation was most pronounced for Quebec, where the mean averages were somewhat lower at 3.7 and 2.8 respectively.

Somewhat surprisingly given the differences in wage income and employment benefits noted for private dental offices versus public sector workplaces such as community health and educational institutions, satisfaction based on type of workplace varied little ($\eta^2 = <.10$).

6.9 SUMMARY

In summary, dental hygienists working in the profession in 2001 in Canada typically had a single workplace (73%) and that workplace was, by far, most likely to be a private dental practice (93.4%). Almost 78.9% worked in general rather than specialty practice or other type of workplace (for example, public health or teaching). There was little regional variation. Among those that reported a second or even a third workplace, the general practice dental office remained predominant. The solo dentist configuration was slightly more prevalent than group practice as a principal workplace - 54% and 46% respectively.

Among dental hygienists working in a specialty dental practice, periodontics and orthodontics was by far the most prevalent types.

Over the period 1977 to 2001, there was little relative change by type of workplace and the private dental office gained in prominence. As principal workplace, in 2001 the dental office accounted for 9 out of 10 dental hygienists (93%), having increased from 76% in 1977 and 83% in 1987. There was a corresponding proportional decrease for the remaining traditional types of workplaces, including community health and the educational institution.

The workforce was relatively stable with little job change. One-half of respondents had commenced work in their principal workplace more than 10 years prior to the survey. Just over one-half worked full-time (57%) in their principal workplace – that is, 30 hours and more on average. Almost 7 out of 10 dental hygienists had worked at least 44 weeks in the previous year in their principal workplace.

For 9 out of 10 respondents, their major work activity involved clinical dental hygiene services. There was little variation regionally. However, major work activity varied by workplace; the “clinical services” group was proportionately greater among respondents in private dental practice and the military whereas community health service was greater among respondents in community health.

Regarding remuneration, 3 out of 5 dental hygienists receive a fixed salary versus commission or other method of payment – a decrease from the 84% observed in 1987. The average hourly wage, computed from weekly income and hours worked per week, was on average \$29.85 and ranged from \$9.83 to \$75.00. One-half of respondents earned \$30.59 or more. Dental hygiene income varied regionally; the hourly wage was highest for British Columbia and lowest for Quebec. Hourly wage varied also by type of workplace. While it tended to be lower among public sector workplaces, employment benefit coverage was greater. Hourly wage did not vary based on number of years of experience in dental hygiene or years worked in the workplace or by full-time versus part-time employment.

By 2001 compared to 1987, availability of employment benefits for dental hygienists had decreased overall. Based on the survey findings, dental hygienists typically were not covered through their workplaces for employment benefits common to other industries and occupations. Regarding payment-of-premiums type benefits, at least 85% of respondents reportedly were not entitled to coverage for extended health insurance, retirement or life and/or disability insurance plans. Regarding pay-type benefits, the vast majority of respondents were *not* offered merit pay and/or bonuses (75%), cost of living increases (80%), or overtime pay (82%). Regarding paid-time-off benefits, only 29% of respondents reportedly were entitled to sick leave; the proportion decreased even further regarding paid-time-off to attend professional conferences and conventions (21%) and other types of professional development (11%).

Benefit entitlement varied by type of workplace. Using an employment benefit score constructed for the purpose, differences were disclosed between the group working in private dental offices versus those in other primarily public sector workplaces ($p < .0001$).

WORK ENVIRONMENT

Respondents tended to be moderately satisfied with their wage income; however, while there was less divergence in opinion regarding satisfaction with employment benefits, the level of satisfaction on average was lower. Findings pertaining to pension and other employment contributions and to satisfaction with remuneration will have implications for retirement planning and possibly workforce retention and stability.

Figure 6.1: Percent Distribution of Dental Hygienists by Number of Dental hygiene Workplaces, Canada, 2001 (n=1590)

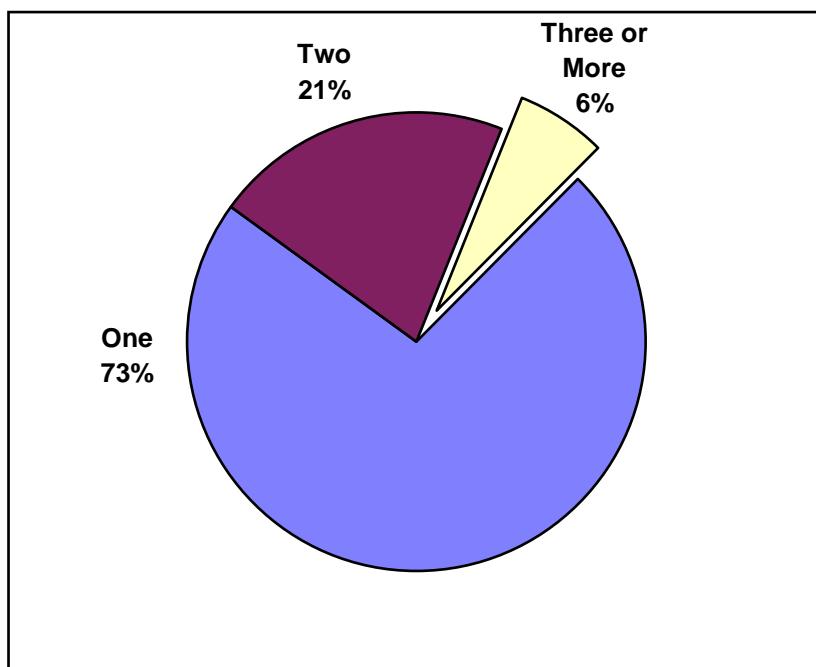


Figure 6.2: Respondents Working in Dental Hygiene by Type of Principal Workplace, Canada 2001 (percent)

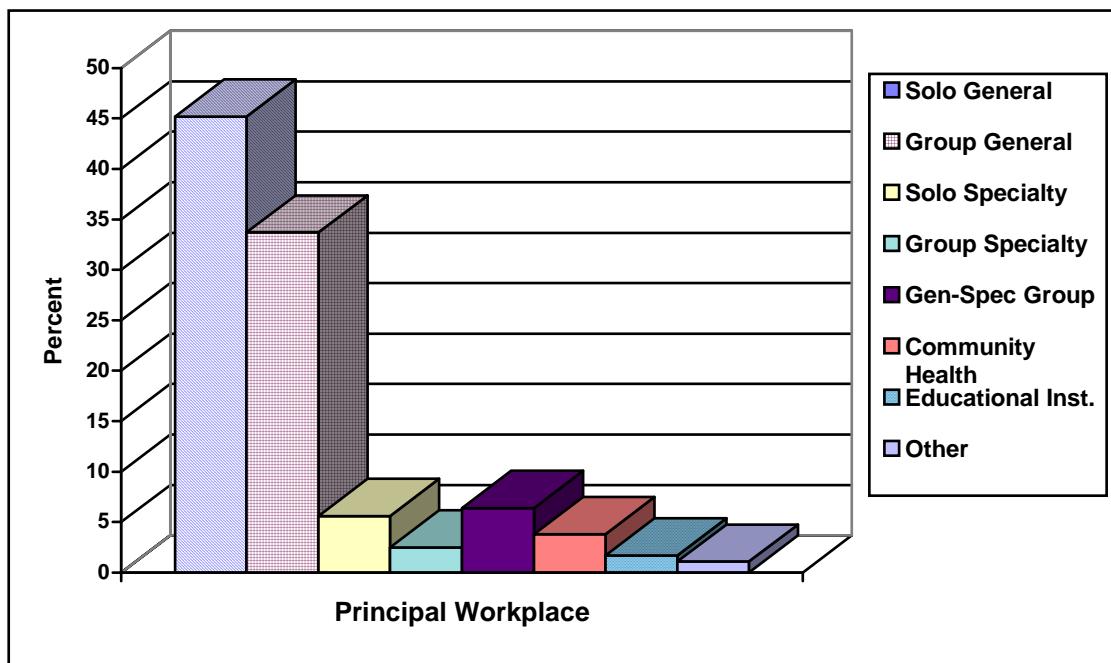


Table 6.1: Distribution of Dental Hygienists Employed in Dental Hygiene, by Type and Number of Workplaces and by Year (1987 and 2001), Canada

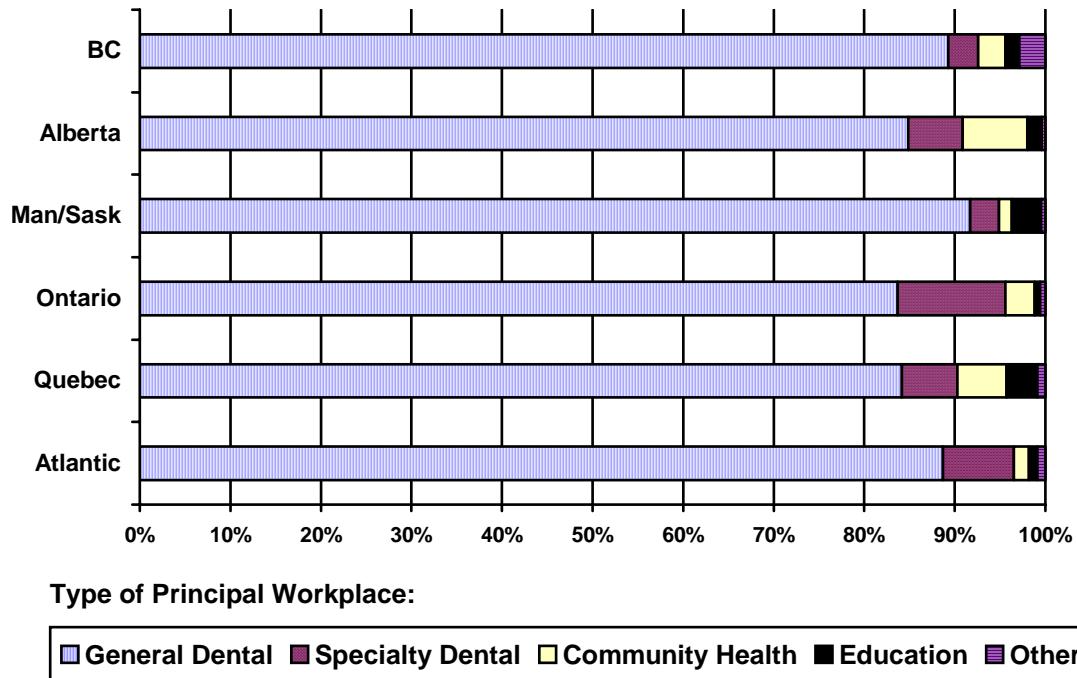
TYPE OF WORKPLACE	PRINCIPAL/ONLY		SECOND		THIRD	
	1987	2001	1987	2001	1987	2001
General dental practice – solo	45.8	45.2	50.5	41.5	49.7	39.7
- group	24.2	33.7	21.0	32.9	23.1	16.2
Specialty dental practice – solo	8.2	5.6	10.8	6.8	8.7	12.4
- group	2.4	2.5	3.4	1.7	2.3	2.1
General/specialty group practice	4.8	6.4	3.7	5.2	2.3	2.1
Independent dental hygiene practice	n/a	0.2	n/a	0.1	n/a	1.3
Community/public health	9.0	3.8	2.6	1.9	1.7	2.7
Educational institution	3.5	1.7	5.2	5.5	7.5	1.1
Canadian Forces Dental Corps	1.1	0.1	0.5	0.2	---	--
Acute care hospital	0.3	0.1	0.5	0.2	3.4	2.1
Long-term care		0.2		0.7		3.0
Business, industry	0.7	0.1	1.9	1.5	3.4	5.7
Other		0.4		1.9		9.5
Column Total	100.0 4662	100.0 1580	100.0 1094	100.0 402	100.0 173	100.0 92
Row Total: 1987	76.5		20.1		3.4	
2001		72.4		21.2		6.4

WORK ENVIRONMENT

Table 6.2: Dental Hygienists by Type of Principal Workplace and Region, Canada, 2001

TYPE OF WORKPLACE	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
General dental practice:							
Solo	42.0	41.4	45.5	37.9	44.0	56.5	45.2
Group	41.1	34.6	30.4	48.9	39.3	29.9	33.7
Specialty dental practice:							
Solo	5.6	5.1	7.7	1.4	4.4	2.2	5.6
Group	2.2	1.0	4.2	1.8	1.6	1.1	2.5
Both General and Specialty	5.6	8.1	7.7	5.0	1.2	3.0	6.4
Independent Dental Hygiene	--	--	--	--	0.4	1.1	0.2
Community Health	1.7	5.4	3.2	1.4	7.1	3.0	3.8
Educational Institution	0.9	3.4	0.6	3.2	1.6	1.5	1.7
Canadian Forces Dental Corps	0.9	--	--	--	0.4	--	0.1
Hospital and Long Term Care	--	0.3	--	--	--	1.8	0.2
Other	0.0	0.6	0.6	0.5	--	--	0.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	231	295	312	219	252	271	

Figure 6.3: Principal Dental Hygiene Workplace, by Type and Region, Canada, 2001 (percent)



WORK ENVIRONMENT

Figure 6.4: Dental Hygienists by Type of Principal Workplace and Year (1977, 1987)

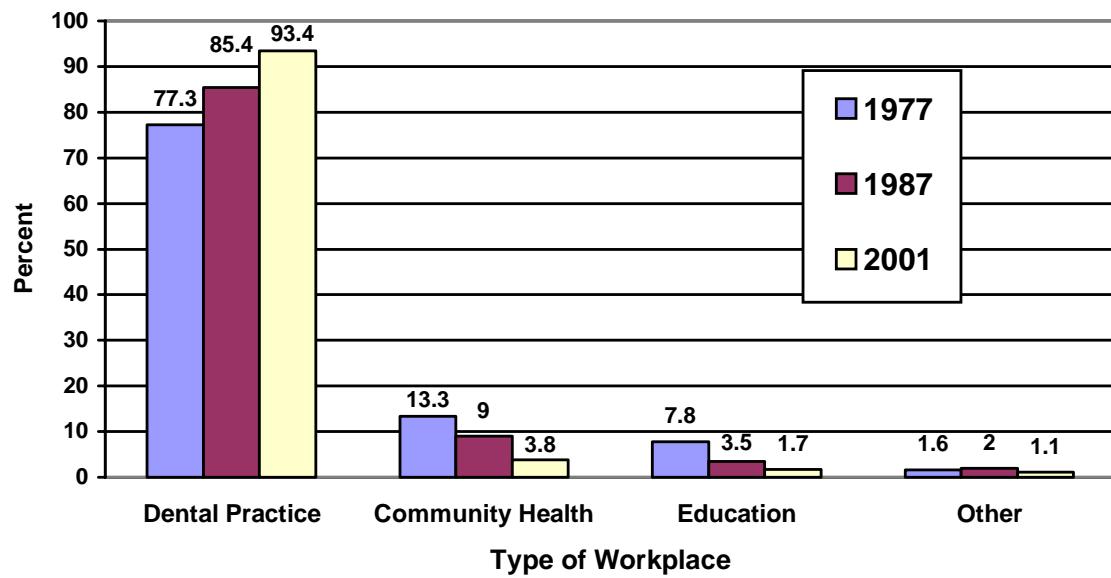


Table 6.3: Principal Dental Hygiene Workplace by Type, Region and Year (1987 and 2001), Canada (%)

TYPE OF WORKPLACE	YEAR	REGION						National Weighted Total
		Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
General dental practice	1987	66.4	68.0	73.3	73.2		82.5	74.8
	2001	88.7	83.1	83.6	91.8	84.5	89.4	85.3
Specialty dental practice	1987	10.8	5.2	15.1	8.3		6.6	10.6
	2001	7.8	6.1	13.9	3.2	6.0	3.3	8.1
Community Health	1987	13.7	18.3	4.1	10.6		6.3	9.0
	2001	1.7	5.4	3.2	1.4	7.1	3.0	3.8
Educational Institution	1987	4.1	5.4	2.6	5.2		3.0	3.5
	2001	0.9	3.4	0.6	3.2	1.6	1.5	1.7
Other	1987	4.9	2.9	5.0	2.7		1.7	2.1
	2001	0.9	0.9	0.6	0.5	0.8	2.9	1.1
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0
N		245	1080	2142	715		480	
n		231	295	312	219	252	271	

Figure 6.5: Dental Hygienists Working in a Specialty Dental Office as the Principal Workplace, by Type of Specialty, Canada, 2001 (%), n=229

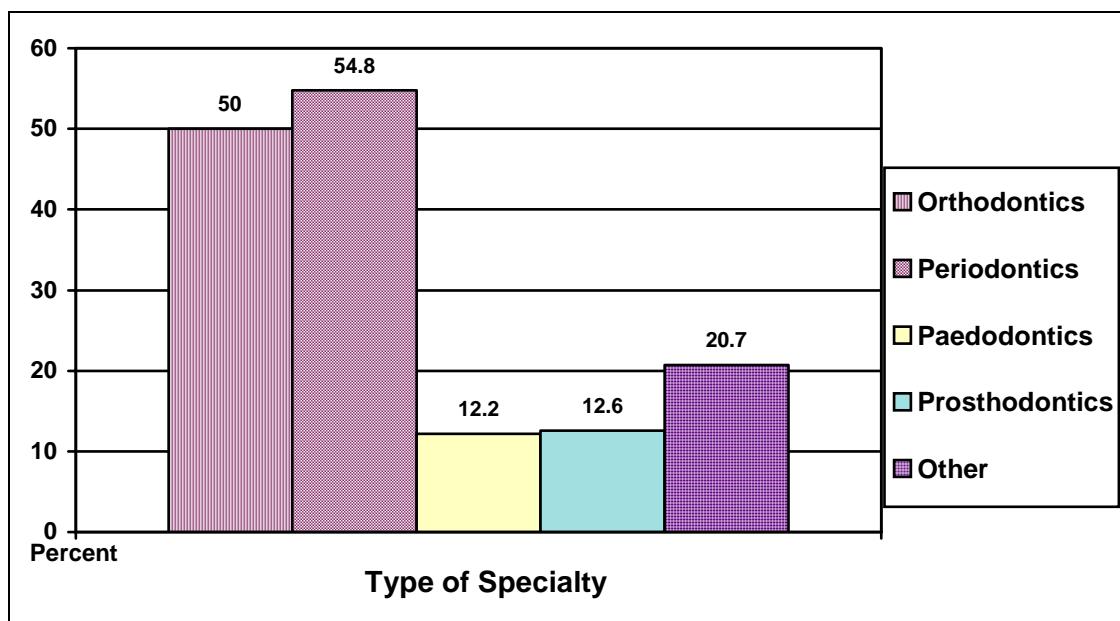


Table 6.4: Dental Hygienists Working in a Specialty Dental Office as the Principal Workplace, by Type of Specialty and Region (percent “yes”)¹

Type of Specialty (n and % “yes”)	P value	REGION						National Weighted Total
		Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
a. Orthodontics	.000	16 51.6	34 81.0	24 44.4	3 21.4	1 5.9	--	50.0
b. Periodontics	.007	8 25.8	20 47.6	31 57.4	9 64.3	12 70.6	12 75.0	54.8
c. Paedodontics	n.s.	7 22.6	4 9.5	7 13.0	1 7.1	3 17.6	1 6.3	12.2
d. Prosthodontics	n.s.	3 9.7	7 16.7	5 9.3	2 14.3	1 5.9	5 31.3	12.6
e. Other	n.s.	5 16.1	10 23.8	11 20.4	4 28.6	--	4 25.0	20.7

1. Distributions are based on responses for 229 respondents that indicated their principal dental hygiene workplace was a specialty dental practice. Multiple responses were possible so columns do not total 100.0%.

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Figure 6.6: Dental Hygienists Whose Principal Workplace Was a Specialty Dental Office, by Type of Specialty and Year (1987 and 2001), Canada

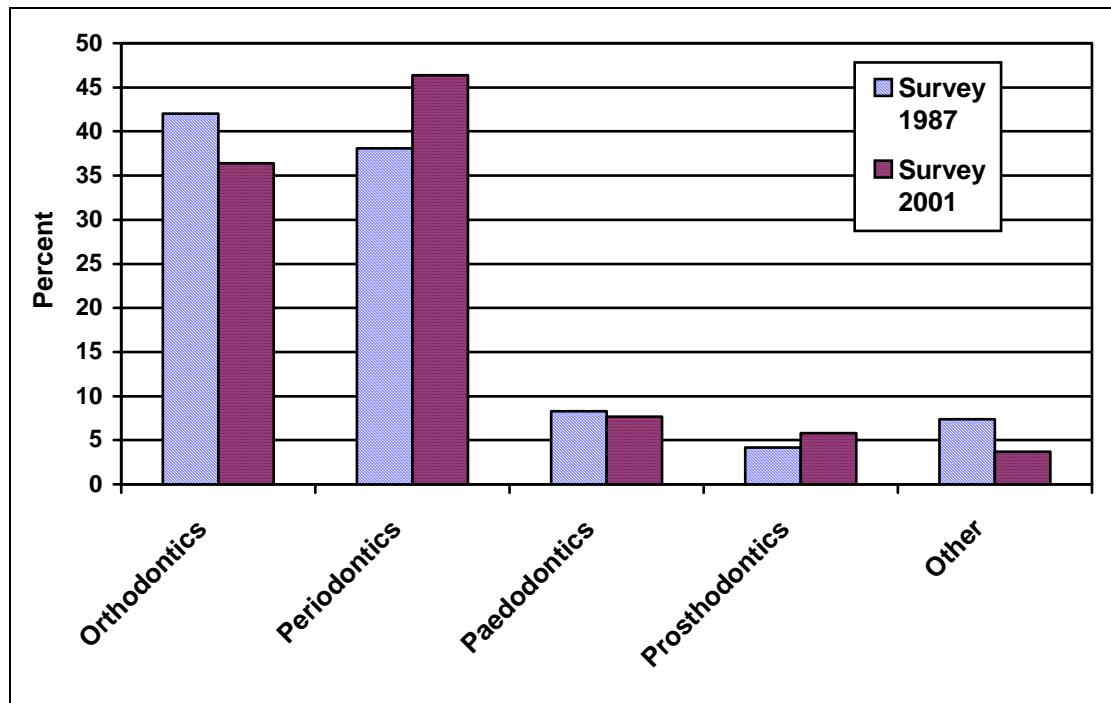


Table 6.5: Dental Hygienists Working in a Dental Office as the Principal Workplace, by Configuration of Office (Solo versus Group) and Region, Canada, 2001

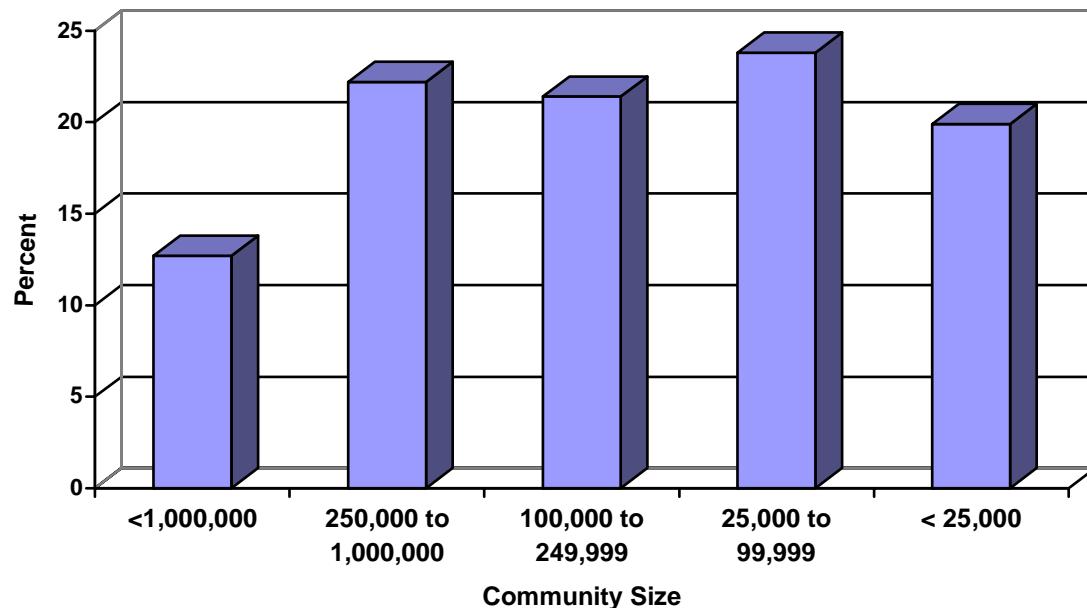
CONFIGURATION OF DENTAL OFFICE	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Solo Dentist:							
General Practice	43.5	45.9	47.7	39.9	48.7	61.0	48.4
Specialty Practice	5.8	5.6	8.1	1.4	4.8	2.4	6.0
Group of Dentists:							
General Practice	42.6	38.3	31.9	51.4	43.4	32.3	36.1
Specialty Practice	2.2	1.1	4.4	1.9	1.8	0.4	2.7
Both General and Specialty Practice	5.8	9.0	8.1	5.3	1.3	3.2	6.9
Total	100.0						
	223	266	298	208	228	251	

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Table 6.6: Principal Dental Hygiene Workplace Configuration of Dental Practice, by Year (1987 and 2001), Canada

TYPE OF PRINCIPAL WORKPLACE			YEAR		
			1987	2001	
Private Dental Office	Solo Practice (single dentist)	a. general	45.8	45.2	
		b. specialty	8.2	5.6	
	Group Practice (multiple dentists)	a. general	24.2	33.7	
		b. specialty	2.4	2.5	
		c. both general and specialty	4.8	6.4	
Other Type			14.6	6.6	
Total			100.0	100.0	
			Number	1590	

Figure 6.7: Dental Hygienists by Size of Community in which Principal Workplace is Located, Canada, 2001 (%)



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Table 6.7: Population Size of Community In Which Dental Hygienist Resides/Works¹, by Region and Year (1987 and 2001), Canada (%)

COMMUNITY SIZE (population)	YEAR	REGION						National Weighted Total
		Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
One million and over	1987	(2)	14.8	16.0	1.2		22.1	13.0
	2001	(2)	9.3	18.2	(2)	2.4	16.9	12.7
250,000 to 999,999	1987	7.8	7.3	20.6	57.9		14.3	22.3
	2001	12.9	8.9	22.5	37.7	57.5	19.2	22.2
100,000 to 249,999	1987	22.0	4.3	21.2	9.4		17.2	15.1
	2001	18.2	15.2	29.1	24.1	4.5	18.8	21.4
25,000 to 99,999	1987	19.9	32.7	20.1	10.0		26.0	21.9
	2001	24.9	40.1	16.6	10.4	17.4	26.3	23.8
Less than 25,000	1987	49.7	40.9	22.1	21.6		20.3	27.7
	2001	43.6	26.4	13.6	25.9	18.2	18.8	19.9
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. In 1987, respondents were asked to indicate the size of the community in which they resided. For 2001, the question was changed; it asked for the size of the community for the principal dental hygiene workplace.

Table 6.8: Dental Hygienists Employed in Dental Hygiene, by Primary Work Activity in the Principal Workplace and Region, Canada, 2001

ACTIVITY AT WHICH R. SPENDS MOST TIME	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Clinical dental hygiene	94.3	87.5	94.5	93.2	90.5	94.1	92.2
Community health	2.2	5.1	2.3	*	6.7	2.6	3.3
Post-secondary teacher	*	2.7	*	3.2	*	*	1.5
Administration/management	*	*	*	*	*	*	0.9
Research/consulting	--	*	--	--	--	--	0.1
Other	*	1.7	*	*	*	*	1.3
Multiple response	*	1.7	*	*	--	*	0.7
Total	230	296	310	220	253	271	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: * Percentage figures are not included where cell counts were less than 5.

WORK ENVIRONMENT

Table 6.9: Dental Hygienists Employed in Dental Hygiene, by Primary Work Activity and Type of Principal Workplace, Canada, 2001

TYPE OF PRINCIPAL WORKPLACE	MAJOR WORK ACTIVITY					TOTAL 100.0% (n)
	Clinical Dental Hygiene	Community Health	Teach Students (post-sec)	Administrat/ Manage	Consult, Research, Other	
Dental Practice:						
General	98.4			0.1	1.4	(1339)
Specialty	93.7				6.3	(127)
Gen/Spec	98.0				2.0	(101)
Community Health	5.0	86.7		8.3		(60)
Post-Secondary Education			88.5	8.3	3.8	(26)
Hospital/LTC	50.0			16.7	33.3	(6)
Other	50.0			50.0		(11)

Table 6.10: Primary Work Activity of Dental Hygienists, by Type of Principal Workplace and Year (1987 and 2001), Canada

TYPE OF PRINCIPAL WORKPLACE	YEAR	MAJOR WORK ACTIVITY					TOTAL 100.0% (n)
		Clinical Dental Hygiene	Community Health	Teach Students (post-sec)	Administer / Manage	Consult, Research, Other	
Dental Practice	1987	97.7			0.5	1.4	(2775)
	2001	98.0			0.1	1.3	(1446)
Community/ Public Health	1987	17.5	63.7	2.1	10.9	5.8	(193)
	2001	5.0	86.7		8.3		(60)
Post-Secondary Education	1987	1.0	3.9	86.5	7.5	1.2	(77)
	2001			88.5	7.7	3.8	(26)
Hospital/LTC	1987	86.2	2.9		10.9		(17)
	2001	50.0			16.7	33.3	(6)
Other	1987	45.8	5.4		32.4	16.4	(14)
	2001	50.0			50.0		(11)

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Table 6.11: Number of Years Dental Hygienist Has Been Employed in Principal Workplace by Region, Canada, 2001

NUMBER OF YEARS EMPLOYED	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
5 years or less	29.3	26.4	23.9	30.3	26.1	32.5	26.4
6 to 10 years	22.0	20.7	22.7	21.1	26.9	27.3	23.0
11 to 15 years	22.8	20.3	19.4	22.0	18.6	17.7	19.7
16 to 20 years	10.3	13.2	14.9	12.8	9.9	8.5	12.8
21 years and more	15.5	19.3	19.1	13.8	18.6	14.0	18.0
Total	232	295	309	218	253	271	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Chi-square: p = .000

Table 6.12: Number of Hours Worked Per Week, On Average, in Principal Dental Hygiene Workplace, by Region, Canada, 2001

Number of Hours Worked/Week	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Less than 20 hours	10.4	9.9	20.0	16.7	221.5	21.6	17.1
20 to 29 hours	20.9	21.2	29.7	27.1	23.5	28.7	26.3
30 to 34 hours	37.8	38.6	22.6	29.4	27.5	28.7	29.0
35 hours and more	30.9	30.4	27.7	26.7	27.5	20.9	27.6
Total	230	293	310	221	251	268	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 6.13: Number of Hours Worked Per Week¹ in Principal Dental Hygiene Workplace, by Region (mean, median, standard deviation)

STATISTICS	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Number	230	294	312	221	254	270	
Mean	30.09	29.83	27.1	28.16	27.59	26.71	27.99
Median	32	32	29.5	30	30	29	30
Standard Deviation	8.13	7.6	9.72	8.61	10.36	9.08	9.14

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Table 6.14: Number of Weeks Worked in Year 2000 in Principal Dental Hygiene Workplace, by Region, Canada, 2001

Number of Weeks Worked in Year 2000	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
40 weeks or less	23.1	16.0	16.0	22.2	21.7	19.5	17.5
41 to 43 weeks	12.7	18.1	12.1	10.0	15.0	16.9	14.4
44 to 48 weeks	40.2	47.6	37.8	30.3	40.0	40.2	40.5
49 to 52 weeks	24.0	18.4	34.2	37.6	23.3	23.3	27.5
Total	229	288	307	221	240	266	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Chi-square: p=.000

Table 6.15: Number of Weeks Worked in Year 2000 in Principal Dental Hygiene Workplace, by Region, Canada, 2001 (mean, median, standard deviation)

STATISTICS	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Number	229	288	307	221	240	266	
Mean	42.4	43.8	44.2	43.7	42.4	43.2	43.7
Median	47	47	48	48	47	47	47
Standard Deviation	10.71	9.2	9.64	9.86	11.19	9.23	9.7

**Table 6.16: Method of Receiving Earnings in the Principal Dental Hygiene Workplace,
by Region, Canada, 2001**

METHOD OF PAYMENT	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Fixed salary	59.1	74.3	51.1	68.2	54.2	61.1	59.9
Commission/percentage	9.1	0.3	6.5	11.4	11.9	3.0	5.3
Salary and commission	6.5	7.8	3.2	3.2	4.3	3.0	4.6
Self-employment	1.7	0.0	13.9	0.9	5.9	7.4	7.5
Other	23.7	17.6	25.2	16.4	23.7	25.6	22.6
Total	232	296	309	220	253	270	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

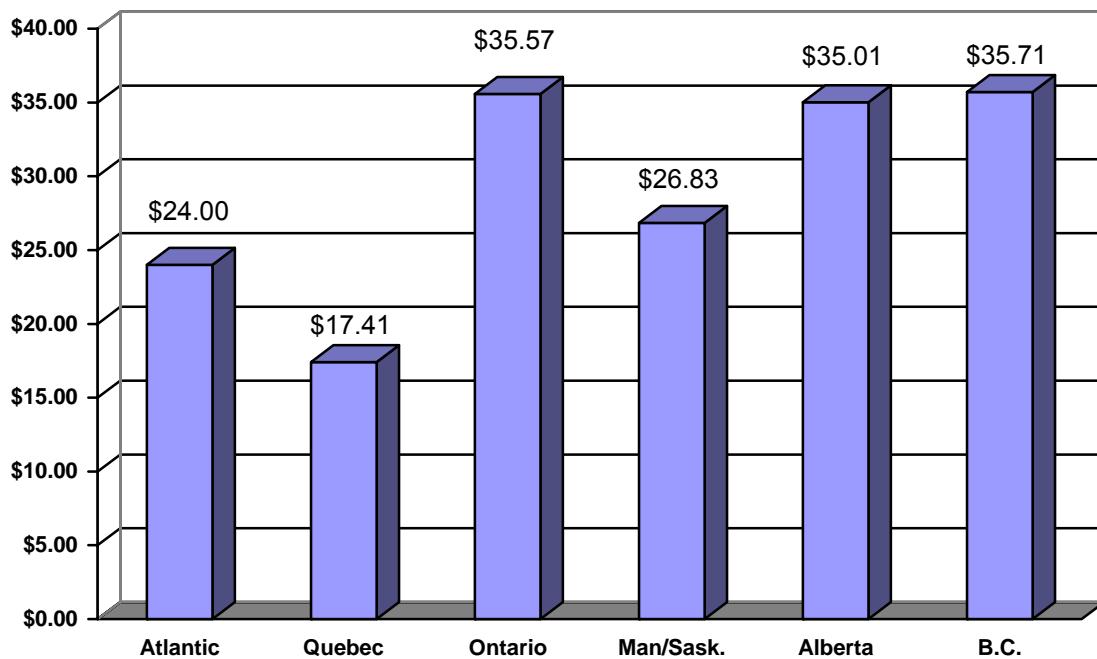
Chi-square: p=.000

WORK ENVIRONMENT

**Table 6.17: Method Of Receiving Earnings in the Principal Dental Hygiene Workplace,
by Region and year (1987 and 2001), Canada, 2001**

METHOD OF PAYMENT	YEAR	REGION						National Weighted Total
		Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Fixed Salary	1987	81.9	84.9	88.7	77.5		75.1	84.4
	2001	59.1	74.3	51.1	68.2	54.2	61.1	59.9
Commission/ Percentage	1987	9.5	0.4	0.5	11.8		6.0	3.2
	2001	9.1	0.3	6.5	11.4	11.9	3.0	5.3
Salary and Commission	1987	1.2	6.6	3.5	3.8		3.3	4.1
	2001	6.5	7.8	3.2	3.2	4.3	3.0	4.6
Self Employed	1987	0.4	0.2	2.0	0.9		7.7	1.9
	2001	1.7	0.0	13.9	0.9	5.9	7.4	7.5
Other	1987	7.0	8.0	5.3	5.9		7.9	6.4
	2001	23.7	17.6	25.2	16.4	23.7	25.6	22.6
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0

Figure 6.8: Hourly Wage Rate for Dental Hygienists, by Region, Canada, 2001 (median)



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Table 6.18: Hourly Wage Rate¹ for Dental Hygienists, by Region, Canada, 2001 (mean, median, range, std. dev.)

	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Number	211	275	286	212	244	253	
Mean wage	\$25.97	\$18.97	\$34.06	\$27.98	\$35.69	\$35.93	\$29.85
Median	\$24.00	\$17.41	\$33.57	\$26.83	\$35.00	\$35.71	\$30.59
Minimum	\$11.50	\$9.83	\$16.67	\$12.50	\$12.08	\$15.00	\$9.83
Maximum	\$66.67	\$75.00	\$72.00	\$71.88	\$71.43	\$71.43	\$75.00
Standard Deviation	7.716	6.671	7.348	7.0331	7.794	7.23	\$9.93

Missing = 115

1. Derived from survey items pertaining to the principal dental hygiene workplace: "How many hours, on average, do you work per week (exclude lunch hour)?" and "How much do you earn in an average week (before taxes and other deductions)?".

Table 6.19: Average Hourly Wage Rate for Dental Hygienists¹, by Type of Principal Workplace and Year² (1987 and 2001), Canada

TYPE OF PRINCIPAL WORKPLACE			YEAR	HOURLY WAGE (\$)		TOTAL (n)		
				Mean	Standard Deviation			
Dental Practice	General	Solo	1987	21.57	7.65	895		
			2001	30.45	10.09	672		
		Group	1987	19.60	7.79	455		
			2001	28.80	9.92	503		
	Specialty	Solo	1987	22.18	6.44	178		
			2001	30.86	8.51	86		
		Group	1987	22.80	7.94	43		
			2001	37.16	11.54	38		
		General and Specialty		18.66	6.38	97		
				29.25	10.64	94		
Independent Dental Hygiene Practice			1987	--	--	--		
			2001	42.48	8.06	3		
			1987	14.56	4.58	184		
Community/ Public Health			2001	25.99	4.17	58		
			1987	18.14	5.25	66		
			2001	30.77	5.82	25		
Post-Secondary Education			1987	20.14	5.25	15		
			2001	23.87	11.4	5		
			1987	16.29	4.98	42		
Hospital/ Long Term Care Institution			2001	28.70	9.1	1		
			1987	14.77	3.04	12		
			2001	23.20	9.02	7		
CANADA			1987	20.21	7.52	1946		
			2001	29.85	9.93	wgt'd. est.		

1. Derived from responses to two survey items that pertained to the principal dental hygiene workplace: "How many hours, on average, do you work per week (exclude lunch hour)?" and "How much do you earn in an average week (before taxes and other deductions)?".

2. Raw data as reported for the respective survey years.

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Table 6.20: Dental Hygienists' Entitlement to Selected Employment Benefits in the Principal Workplace, by Benefit and Region, Canada 2001

BENEFIT (% responding "Yes")	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
1 Provincial health insurance premiums **	14.6	12.5	25.3	10.4	16.1	12.9	18.3
2 Extended coverage health insurance *	15.9	13.8	6.4	13.6	16.1	9.2	10.4
3 Retirement plan (not CPP/QPP)	7.7	12.5	8.3	9.5	9.0	8.1	9.5
4 Dental services **	72.1	50.8	59.0	68.8	70.2	67.6	60.2
5 Life insurance **	22.7	17.2	7.4	13.1	13.7	5.1	11.3
6 Disability insurance **	24.0	19.2	11.9	16.3	18.0	7.0	14.5
7 Workers Compensation **	29.2	9.1	14.7	29.0	18.8	45.3	19.1
8 Professional development (e.g., tuition, travel) **	43.8	14.5	31.4	28.5	46.3	40.4	30.0
9 Convention registration fees **	29.6	58.6	33.7	48.4	33.7	50.7	42.8
10 Uniform allowance **	33.5	30.0	38.5	46.2	38.0	46.3	37.5
11 Other	9.0	7.7	8.3	7.2	8.2	13.2	8.7
Total (n)	233	297	312	221	255	272	

Chi-square: **p=.000; *p=.001

1. By definition, Type I refers to employment benefits that involve the payment of a premium or fee.

Table 6.21: Dental Hygienists' Entitlement to Selected Employment Benefits by Type of Principal Workplace, Canada 2001

	BENEFIT (% responding "Yes")	TYPE OF WORKPLACE			
		General Dental Office	Specialty Dental Office	Community Health	Educational Institution
1	Provincial health insurance premiums	15.2	21.9	56.7	69.2
2	Extended coverage health insurance	6.3	4.7	72.1	76.9
3	Retirement plan (not CPP/QPP)	3.9	4.7	86.9	88.9
4	Dental services	62.1	38.3	72.1	37.0
5	Life insurance	6.9	3.1	86.7	73.1
6	Disability insurance	10.5	5.5	85.0	65.4
7	Workers Compensation	17.0	11.7	68.9	53.8
8	Professional development (e.g., tuition, travel)	27.6	34.4	66.7	74.1
9	Convention registration fees	41.1	42.2	78.3	53.8
10	Uniform allowance	35.0	50.0	31.7	34.6
11	Other	8.0	10.1	18.0	7.4
	Total (n)	1243	128	60	26

Chi-square: **p=.000

1. By definition, Type I refers to employment benefits that involve the payment of a premium or fee.

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Table 6.22: Number of Selected Employment Benefits to Which Dental Hygienists Are Entitled, on Average, in the Principal Workplace, by Region, Canada, 2001 (n, mean, median and standard deviation)

	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Number	233	297	312	221	255	272	
Mean	2.93	2.38	2.37	2.84	2.80	2.93	2.53
Median	3	2	2	2	2	3	2
Range	0 - 9	0 - 9	0 - 10	0 - 10	0 - 10	0 - 10	0 - 10
Standard Deviation	2.12	2.06	2.16	2.12	2.38	1.95	2.13

Table 6.23: Dental Hygienists' Employment Benefit Score¹, by Type of and Number of Hours Worked Per Week in the Principal Workplace, Canada, 2001

STATISTICS	TYPE OF PRINCIPAL WORKPLACE**				HOURS PER WEEK**	
	General Dental	Specialty Dental	Community Health	Education Institution	< 30	30 or more
Mean	2.25	2.17	7.04	6.26	2.08	2.90
Median	2	2	8	7	2	2
Standard deviation	1.80	1.58	2.56	2.51	1.85	2.26
Number	1244	128	61	26	680	887

**Statistical significance: p=.000

1. Score was calculated by summing total number of employment benefits listed in survey item C10 (n=10) to which respondent indicated they were entitled.

Table 6.24: Dental Hygienists' Entitlement to Selected Employment Benefits in the Principal Workplace, by Region and Year (1987 and 2001), Canada

	BENEFIT¹	SURVEY YEAR	
		1987	2001
a	Provincial health insurance premiums	53.0	18.3
b	Extended coverage health insurance	54.4	10.4
c	Retirement plan (not CPP/QPP)	51.6	9.5
d	Dental services	66.8	60.2
e	Life insurance	56.3	11.3
f	Disability insurance	59.2	14.5
g	Workers Compensation	—	19.1
h	Professional development (e.g., tuition, travel)	74.2	30.0
i	Convention registration fees	78.6	42.8
j	Uniform allowance	—	37.5
k	Other	68.7	8.7

1. For 1987, percent figure is based on the portion of respondents that indicated they were entitled to the benefit, regardless of whether the employer paid or contributed to the premium. For 2001, percent figure is based on the portion that checked the corresponding box to indicate their entitlement.

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Figure 6.9: Availability of Income-Related Employment Benefits in the Principal Dental Hygiene Workplace, 1987 and 2001, Canada

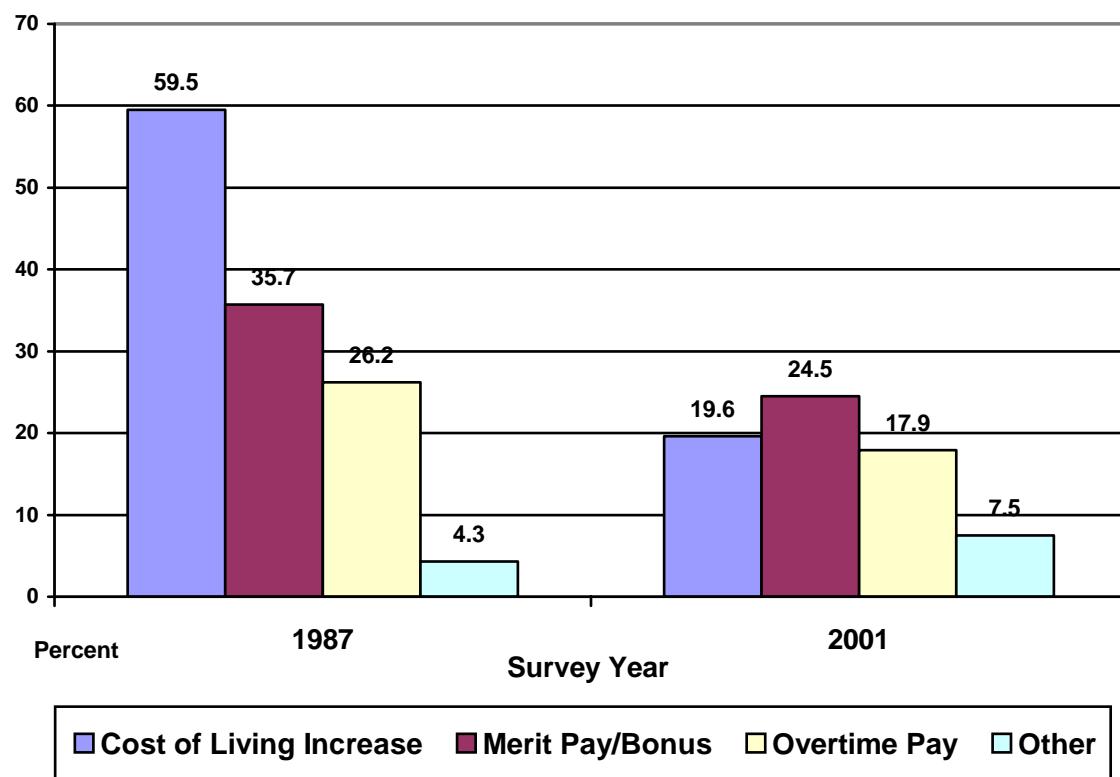


Table 6.25: Frequency with Which Dental Hygienists Receive a Wage Increase and Work Overtime¹ in the Principal Workplace, by Region, Canada, 2001

	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
Wage Increase in Past 12 Months (% yes)	52.4	63.9	46.3	62.3	56.4	57.4	54.3
Works Overtime:							
Never	34.3	35.5	32.4	27.6	27.3	28.1	32.0
Sometimes	57.1	59.0	56.6	63.3	63.1	59.2	58.5
All the time	8.6	5.5	11.0	9.0	9.6	12.7	9.5
Total N	233	293	309	221	249	267	

1. Overtime work was defined as working *beyond your usual hours*.

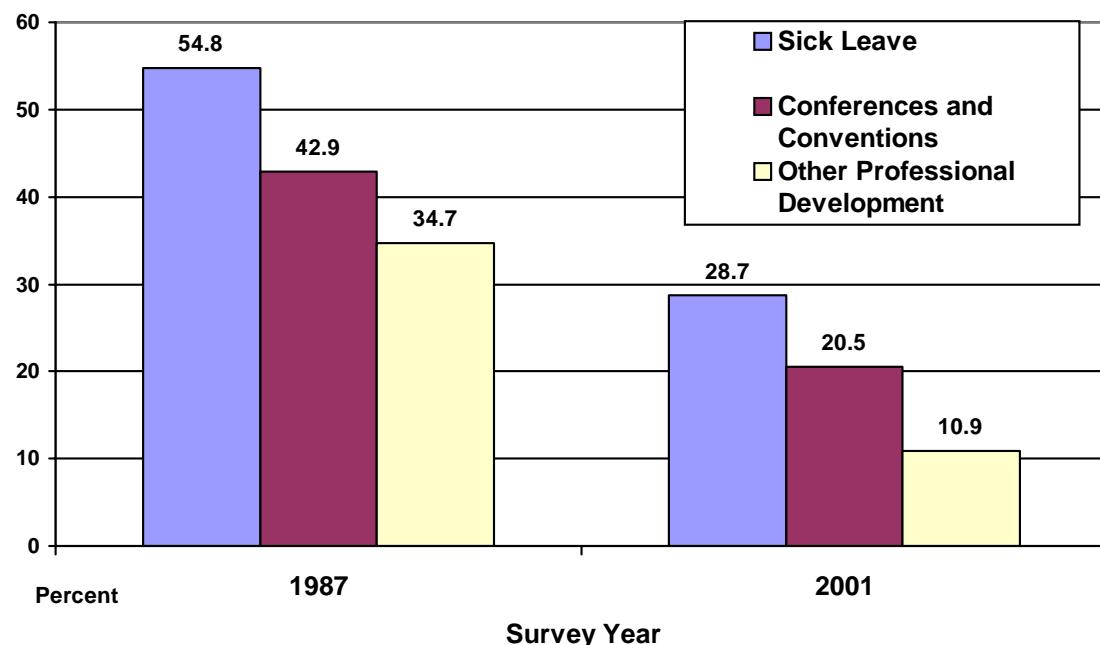
WORK ENVIRONMENT

Table 6.26: Availability of Income-Related Employment Benefits in the Principal Dental Hygiene Workplace, by Region, Type of Workplace and Hours Worked Per Week in That Workplace, Canada 2001

FACTORS		INCOME-RELATED EMPLOYMENT BENEFIT IS AVAILABLE					
		Cost of Living Increase		Merit Increases and/or Bonuses		Payment for Working Overtime	
	p value	%	n	%	n	%	n
Region:	.000			n.s.		.000	
Atlantic		21.5	50	29.6	69	23.7	32
Quebec		35.0	104	24.6	73	26.6	79
Ontario		11.5	36	22.8	71	12.5	39
Man/Sask.		20.8	46	25.3	56	17.6	39
Alberta		13.3	34	28.2	72	14.9	38
B.C.		18.8	51	25.4	69	22.4	61
Type of Workplace:	p	.000		.000		.000	
General Dental Office		17.8	221	24.2	301	16.2	202
Specialty Dental Office		25.0	32	29.7	38	18.0	23
Community Health		21.7	13	5.0	3	41.0	25
Educational Institution		42.3	11	14.8	4	37.0	10
Hours Worked/Week:	p	.035		.000		n.s.	
Less than 20		15.7	42	14.9	40	14.9	40
20 to 29		17.2	71	20.6	85	18.7	77
30 to 34		20.5	93	28.4	129	17.6	80
35 and more		23.6	102	30.7	133	19.6	85

1. Columns do not total 100.0% but are independent cells that denote the "yes" responses.

Figure 6.10: Entitlement to Paid-Time-Off-Related Employment Benefits in the Principal Dental Hygiene Workplace, 1987 and 2001, Canada (%)



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Table 6.27: Dental Hygienists' Entitlement to Paid-Time-Off Type Employment Benefits in the Principal Dental Hygiene Workplace, by Region, Type of Workplace and Hours Worked Per Week, Canada 2001

FACTORS	ENTITLEMENT TO PAID-TIME-OFF BENEFITS						
	Sick Leave		Professional Conferences and conventions		Other Professional Development		
	%	n	%	n	%	n	
Region:	p value	.000		.000		.000	
Atlantic		45.1	105	12.4	29	9.0	21
Quebec		33.7	100	36.4	108	15.2	45
Ontario		25.0	78	15.7	49	9.6	30
Man/Sask.		29.4	65	19.0	42	10.4	23
Alberta		23.9	61	18.4	47	12.5	32
B.C.		27.2	74	10.7	29	6.3	17
Type of Workplace:	p	.000		.000		.000	
General Dental Office		24.3	302	16.5	205	7.9	98
Specialty Dental Office		31.0	40	17.2	22	11.7	15
Community Health		91.8	56	91.7	55	54.1	33
Educational Institution		92.3	24	69.2	18	69.2	18
Hours Worked/Week:	p	.000		.000		.016	
Less than 20		11.2	30	7.1	19	2.2	6
20 to 29		25.2	104	19.9	82	8.5	35
30 to 34		33.3	151	17.2	78	10.4	47
35 and more		38.6	167	33.5	145	19.2	83

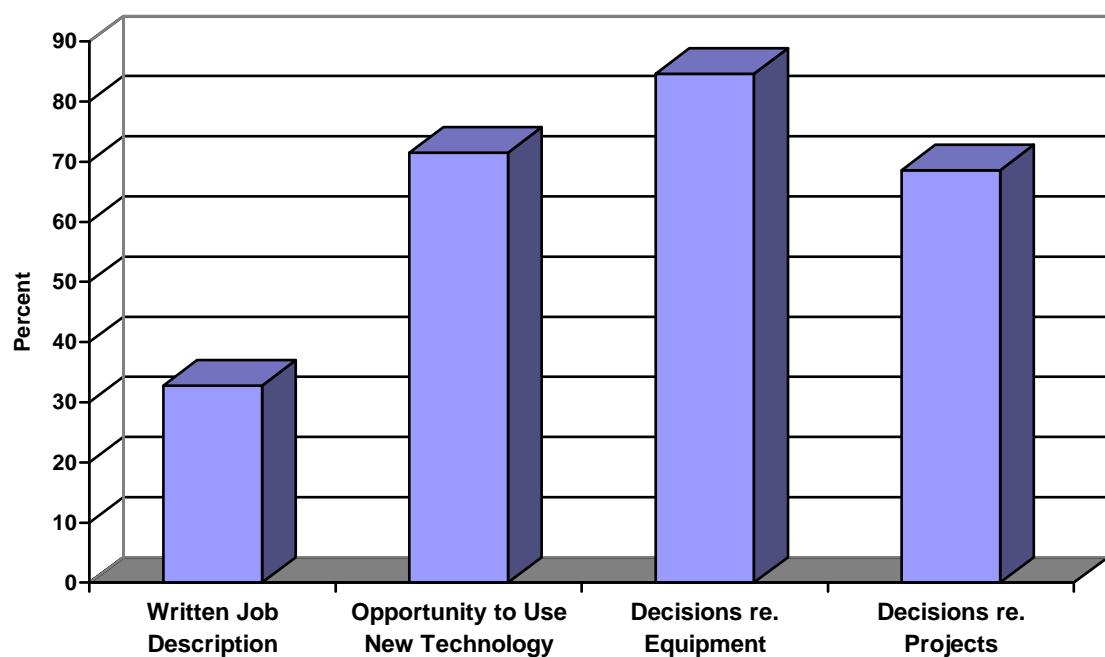
* Columns do not total 100.0% but are independent cells that denote the "yes" responses.

Table 6.28: Employment Benefit Score (EMPBENEFIT) by Region and Type of Principal Dental Hygiene Workplace, Canada, 2001 (mean, s.d. and n)

	NUMBER	MEAN	RANGE	STANDARD DEVIATION
Region (p=.005)				
Atlantic	233	4.24	0-14	2.84
Quebec	297	4.09	0-14	2.91
Ontario	312	3.34	0-14	3.06
Man/Sask.	221	4.06	0-14	2.91
Alberta	255	3.91	0-14	3.28
B.C.	272	4.04	0-15	2.85
CANADA (wgt'd)		3.76	0-15	3.018
Type of Principal Workplace				
General Dental Office	1244	3.32	0-15	2.52
Specialty Dental Office	128	3.48	0-12	2.49
Community Health	61	10.09	2-14	3.31
Education	26	9.5	0-14	3.60

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Figure 6.11: Selected Characteristics of the Dental Hygienists' Employment Situation in Principal Workplace, Canada, 2001)



**Table 6.29: Dental Hygienists' Employment Situation in Principal Workplace>
Selected Characteristics, by Region and Year (1987 and 2001), Canada**

RESPONDENT	YEAR	REGION						National Weighted Total
		Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
1. Has written job description	1987	59.4	60.5	56.8	57.2		51.9	57.2
	2001	26.7	23.5	43.2	23.6	33.7	23.2	32.8
2. Participates in decisions re. purchase of equipment and supplies	1987	56.0	44.2	54.8	55.1		60.8	53.4
	2001	86.5	79.3	84.0	88.9	89.7	91.1	84.6

1. In 1987, items pertained to the principal clinical workplace. Response choices were *yes*, *sometimes*, *know* and *don't know*. 2. In 2001, the items pertained to all dental hygienists regardless of type of practice; they were asked to answer in terms of their principal dental hygiene workplace.

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Table 6.30: Selected Characteristics of Dental Hygienists' Employment Situation, by Type of Principal Workplace, Canada, 2001 (% Responding "Yes")

CHARACTERISTIC (% Yes)	SELECTED TYPES OF PRINCIPAL WORKPLACE				
	Private Dental Office			Community Health	Education Institution
	General	Specialty	Gen/Spec		
Respondent has:					
1 Written job description	27.4	35.9	42.6	89.8	84.6
2 Opportunity to use new technology and equipment related to work	69.6	78.0	85.0	62.3	96.2
3 Participates in decisions regarding:					
a. purchase of equipment and supplies	84.8	77.2	85.0	90.2	96.3
b. new projects and/or programs	66.3	65.0	80.0	88.5	96.3
Number	1244	128	101	61	27

Table 6.31: Annual Income¹ of Dental Hygienists in Year 2000, Totaled Across All Dental Hygiene Workplaces, by Region, Canada, 2001

DENTAL HYGIENE INCOME FOR YEAR 2000	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
No income	--	0.7	1.0	0.9	0.4	--	0.7
Less than \$30,000	28.0	63.8	20.4	31.4	21.6	19.2	32.6
\$30,000 to \$39,000	34.2	25.6	13.2	24.9	12.2	15.0	18.2
\$40,000 to \$49,000	28.4	6.1	29.3	24.4	25.7	18.5	21.3
\$50,000 to \$59,000	7.1	2.7	18.8	10.6	20.8	25.0	14.6
\$60,000 and over	2.2	1.0	17.4	7.8	19.1	22.3	2.8
Total	225	293	304	217	245	260	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. The survey item read "Thinking now of ALL your current dental hygiene workplaces: In 2000, what was your TOTAL ANNUAL INCOME (before taxes) from dental hygiene?"

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Figure 6.12: Dental Hygienists Employed in Dental Hygiene, by Satisfaction with Employment Income and Job Security and Benefits, Canada, 2001

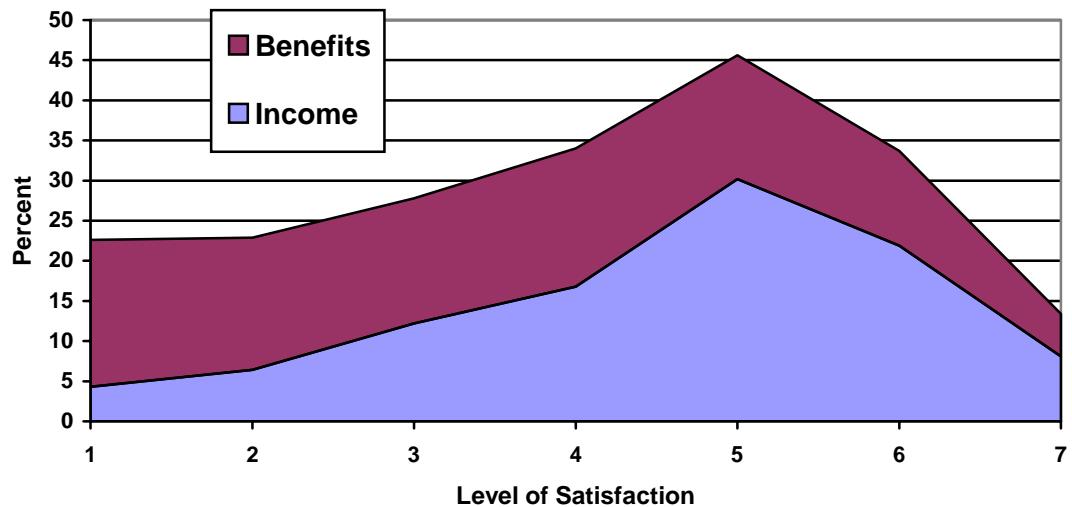


Table 6.32: Dental Hygienists Employed in Dental Hygiene, by Satisfaction with Dental Hygiene Income and with Job Security and Benefits, by Region, Canada, 2001 (n, mean, median, std. dev.)

ITEM AND STATISTIC	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
1. Satisfaction with Dental Hygiene Income							
Number	232	295	309	221	250	272	
Mean	4.53	3.66	4.89	4.54	5.2	5.19	4.6
Median	5	4	5	5	5	5	5
Standard Deviation	1.42	1.45	1.4	1.45	1.31	1.38	1.52
2. Satisfaction with Dental Hygiene Job Security and Benefits							
Number	229	296	307	218	245	263	
Mean	3.79	2.78	3.72	3.6	3.95	3.89	3.51
Median	4	2	4	4	4	4	3
Standard Deviation	1.75	1.79	1.77	1.7	1.78	1.77	1.82

Missing: Income = 11 (0.7%); Benefits = 32 (2.0%)

Statistical significance for each type of satisfaction by region: p=.000

CHAPTER 7

WORK ENVIRONMENT: CLINICAL PRACTICE

In this chapter, the work environment for the dental hygienist in clinical practice is described. The primary focus is work organization since it can influence behaviour and productivity. Aspects include clinical workload, appointment scheduling, professional autonomy and record keeping. Findings are reflected in the following chapters that report on clinical practice patterns and influencing factors. Decision-making responsibility is examined further in those chapters also.

For this chapter, corresponding survey items are found in Section D of the questionnaire. Analysis was based on respondents that were working in clinical dental hygiene practice at the time of the survey – that is, the clinicians. It was further limited to those whose primary clinical practice setting was a dental office to ensure adequate numbers for sub-group analysis.

A. THE CLINICIANS

Additional screening ensured that all members of the revised sample ($n=1438$) provided direct client care (see Section D) and their major work activity was the provision of clinical dental hygiene services (QC4). In all cases, their primary clinical setting (i.e., the one where they spend the most time) was a dental office (QC1).

7.1 SELECTION CRITERIA

In the preamble to Section D, respondents were asked to indicate whether or not they were in clinical practice – defined as providing direct client care. Those not in clinical practice were asked to skip to the comment section at the end of the questionnaire.

Treatment of clients by a teacher as part of clinical instruction was, by definition, not considered to be clinical practice. Also excluded was the relatively small group of clinicians (0.8%) that worked in a setting other than a private dental office and were by design beyond the scope of this study.¹ Group-specific targeting would be required to permit the necessary sub-group analyses and provide meaningful findings.

¹ Previous studies and preliminary findings indicated the work environment and work behaviour of dental hygienists varied depending on type of workplace – among both various types of dental offices and in comparison with other workplaces such as hospitals and community health. For no type of workplace other than the dental office were there sufficient numbers of respondents to permit the necessary sub-group analysis. Specifically, for each of the non-dental-office workplaces represented in the sample, fewer than 5 respondents were in clinical practice.

Thus, the focus of this chapter and all that follow is the deployment of the 9 out of 10 dental hygienists overall that work in clinical practice in private dental offices. Figure 7.1 illustrates the distribution of clinicians by type of workplace. It was essentially the same as for respondents overall, thereby demonstrating a predominant characteristic of this occupational group - the clinician that works in a dental office.

7.2 PRIMARY CLINICAL PRACTICE SETTING (PCS)

As expected, there was little variation in distributions both for clinicians and for respondents overall that worked in a dental office (see Chapter 6).

7.2.1 Type of Dental Office

Among respondents in clinical practice whose primary workplace was a dental office, just over one-half worked in a general practice (54.4%), another 38.7% in a specialty practice, and a further 6.9% in an office that included both general and specialty practitioners. Regional distributions, presented in Table 7.1, are similar to those for respondents overall. In terms of practice size, 84.8% worked in a solo practice (i.e., an office with one dentist) and another 15.2% in a group practice.

7.2.2 Type of Specialty Practice

As noted previously, respondents had indicated the type of specialty if their principal workplace was a specialty dental office; those that cited more than one type of specialty presumably worked in a group specialty practice. Similar to findings overall, orthodontics and periodontics were predominant – each was reported by 54.9% of respondents in specialty offices; 19.1% and 15.1% cited prosthodontics and paedodontics respectively. (See Table 7.2.)

The regional distribution remained relatively the same as for respondents overall. That is, responses were disproportionately greater for Quebec compared to the other regions.

B. THE CLINICAL SETTING**7.3 PERSONNEL**

Dental hygienists tend to work in a clinical setting in which there are relatively few personnel with whom to interact and consult. The types and numbers of personnel are presented in Table 7.3, together with comparative information for 1987. Regional distributions are presented in Table 7.4.

Consistent with the slight proportionate increase in respondents reportedly working in a group dental office (Chapter 6), we find a similar increase regarding the number of dentists, dental hygienists and secretary/receptionists reported for the PCS. The apparent decrease in number of chair side dental assistants likely was offset by an increase in the number of certified dental assistants per PCS; data for 1987 for the Level II assistant was not available.

Regionally and with one exception, there was little variation. Chair side (Level I) dental assistants tended to be characteristic of the three eastern regions whereas certified (Level II) dental assistants were considerably more prevalent in the three western regions.

7.3.1 Dentists

As expected, the greatest proportion of respondents (44.2%) reported one dentist only for their PCS – that is, it was a solo dental practice. Another 26.8% of respondents reported two dentists and a further 14.9% reported three; less than 1 out of 10 reported 5 or more dentists (6.6%). The proportion that cited only one dentist had declined slightly from the 52.5% noted in 1987.

7.3.2 Dental Hygienists

At least 8 out of 10 respondents overall (84.7%) worked in a dental office that had at least one dental hygienist other than themselves. Three out of 10 respondents reported a second dental hygienist (30.0%) and another 20.8% reported three; only 15.3% reported no other dental hygienist.

The number of dental hygienists in a workplace had increased since 1987 when almost 4 out of 10 respondents (37.5%) reported none other than themselves.

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7.3.3 Chair-side Dental Assistant (Level I)

The presence of two types of dental assistants was examined – the Level I or chair-side assistant and the Level II or certified assistant. One-third of respondents overall (32.9%) reported one chair-side dental assistant in the PCS and another 23.2% reported two. The likelihood of having at least one chair side dental assistant in the office had decreased markedly - from 96.0% in 1987 to 74.0% in 2001.

Regionally, findings varied widely. Across the three western regions, approximately two-thirds of respondents reported no chair-side assistant in their CPS. In contrast, among respondents for Quebec and Ontario, one-half reported at least two chair-side assistants – 50.2% and 51.9% respectively.

7.3.4 Certified Dental Assistant (Level II)

Overall, approximately one-half of the respondents reported the presence of one (28.5%) or two (23.8%) Level II certified dental assistants. The exception was Quebec where one-half indicated there were none. In contrast, over 1 out of 2 respondents for Man/Sask. and Alberta and 4 out of 10 for B.C. reported three or more certified dental assistants. Comparable information was not available for 1987.

7.3.5 Secretary /Receptionist

One-third of respondents (34.4%) indicated there was a secretary or receptionist in the workplace and another almost one-third (31.8%) reported two. The number of secretaries per office had increased slightly since 1987. Regional variation was slight.

7.3.6 Office Manager

Almost two-thirds of respondents overall (60.7%) reported the presence of one office manager in the PCS. Another 36.2% indicated there was none. Comparable information was not available from the 1987 survey. Again, there was little regional variation.

7.3.7 Other Types

Almost one-half of respondents overall (46.4%) reported no other types of personnel in the PCS and another 37.7% indicated only one. There was little variation regionally.

C. CLINICAL WORKLOAD

Three indicators of clinical workload were examined - availability of chair-side assistance, appointment scheduling and number of clients per day.

7.4 AVAILABILITY OF A DENTAL ASSISTANT

Efficiency and effectiveness are expected to increase when a dental assistant works "chair side" with a clinical practitioner in the provision of intra oral services. It would appear that such assistance typically is not available to the dental hygienist. As illustrated in Figure 7.2, in 2001, 3 out of 4 respondents indicated such help was available *rarely* (47.3%) or *never* (29.5%), another 17.2% cited *usually* and a further 6.0% *always*.

There appeared to be a slight shift in lack of availability since 1987 when the proportion that cited *never* was 46.0% versus 29.5% in 2001. However, proportions for *always* and *usually* remained virtually unchanged. (See Figure 7.2.)

Across all regions, the vast majority of respondents reported they rarely or never had assistance - proportions ranged from a high of 88.2% for Quebec to a low of 68.9% for Ontario. (See Table 7.5.) Across all regions, fewer than 8 out of 100 respondents indicated a chair side dental assistant always was available.

Availability did not vary by whether the PCS was a solo or group practice or by the number of hours the respondent worked per week in the PCS. As noted in Table 7.5 however, the group that worked in a specialty dental office was more likely to have a dental assistant available than the group in a general office.

7.5 APPOINTMENT SCHEDULING FOR THE ADULT CLIENT

Respondents were asked to provide information regarding the usual amount of time (1) allotted and (2) preferred in their PCS for a maintenance (i.e., recall) appointment for the adult client, defined as 14 years of age and older. Response choices were *15 minutes or less*, *16 to 30 minutes*, *31 to 45 minutes*, and *as much as needed*. Results are presented in Table 7.6². Congruence between the two responses is illustrated in Figure 7.3, together with comparative information for 1987. (It should be noted that the response choice "more than 45 minutes", used for the 1987 survey, read "as much as needed" for the 2001 survey.)

7.5.1 Time Allotted

Just over one-half of respondents (52.5%) indicated they were allotted as much time as needed to treat each adult client and another 41.6% reported having from 31 to 45 minutes. Less than 6.0% cited 30 minutes or less.

Appointment time for the adult client varied by region. Respondents for the three western regions were far more likely to be allotted as much time as needed compared to those for the three eastern regions (Table 7.6). Proportions ranged from a high of 83.3% for B.C., followed by 74.6% for Alberta, to a low of 40.7% and 42.2% for the Atlantic and Ontario regions respectively.

Appointment time varied also by type of workplace. Respondents in a group specialty office tended to cite the 30-45 minute appointment (53.3%) whereas respondents for the other categories were most likely to cite "as much time as needed"; among the latter group, proportions ranged from 51.3% for the solo general office to 64.3% for the general-specialty office. Regardless of type of specialty office, over 8 out of 10 respondents reported either the 31-45 minute appointment or as much time as needed. The exception was the group in paedodontics - one-half cited 31-45 minutes and the remainder were divided equally between 16-30 minutes and as much time as needed (25.6% each).

There was little variance by year of graduation, years working in dental hygiene, years employed in the PCS or hours worked per week.

² The side-by-side layout of the item on the questionnaire form may have contributed to the relatively high portion of missing responses to the part regarding preferred appointment length ($m=44.4\%$). Alternately, respondents may have either had no preference or chose not to express it.

7.5.2 Time Preferred

The distribution for time preferred for an adult maintenance appointment is presented in Table 7.6. Almost 3 out of 4 respondents indicated they preferred as much time as needed (73.9%) whereas, as reported above, only one-half indicated they were allotted it. Almost all other respondents indicated they preferred no less than half an hour (24.1%). When congruence (or conversely, difference) between allotted and preferred time was examined on a case-by-case basis, only 3 out of 5 respondents were satisfied with the adult appointment schedule (see 7.5.3).

Preferences varied based on region and type of specialty practice. Across all regions, at least one-half of respondents preferred as much time as needed; the proportion was greatest for the three western regions (at least 8 out of 10 respondents) and lowest for the Atlantic region (53.7%). Across each type of PCS and specialty practice, the “as much time as needed” response choice was predominant. Respondents in periodontic and orthodontic offices were more likely to prefer as much time as needed (82.6% and 75.4% respectively), compared to those in paedodontic or prosthodontic offices (50.0% and 57.1% respectively).

7.5.3 Congruence between Time Allotted and Time Preferred

A *work schedule score* was constructed to measure congruence (or difference) between the length of appointment usually scheduled for an adult client and the length preferred by the dental hygienist. Conceptually, the score was an indicator both of workload, a structural, extrinsic factor, and satisfaction with work scheduling, an intrinsic factor; both factors were expected to be associated with work behaviour. The score was computed for each respondent by subtracting the value for the response choice for time allotted from the value for time preferred – that is, QD3b minus QD3a. Results are summarized in Figure 7.3.

Overall, 3 out of 5 respondents preferred no change regarding the amount of time scheduled for an adult client (61.5%). Another 37.3% preferred more time; relatively few respondents preferred less time (1.1%). Satisfaction with time allotted for an adult client maintenance appointment apparently had declined – from 73.4% in 1987 to 61.5% in 2001 (Figure 7.3).

Several noteworthy variations were observed (see Table 7.8). Congruence varied by region, type of PCS and type of specialty practice. No significant variance by year of graduation or number of years worked in dental hygiene, hours worked per week and years employed in the PCS was observed.

Across all regions, the majority of respondents were satisfied with the time allotted; the exception was Quebec where 54.1% preferred more time. Satisfaction with the appointment time allotted was greatest among respondents for British Columbia and Alberta (83.5% and 81.3% respectively). Compared to findings for 1987, the level of satisfaction with the adult appointment schedule had declined for Quebec - from 64.1%.

Regarding the type of workplace, satisfaction with the appointment schedule was markedly less among respondents working in a group specialty office – 33.3% versus 61.5% overall. The majority of respondents in a periodontic or prosthodontic office were satisfied (53.0% and 57.1% respectively) whereas the majority in an orthodontic or paedodontic office preferred more time (57.4% and 56.0% respectively).

Satisfaction was positively associated with year of graduation and years employed in the PCS, although relationships tended to be slight. Regarding year of graduation, 3 out of 4 respondents that graduated prior to 1975 (76.6%) were satisfied and the proportion declined to a low of 61.2% for the group that graduated after 1995. Similarly, regarding the number of years employed in the PCS, satisfaction tended to be greater among respondents that had been employed the longest, declining gradually as length of employment decreased – from 71.4% for the “21 years and more” group to 61.4% for the “5 years and less” group.

7.6 APPOINTMENT SCHEDULING FOR THE CHILD CLIENT

A similar analysis was undertaken regarding the schedule for maintenance appointments for the child client.

7.6.1 Time Allotted

As expected, dental hygienists overall were allotted less time for a maintenance appointment for a child than an adult client. (See Table 7.7.) Approximately 7 out of 10 respondents (73.0%) reported the appointment length typically was 16 to 30 minutes, another 16.8% cited 31 to 45 minutes, and a further 8.7% indicated they had as much time as needed.

Time allotted for the child tended to vary by region and type of PCS. There was no significant variation by year of graduation, years worked in dental hygiene or employed in the PCS or hours worked per week.

Across all regions, the 16-to-30-minute appointment for a child client was predominant. Similar to findings for 1987, the exception was Alberta where a longer appointment was more prevalent; only 3 out of 10 cited the 16-30 minute appointment and another 44.7% indicated they typically had 31 to 45 minutes.

Regarding the PCS, the 16-to-30 minute appointment was more likely to be reported by respondents in a general versus a specialty office - 73.6% and 55.8% respectively; among the latter group, proportions increased across all remaining response choices. Interestingly, the distribution for those in a general-specialty office was more similar to the distribution for general than for specialty offices.

7.6.2 Time Preferred

As indicated in Table 7.7, one-half of respondents overall (55.7%) preferred a 16-to-30 minute maintenance appointment for the child client, another 31.1% preferred 31 to 45 minutes, and a further 12.6% cited as much time as needed. Findings varied from 1987 when the proportion that preferred 16 to 30 minutes was even greater - 76.7%.

Preferences varied by region and type of PCS. There was little if any variation based on type of specialty office, year of graduation, years worked in dental hygiene, or hours worked per week.

Although the 16-30 minute appointment was preferred overall, proportions ranged from a low of 29.5% for Alberta to a high of 68.4% for the Atlantic region. For Alberta, the 31-45 minute appointment was predominant (44.7%).

Regarding the PCS, the 16-to-30 minute appointment was more likely to be reported by respondents in specialty compared to general offices – 73.1% and 55.0% respectively, and in solo versus group practices – 61.6% and 48.5% respectively; it was proportionately greatest among the solo specialty office group – 80.0%.

7.6.3 Congruence between Time Allotted and Preferred

The majority of respondents preferred no change in time allotted for maintenance appointments for the child client (70.0%) – a decrease from 1987 when 88.1% of respondents indicated satisfaction. Of the remaining respondents, virtually all wanted more time for child clients (28.4%). Results are summarized in Figure 7.3.

Across all regions, the majority of respondents indicated satisfaction with the appointment time scheduled for the child client. Respondents for the Atlantic, Ontario and Man/Sask. regions were more likely to be satisfied compared to B.C., Alberta and, in particular, Quebec; proportions ranged from a high of 78.4% to a low of 60.5%.

Regarding type of PCS, overall congruence was higher among respondents in specialty (91.7%) compared to general dental offices (69.4%) and, in particular, to combined general-specialty dental offices (44.1%).

Variance based on type of specialty, year of graduation and years employed was slight.

7.6.4 Summary

In summary, it would appear that overall, dental hygienists tended to be satisfied with the amount of time allotted for a maintenance appointment for both the adult and child client. The time scheduled for an adult client typically was as much as was needed (52.5%); the amount for a child client typically was 30 minutes or less (73.0%).

7.7 DENTAL HYGIENE CLIENTS PER DAY

Respondents provided information regarding the number of both adult and child clients they saw on the last typical day that they worked and, of those clients, the number the dentist also saw (QD6). Conservatively, outlying responses – that is, those beyond the upper 0.05% of the distribution - were set to missing.³ Comparative information was not available for 1987.

7.7.1 The Adult Client

Three categories of adult clients were considered – namely, recall (or maintenance), new and those currently undergoing dental hygiene therapy. Findings are reported in Table 7.8. Across all categories of adult client and with few exceptions, there was little variation based on region, type and size of PCS, year of graduation, years employed in the workplace and years of experience. Any variation that did exist, while significant statistically ($p<.01$), typically was too slight to be meaningful ($\text{Eta}^2 < 0.1$).

7.7.1.1 Recall or Maintenance Client

Respondents overall saw, on average, 6 adult recall clients per day. The mean average was 6.5, with a standard deviation of 2.55 and range of 0 to 15. Regionally, the minimum number seen by one-half of respondents ranged from a high of 8 clients for the Atlantic region to a low of 5 clients for Alberta; the median was 7 for Ontario and 6 for Quebec, Man/Sask. and B.C.

Regarding type of PCS, one-half of respondents in a general dental office saw 6 or more adult recall clients on a typical day to a maximum of 15 and those in a specialty office saw 7 or more to a maximum of 11. The distribution varied slightly by size of the dental office - respondents in a solo practice saw 7 clients per day on average whereas those in a group practice saw 6; for both groups, the maximum was 15.

Regarding years of experience, one-half of respondents that had worked more than 10 years in dental hygiene saw 7 or more recall adult clients on average compared to 6 clients for the group with less experience. The pattern was similar regarding the number of years employed in the PCS.

³ Outlying responses were beyond the range reported for 99.5% of respondents. Their inclusion would have skewed the distributions and averages. Prior to the adjustment, the maximum number reportedly seen by respondents was 60 adult recall clients, 6 adult new clients, 25 adults undergoing dental hygiene therapy, 15 child recall clients and 4 new child clients. A maximum of 5 outlying responses was excluded per item. "Outliers" were least likely to be reported for B.C. and most likely to be reported by respondents working in group practice.

7.7.1.2 New Client

Respondents overall saw, on average, 1 new adult client per day. The mean average was 1.03, with a standard deviation of 0.77 and range of 0 to 5. Across all regions, one-half of respondents on average saw at least 1 new adult client per day. Regardless of type and size of the PCS, type of specialty practice, year of graduation, years of experience or years employed in the PCS, the median average was 1.

7.7.1.3 Client Currently in Therapy

Respondents overall saw, on average, 2 adult clients per day that were currently undergoing dental hygiene therapy – that is, “active treatment” clients. The mean average was 1.92, with a standard deviation of 1.62 and range of 0 to 11.

Respondents for the Atlantic and Ontario regions tended to see more adult “active treatment” clients per day on average – the median was 2 compared to 1 for the remaining regions. Regarding type of PCS, respondents in a general dental office typically saw more active treatment clients daily than their colleagues in a specialty office – median averages were 2 and 1 respectively.

7.7.2 The Child Client

Two categories were specified for the child client – namely, recall and new appointment. Results are presented in Table 7.8.

7.7.2.1 Recall or Maintenance Client

Respondents overall saw, on average, 2 child recall clients per day. The mean average was 1.91, with a standard deviation of 1.73 and range of 0 to 12. Similar to the pattern for the “active treatment” adult client, respondents for the three eastern regions saw on average more child recall clients per day than their colleagues in the three western regions – median averages were 2 versus 1 for Man/Sask. and Alberta and 0.0 for B.C.

The group that cited paedodontics as their principal workplace typically saw more child recall clients per day than their colleagues in orthodontics, periodontics and prosthodontics - median average was 3 versus 2 for the other groups. Findings did not vary by year of graduation, years of experience, years employed or hours worked per week.

7.7.2.2 New Client

It was interesting to note that, overall, dental hygienists typically do not see many new child clients. Respondents reported, on average, no new child clients per day. The mean average was 0.54, with a standard deviation of 0.76 and range of 0 to 4. Findings varied regionally in that one-half of respondents for the Atlantic region typically saw at least one new child client per day.

New child clients were most likely to be reported by respondents that indicated paedodontics as their principal workplace – median average was 1 versus 0 for the other three specialties examined.

7.7.3 Summary

In summary, dental hygienists are most likely to see, on a typical day, more recall versus new and “active treatment” type clients. Regarding the adult dental hygiene client, respondents most frequently reported seeing 6 recall clients on a typical day, 1 new client per day and 2 clients currently undergoing dental hygiene therapy per day. Regarding the child dental hygiene client, they most frequently reported seeing 2 recall clients per typical day and less than one new client per day.

Findings varied regionally for three types of clients in particular. Regarding the adult recall client, respondents for the Atlantic region reported, on average, the most clients per day whereas those for Alberta reported the least – 8 and 5 respectively. Regarding both the child recall and the new client, respondents for the three eastern regions were more likely to see 2, on average, compared to 1 for the three western regions.

D. PROFESSIONAL AUTONOMY

A person's perception of their professional autonomy in the workplace is associated with their job and career satisfaction and may influence work behaviour and productivity. Aspects of professional autonomy examined included presence of the dentist at the time of a dental hygiene appointment, and perceived decision-making responsibility and the dental hygienist's satisfaction with the level of responsibility.

7.8 DENTIST ON-SITE

Respondents provided information regarding the frequency with which the dentist typically was present in the office/clinic when they were providing intra oral dental hygiene services. Response choices were always/usually, sometimes, rarely/never and only when performing specified procedures such as local anaesthesia.

Across all regions, 9 out 10 respondents indicated the dentist was present always or usually – 96.7% overall. There was little variance based on type of workplace, years of experience, years employed or hours worked per week.

7.9 DECISION-MAKING REGARDING DENTAL HYGIENE CARE

Conceptually, one's role and level of responsibility in decisions related to one's work is an aspect of professional autonomy. One's satisfaction with that role or level of responsibility may be associated with work behaviour. Respondents provided information regarding their role in the PCS regarding decisions that involved the dental hygiene procedures to perform.

Given the following four statements, they were asked to indicate the one that best described their (a) actual work situation and (b) the one they would prefer if they had a choice. The instructions specified that the two statements they selected might not necessarily be different – that is, they might be satisfied with their actual situation. Respondents that cited more options than requested were excluded from the analysis.⁴ The overall distribution is illustrated in Figure 7.4. Findings are presented by region in Table 7.9.

1. Dentist decides all dental hygiene procedures to be performed.
2. Dental hygienist decides all dental hygiene procedures with the exception of radiographs.
3. Dental hygienist decides all dental hygiene procedures.
4. Dental hygienist and dentist collaborate to decide dental hygiene care.

⁴ Presumably the statements were not mutually exclusive and/or did not capture the complexity of decision-making in the dental hygiene workplace. Almost one-third of respondents either selected more than one statement to answer each part (that is, the actual and the preferred) or they did not answer one or both parts. For example, one group of respondents indicated they both made decisions on their own (option #2 or #3) and collaborated with the dentist (option #4). Conversely, another group indicated their actual situation (typically citing more than one option) but not their preference.

CLINICAL WORK ENVIRONMENT

7.9.1 Distribution

Regarding their actual decision-making role, as illustrated in Figure 7.4, just over one-half of respondents overall (55.4%) cited option 4 (collaborative decision-making). Another almost one-quarter of respondents (23.5%) indicated they were the sole decision maker regarding dental hygiene procedures – i.e., option 3, and a further 16.7% indicated they made all decisions except those involving radiographs – i.e., option 2; relatively few cited option 1 (5.4%).

Regarding their preferred role, two-thirds of respondents cited collaboration with the dentist (67.1%). Relatively few indicated they would prefer to be the sole decision maker (16.9%) or to make all decisions except those involving radiographs (11.5%) or have the dentist decide (4.5%).

The overall distribution of responses is presented in Table 7.9. Across all four options, there was little variation regionally regarding both the actual role (a + c) and the preferred role (b + c). It would appear that option 1 – the dentist decides – was most prevalent among respondents for Quebec and least prevalent for the Atlantic and Alberta regions. There was also little variation by type and size of PCS, type of specialty, year of graduation, and number of years worked in dental hygiene and years employed and hours worked per week in the PCS.

7.9.2 Actual versus Preferred

Distributions for actual and preferred decision-making styles were compared using cross-tabulations. (See Table 7.10.) With one exception, regardless of the type of decision-making actually experienced, collaboration between the dental hygienist and the dentist was preferred. The exception involved Option 3 - those respondents that made decisions on their own tended to prefer that option (54.4%); another 35.2% indicated collaboration was preferred.

7.10 DENTAL HYGIENE CLIENTS ALSO SEEN BY DENTIST

Congruence between the number of clients seen by the dental hygienist and also by the dentist on the same day was examined. Conceptually this was a measure of work supervision and, in a subsequent item, respondents were asked to indicate the dentist's typical activities when seeing the dental hygiene client.

7.10.1 Congruence Score

A congruence score was constructed. It was based on the previously reported item regarding the number of clients seen by the dental hygienist on a typical day (QD6); they had also indicated the number of those clients that were seen by the dentist on that same day. Again, outlying responses were set conservatively to missing. The score was calculated by subtracting from the number of clients seen by the dental hygienist, the number also seen by the dentist. A score of zero indicated that the dentist saw 100.0% of the dental hygiene clients whereas a score of 2, for example, indicated that the dentist did not see two of the dental hygiene clients. Findings are presented in Table 7.11 and summarized in Figure 7.5.

7.10.2 Congruence Overall

Congruence overall tended to be high for most types of clients. The child client typically was also seen by the dentist - 96.4% of respondents reported the dentist saw all child recall clients and 96.6% reported she/he saw all child new clients.

Greater variation was evident for the adult client. Regarding the adult recall client, three – quarters of respondents (77.3%) reported the dentist typically saw all of them on the same day and another 17.3% indicated all except a maximum of 2 were seen. Regarding the adult new client, the vast majority of respondents (93.3%) indicated the dentist saw all of them; another 3.8% indicated that all but 1 new client typically was seen. On the other hand, regarding the client currently undergoing dental hygiene therapy, only 1 out of 2 respondents (51.7%) indicated the dentist also saw them on the same day; another 22.7% reported all but 1 “active” client was seen and a further 14.5% cited 2.

7.10.3 Regional Variation

Given that the regulation of dental hygiene practice including requirements for “dental supervision” is within provincial and territorial jurisdiction, it was not surprising to observe congruence scores varied regionally; however Quebec was unique. Regarding the adult dental hygiene recall client, they were most likely to also be seen by the dentist if they were in Quebec and least likely if in Alberta – proportions were 88.1% and 55.2% respectively. Similarly, the adult client currently undergoing dental hygiene therapy was three times more likely to also seen by the dentist on the same day if they were in Quebec versus British Columbia or Alberta – proportions were 93.3% versus 29.5% and 33.8% respectively.

There was little to no variation based on type or size of dental office, type of specialty, year of graduation, years of experience or number of years employed or hours worked per week in the PCS.

7.11 ACTIVITIES OF THE DENTIST

Respondents provided information regarding their perception of what the dentist typically did when seeing dental hygiene clients, previously identified in QD6, on the day of their dental hygiene appointment. From a list of 6 possible activities, respondents were asked to check all that applied. Findings are presented in Table 7.12.

Based on the perceptions of the respondents, it would appear that, when seeing a dental hygiene client, the primary focus of the dentist is communication and examination more so than evaluation of the dental hygienist's procedures. Overall, the two most frequently cited activities were examination of the client and discussion of the diagnosis and/or treatment (93.8% and 94.0% respectively), followed by talking with the client to establish rapport (88.6%). Three out of 5 respondents indicated the dentist confirmed their examination of the client (58.3%). While almost one-half of the respondents reported the dentist visually examined debridement and other dental hygiene procedures (46.5%), only one-quarter indicated the dentist evaluated the procedures (26.1%).

For the three predominant activities, little regional variation was evident. Regarding the other three activities however, variation existed in and tended to be greatest around evaluation. The perception that the dentist was evaluating the dental hygiene work was more than twice as great among respondents for Quebec compared, in particular, to those for British Columbia; proportions were 36.7% and 14.7% respectively, and 26.1% overall. Similarly, the perception that the dentist visually examined debridement and other dental hygiene procedures tended to be more prevalent among respondents for Quebec (53.2%) and decreased for the three western regions in particular (for example, 33.9% for the Man/Sask. region). Regarding the final activity, 2 out of 3 respondents for Ontario perceived that the dentist confirmed their examination of the client (66.7%) compared to approximately one-half of respondents for the three western regions.

There was little or no variation based on year of graduation, years of experience, number of years employed and hours worked in the PCS, and type and size of the dental office. The exception involved visual examination of debridement and other dental hygiene procedures. The perception that the dentist performed this activity was proportionately greater among the group that worked in a specialty rather than a general dental office (59.1% and 45.7% respectively), especially if that specialty was a periodontal office (63.0%).

7.12 OPPORTUNITIES TO CONSULT

The vast majority of dental hygienists reportedly have opportunities to consult with colleagues, experts and health care professionals regarding dental hygiene care and other work-related concerns. Findings are presented by region in Table 7.13.

Regarding dental hygiene care, almost 9 out of 10 respondents (88.2%) indicated they had opportunities to consult with others, another 9.4% said no, and a further 2.4% did not know. There was no regional variation.

Regarding other work-related concerns, the findings were similar – 84.1% indicated yes, 11.9% said no, and a further 4.0% did not know. Regionally, respondents for Quebec were slightly less likely to indicate they had opportunities to consult whereas those for B.C. were more likely – proportions for “yes” were 76.0% and 90.2% respectively.

There was no variation based on year of graduation, years of experience, number of years employed and hours worked per week in the PCS, type and size of dental office and type of specialty. Compared to the other three specialties examined, respondents in prosthodontics were less likely to report opportunities to consult regarding other work-related concerns (76.8%); differences were slight.

E. RECORD KEEPING

Requirements for and maintenance of written client records are essential components of quality care. Client records serve a variety of purposes including documentation of assessment findings and preventive and therapeutic interventions and subsequent outcomes. They provide a tool for making dental and dental hygiene diagnoses and care plans and for monitoring and evaluating progress. They are a means of communication for client education and behaviour modification. And not least in importance, they are a legal document for the protection of the client and the clinician.

Respondents provided information regarding record keeping specific to dental hygiene care in their principal workplace. Three aspects were examined.

7.13 FAMILIARITY WITH REQUIREMENTS

As illustrated in Figure 7.5, overall 8 out of 10 respondents (85.0%) indicated they were familiar with legal record keeping requirements in their province and another 14.4% reported they were not. A further very small proportion indicated the question was not applicable to them since no such requirements existed (0.6%).

While across all regions, the majority of respondents reported they were familiar with record keeping requirements, variation was evident. (See Table 7.14.) Proportionately more respondents for Ontario were familiar with the requirements compared in particular to respondents for Man/Sask. and Alberta – 95.1% versus 59.9% and 64.1% respectively. Of the relatively few respondents that indicated the item was not applicable (that is, legal requirements did not exist), the majority resided in the Man/Sask. region.

There was no variation based on year of graduation, years of experience, number of years employed and hours worked per week in the PCS, type and size of dental office and type of specialty.

7.14 CLIENT RECORD FORMS

Respondents were asked about their participation in the design of the client record forms they used for dental hygiene care. Secondly, they were asked if, in their opinion, they could initiate and participate in a re-design of the forms. Results are presented in Table 7.15 and illustrated in Figure 7.6.

7.14.1 Participate In Design of Forms

It would appear that dental hygienists overall have had and expect to have little participation in the design of the client record forms they use. Only 3 out of 10 respondents overall (29.0%) indicated they had participated in the design of the record forms they were using. Proportions were greatest among respondents for Ontario and B.C. (34.6% and 34.1% respectively) and decreased by one-half to 17.4% for the Atlantic region.

7.14.2 Initiate/Participate In Re-Design of Forms

Regarding the likelihood of initiating and participating in a re-design of the forms, almost one-half of respondents overall indicated “yes”, another one-quarter said “no”, and a further 27.5% did not know. As indicated in Table 7.16, respondents for B.C., Alberta,

Atlantic and Man/Sask. regions tended to be more confident that they could be involved in such a project compared to the group for Ontario and, in particular, Quebec. Among respondents for Quebec, 39.8% cited "yes" and another 24.9% "no"; over one-third cited "don't know" (35.4%).

Findings did not vary on the basis of year of graduation, years of experience, number of years employed and hours worked per week in the PCS, type and size of dental office and type of specialty.

7.14.3 Components of Current Forms

It would appear that client record forms currently used by dental hygienists typically permit them to document the major aspects of dental hygiene care. Respondents were asked whether the forms they typically used permitted them to describe in writing the dental hygiene assessment, diagnosis, care plan, implementation and evaluation.

For all five aspects examined, 9 out of 10 respondents cited "yes" and less than 2.0% indicated they did not know. Proportions ranged from a low of 88.2% of respondents that indicated they could record the dental hygiene care plan to a high of 96.3% that indicated the services they provided could be recorded (i.e., implementation). Given the large proportions that indicated "yes", not surprisingly, there was no variation regionally or on the basis of year of graduation, years of experience, number of years employed and hours worked per week in the PCS, type and size of dental office and type of specialty.

F. SUMMARY

In summary, over 9 out of 10 dental hygienists in 2001 worked in clinical practice providing direct client care services and their primary clinical practice setting (PCS) was a dental office, most typically a general practice (54%) more so than a specialty or combination general-specialty office (39% and 7% respectively). The solo dental practitioner workplace was predominant – only 15% worked in a group practice. Among the group that worked in a specialty practice, orthodontics and periodontics were almost equally predominant.

Personnel that worked in the PCS tended to be relatively few in number and type, with little variation regionally. Consistent with the slight increase since 1987 in the group versus solo practice workplace, a slight increase in numbers for most types of personnel was noted. Less than 1 out of 5 respondents indicated they were the only dental hygienist – 15.3% compared to 37.5% in 1987; one-half indicated up to 2 other dental hygienists worked in the PCS. The greatest proportion indicated there was only one dentist (44.2%) and another 26.8% reported two. The Level I or chair side dental assistant tended to be predominant for the three eastern regions where typically more than one was reported. In contrast, the Level II or certified dental assistant was predominant in the three western regions where again one-half of respondents reported the presence of at least two. One – third of respondents reported there was one secretary or receptionist (34.4%) and another 31.8% reported two. Three out of 5 reported there was one office manager and another 36.2% indicated there was none.

Clinical Workload

Dental hygienists typically worked without the help of a chair side dental assistant when performing intra oral procedures. Three-quarters of respondents reported an assistant was available rarely or never (47.3% and 29.5% respectively); the proportion was greatest for Quebec (88.2%) and least for Ontario (68.9%).

The majority of dental hygienists are satisfied with the time they are allotted for a maintenance (i.e., recall) appointment. Regarding time allotted for an adult client, approximately one-half of respondents indicated they had as much time as was needed and another 41.6% reported having from 31 to 45 minutes. Respondents for the three western regions were considerably more likely to report “as much as needed”; proportions ranged from a high of 83.3% for B.C. to a low of 40.7% and 42.2% for the Atlantic and Ontario respectively. Findings varied, in particular if the PCS was a specialty practice. Overall, the majority of respondents was satisfied with the amount of time allotted and would prefer no change (61.5%); another 37.3% would prefer more time. Satisfaction had decreased slightly since 1987 when 73.4% indicated they would prefer no change. Respondents for B.C. and Alberta were the most likely to be satisfied (8 out of 10) whereas those for Quebec tended to prefer more time (54.1%). A preference for more time was proportionately greater among respondents working in orthodontic and paedodontic offices compared to other workplaces.

Regarding the child maintenance appointment, dental hygienists typically are allotted less time than for an adult. Almost three-quarters of respondents (73.0%) indicated the appointment typically was 16 to 30 minutes in length and another 16.8% reported 31 to 45 minutes; only 8.7% cited “as much as needed”. Again, the majority of respondents were satisfied – 70.0% preferred no change, a decrease from the 88.1% reported in 1987. Satisfaction was proportionately lower among respondents for Quebec in particular. It also varied by type of workplace.

On a typical day, dental hygienists tend to see 6 adult recall clients, 1 new client and 2 that are currently undergoing dental hygiene therapy. Regarding children, they typically see 2 recall clients but less than 1 new client per day. For some categories of client, slight variation was evident regionally and by type of workplace, year of graduation, years of experience or number of years employed or hours worked per week in the PCS.

Professional Autonomy

The dentist typically is present when the dental hygienist is providing intra oral dental hygiene services. Across all regions, 9 out of 10 respondents indicated the dentist was present usually or always (96.7%).

Dental hygienists tend to perceive that decisions regarding dental hygiene procedures to be performed are made in collaboration with the dentist and they prefer that type of decision-making. However, at the same time, a large portion (approximately one-third) also perceive that the dentist makes all the decisions or that they themselves make those decisions, sometimes with the exception of radiographs. Among respondents that indicated the one type of decision-making that best described their situation and the one they would prefer, 55.4% indicated decisions were made collaboratively and another 23.5% indicated they were the sole decision-maker for all procedures including radiographs. With the exception of respondents that were sole decision-makers, the greatest portion of respondents would prefer collaboration.

Of the clients seen by the dental hygienist on a typical day, 9 times out of 10 the dentist will also see all recall and new child clients and all new adult clients. Regarding other types of adult clients, 77.3% of respondents reported that the dentist saw all recall clients; the proportion decreased to one-half regarding clients currently undergoing dental hygiene therapy (51.7%). There was little regional variation with one exception; regarding the adult recall client, the proportion ranged from a high of 88.1% for Quebec to low of 55.2% for Alberta.

It would appear that the primary purpose of the dentist, when seeing the dental hygiene client, is communication and examination more so than evaluation of the procedures performed. The vast majority of respondents reported that the dentist examined the client, discussed the diagnosis and/or treatment plan, and talked with the client to establish rapport (93.8%, 94.0% and 88.6% respectively). Almost 3 out of 5 respondents (58.3%) indicated the dentist confirmed their examination of the client and 46.5% reported the dentist visually examined debridement and other procedures; only 26.1% perceived the dentist evaluated the procedures. Respondents for Quebec were most likely to perceive that the dentist evaluated their work and those for B.C. were least likely – 36.7% and 14.7% respectively. The Quebec group also was most likely to report the dentist did a visual examination (53.2%), as were respondents that worked in a specialty office, in particular a periodontics practice (63.0% versus 46.5% overall).

The vast majority of dental hygienists apparently have opportunities to consult with colleagues, experts and health care professionals regarding dental hygiene care (88.2%) and other work-related concerns (84.1%).

Record Keeping

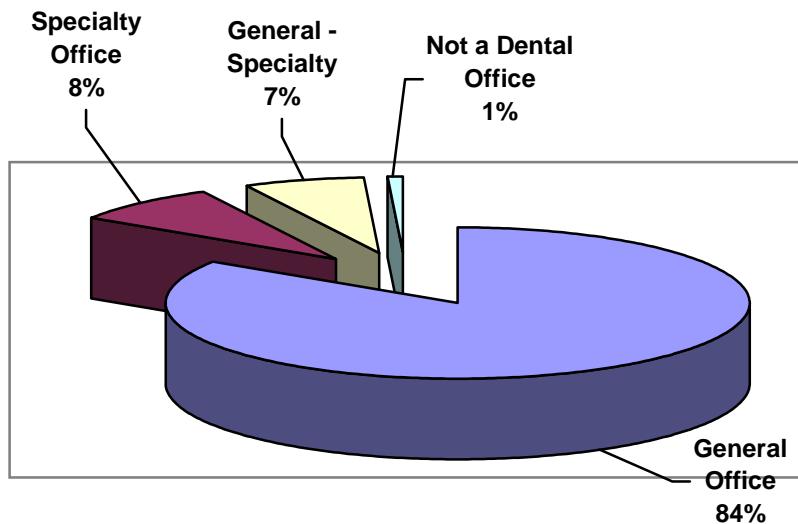
Regarding client records, overall dental hygienists are familiar with legal record keeping requirements for their province. The proportion was greatest for Ontario – 95.1% versus 85.0% overall and 59.9% and 64.1% for Man/Sask. and Alberta respectively.

Dental hygienists overall apparently have had and expect to have little participation in the design of the client record forms they use for dental hygiene care. Only 3 out of 10 respondents (29.0%) indicated they had participated in the design of the current forms. The proportion increased to one-half regarding their opinion that they could initiate and participate in the re-design of the forms (47.6%).

The forms currently used by dental hygienists appear to permit them to document the major elements of dental hygiene care. Across all five elements – namely, dental hygiene assessment, diagnosis, care plan, implementation and evaluation, 9 out of 10 respondents cited “yes”.

In conclusion, findings regarding the clinical work environment will be reflected in the investigation of clinical practice patterns of dental hygienists reported in the following chapters.

Figure 7.1: Dental Hygienists in Clinical Practice, by Type of Workplace¹, Canada 2001



1. Workplace refers to the primary clinical setting (PC) – that is, the one in which the dental hygienist spends the most time if there is more than one clinical workplace.

CLINICAL WORK ENVIRONMENT

Table 7.1: Dental Hygienists in Clinical Practice that Work in a Private Dental Office, by Type of Office and Region, Canada 2001

TYPE OF DENTAL OFFICE (% "YES")	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
1 General Office							
a. solo	44.9	46.1	48.1	40.4	49.3	61.0	48.8
b. group	4.2	5.1	7.6	1.5	4.9	2.4	5.6
2 Specialty Office							
a. solo	43.0	38.3	32.0	51.2	42.7	32.1	36.0
b. group	1.9	1.2	4.5	1.5	1.8	1.2	2.7
3 Combination – general and specialty	6.1	9.4	7.9	5.4	1.3	3.2	6.9
Total	214	256	291	203	225	249	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 7.2: Dental Hygienists that Work in a Specialty Dental Office by Type of Specialty and Region, Canada 2001 (n and %)

TYPE OF SPECIALTY (% "YES")	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
1 Orthodontics	7	100	54	3	1	2	
	4.2	59.9	32.3				100.0
2 Periodontics	4	71	71	3	6	11	
		42.8	42.8		3.6	6.6	100.0
3 Paedodontics	2	26	15	0	2	1	
		56.5	32.6				100.0
4 Prosthodontics	2	37	13	1	1	5	
		62.7	22.0			8.5	100.0

CLINICAL WORK ENVIRONMENT

Table 7.3: Dental Hygienists by Type and Number of Personnel in the Primary Clinical Workplace, and by Year (1987 and 2001), Canada

TYPE OF PERSONNEL	SURVEY YEAR	NUMBER PER OFFICE					TOTAL
		0	1	2	3	4+	
1. Dentist	1987	1.4	52.5	22.4	10.2	13.5	100.0
	2001	0.1	44.3	26.8	15.2	13.6	100.0
2. Dental Hygienist (other than self)	1987	37.5	29.8	15.6	8.4	8.7	100.0
	2001	15.3	30.0	20.8	12.9	20.9	100.0
3. Chairside Dental Assistant (Level I)	1987	4.0	32.2	28.2	13.8	21.9	100.0
	2001	25.1	32.9	23.2	8.8	10.1	100.0
4. Certified Dental Assistant (Level II)	1987	--	--	--	--	--	-- ¹
	2001	20.8	28.3	24.3	11.8	14.9	100.0
5. Secretary/ Receptionist	1987	2.4	48.3	26.7	11.4	11.1	100.0
	2001	0.6	34.4	31.8	15.6	17.7	100.0
6. Office Manager	1987	--	--	--	--	--	-- ¹
	2001	36.2	60.7	3.0	--	--	100.0
7. Other	1987	--	--	--	--	--	-- ¹
	2001	46.4	37.7	9.4	3.5	3.1	100.0
Total		1987					1952
		2001					1438

¹ Where cell counts are less than 5, data are not presented.

CLINICAL WORK ENVIRONMENT

Table 7.4: Dental Hygienists by Type and Number of Personnel in the PCS, by Region, Canada, 2001

TYPE AND NUMBER	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
1. Dentist (m = 0.8%)							
One	43.2	37.7	46.2	36.6	45.5	52.8	44.3
Two	27.7	28.2	24.0	33.2	29.0	29.4	26.8
Three or more	29.1	34.1	29.8	36.2	25.5	17.8	28.8
2. Dental Hygienist (other than self) (m = 4.2%/61)							
None	19.4	13.8	13.8	13.6	21.5	18.6	15.3
One	35.9	32.9	26.4	23.2	24.8	40.1	30.0
Two	15.0	19.9	19.9	31.3	22.0	22.8	20.8
Three or more	29.7	33.4	39.9	31.9	31.7	18.5	33.8
3. Chairside Dental Assistant (Level I) (m = 22.0%/317)							
None	38.0	14.1	10.4	67.6	66.1	63.4	25.1
One	32.3	35.7	37.7	12.5	17.6	24.6	32.9
Two	14.6	26.4	30.0	6.6	10.9	5.1	23.2
Three or more	15.1	23.8	21.9	13.3	5.4	6.9	18.9
4. Certified Dental Assistant (Level II) (m = 16.6%/239)							
None	11.0	49.0	23.5	5.6	1.9	2.6	20.8
One	28.2	24.2	38.7	13.3	12.9	20.2	28.3
Two	29.8	16.8	20.4	28.6	29.5	36.5	24.3
Three or more	31.0	10.0	17.4	52.5	55.7	40.7	26.7
5. Secretary/Receptionist (m = 1.5%/22)							
None	0.0	0.0	--	--	--	0.0	0.6
One	35.9	31.2	37.7	33.8	30.5	32.1	34.4
Two	32.1	32.8	27.8	33.3	28.7	43.93	31.8
Three or more	32.0	36.0	33.8	31.4	38.6	24.0	49.3
6. Office Manager (m = 29.6%/425)							
None	35.9	45.4	27.4	38.5	40.2	45.7	36.2
One	60.3	52.1	69.5	54.1	56.3	52.6	60.7
Two	3.8	2.5	3.0	7.5	3.4	1.7	3.0
TOTAL	214	256	291	203	225	249	---

Figure 7.2: Dental Hygienists in Clinical Practice by the Availability of a Dental Assistant During Intra Oral Dental Hygiene Procedures, Canada, 1987 and 2001

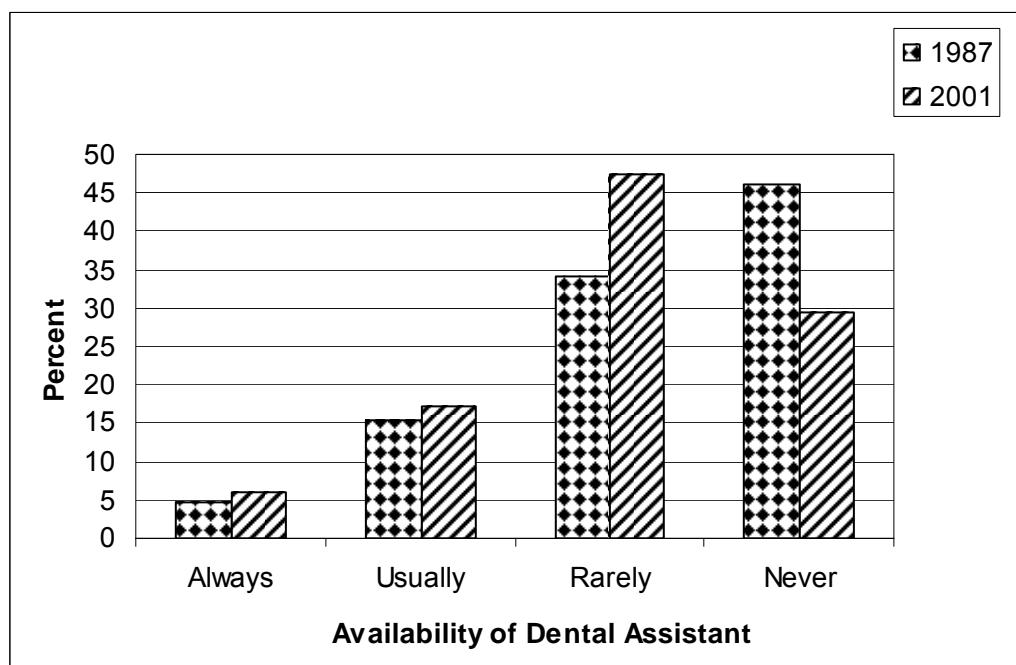


Table 7.5: Dental Hygienists > Availability of a Dental Assistant During Intra Oral Dental Hygiene Procedures, by Region and Type of PCS, Canada, 2001

	n	Availability of Dental Assistant			
		Always	Usually	Rarely	Never
Region					
Atlantic	214	4.7	17.8	50.5	27.1
Quebec	225	4.3	7.5	48.2	40.0
Ontario	287	7.7	23.3	46.3	22.6
Man/Sask	201	4.5	13.4	45.8	36.3
Alberta	224	5.8	21.0	40.6	32.6
B.C.	249	4.8	14.5	51.8	28.9
Canada		6.0	17.2	47.3	29.5
Type of Office					
General	1306	5.6	15.8	48.8	29.9
Specialty	119	10.1	33.6	30.3	26.1

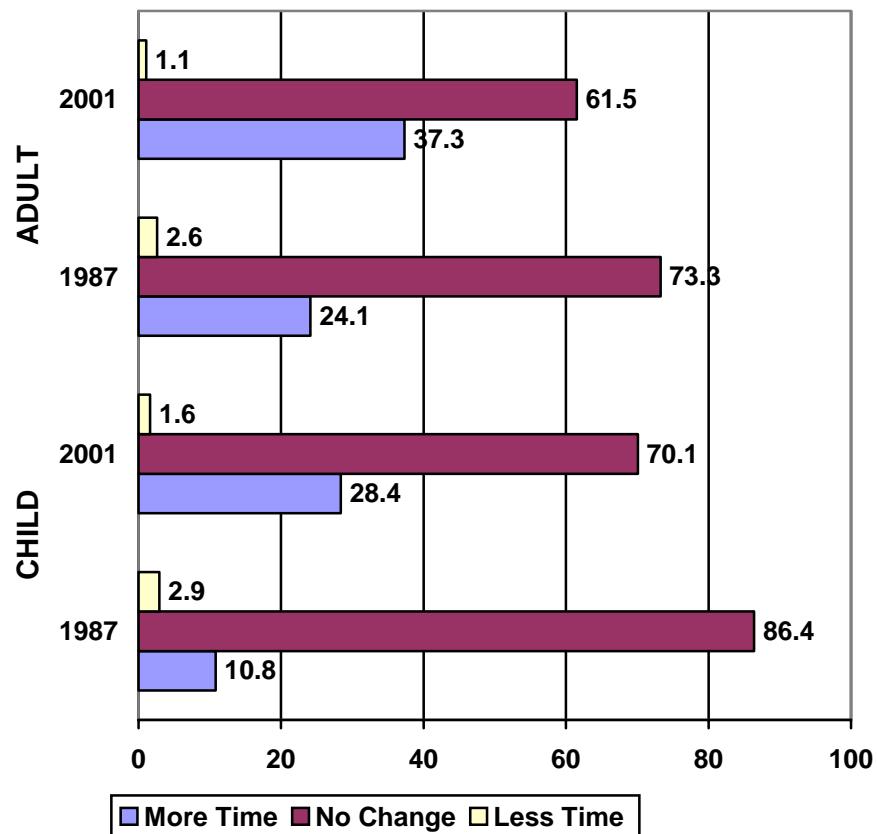
CLINICAL WORK ENVIRONMENT

Table 7.6: Dental Hygienists by Time a) Allotted and b) Preferred for a Dental Hygiene Maintenance Appointment for An Adult Client, by Region, Canada 2001 (%)

TIME	REGION						National Weighted Estimate
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
A. TIME ALLOTTED							
15 minutes or less	--	--	--	--	--	--	0.8
16 to 30 minutes	6.3	8.2	6.0	--	--	--	5.1
31 to 45 minutes	52.4	46.4	51.0	33.2	23.9	14.5	41.6
As much as needed	40.7	44.5	42.2	65.8	74.6	38.3	52.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	189	220	251	187	201	228	
B. TIME PREFERRED							
15 minutes or less	--	0.0	0.0	--	--	--	0.3
16 to 30 minutes	--	--	--	--	--	0.0	1.7
31 to 45 minutes	43.1	20.3	31.3	15.0	13.9	9.2	24.1
As much as needed	53.7	78.2	66.3	83.5	34.7	89.3	73.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	123	133	166	127	137	131	

¹ Where cell counts are less than 5, percentages are not presented.

**Figure 7.3: Congruence between Time Allotted and Time Preferred by the Dental Hygienist for a Dental Hygiene Maintenance Appointment for the
a) Child and the b) Adult Client, Canada, 1987 and 2001**



CLINICAL WORK ENVIRONMENT

Table 7.7: Dental Hygienists by Time a) Allotted and b) Preferred for a Dental Hygiene Maintenance Appointment for A Child Client, by Region, Canada 2001 (%)

TIME	REGION						National Weighted Estimate
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
A. TIME ALLOTTED							
15 minutes or less	3.8	--	--	--	--	--	1.5
16 to 30 minutes	75.8	84.2	74.3	69.4	50.8	61.8	73.0
31 to 45 minutes	11.5	8.8	18.1	19.7	29.2	20.8	16.8
As much as needed	8.8	5.6	6.0	9.8	17.8	17.0	8.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	182	215	249	173	185	212	
B. TIME PREFERRED							
15 minutes or less	--	0.0	--	0.0	--	--	0.7
16 to 30 minutes	68.4	53.8	63.4	57.0	29.5	45.5	55.7
31 to 45 minutes	22.2	32.8	26.1	33.3	44.7	38.2	31.1
As much as needed	6.8	13.4	9.8	9.6	24.2	15.4	12.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	117	119	153	114	132	123	

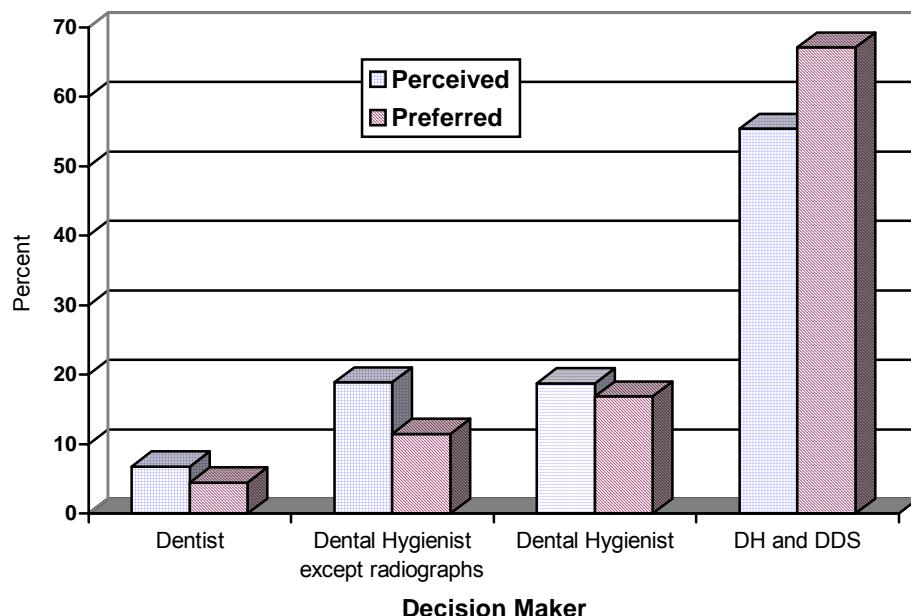
¹ Where cell counts are less than 5, percentages are not presented.

Table 7.8: Dental Hygienists by the Number of Adult and Child Clients They See on a Typical Day, Canada, 2001 (n, averages, s.d., range)

TYPE OF CLIENT	STATISTICS				
	n	Mean	Median	Standard Deviation	Range
1. Adult					
a. Recall	1356	6.54	6	2.55	0-15
b. New	879	1.03	1	0.77	0-5
c. Active Therapy ¹	745	1.94	1	1.82	0-12
2. Child					
a. Recall	985	1.91	2	1.73	0-12
b. New	410	0.54	0	0.76	0-4

1. By definition, "active therapy" refers to the client currently undergoing dental hygiene therapy.

Figure 7.4: Dental Hygienists' Perceived and Preferred Role in Deciding Dental Hygiene Procedures to Perform, Canada, 2001



CLINICAL WORK ENVIRONMENT

Table 7.9: Actual and Preferred Decision-Making Responsibility of Dental Hygienists in Primary Clinical Workplace, by Region, Canada, 2001 (percent and n)

DECISION MAKER RE. DENTAL HYGIENE PROCEDURES		REGION						National Weighted Total
		Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
1. Dentist								
a. actual		57.1	83.3	70.6	(4)	58.3	66.7	72.7
b. preferred		(4)	(3)	23.5	(1)	(2)	(2)	20.3
c. a and b		(2)	(1)	(2)	0.0	(1)	(1)	6.9
Total	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	n	14	24	34	5	12	9	
2. Dental Hygienist								
(except radiographs)								
a. actual		67.6	61.8	60.8	72.1	57.4	62.1	61.6
b. preferred		(4)	23.5	20.3	(1)	(4)	(2)	15.9
c. a and b		20.6	14.7	19.0	25.6	34.0	34.8	22.5
Total	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	n	34	34	79	43	47	66	
3. Dental Hygienist								
a. actual		54.5	56.6	54.1	43.5	42.7	48.5	51.3
b. preferred		15.2	20.8	26.2	18.8	13.4	15.5	20.3
c. a and b		30.3	22.6	19.7	37.7	43.9	36.1	28.4
Total	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	n	66	53	61	69	82	97	
4. Collaboration DH and DDS								
a. actual		33.1	37.9	34.5	23.3	15.9	23.9	32.1
b. preferred		15.3	12.8	23.0	17.8	26.9	21.3	19.6
c. a and b		51.6	49.3	42.5	58.9	57.2	54.8	48.3
Total	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	n	157	203	200	129	145	155	

1. Where cell counts are less than 5, numbers rather than percentages are presented.

Table 7.10: Dental Hygienists' Perceived Role in Deciding Dental Hygiene Procedures, by Role Preferred, Canada, 2001 (n and %)

PREFERRED ROLE <i>Who decides procedures to perform</i>	ACTUAL ROLE <i>Who decides dental hygiene procedures to perform</i>				
	Dentist	Dental Hygienist <i>Except radiographs</i>	Dental Hygienist	Dental Hygienist and Dentist Collaboration	Total Weighted % (n)
1. Dentist	12.9	6.7	5.2	2.5	4.5 (46)
2. Dental Hygienist except radiographs	7.1	37.1	5.2	5.5	11.5 (118)
3. Dental Hygienist	8.6	13.4	54.4	6.3	16.9 (173)
. Dental Hygienist and Dentist Collaborate	71.4	42.8	35.2	85.7	67.1 (687)
Total	100.0	100.0	100.0	100.0	100.0
n	70	194	193	567	
% of Actual	6.8	18.9	18.8	55.4	100.0

Table 7.11: Dental Hygienists Whose Clients Were Also Seen by the Dentist on a Typical Day, by Region, Canada, 2001 (% and n)

TYPE OF CLIENT	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
1. Adult							
a. Recall	64.1 127	88.1 200	78.5 201	59.5 113	55.2 116	65.8 154	75.3
b. New	90.9 90	96.9 157	91.9 113	91.2 104	91.2 124	92.1 128	93.3
c. Active Therapy ¹	60.4 29	93.3 56	45.3 43	50.0 26	33.8 26	29.5 26	51.7
2. Child							
a. Recall	94.0 140	95.7 178	96.9 156	95.3 121	99.2 119	96.8 92	96.4
b. New	98.4 61	94.7 89	96.9 62	100.0 64	98.6 70	96.6 56	96.6

1. By definition, "active therapy" refers to the client currently undergoing dental hygiene therapy.

CLINICAL WORK ENVIRONMENT

Table 7.12: Activities of the Dentist When Seeing Dental Hygiene Clients on the Day of their Appointment, by Region, Canada, 2001 (percent and n)

ACTIVITIES OF THE DENTIST	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Dentist Typically:							
1 talks with client to establish rapport	88.2	90.7	89.4	82.3	86.9	86.1	88.6
2 visually examines debridement and other dental hygiene procedures	49.5	53.2	49.3	33.9	36.0	35.5	46.5
3 Evaluates debridement and other dental hygiene services	28.8	36.7	25.9	18.8	17.3	14.7	26.1
4 Confirms DH's examination of the client	50.5	56.0	66.7	48.4	46.7	49.4	58.3
5 Performs an examination of the client	97.6	91.1	93.6	93.2	96.7	95.9	93.8
6 Discusses diagnosis and/or treatment with the client	94.8	92.7	94.7	93.2	93.0	94.7	94.0
Total	%	100.0	100.0	100.0	100.0	100.0	100.0
n		212	248	282	192	214	245

Table 7.13: Dental Hygienists' Opportunities to Consult Regarding Work-Related Concerns, by Region, Canada, 2001 (percent and n)

TOPIC OF CONSULTATION (% Yes)	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
1 Dental hygiene care	89.2	84.4	88.6	87.9	89.7	92.8	88.2
2 Other work-related concerns	88.4	76.0	85.6	83.6	87.4	90.2	84.1
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	212	248	282	192	214	245	

Figure 7.5: Dental Hygienists' Familiarity with Legal Record Keeping Requirements in Their Province, by Region, Canada, 2001 (% Yes)

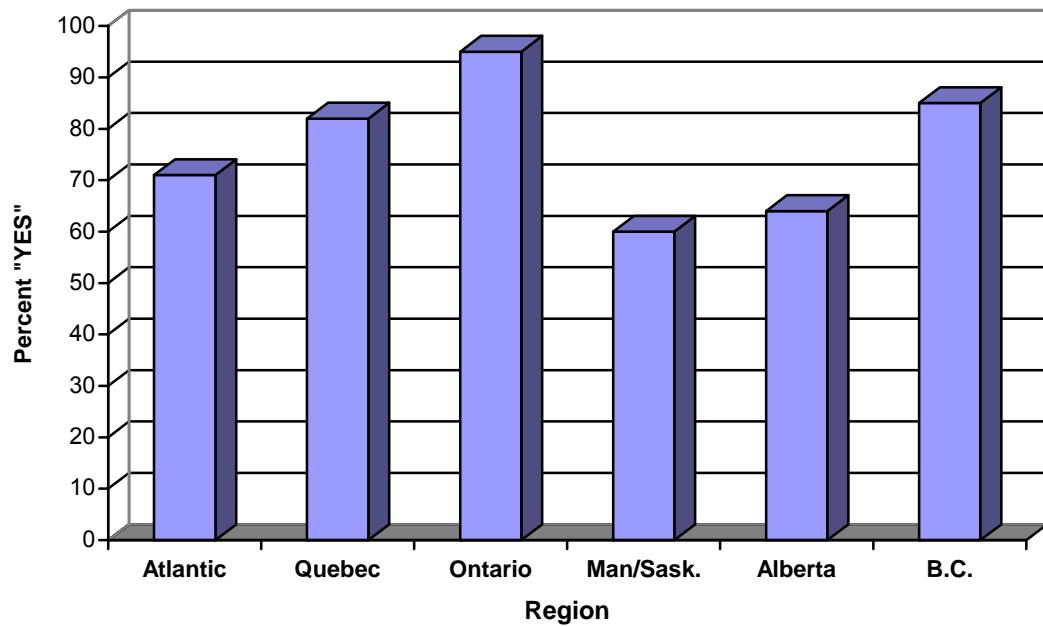
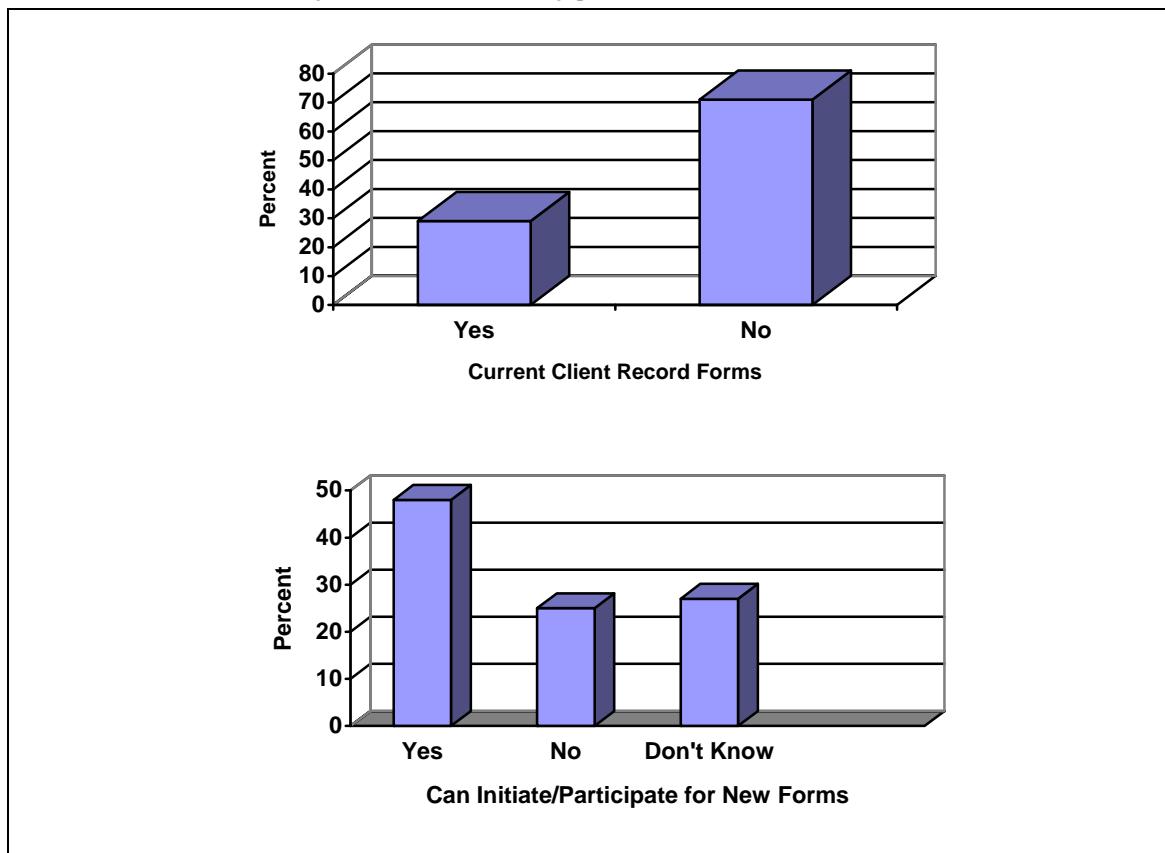


Table 7.14: Dental Hygienists' Familiarity with Legal Record Keeping Requirements in Their Province, by Region, Canada, 2001

R. IS FAMILIAR WITH REQUIREMENTS	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
1 Yes	71.0	82.4	95.1	59.9	64.1	85.1	85.0
2 No	29.0	16.9	4.9	35.6	35.0	14.1	14.4
3 Not applicable – no such requirements exist	0.0	0.8	0.0	4.5	0.9	0.8	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	207	255	287	202	223	249	

Figure 7.6: Dental Hygienists' Participation in the Design of the Client Record Forms They Use for Dental Hygiene Care, Canada, 2001



CLINICAL WORK ENVIRONMENT

Table 7.15: Dental Hygienists' Participation in the Design of the Client Record Forms They Use for Dental Hygiene Care, by Region, Canada, 2001

PARTICIPATION OF RESPONDENT	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
a. Did you participation in the design of the client record forms you use?							
Yes	17.4	21.6	34.6	24.8	24.0	34.1	29.0
	43	66	106	53	68	96	
b. Could you initiate and participate in a re-design of the forms?							
Yes	53.4	39.8	46.9	51.8	53.8	57.4	47.6
No	23.3	24.9	28.2	21.6	21.3	18.7	24.9
Don't know	23.3	35.4	24.9	26.6	25.0	23.9	27.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	163	181	177	139	160	155	

PART IV

CLINICAL PRACTICE

In Part IV, a series of profiles is presented to describe dental hygiene clinical practice in Canada in 2001. Key findings are presented in Chapters 8 through 13. For a complete set of cross-tabulations by region, the reader is referred to **Dental Hygiene Practice in Canada: 2001 – Report 2** (CDHA 2001).

As described in Chapter 7, the sample used for this part of the analysis consisted of 1438 respondents that had indicated their major work activity was clinical service and their primary clinical workplace was a private dental office. Given that this sub-sample comprised 93.4% of the total sample of respondents working at the time of the survey, it was not surprising to find the two groups were similar based on social-demographic, educational and work-related characteristics and regional distribution.

The elements of dental hygiene process (see Chapter 2) provided the framework for examining clinical practice behaviours. In Chapter 8, selected assessment activities of dental hygienists are profiled. Chapter 9 presents information regarding the dental hygiene diagnosis and care plan. Therapeutic services are examined in Chapter 10 and client education activities in Chapter 11. Information on services associated with safety and protection is presented in Chapter 12 and evaluation procedures in Chapter 13.

Relationships between practice patterns of the dental hygienist and personal, structural (i.e., related to the profession and the workplace), and environmental or macro-level factors were explored using basic cross-tabulations. For a number of factors, findings clearly are preliminary. They suggest that a more definitive multivariate analysis, beyond the scope of this report, is warranted to more fully understand the relationship, for example, of workplace policies and work patterns. These relationships may have implications for dental hygiene education, regulation and practice and for human resource planning, safety, quality and delivery of services, and health outcomes.

CHAPTER 8

CLINICAL PRACTICE: ASSESSMENT

Assessment involves activities to systematically collect and document data necessary to develop a dental hygiene diagnosis and care plan, and subsequently monitor progress and evaluate outcomes. In this chapter, the frequency with which dental hygienists performed selected assessment-related activities is described. Factors significantly associated with each activity are noted.

8.1 FREQUENCY OF PERFORMING SELECTED ACTIVITIES

Respondents were asked to indicate how frequently, on average, they performed each of a set of 17 activities and recorded the findings. Response choices were *always*, *occasionally*, *rarely/never* and *done by others*. Findings are presented in Table 8.1.

Overall and with few exceptions, dental hygienists tend to perform one portion of the activities always (n=8) and the other portion rarely or never (n=6). It would appear that the activities examined typically were not performed unless done by the dental hygienist. Across all procedures, fewer than 1 out of 10 respondents cited “done by others”; proportions increased slightly for oral cancer screening and taking and fabricating study models to 10.7%, 13.0% and 17.9% respectively.

At least one half of respondents always updated the medical history, determined client priorities, performed soft and hard tissue examinations, took PSR, deposit, and bleeding indices, and reviewed self-care procedures. In contrast, at least one half rarely or never took vital signs or conducted caries susceptibility, periodontal disease activity and oral cancer screening tests and 2 out of 5 rarely or never took gingival indices or photographs. Another two activities tended to be performed occasionally – namely, impressions for study models and examination of the head and neck. Regarding study models, 2 out of 5 respondents fabricated them occasionally and another 2 out of 5 did so rarely or never.

There was little variance. Where it existed, it tended to be associated with region, level of professional development activity (i.e., PD score), type of workplace, type of specialty if periodontics or orthodontics¹, and the opportunity to consult with others regarding dental hygiene care. Overall, while the actual distribution varied by type of activity, proportions for the group that cited “always” tended to be lower among respondents for the Atlantic, Quebec and Man/Sask. regions, with corresponding increases for “occasionally” and “rarely/never” in particular.

¹ Regarding dental hygienists whose principal workplace was a specialty office, two groups only were included in the analysis – namely, periodontics and orthodontics (n=50 and 47 respectively). There were too few respondents for the other categories to support statistical procedures and provide meaningful results.

ASSESSMENT

8.1.1 Core Activities

Five of the activities examined appeared to be core features of dental hygiene clinical practice. That is, at least 3 out of 4 respondents reviewed or updated the medical history, determined the client's oral health concerns and priorities, performed intra oral examinations of the soft and hard tissues, and reviewed oral self-care procedures. Further, the frequency with which dental hygienists reviewed the medical history, took vital signs and performed intra oral hard and soft tissue examinations had changed little since 1987 (see Figure 8.1).

Table 8.2 presents factors associated with frequency of performing the core activities. With the exception of reviewing oral self-care procedures, some regional variation was evident. For the remaining four items, across all regions the majority of respondents indicated "always". However, proportions varied – 9 out of 10 respondents for Ontario (97.2%), Alberta and British Columbia always updated the medical history and determined client priorities, compared to 7 out of 10 respondents for Quebec and the Atlantic region. Similarly, 8 out of 10 respondents for Ontario and British Columbia always performed soft and hard tissue examinations, compared to 6 out of 10 for Man/Sask.

Frequency of performing each of the five core activities was positively and linearly associated with a respondent's level of professional development (PD) activity. That is, those that scored High in terms of PD were more likely to perform the core activities always. The variance was greatest regarding frequency of determining a client's priorities – the proportion that reported "always" ranged from 97.0% for the High PD group to 87.7% for the Moderate group, and decreased even further to 75.2% for the Low group.

Frequency varied also by type of workplace. While at least 3 out of 5 respondents performed each of the core activities always, proportions were greater among those that worked in a general versus a specialty dental office; the exception was the review of self-care procedures where no apparent difference existed. Among respondents that worked in a specialty dental office, the periodontics group was considerably more likely than the orthodontics group to always perform the core activities; the exception was the review of self-care procedures.

For two of the core activities, findings varied slightly by whether or not respondents perceived they had opportunities to consult with others regarding dental hygiene care. That is, respondents that indicated such opportunities existed were more likely to always examine and record soft tissue findings and to review oral self-care procedures.

8.1.2 Indices

The frequency of calculating four types of indices was examined; all types were intended for use with individual clients. Findings overall are reported in Table 8.1.

Dental hygienists tend to always complete periodontal screening and recording (PSR), deposit (plaque, debris and calculus), and gingival bleeding indices. However, they are far less likely to complete a gingival index. Further, it would appear that, unless the dental hygienist completes the index, it is unlikely to be done.

For the first three indices listed, at least one-half of respondents cited always; proportions ranged from 54.4% for PSR to 65.5% for a deposit index. Regarding a gingival index however, 7 out of 10 respondents completed one either occasionally (32.3%) or rarely/never (39.5%); the proportion that did so always decreased to 27.5% - one-half the proportion that was reported for the other three indices. Only approximately 1 out of 100 respondents indicated an index was done by others.

Factors associated with the frequency of completing indices are described in Table 8.3. Regional variation was evident. Regarding the group that “always” completed deposit, bleeding and/or gingival indices, across all three indices, proportions were greatest for Quebec and least for Man/Sask. On the other hand, respondents for Quebec were the least likely to “always” complete the fourth index – that is, PSR. Regarding the deposit and bleeding indices, the group that “always” did them ranged from a high of 75.0% and 67.2% respectively for Quebec to a low of 45.1% and 42.9% respectively for Man/Sask. Regarding the PSR index, the “always” group ranged from a high of 64.4% for British Columbia to a low of 40.8% for Quebec. In comparison, for the gingival index, the “always” group was considerably smaller and varied little - 16.8% to 23.8%; the exception was Quebec with 44.6%.

For only one type of index – namely, PSR - was the association with professional development activity significant. Respondents that scored high in terms of PD were far more likely to report they always completed a PSR index compared to the groups that scored moderate and low – 70.2% versus 53.4% and 38.7% respectively.

Frequency of completing some types of indices was associated with type of workplace. Respondents working in a general versus a specialty dental office were more likely to complete a PSR – 56.1% versus 35.2%; there was little difference regarding the remaining three types. Not unexpectedly given differences in client groups, respondents in orthodontics were less likely to *always* complete PSR, bleeding and gingival indices.

Respondents that reported they had opportunities to consult with others regarding dental hygiene care were somewhat more likely to always complete bleeding and gingival indices. Regarding the latter index, although the proportion for “always” was relatively small, it was double the proportion for the group that did not have similar opportunities - 28.9% versus 14.5%.

ASSESSMENT

8.1.3 Diagnostic Tests

As indicated in Table 8.1, the majority of respondents indicated they rarely or never performed the three diagnostic tests examined – namely, caries susceptibility, periodontal disease activity and oral cancer screening. Caries susceptibility testing was least prevalent and oral cancer screening most prevalent – 14.7% and 32.2% of respondents respectively performed them either occasionally or always. Regarding cancer screening, another 1 out of 10 respondents reported the procedure was *done by others* (10.7%).

There was little variation regionally. Across all regions, at least 3 out of 4 respondents indicated they rarely or never performed a caries susceptibility test and at least 3 out of 5 rarely or never tested for periodontal disease activity or performed oral cancer screening. Proportions for rarely/never were greatest for British Columbia and lowest for Quebec and, regarding cancer screening, for Ontario.

Findings did not vary based on professional development activity or general versus specialty practice. Regarding screening for oral cancer, findings varied slightly based on type of specialty office. Approximately 2 out of 5 respondents in periodontics (43.2%) reported they occasionally or always screened, compared to 33.7% for orthodontics, a setting that tends to have fewer adult clients typically at greater risk for oral cancer.

8.1.4 Study Models

Regarding study models, two aspects were considered – taking impressions and fabrication. Dental hygienists tend to take impressions occasionally but fabricate them less frequently. As indicated in Table 8.1, one-half of respondents reported they took impressions occasionally and another one-quarter did so rarely or never – 54.5% and 26.6% respectively; a further 13.0% indicated others did them.

Findings varied based on a number of factors (Table 8.4). Regionally, respondents for Ontario were the most likely to take impressions occasionally – 70.3% versus 54.5% overall. In contrast, respondents for Quebec either rarely or never take impressions (39.2%) or report they are taken by others (20.8%); only 34.0% take them occasionally - one-half the portion for Ontario. On the other hand, while respondents for Quebec were the least likely to take impressions, they were twice as likely to fabricate study models compared to the three western regions - 55.3% compared to 22.2% for Alberta, 27.5% for British Columbia and 28.7% for Man/Sask.

Frequency of taking impressions tended to increase as professional development activity increased. Approximately 2 out of 3 respondents that scored high on PD (64.7%) took impressions occasionally and the proportion decreased to 43.2% for the group that scored low. On the other hand, fabrication of the study models was inversely associated with PD; Almost 1 out of 2 respondents that scored low fabricated them occasionally and the proportion decreased to 32.0% for the high PD group.

Frequency of taking impressions varied little based on type of workplace and type of specialty. Regarding study models however, greater variance was evident. As noted in Table 8.4, the “general office” group was twice as likely to fabricate study models occasionally compared to the “specialty” group - 40.4% versus 19.1%.

8.1.5 Other Activities

The frequency of performing three additional activities was examined – namely, vital signs, head and neck (that is, extra oral) examination and intra oral photographs. Findings overall are presented in Table 8.1, with regional and other factors reported in Table 8.4.

Regarding vital signs, it would appear that this procedure is rarely or never performed in the dental office. Overall, 4 out of 5 respondents cited rarely/never (84.4%) and another 11.4% reported they did it occasionally; only 1.8% indicated that others took a client’s vital signs. Across all factors investigated, there was little variance.

Regarding the extra oral or head and neck examination, 41.7% of respondents reported they performed one occasionally and another 31.9% indicated rarely or never; a further 9.7% said others did it. The proportion that cited “occasionally” ranged from a low of 32.9% for Alberta and 33.5% for the Atlantic region to a high of 47.4% for Ontario. Almost one-half of respondents that scored high in terms of professional development activity (47.2%) indicated they did an extra oral examination occasionally and another 24.1% did one always; only 19.4% cited “rarely/never”. In contrast, among the “Low PD” group, the greatest proportion reported they rarely or never performed the examination (44.2%) and another 36.0% did one occasionally. There was slight variance by type of workplace, with those in a general versus a specialty office being more inclined to cite “occasionally” (42.6% versus 30.8%); among the specialty group, proportions for “rarely/never” and “done by others” tended to be somewhat greater.

Regarding photographs, 43.0% of respondents reported they rarely or never took them and another 34.6% did so occasionally. Almost one-half of respondents for Quebec reported they took photographs occasionally (48.5%) – twice the proportions indicated for the Atlantic region (22.1%) and Man/Sask. (25.3%). There was little variance based on type of workplace or other factors examined.

8.2 FREQUENCY OF TAKING RADIOGRAPHS

Respondents provided information regarding the frequency with which they took six types of radiographs. Response choices were *every 6-month recall appointment, at least once a year, depends on the client’s needs, and other*. Findings overall are presented in Table 8.5, with variations reported in Table 8.6.

ASSESSMENT

Dental hygienists tend to take periapical and horizontal bitewing radiographs more so than the other four types examined. For the cephalometric radiograph, and to a lesser extent, the vertical bitewing, missing responses were relatively high (18.8% and 12.7% respectively); proportions were similarly high for the “other” category (66.4% and 28.1% respectively). Since the response choices “rarely” and “never” were not offered, it is likely a large portion of respondents either skipped the items or cited “other” to denote they typically do not take the radiograph.

Regarding frequency, findings overall indicate that full mouth series, periapical, vertical bitewing and panoramic radiographs typically are taken based on a client’s needs. On the other hand, the horizontal bitewing is as likely to be taken once a year as based on a client’s needs. Frequency tends to vary based on region, type of workplace and type of specialty.

8.2.1 Full Mouth Series

Approximately 7 out of 10 respondents indicated that they typically took a full mouth series (FMS) of radiographs based on a client’s needs (71.6%). With few exceptions, the remainder indicated the “other” category (27.8%).

Across all regions, the majority of respondents reported that frequency was based on a client’s needs. The proportion ranged from a high of 80.9% and 80.5% for British Columbia and the Atlantic region respectively to a low of 64.3% for Quebec. There was little difference between the groups that worked in general versus specialty dental offices. However, respondents that worked in periodontics were twice as likely as those in orthodontics to report they take FMS based on needs – 70.2% and 34.5% respectively; among the orthodontic group, another 59.2% cited the “other” category.

8.2.2 Periapical

Almost all respondents reported that they typically took a periapical radiograph based on the client’s needs – 95.3%. There was no significant variation based on region or other factors considered. The exception was type of specialty – while 9 out of 10 respondents in periodontics (93.6%) took a periapical based on needs, the proportion declined to approximately 6 out of 10 for the orthodontics group (62.9%).

8.2.3 Horizontal Bitewing

Respondents were almost equally divided into two groups regarding the frequency with which they typically took a horizontal bitewing radiograph. One group reported they took it at least once a year for a client and the other indicated frequency was based on a client’s needs; proportions were 43.7% and 40.9% respectively. Respondents for Quebec and Alberta were slightly more inclined to take horizontal bitewings at least once a year for a client (56.7% and 53.6% respectively), whereas those for British Columbia and Ontario tended to base frequency on the needs of the client (52.7% and 49.0% respectively).

Frequency of taking the horizontal bitewing for a client was associated with years of experience although the relationship was slight. One-half of respondents that had worked fewer than 6 years in dental hygiene typically took the bitewing radiograph at least once a year for a client; the proportion declined gradually to 40.5% of respondents with 16 or more years of experience. Conversely, one-half of the “16 years plus” group based frequency on the client’s needs and the proportion declined to 32.2% for the “<6 years of experience” group.

Frequency was also associated with level of professional development activity (i.e., PD score). The “High PD” group tended to base frequency on the client’s needs – 52.7% versus 39.0% for the “Moderate PD” group and 30.2% for the “Low PD” group. Conversely, the “Low PD” group was more likely to take the radiograph for the client at least once a year (51.2%).

Regarding type of dental office, respondents in a general office tended to take the radiograph at least once a year (45.8%) or depending on the client’s needs (40.2%). While the majority of the “specialty” group also reported frequency was based on need (52.3%), another 29.5% cited the “other” category. Regarding type of specialty, the pattern was similar – the periodontics group was more likely to take a horizontal bitewing based on needs whereas the orthodontic group was more likely to cite “other” (proportions for “client’s needs” were 57.5% and 34.5% respectively).

8.2.4 Vertical Bitewing

Two out of three respondents indicated they typically took a vertical bitewing radiograph based on a client’s needs (60.3%) and another 28.1% cited the “other” category. Across all regions, the majority of respondents based the frequency on the needs of the client. The proportion ranged from a high of 3 out of 4 respondents for British Columbia (75.7%) to a low of one-half for Quebec and Man/Sask. (50.2% and 51.8% respectively).

Respondents in a general office were more likely to indicate frequency was based on the client’s needs – 61.8% versus 40.4% for the specialty group; one-half of the specialty group cited the “other” category. Among both the periodontics and orthodontics groups, proportions for the “needs-based” category were relatively low at 38.1% and 18.5% respectively. No other factors examined were significant.

8.2.5 Panoramic

Almost 7 out of 10 respondents reported that they typically took the panoramic radiograph based on a client’s needs (68.5%). With few exceptions, the remainder indicated the “other” category (30.5%). Findings did not vary regionally to any extent.

Seven out of 10 respondents in a general office (69.7%) reported frequency was based on the client’s needs. For the specialty group, the proportion decreased to one-half (53.4%) and another 36.9% cited the “other” category. As expected, exposure of the panoramic radiograph was far more likely to occur among and be “needs based” for the orthodontic compared to the periodontic group – 75.0% versus 26.2%.

ASSESSMENT

8.2.6 Cephalometric

Regarding the frequency with which dental hygienists take the less common cephalometric radiograph, findings varied compared to the other types. Two-thirds of respondents cited the “other” category (66.4%) and only one-third indicated it was based on a client’s needs (32.7%). As noted previously, the disproportionately small group of respondents over all frequency categories that indicated they took the radiograph and the correspondingly large group that cited the “other” category suggest they used that category to indicate they did not take cephalometric radiographs. Further, assuming the relatively large proportion of missing responses (18.8%) consisted of respondents that did not take the cephalometric radiograph, the proportion would decrease to 1 out of 4 respondents overall (27.3%) that did take it.

Across all regions, the majority of respondents cited the “other” category. Proportions were greatest for Alberta (85.7%) and decreased to 57.6% for the Atlantic region, where another 41.2% indicated frequency was based on the client’s needs.

The majority of respondents in a general office (68.1%) cited the “other” category – that is, they likely did not take that type. In comparison, the vast majority (95.0%) of respondents in a specialty office were almost equally distributed between the group that cited “other” and the one that indicated frequency was based on the client’s needs - 47.5% and 47.5% respectively. As expected, among respondents that cited a specialty office, the proportion that took cephalometric radiographs was greatest for the orthodontics group. The relatively few respondents that indicated they took cephalometric radiographs were more likely to have reported they have opportunities to use new technology compared to the group that did not take the cephalometric - i.e., that cited “other”.

8.2.7 Summary

In summary, respondents overall reported they typically take full mouth series, periapical, vertical bitewing and panoramic radiographs based on a client’s needs more so than according to a routine interval. There was greater variance regarding the horizontal bitewing radiograph – one group takes it once a year typically and for the other group, frequency is based on a client’s needs. Relatively few respondents reported taking the cephalometric radiograph. Findings tended to vary slightly by region and type of workplace.

8.3 WHO DECIDES WHICH RADIOGRAPHS TO TAKE

Respondents provided information regarding the person that typically decides which radiographs should be taken for a client. Response choices were *dental hygienist independently*, *dentist independently*, *dental hygienist and dentist jointly*, and *routine policy*. Findings are presented in Tables 8.7 and 8.8.

Overall, it appears that dental hygienists typically do not make the decision whether or not to take a radiograph nor is the decision based on routine policy. The dentist typically decides jointly with the dental hygienist regarding periapical, panoramic and cephalometric radiographs and independently regarding a full mouth series. The exception is the decision regarding a bitewing radiograph - it typically is made by the dental hygienist either jointly with the dentist or independently or is based on routine policy.

Missing responses were relatively high for the cephalometric and panoramic radiographs (16.0% and 11.4% respectively). They may denote respondents that do not take them since the procedures require specialized equipment not available in all workplaces.

8.3.1 Full Mouth Series

One-half of the respondents (52.0%) reported that the dentist independently makes the decision regarding a full mouth series and another 38.0% indicated the decision is made jointly. The proportion that indicated the dentist makes the decision was greatest for Ontario and least for Quebec and British Columbia - 60.1% versus 40.8% and 41.2% respectively. Among the latter two groups, joint decision making reportedly was slightly more predominant – 43.5% and 48.9% respectively. Findings did not vary markedly by type of workplace or other factors examined.

8.3.2 Periapical

Overall, two-thirds of respondents reported the decision regarding panoramic radiographs typically was made jointly (60.6%) and another 27.8% cited the dentist independently. Across all regions, joint decision making was predominant.

As noted in Table 8.7, findings varied by type of workplace. The majority of respondents in a general office reported the decision was made jointly – twice the proportion for the specialty group (62.8% versus 32.3%). In contrast, the majority of respondents in a specialty office reported the decision was made by the dentist independently – twice the proportion for the general group (55.6% versus 25.6%). There was no significant difference for the periodontics and orthodontics groups.

8.3.3 Bitewing

In contrast to the other types of radiographs, one-half of respondents reported that decisions regarding the taking of bitewing radiographs were made either independently by the dental hygienist (26.1%) or were based on routine policy (24.7%). A further 36.7% indicated they were made jointly.

The proportion that cited either “dental hygienist independently” or “routine policy” was greatest among respondents for Quebec (64.2%), Man/Sask. (63.9%) and Alberta (61.4%), compared to a low of 37.7% for Ontario. Corresponding proportions for the Atlantic region and British Columbia were 55.7% and 54.0% respectively.

ASSESSMENT

While joint decision-making was predominant regardless of whether the workplace was a general or a specialty dental office (36.4% and 40.7% respectively), those figures tend to be misleading. Respondents in a general versus a specialty office were twice as likely to report they made the decision independently (26.9% versus 13.6%). They were also three times as likely to indicate the decision was based on routine policy (25.8% versus 8.6%). In contrast, the specialty office group was three times more likely to report the dentist made the decision independently compared to those in a general office – 37.0% versus 11.0%. Regarding type of specialty, there was no significant difference for the periodontics and orthodontics groups.

8.3.4 Panoramic

Regarding the panoramic radiograph, overall respondents were almost equally divided into the group that reported the dentist made decisions independently (41.7%) and those that indicated it was a joint decision (39.1%). Another 12.5% cited routine policy and less than 1 out of 10 respondents indicated they made the decision independently.

For 4 regions, approximately one-half of respondents indicated the dentist made the decision – namely, the Atlantic (50.0%), Ontario (52.5%), Man/Sask. (50.0%) and British Columbia (53.8%); the proportion decreased markedly to 18.9% for Quebec, followed by 31.5% for Alberta. Among respondents for Quebec, joint decision making was predominant (48.9%). Among respondents for Alberta, only 31.5% indicated the dentist made the decision and another 37.8% perceived it was made jointly, with the remainder divided into those that reported the decision was made by the dental hygienist (15.3%) and those that cited “routine policy” (15.3%).

Similar to results for the periapical radiograph, respondents in a general office were twice as likely as the specialty group to report the decision was made jointly – 40.7% versus 18.4%. Among the latter group, two-thirds reported the dentist made the decision (66.7%); the corresponding proportion was 39.7% for the general group. There was no variation based on type of specialty for the two groups examined.

8.3.5 Cephalometric

Regarding the cephalometric radiograph, one-half of respondents reported the decision was made jointly (50.9%), another one-quarter indicated the dentist made it (25.1%), and a further 17.7% cited routine policy. As noted, results are based on the 61.5% of respondents overall that answered the question; presumably most if not all of the others did not take the cephalometric radiograph.

Across all regions, at least 4 out of 5 respondents indicated the dentist made the decision about taking a cephalometric radiograph. The exception was Quebec where the proportion declined to 57.8% and another 40.0% indicated the decision was either made jointly (23.9%) or based on routine policy (16.1%).

8.3.6 PD Activity

Unlike the 17 assessment activities reported previously, the relationship between a respondent's level of professional development activity (PD score) and decision-making involving radiographs was minimal. Further, the direction of the relationship was somewhat surprising. Findings are reported in Table 8.8.

An association was evident with respect to bitewing, panoramic and cephalometric radiographs only. Respondents in the High PD group were more likely to perceive that the decision was made either by the dentist or jointly with the dental hygienist. In comparison, the Moderate-PD and Low-PD groups were less likely to perceive it was the dentist's decision.

8.4 FREQUENCY OF RADIOGRAPHS BY DECISION-MAKING

Association was examined between frequency with which the dental hygienist takes a radiograph and decision-making responsibility – that is, the person that typically decides whether that type of radiograph should be taken (QE2 by QE3). Across the six types of radiographs investigated, no consistent pattern was discerned. For periapical and vertical bitewing radiographs, the majority of respondents reportedly take them based on a client's needs more so than at a set interval, regardless of who decided the radiograph should be taken. Findings regarding the other types of radiographs examined are presented in Table 8.9.

8.4.1 Full Mouth Series

The full mouth series (FMS) was taken as needed by the vast majority of respondents that perceived the decision to take a FMS was made jointly by the dental hygienist and the dentist - 86.1% compared to 71.6% overall. The proportion declined markedly among respondents that perceived the decision was made by either the dental hygienist or the dentist or was based on routine policy.

8.4.2 Bitewing

Regarding bitewing radiographs, at least one-half of respondents that perceived bitewing-related decisions were made either by the dental hygienist or based on routine policy took horizontal bitewing radiographs for a client at least once a year. In contrast, at least one-half of those that perceived the decisions were made either by the dentist or jointly with the dental hygienist took the horizontal bitewing as needed. As noted previously, frequency of taking the vertical bitewing tended to be low overall and did not vary significantly based on who made the decision about taking it.

ASSESSMENT

8.4.3 Panoramic

While across all categories of decision-making, the majority of respondents took the panoramic radiograph as needed, proportions varied widely. They ranged from a low of 54.1% for the group that indicated the decision was based on routine policy to a high of 82.6% for the group that perceived the decision was made jointly, followed by 71.9% for those that perceived the dentist made the decision.

8.4.4 Cephalometric

Regarding cephalometric radiographs, frequency based on needs was considerably more prevalent for two groups – namely, the relatively few respondents that perceived they made cephalometric-related decisions independently and the considerably larger group that made them jointly with the dentist; proportions were 85.7% and 71.3% respectively compared to 32.7% overall. (See Table 8.9.) In contrast, the “other” category was predominant among respondents that perceived decisions were made either by the dentist or based on routine policy – proportions were 60.7% and 72.6% versus 27.1% for the “joint decision” group.

8.5 DECISIONS REGARDING THE ORAL EXAMINATION

Respondents provided information regarding decision-making responsibility specific to the oral examination of a client. Three types of decisions were examined – namely, who will provide it, what to include in it, and the amount of time to schedule for it. Response choices were the same as for the item regarding radiographs. Results are presented in Table 8.10.

Overall, dental hygienists perceive that decisions regarding oral examination typically are made jointly with the dentist and rarely on their own. The decision as to who will perform the examination and what to include in it are next most likely to be made by the dentist independently. Regarding the amount of time to schedule, while joint decision-making responsibility again is most prevalent, routine policy and decision-making by the dental hygienist occur relatively more frequently, compared to the other two types of decisions.

8.5.1 Who Will Provide It

One-half of respondents reported that typically the dental hygienist and dentist jointly made the decision regarding who will perform the oral examination and another one-quarter indicated the dentist decided; proportions were 50.9% and 25.1% respectively. Less than 1 out of 5 respondents cited routine policy (17.7%) and even fewer perceived they made the decision on their own (6.2%).

Across all regions, joint decision-making was predominant. The proportion ranged from a high of 54.6% for Ontario to a low of 38.4% for Man/Sask. For the latter region, remaining responses were distributed among the other three response choices. There was no significant variance by type of workplace or other factors examined.

8.5.2 What to Include in It

The distribution regarding what to include in the examination was essentially the same as the one regarding who will do it. That is, one-half of respondents reported that typically the dental hygienist and dentist jointly made the decision and another one-quarter indicated the dentist decided; proportions were 50.0% and 25.5% respectively. Again, less than 1 out of 5 respondents cited routine policy (18.4%) and even fewer perceived they made the decision on their own (6.1%). There was little variance regionally, by type of workplace or other factors examined.

8.5.3 Amount of Time to Schedule

Regarding the amount of time to schedule for an oral examination, 37.5% of respondents indicated the decision was made jointly and another 25.1% cited routine policy. The remainder indicated it was made either by the dentist independently or by the dental hygienist; proportions were 22.9% and 14.5% respectively.

Again, there was little variance regionally, by type of workplace or other factors examined, with one exception. Regarding the amount of time allotted for an adult recall appointment, respondents that preferred more time tended to report either the dentist decided the amount of time to schedule for an examination or it was made jointly – 35.9% and 35.9% respectively. In comparison, the group that was apparently satisfied with the time allotted were less likely to report the dentist decided the time for an examination and more likely to report it was made jointly or based on routine policy – 19.4% versus 37.2% and 30.3% respectively.

8.6 ORAL EXAMINATIONS BY TYPE OF DECISION-MAKER

The relationship was examined between the frequency with which the dental hygienist performs several aspects of an oral examination and decision-making responsibility for that examination (QE1-d, e by QE4). The three decisions investigated were who will perform it, what to include and the amount of time to schedule – that is, “when”. Findings are presented in Table 8.11.

Findings with respect to the dentist-as-decision-maker were fairly consistent – that is, the three aspects of the various examinations tended to be performed less frequently compared to when the decisions were made by the dental hygienist or jointly or based on routine policy. Regarding aspects of the extraoral examination, dental hygienists are more likely to perform them rarely or never versus occasionally when the dentist makes the decisions. Regarding aspects of the soft and hard tissue examinations, they tend to perform them always, particularly when decisions are made jointly with the dentist, and are somewhat less likely to perform them always if the dentist decides independently.

ASSESSMENT

For example, regarding the extraoral examination, when the dentist decided whom, what and when, proportions for the rarely/never response choice were 45.4%, 46.3% and 46.3% respectively. In comparison, the proportion ranged from 22.8% to 33.0% for the other three decision-making categories. Regarding the soft tissue examination and regardless of decision-making responsibility, a minimum 7 out of 10 respondents always performed a soft tissue examination for a client. The proportion tended to be greatest among respondents that reported decisions were made jointly and declined among those that reported the dentist made the decisions.

The pattern was similar regarding the hard tissue examination. (See Table 8.11.)

8.7 SUMMARY

In summary, dental hygienists tend to perform a broad range of assessment activities and/or procedures for a client. Of a set of 17 activities examined, they tended to perform eight of them always – namely, review or update the medical history, determine client priorities, perform soft and hard tissue examinations, take PSR, deposit, and bleeding indices, and review self-care procedures. They perform another two activities occasionally – namely, impressions for study models and examination of the head and neck. The seven activities that they tend to perform rarely or never include taking vital signs, testing for caries susceptibility, periodontal disease activity and oral cancer, taking gingival indices and photographs, and to a lesser extent, fabricating study models. Procedures that are not performed by the dental hygienist typically are not done for the client; the proportion was less than 1.0% with the exception of screening for oral cancer (10.7%) and taking and fabricating study models (13.0% and 17.9% respectively).

Regarding the frequency with which dental hygienists take radiographs, they typically take full mouth series, periapical, vertical bitewing and panoramic radiographs based on a client's needs rather than at a pre-determined interval (i.e., every 6 months or at least once a year). On the other hand, they typically take horizontal bitewing radiographs either at least once a year or on a client's needs. Relatively few take cephalometric radiographs. Frequency tends to vary based on region, type of workplace and type of dental specialty.

There is little consistency between the frequency with which the dental hygienist takes a radiograph and decision-making responsibility – that is, whether the decision regarding which radiograph to take is made by the dental hygienist, the dentist, both jointly, or based on routine policy. For periapical and vertical bitewing radiographs, the majority of dental hygienists take them based on a client's needs more so than at a set interval, regardless of who decides to take the radiograph. Regarding a full mouth series, dental hygienists that perceive the decision is made jointly with the dentist are somewhat more likely to take one as needed for a client – 86.1% versus from 63.5% to 68.4% for the other groups.

Among dental hygienists that perceive decisions regarding bitewing radiographs are made either jointly or by the dentist, at least one-half take a horizontal bitewing as needed – 60.2% and 50.3% respectively versus 31.2% of those that think they make the decision and 19.0% for the routine policy group. Regarding the panoramic radiograph, while the majority of dental hygienists take them as needed, the proportion is considerably greater for the group that perceives the decision is made jointly – 82.6% versus from 54.1% to 71.9% for the other three groups. Lastly, among the relatively small group that take cephalometric radiographs, 7 out of 10 dental hygienists that consider the decision is made jointly take them as needed. In contrast, the proportion declines among those that perceive the decision is made either by the dentist or based on routine policy – to 39.1% and 25.8% respectively.

Decision-making responsibility specific to an oral examination of a client was examined – that is, who will do it, what to include, and amount of time to schedule (i.e., “when”). Across all three types of decisions, the majority of dental hygienists perceive they make decisions jointly with the dentist. Decisions as to “whom” and “what” are next most likely to be made by the dentist independently. In contrast, the decision regarding “when” is next most likely to be based on routine policy or made by the dental hygienist.

Regarding the relationship between decision-making responsibility and frequency of performing oral examinations, dental hygienists are more likely to perform an extraoral examination rarely or never versus occasionally when the dentist decides the “who”, “what” and “when”. Regarding soft and hard tissue examinations, dental hygienists tend to perform them always when the three decisions are made jointly with the dentist, compared to when the dentist alone decides.

Decision-making responsibility will be examined further in the following chapters.

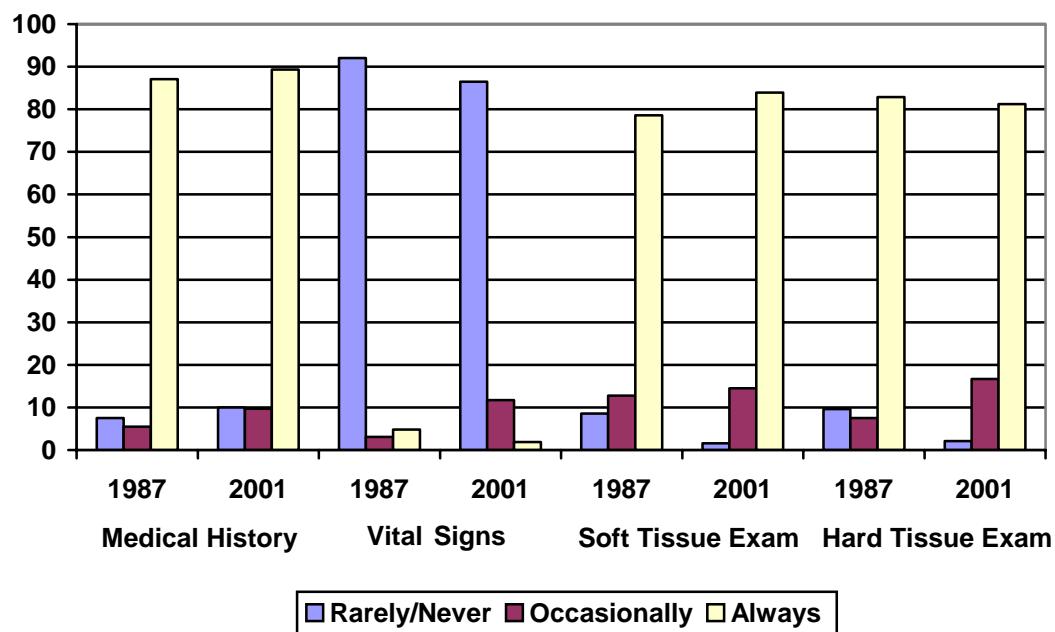
ASSESSMENT

Table 8.1: Frequency With Which Dental Hygienists Perform Selected Assessment Procedures, Canada, 2001 (n=1438)

PROCEDURE	FREQUENCY			
	Rarely/Never	Occasionally	Always	Done by Others
1. Medical History	1.0	9.6	88.3	1.1
2. Client's priorities	0.8	11.5	86.9	0.8
3. Vital signs	84.4	11.4	1.8	2.4
4. Examine				
a. Head/neck	31.9	41.7	16.6	9.7
b. Soft tissue	1.5	13.9	80.4	4.2
c. Hard tissue	2.0	15.6	76.2	6.2
5. Indices:				
a. PSR	14.8	29.4	54.4	1.4
b. Deposits	17.9	16.0	65.5	0.6
c. Bleeding	18.1	21.7	59.5	0.7
d. Gingival index	39.5	32.3	27.5	0.8
6. Self-care procedures	0.6	21.1	78.1	0.2
7. Photographs	43.0	34.6	14.9	7.6
8. Diagnostic				
a. Caries susceptibility	81.2	8.8	5.9	4.1
b. Periodontal disease activity	70.5	12.3	13.8	3.3
c. Oral cancer screening	57.1	13.8	13.9	10.7
9. Study models:				
a. Impressions	26.6	54.5	5.9	13.0
b. Fabricate models	39.4	38.7	4.0	17.9

* Missing responses were less than 5.0% with the exception of item 7 (13.8%).

Figure 8.1: Frequency with Which Dental Hygienists Perform Selected Assessment Activities, Canada, 1987 and 2001 (%)



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Table 8.2: Dental Hygienists that *Always*¹ Perform A Set of Core Activities, by Region, Professional Development Activity, and Type of Workplace, Canada, 2001 (% “always”)

FACTORS (% “always do it”)	N	CORE ACTIVITY				
		Medical History	Client's Priorities	Soft Tissue Exam	Hard Tissue Exam	Self Care
1 Region						
Atlantic	214	74.2	84.3	71.8	66.7	73.1
Quebec	256	74.0	65.0	77.1	76.1	76.0
Ontario	291	97.2	96.5	84.9	80.8	78.5
Man/Sask.	203	81.3	90.5	63.1	56.5	77.2
Alberta	225	91.4	88.2	77.2	64.8	82.3
British Columbia	249	92.3	94.8	84.5	81.0	80.3
Canada (<i>weighted estimate</i>)		88.3	86.9	80.4	76.2	78.1
2 Professional Development Activity						
Low	470	79.1	75.2	71.1	66.8	71.8
Moderate	467	88.3	87.7	81.3	77.6	75.8
High	499	96.7	97.0	88.3	83.5	86.3
3 Type of Workplace						
General	1317	89.6	87.4	81.6	77.5	78.0
Specialty	119	73.2	80.5	68.2	60.9	78.4
4 Type of Specialty						
Orthodontics	47	34.1	56.1	27.9	25.0	81.4
Periodontics	50	100.0	92.0	87.5	73.5	68.1
5 Opportunities to Consult						
Yes	1262	-- ²	-- ²	82.6	-- ²	80.1
No	134			64.9		61.1

Statistical significance: p=.000 and contingency coefficient $\geq .151$.

¹Response choices were *Always*, *Occasionally*, *Rarely/Never* and *Done By Others*.

²While results may be statistically significant, differences were too small to be meaningful.

Table 8.3: Percent of Dental Hygienists that *Always*¹ Complete Selected Indices, by Region, Professional Development Activity, Type of Workplace and Opportunity to Consult, Canada, 2001 (% “always”)

FACTORS (% “always do it”)	N	TYPE OF INDEX			
		PSR	Deposits	Bleeding	Gingival
1 Region					
Atlantic	214	45.7	62.7	58.8	19.4
Quebec	256	40.8	75.0	67.2	44.6
Ontario	291	59.1	66.1	61.1	23.8
Man/Sask.	203	52.3	45.1	42.9	16.8
Alberta	225	61.1	59.6	50.9	19.2
British Columbia	249	64.4	59.0	52.9	20.1
Canada (<i>weighted estimate</i>)		54.4	65.5	59.5	27.5
2 Professional Development Activity					
Low	470	38.7	61.9	56.3	28.9
Moderate	467	53.4	65.4	58.8	25.1
High	499	70.2	68.9	63.4	28.5
3 Type of Workplace					
General	1317	56.1	65.9	60.1	27.6
Specialty	119	35.2	60.9	53.2	26.4
4 Type of Specialty					
Orthodontics	47	13.2	50.0	34.1	18.4
Periodontics	50	44.7	63.3	62.0	32.7
5 Opportunities to Consult					
Yes	1262	(2)	(2)	60.7	28.9
No	134			47.2	14.5

1. Alternate response choices were *occasionally, rarely/never* and *done by others*.
 2. While results may be statistically significant, differences were too small to be meaningful.
- Missing responses: less than 5.0%.

Statistical significance: p=.000 and contingency coefficient $\geq .151$, with exception of (2).

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Table 8.4: Dental Hygienists that *Occasionally*¹ Perform Activities Related to Study Models and other Assessment Procedures, by Region, Professional Development Activity and Type of Workplace, Canada, 2001 (%)

FACTORS (% "occasionally do it")	N	STUDY MODELS		OTHER	
		Take Impressions	Fabricate Models	Extra Oral Examination	Take Photographs
1 Region					
Atlantic	214	55.7	48.8	33.5	22.1
Quebec	256	34.0	55.3	41.0	48.5
Ontario	291	70.3	35.7	47.4	34.9
Man/Sask.	203	48.5	28.7	24.2	25.3
Alberta	225	42.4	22.2	32.9	34.2
British Columbia	249	49.4	27.5	40.6	32.4
Canada (weighted estimate)		54.5	38.7	41.7	34.6
2 Professional Development Activity					
Low	470	43.2	45.0	36.0	39.9
Moderate	467	54.9	39.6	41.9	31.1
High	499	64.7	32.0	47.2	34.0
3 Type of Workplace					
General	1317	55.4	40.4	42.6	35.1
Specialty	119	44.3	19.1	30.8	28.3
4 Type of Specialty					
Orthodontics	47	24.4	16.7	19.0	29.0
Periodontics	50	51.0	16.3	43.5	21.7

1. Alternate response choices were *always*, *rarely/never* and *done by others*.

Missing responses: less than 5.0%.

Statistical significance: p=.000 and contingency coefficient $\geq .151$.

Table 8.5: Dental Hygienists by Frequency with Which They Take Selected Radiographs, Canada, 2001 (% and n)

TYPE OF RADIOGRAPH	FREQUENCY				TOTAL	
	Every 6-Month Recall Appointment	At Least Once a Year	Depends on Client Needs	Other	%	n
1. Full Mouth Series	0.1	0.6	71.6	27.8	100.0	1318
2. Periapical	0.3	1.7	95.3	2.7	100.0	1400
3. Horizontal Bitewing	4.3	43.7	40.9	11.1	100.0	1354
4. Vertical Bitewing	1.2	10.4	60.3	28.1	100.0	1253
5. Panoramic	0.2	0.8	68.5	30.5	100.0	1325
6. Cephalometric	0.7	0.3	32.7	66.4	100.0	1166

Missing responses were less than 10.0% except for the vertical bitewing and cephalometric radiographs for which missing were 12.7% and 18.8% respectively.

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Table 8.6: Percent of Dental Hygienists That Take Selected Radiographs Based on a Client Needs¹, by Region, and Type of Workplace, Canada, 2001 (%)

FACTORS (% "depends on client needs")	N	TYPE OF RADIOGRAPH				
		Full Mouth	Periapical	Bitewing		Panoramic
				Horizontal	Vertical	
1 Region						
Atlantic	214	80.5	94.1	32.8	67.2	72.4
Quebec	256	64.3	95.2	23.3	50.2	70.9
Ontario	291	73.4	96.8	52.7	61.8	68.3
Man/Sask.	203	70.2	91.2	37.2	51.8	65.1
Alberta	225	61.1	88.8	24.9	56.4	63.8
British Columbia	249	80.9	96.8	49.0	75.7	67.4
Canada (weighted estimate)		71.6	95.3	50.9	60.3	68.5
2 Type of Workplace						
General	1317	72.1	96.2	40.2	61.8	69.7
Specialty	119	63.8	85.1	52.3	40.4	53.4
3 Type of Specialty						
Orthodontics	47	34.5	62.9	34.5	18.5	75.0
Periodontics	50	70.2	93.6	57.5	38.1	26.2

¹Response choices were *Every 6 Months, At Least Once A Year, Depends on Client Needs and Other.*

Table 8.7: Percent of Dental Hygienists that Report Decisions Regarding Radiographs to be Taken Are Made Jointly by the Dental Hygienist and the Dentist¹, by Region and Type of Workplace, Canada, 2001

FACTORS (% DH and DDS jointly)	N	TYPE OF RADIOGRAPH			
		Full Mouth	Periapical	Bitewing	Panoramic
1 Region					
Atlantic	214	39.4	60.6	34.3	37.5
Quebec	256	43.5	65.8	27.8	48.9
Ontario	291	32.4	56.1	46.0	35.4
Man/Sask.	203	37.1	54.9	20.8	37.9
Alberta	225	33.3	57.0	24.6	37.8
British Columbia	249	49.0	71.9	38.1	32.7
Total Canada (weighted estimate)		38.0	60.6	36.7	39.1
2 Type of Workplace					
General	1317	38.3	62.8	36.4	40.7
Specialty	119	34.1	32.3	40.7	18.4

¹Proportions for respondents that reported the decision was made jointly by the dental hygienist and the dentist are reported. Other choices were "dental hygienist independently, dentist independently and routine policy."

Table 8.8: Type of Decision-Maker Regarding Radiographs To Be Taken, By Professional Development Activity of the Dental Hygienist, Canada, 2001

TYPE OF RADIOGRAPH AND DECISION MAKER	National Weighted Estimate	PROFESSIONAL DEVELOPMENT		
		High	Moderate	Low
1 Bitewing				
a. Dental hygienist	26.1	21.2	26.8	30.6
b. Dentist	12.5	16.1	10.8	10.4
c. Both jointly	36.7	43.3	37.1	29.0
d. Routine policy	24.9	19.5	25.4	30.0
2 Panoramic				
a. Dental hygienist	6.8	4.7	7.6	7.9
b. Dentist	41.7	51.7	40.9	32.4
c. Both jointly	39.1	37.4	38.3	41.5
d. Routine policy	12.5	6.2	13.2	18.2
3 Cephalometric				
a. Dental hygienist	6.2	--	0.3	2.0
b. Dentist	25.1	85.9	79.4	64.7
c. Both jointly	50.9	10.8	13.7	20.7
d. Routine policy	17.7	3.4	6.5	12.5
N		470	467	499

Table 8.9: Frequency With Which Dental Hygienists Take Selected Radiographs, by Person That Typically Decides Whether the Radiograph Should Be Taken, Canada, 2001 (% and n)

FREQUENCY WITH WHICH RADIOGRAPH IS TAKEN	DECISION-MAKER				National Estimate
	Dental Hygienist	Dentist	Both Jointly	Routine Policy	
1. Full Mouth Series					
a. Every 6 months	(0) ²	(0)	(0)	(0)	0.1
b. At least once/year	(1)	(3)	(3)	(0)	0.6
c. As needed	65.9	68.4	86.1	63.5	71.6
d. Other	31.7	31.2	13.2	36.5	27.8
Total %	100.0	100.0	100.0	100.0	
N	(41)	(662)	(484)	(85)	
2. Horizontal Bitewing					
a. Every 6 months	4.7	5.2	2.1	7.4	4.3
b. At least once/year	56.7	25.2	29.4	62.3	43.7
c. As needed	31.2	50.3	60.2	19.0	40.9
d. Other	7.4	19.4	8.3	11.3	11.1
Total %	100.0	100.0	100.0	100.0	
N	(346)	(166)	(486)	(328)	
3. Panoramic					
a. Every 6 months	(0)	(0)	(0)	(0)	0.2
b. At least once/year	(0)	(3)	(4)	(3)	0.8
c. As needed	60.5	71.9	82.6	54.1	68.5
d. Other	39.5	27.5	16.6	43.9	30.5
N	(82)	(502)	(471)	(151)	
4. Cephalometric					
a. Every 6 months	(0)	(1)	(1)	(0)	0.7
b. At least once/year	(0)	(0)	(1)	(1)	0.3
c. As needed	85.7	39.1	71.3	25.8	32.7
d. Other	14.3	60.7	27.1	72.6	66.4
Total %	100.0	100.0	100.0	100.0	
N	(7)	(678)	(133)	(66)	

1. Missing responses: less than 5.0%.

2. Where cell percentages were less than 5.0%, cell counts are presented – that is, (n).

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Table 8.10: Dental Hygienists by Type of Decision-Maker Regarding the Oral Examination of a Client, Canada, 2001 (% and n)

DECISION REGARDING ORAL EXAMINATION	DECISION MAKER				Total	
	Dental Hygienist	Dentist	Both Jointly	Routine Policy	%	n
1. Who will perform it?	6.2	25.1	50.9	17.7	100.0	1383
2. What to include in it?	6.1	25.5	50.0	18.4	100.0	1382
3. Amount of time to schedule?	14.5	22.9	37.5	25.1	100.0	1380

Missing responses: less than 5.0%.

Table 8.11: Frequency With Which Dental Hygienists Perform Selected Types of Oral Examination, by Decision-Making Responsibility, Canada, 2001 (%)

DECISION AND RESPONSIBILITY	TYPE OF EXAMINATION AND FREQUENCY			
	Extra Oral		Soft Tissue	Hard Tissue
	Rarely/Never	Occasionally	Always	Always
1. Who will perform it?			(1)	
a. Dental Hygienist	28.9	49.4	72.6	73.8
b. Dentist	45.4	33.1	73.0	65.2
c. Both jointly	25.1	46.9	85.9	83.3
d. Routine Policy	30.5	38.5	77.1	72.7
2. What to Include In It?				
a. Dental Hygienist	30.4	51.9	82.1	86.4
b. Dentist	46.3	31.7	67.6	63.1
c. Both jointly	25.0	47.5	86.1	81.9
d. Routine Policy	28.0	39.9	81.3	74.4
3. Amount of Time To Schedule				
a. Dental Hygienist	22.8	47.7	86.7	87.8
b. Dentist	46.3	33.2	70.5	63.1
c. Both jointly	24.9	46.6	85.5	81.2
d. Routine Policy	33.0	41.1	79.7	74.7
National Total	%	31.9	42.0	80.4
	(n)	(433)	(567)	(1116)
				(1039)

Chi-square: p = .000; contingency coefficient $\geq .21$, except (1) which was .19.

Missing responses: less than 5.0%.

CHAPTER 9

DIAGNOSIS AND CARE PLAN

In this chapter, activities involved in compiling a dental hygiene diagnosis and care plan are described. Findings are based on responses to section F of the questionnaire.

The focus is the frequency with which the dental hygienist performs seven aspects of care planning - namely, analysis of assessment data, informing the client of findings, developing a plan, documentation, client involvement, consultation, and ongoing review of the plan. Relevant factors and decision-making responsibility with respect to the care plan also were examined.

9.1 OVERVIEW

Dental hygienists tend to perform always the activities associated with dental hygiene diagnosis and care planning. Twenty-three specific activities were examined; response choices were *rarely/never*, *occasionally*, *always* and *done by others*. (See Table 9.1.) Of the 23 activities, 11 reportedly were performed *always* by at least 7 out of 10 respondents; for 3, the proportion increased to 90.0% or more. Another 8 activities were performed *always* by a slightly smaller proportion - from approximately one-half to two-thirds of respondents. The remaining 4 activities typically were performed less frequently – fewer than one out of three respondents cited “*always*”.

The relatively few activities that are not performed *always* are most likely to be performed *occasionally* by the dental hygienist rather than *rarely/never* or *done by others*. Frequency tends to vary regionally and depending primarily on the type of dental hygiene workplace and the dental hygienist's level of professional development activity.

Regarding appointment planning, dental hygienists tend to perceive that they make relevant decisions on their own. Across the four types of decisions examined, at least one-half of respondents reported they made the decision independently and the remainder was most likely to indicate the decisions were made jointly with the dentist.

9.2 ANALYZE CLIENT ASSESSMENT DATA

Respondents indicated the frequency with which they undertook three aspects of analyzing assessment data – namely, determine significant findings, identify current and potential dental hygiene care needs and identify factors contributing to current and potential disease etiology. Findings overall are presented as item #1 in Table 9.1.

DIAGNOSIS AND CARE PLAN

9.2.1 Distribution

Each of the three activities was performed *always* by the majority of respondents. Almost 8 out of 10 always determine significant findings (77.2%), 9 out of 10 always identify current and potential dental hygiene care needs (91.1%), and 7 out of 10 always identify factors contributing to current and potential disease pathology (71.4%).

9.2.2 Variation

As indicated in Table 9.2, findings varied slightly by region. Across all regions and for each of the three activities examined, the majority of respondents cited “*always*”. However, proportions consistently were lowest among respondents for Quebec, followed by the Atlantic region, and were greatest for British Columbia. For two items – namely, significant findings and contributing factors, the “*always*” group ranged from a low of 61.4% and 50.0% respectively for Quebec to a high of 89.2% and 85.5% for British Columbia.

Regarding the identification of a client’s dental hygiene care needs, across all regions the proportion that reported they always performed this activity was greater compared to the other two activities and regional variation was less; proportions for “*always*” ranged from a low of 82.7% for Quebec to a high of 96.7% for British Columbia.

Frequency of analyzing assessment data varied also by type of workplace and the respondent’s level of professional development activity. (See Table 9.3.) Across all three analytic activities examined, respondents in a general versus a specialty dental office were more likely to perform them *always*. Similarly, respondents in periodontics were more likely to perform them *always* compared to those in orthodontics. Regarding the identification of client needs, differences involving the type of workplace and type of specialty tended to be smaller and less meaningful. Again across all three activities, respondents that scored high in terms of professional development were considerably more likely to perform the activity *always* compared, in particular, to the group that scored low.

9.3 INFORM CLIENT RE. FINDINGS, CONSEQUENCES AND CAUSES

Respondents provided information regarding the frequency with which they informed and/or counseled the client regarding their oral hygiene findings and the likely causes and consequences of their oral condition. Findings overall are presented as item #2 in Table 9.1, with regional distributions in Table 9.4.

Dental hygienists tend to always inform the client regarding their oral hygiene findings (96.3%). Nine out of ten always counsel the client regarding the short and long-term consequences of their oral condition (89.9%) as well as the likely causes (89.1%). There was minimal variation regionally or based on the other factors examined.

9.4 ESTABLISH PRIORITIES, OPTIONS, GOALS AND OBJECTIVES

Information was provided regarding the frequency with which the respondent, together with the client and where appropriate the client's advocate/parent, established and/or discussed six elements integral to the preparation of a client-centred treatment plan. Results overall are presented as item #3 in Table 9.1, with distributions for region in Table 9.4 (item #2) and for other factors in Table 9.5.

9.4.1 Distribution

Dental hygienists tend to always or occasionally perform the six elements examined. Relatively few respondents indicated they did them rarely or never or that the procedure was done-by-others. While proportions were greatest for the groups that performed them always, variation increased compared to results reported above regarding the assessment of "findings, consequences and causes" (Table 9.1).

Together with the client (or client advocate), 7 out of 10 respondents always establish priorities for treatment (71.8%) and another 16.5% do so occasionally. Two-thirds always discuss treatment options - e.g., risks, costs and benefits (65.4%), another 19.1% do so occasionally, and a further 13.4% indicated it was done-by-others. Somewhat fewer respondents - just over one-half - always establish short-term and long-term goals (55.1%) and the proportion that do so occasionally increased to 33.3%. Two-thirds always specify clinical interventions to achieve the goals (66.1%) and approximately one-quarter do so occasionally (24.3%). Three out of 5 respondents reported they always specify behavioural objectives for the client (60.4%) and another 30.0% do so occasionally. Regarding the preparation of a detailed appointment plan, in contrast to findings for the other five activities, the proportion for "always" decreased to 48.1%; another 27.7% indicated they prepared one occasionally and a further 14.4% cited it was done-by-others.

9.4.2 Variation

Regionally, as indicated in Table 9.4 (item #2), respondents for B.C. were the most likely to always perform the activities examined – two-thirds or more cited *always*. The exception was preparation of a detailed appointment plan - the "always" group was proportionately greatest for Alberta (52.6%), followed closely by Quebec and British Columbia at 51.0% and 49.0% respectively. Conversely, respondents for the Atlantic region were the least likely to perform 5 of the 6 activities always and they ranked third lowest for the remaining activity. Variance was greatest for two activities in particular. Regarding priorities for treatment, the group that established them always ranged from a high of 83.1% for B.C. to a low of 59.0% for the Atlantic region. Regarding clinical interventions, the group that specified them always ranged from a high of 79.7% for B.C. to a low of 54.8% for Quebec.

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Findings varied also by type of workplace. As indicated in Table 9.5, respondents employed in a general compared to a specialty dental office were far more likely to establish treatment priorities, discuss options, establish goals and specify clinical interventions; little difference was evident regarding behavioural objectives. The “specialty” group was more than twice as likely as the “general” group to report the activity was done-by-others; this pattern was evident with respect to treatment priorities (23.5% versus 9.3%), treatment options (28.6% versus 12.2%), goals (20.2% versus 7.5%), and interventions (20.4% versus 5.9%).

Regarding type of specialty, respondents in periodontics compared to those in orthodontics were considerably more likely to always undertake the planning activities. The proportion of respondents that “always” discussed treatment options increased as the number of hours/week the respondent worked in the workplace increased. It was interesting to note that respondents that indicated the dentist did not see “active treatment” dental hygiene clients at each appointment were considerably more likely to always specify clinical interventions compared to the “dentist sees” group; proportions were 80.0% and 65.5% respectively.

For 3 of the 5 activities examined – namely, goals, interventions and behavioural objectives, frequency was positively associated with the respondent’s level of professional development activity. As indicated in Table 9.5, depending on the activity, proportions for “always” ranged from two-thirds to almost 4 out of 5 respondents for the High-PD group compared to approximately one-half for the Low-PD group.

Respondents that reported dental assistants usually or always were available were proportionately more likely to always specify goals and clinical interventions, compared to the group that did not. On the other hand, the availability of a dental assistant was not associated with frequency of performing other elements of treatment planning – namely, priorities, options and objectives.

Perceived opportunities related to their work were associated with the frequency with which respondents performed some of the planning activities. Respondents that reported opportunities to consult regarding dental hygiene care were more likely to always establish priorities and goals and specify clinical interventions. Respondents that reported opportunities to use new technology in the workplace were more likely to always establish goals and specify clinical interventions. Similarly, opportunities to participate in decisions regarding the purchase of equipment supplies was positively associated with always establishing treatment priorities and discussing options; among those that lacked the opportunity, proportions for occasionally and done-by-others increased.

9.5 DOCUMENTATION

Respondents reported on the frequency with which they documented in writing the client's informed consent to proceed as well as elements of the treatment plan – namely, goals, objectives, and desired outcomes and the sequence of activities (i.e., the appointment plan). Findings overall are presented as item #4 in Table 9.1, with distributions by region in Table 9.4 and by other factors in Table 9.6.

It was surprising to find that relatively few dental hygienists document in writing the client's informed consent even though it is a legal requirement for most jurisdictions. It was equally surprising to note the relatively small portion of dental hygienists that record goals, etc. as well as the intended appointment schedule. This finding has health and safety implications – for example, 4 out of 5 respondents work in an office with other dental hygienists (84.7%) that may also be involved in implementing the plan.

Documentation of informed consent and planned goals, etc. occurs most frequently among dental hygienists in Ontario, followed by B.C. On the other hand, documentation of the appointment plan occurs most frequently among dental hygienists in Alberta, followed closely by B.C.

9.5.1 Informed Consent

Regarding informed consent, over 8 out of 10 respondents reportedly obtain a client's informed consent to proceed either always (70.0%) or occasionally (15.8%). However, 1 out of 3 respondents rarely or never record it in writing (36.5%) and the proportion declines for those that record it always or occasionally to 27.6% and 24.4% respectively. (See Table 9.1, items 2d and 4a.)

9.5.1.1 Obtain Consent

The group that always records informed consent was proportionately greater among respondents for Ontario (33.9%) and least for Man/Sask. (18.6%).

Respondents that worked in a general dental office were more than twice as likely to always obtain informed consent as to always record it; proportions were 71.2% and 28.1% respectively. However, respondents in specialty offices were even less likely to always obtain and always record informed consent - 54.8% and 22.0% respectively; the specialty group was somewhat more likely to report informed consent activities were done-by-others.

Regarding years of employment; respondents that had been employed between 6 and 10 years were somewhat more likely to obtain consent always (79.6%), compared in particular to those that had worked there more years (64.1%). There was little variation based on the other factors examined.

9.5.1.2 Document Consent

Greater variation was evident regarding the recording or documenting of informed consent. Although consistently low, proportions for “always” increased among the high-PD group. (See Table 9.6.) As noted previously, in a specialty dental office, documentation typically was done by someone other than the respondent. Respondents that worked at least 35 hours/week in the workplace tended to document informed consent always (33.2%) or occasionally (27.7%), whereas the groups that worked fewer hours were most likely to do so rarely or never.

Workplace characteristics were associated with the frequency of documenting informed consent. Although distributions regarding “always” remained consistently low, variation among the other response choices was of interest. One-half of respondents that indicated opportunities existed to consult with others reported they documented informed consent either always (28.3%) or occasionally (25.0%); in contrast, one-half of those that indicated such opportunities either did not exist or they did not know, reported they rarely or never documented it (49.6%). The pattern was almost identical regarding opportunities in the workplace to use new technology. Respondents that reported having a written job description were twice as likely to always document it compared to the “no job description” group; proportions were 39.9% and 20.9% respectively.

9.5.2 Goals, Objectives and Desired Outcomes

It would appear that dental hygienists are not inclined to routinely record planned goals, objectives and desired outcomes. Just over one-third of respondents reported they record them occasionally (36.0%) and another 25.2% do so always; almost one-third rarely or never record them (31.7%). Regionally, there was little variation; proportions for “always” ranged from a low of 16.2% for Man/Sask. to a high of 28.6% for Ontario and 27.8% for B.C.

There was little variation by type of workplace (see Table 9.6), with one exception. Respondents in a specialty dental office were more likely to report documentation was done-by-others and slightly less likely to cite rarely/never, compared to the “general office” group – 29.1% versus 5.1% and 24.5% versus 32.3% respectively. Among the group that had been employed for 6-to-10 years, 7 out of 10 cited occasionally (42.6%) or always (28.6%) whereas among the group that had been employed either more or fewer years, a similar portion cited either rarely/never or occasionally. Regarding hours worked per week, among the group that worked less than 20 hours, the greatest proportion cited rarely/never (41.4%), whereas across the groups that worked more hours, approximately the same proportion cited occasionally.

Regarding workplace policies, respondents that indicated opportunities existed to consult regarding client care were most likely to report they documented occasionally (36.7%) whereas those that indicated either no or “do not know” cited rarely/never (45.2%). The pattern was similar regarding opportunities to participate in decisions involving the purchase of equipment and supplies. Frequency also was associated with the availability of a dental assistant. The group that reported one was never available was most likely to report they rarely or never documented (40.1%) whereas the group that reported one was available rarely cited occasionally (38.7%) and those that reported one was always or usually available cited always (34.7%), followed closely by occasionally (33.8%).

Regarding professional development activity, among the Low-PD group, almost 2 out of 5 reported they rarely or never documented goals, etc. In contrast, among the Moderate- and High-PD groups, proportions were greatest for “occasionally” - 37.2% and 36.7% respectively. Proportions for “always” remained low and ranged from 19.4% to 33.0% (see Table 9.6).

9.5.3 Appointment Plan

In contrast to informed consent, approximately one-half of dental hygienists always prepare a detailed appointment plan (48.1%) and document that plan in writing (53.9%). (See Table 9.1.) There was little variation regionally regarding the preparation of the plan. However as indicated in Table 9.4, regarding documentation, the group that recorded it always decreased among respondents for the two eastern regions (44.9% and 45.8%) and increased for the two western regions (65.0% and 63.4%).

9.5.3.1 Preparation

Findings varied by type of workplace. One-half of respondents in a general dental office reportedly always prepare a detailed plan whereas the proportion declined to 28.3% among those in a specialty office. Among the latter group, there was a corresponding increase for those that reported it was either done by others (35.4% versus 12.7% for the “general” group) or was rarely or never done (22.2% versus 8.9% for “general”). There was little difference regardless of whether they worked in orthodontics or periodontics. Regardless of the number of hours worked per week in the principal clinical workplace, the greatest proportion of respondents cited “always”; proportions ranged from a low of 37.4% among those that worked less than 20 hours per week to 60.5% among those that worked 35 hours or more.

Respondents that reported opportunities existed to consult with others or to participate in decisions regarding the purchase of equipment and supplies were considerably more likely than the “no opportunity” groups to always prepare a detailed appointment plan; proportions were 49.9% and 50.0% versus 35.9% and 36.6% respectively. Similarly, the group that had a written job description was more likely to prepare a plan always compared to for the group that did not – 58.5% versus 43.3%. Among respondents that reported the dentist did not see their active treatment clients, 2 out of 3 indicated they always prepared a plan (66.5%). In contrast, among the group that reported the dentist did see those clients, the proportion decreased to 41.7% and there were corresponding increases for the other three response categories.

9.5.3.2 Documentation

Regarding the frequency with which respondents documented the appointment plan in writing, findings varied by type of workplace. Approximately 1 out of 2 respondents in a general dental office always record the appointment plan (55.9%) and another 22.2% do so occasionally. In contrast, only 30.6% of the “specialty office” group always record the plan and an even greater proportion indicated documentation is done-by-others (39.8%).

Findings varied based on a number of workplace policies and protocols. Respondents that reported a dental assistant was usually or always available to them were more likely to always document the plan – 63.8% compared to 53.6% overall and 45.6% for the group that never had a dental assistant. One-half of respondents that perceived they had opportunities to participate in decisions regarding the purchase of supplies and equipment reportedly always documented the appointment plan (56.2%) whereas those that did not participate were more likely to document occasionally (25.1%) or rarely or never (20.6%). Two-thirds of the group that had a written job description always documented the plan (64.9%) compared to one-half for the group that did not (49.0%); among the latter group, another 23.0% recorded it occasionally and 14.9% rarely or never did. Almost three-quarters of the group that reported the dentist never sees their active treatment clients at the same appointment always document the plan - 73.1% compared to 43.1% for the “dentist sees client” group; among the latter group, another 28.9% indicated they recorded it occasionally.

Length of employment and years of experience demonstrated virtually the same relationship. Similar to findings reported previously regarding other planning activities, the groups that had worked 6 to 10 years in the workplace and/or 6 to 10 years in dental hygiene were the most likely to always record the plan – 64.3% and 63.4% respectively compared to 53.9% overall. The proportions decreased to 47.6% and 45.4% respectively for the “16-years-and-over” group and there was a corresponding increase in the “done-by-others” portion.

Regarding level of professional development activity, findings were consistent with previous results. Respondents in the High-PD group were more likely to always record the plan – 62.1% compared to 46.7% for the Low-PD and 52.5% for the Moderate-PD groups.

9.5.3.3 Summary

In summary, dental hygienists vary in the frequency with which they record aspects of the dental hygiene care plan. The relationship of workplace-related factors including differences in type, decision-making opportunities and professional autonomy merit further investigation.

9.6 CLIENT INVOLVEMENT

Respondents were asked to indicate the frequency with which the adult client participates, on average, both in formulating the dental hygiene care plan and in the decision-making process. Results are presented in Tables 9.1 and 9.7.

It would appear that dental hygienists perceive that the client participates in the decision-making process more so than in formulating the actual dental hygiene care plan. Overall, 9 out of 10 respondents indicated that the adult client participates in formulating the plan either always (48.4%) or occasionally (39.6%). Regarding the decision-making process, the proportion that indicated participation occurred “always” increased to 7 out of 10 respondents (70.5%) and another 23.4% cited “occasionally”.

9.6.1 Formulation of the Plan

There was little variation based on the factors examined. Regionally, respondents for the Atlantic and Quebec regions were slightly more likely to cite “occasionally” – 47.6% and 42.1% respectively (see Table 9.7). Among the remaining four regions, “always” was the most prevalent response choice; proportions varied little, ranging from 46.3% for Alberta to 52.2% for Ontario.

Regarding level of professional development activity, respondents in the High-PD group were most likely to cite “always” (58.9%); in comparison, the Low-PD group tended to cite “occasionally” (45.2%). Regarding opportunities to consult with others regarding dental hygiene care, respondents that reported in the affirmative were more likely to report the client always participates (50.9%). In comparison, among those that cited either no or do not know, proportions for “always” declined to 32.0% with a corresponding increase among those that cited “occasionally” (45.6%).

9.6.2 Decision-Making Process

Regarding the client’s participation in decisions related to the care plan and based on the factors examined, variation was even less than was observed regarding participation in formulating the plan. As indicated in Table 9.7, there was limited regional variation.

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Respondents that scored high in terms of professional development were more likely to report that the client participated always – 77.3% versus 71.2% for the Moderate-PD and 62.5% for the Low-PD groups. Again, respondents that reported they had opportunities to consult with others regarding dental hygiene care were more likely to cite “always” compared to those that did not report such opportunities - 73.7% versus 50.0%.

9.7 FREQUENCY OF REVIEWING THE PLAN

Respondents were asked to indicate the frequency with which they reviewed the plan during treatment, modifying it as necessary. They also were to indicate the frequency with which they informed the client about this review process. Findings are presented in Tables 9.1 and 9.8.

It would appear that, while the majority of dental hygienists follow the steps involved in making a dental hygiene care plan, they are less inclined to periodically review and update that plan.

9.7.1 Reviewing the Plan

One-half of the respondents always review the plan during treatment, modifying it as needed (53.3%) and another 37.9% do so occasionally. Of those that always review the plan, 9 out of 10 always inform the client regarding the review and any subsequent modifications (89.2%). In contrast, of the group that occasionally reviews the plan, the proportion that always inform the client declined to 61.2%.

Variation was slight. In contrast to the other regions, respondents for Quebec tended to review the plan occasionally more so than always – 47.5% versus 36.4% (see Table 9.4). Among the remaining regions, the proportion that cited “always” was predominant and ranged from a low of 45.9% for the Atlantic region to a high of 64.5% for B.C.

Results varied little by type of workplace or type of specialty. Greater variance was evident with respect to workplace policies. Regarding the opportunity to consult regarding dental hygiene care; the “yes” group tended to review the plan always (55.6%) whereas the “no/don’t know” group was more likely to review the plan occasionally (48.3%), with another 35.0% citing “always”. Regarding the availability of a dental assistant, the group that reported one was usually or always available was most likely to review the plan always (61.8%); the proportion declined to 46.4% among the group that reported an assistant was never available. Again, the group that had been employed for 6-to-10 years appeared to be unique. They were more likely to always review the plan compared to the other groups; proportions were 62.2% versus 53.5% overall and 43.6% for the group that had been employed 11-to-15 years.

Regarding professional development, two-thirds of the High-PD group always reviewed the plan (66.8%) compared to 51.0% for the Moderate-PD and 41.0% for the Low-PD group; among the latter group, the response choice "occasionally" was predominant (44.4%).

9.7.2 Informing the Client

Overall, 7 out of 10 respondents always inform or counsel the client regarding their review and possible modification of the care plan (73.1%); another 19.7% do so occasionally. Regionally there was little variation.

As indicated in Table 9.9, findings did vary somewhat by characteristics of the workplace. Three-quarters of respondents in a general dental office always inform the client (74.6%). The proportion decreased to 54.7% among the specialty group and another 17.0% reported that others informed the client. Respondents that reported the opportunity to consult were considerably more likely to always inform the client —75.8% versus 51.6% for the group that lacked such opportunity. Variance was similar regarding the opportunity to participate in decisions regarding purchases; three-quarters of the "participating" group always informs the client (76.2%) and the proportion decreased to one-half for the "non-participating" group, with a corresponding increase among those that cited "occasionally" — 54.5% and 33.8% respectively.

Again, professional development activity was an indicator of the frequency with which dental hygienists inform the client regarding a review of their dental hygiene treatment plan. As expected, while across all PD groups, the response choice "always" was predominant, proportions were considerably greater among the High-PD group compared to those in the Moderate-PD and Low-PD groups – 82.5% versus 71.3% and 64.7% respectively.

9.8 CONSULT WITH OTHERS

Respondents provided information regarding the frequency with which they consulted and/or collaborated with the dentist, the periodontist, the client's physician and other health care professionals. Overall results are presented in Table 9.1 (item 7), with regional distributions in Table 9.4 (item 5).

As expected, dental hygienists tend to consult more frequently with dentists than they do with other health care professionals. Overall, 7 out of 10 respondents indicated they always consult and/or collaborate with the dentist (71.7%) and another 24.3% indicated they do so occasionally. In contrast, dental hygienists are more likely to consult with a periodontist and/or the client's physician only occasionally - 57.5% and 59.1% respectively. Fewer than 1 out of 5 respondents cited the "other" category.

There was little variance based on region (Table 9.4) or other factors examined with the exception of type of workplace (see Table 9.3).

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9.8.1 Dentist

Regarding frequency of consulting with a dentist, 7 out of 10 respondents that worked in a general dental office always consult with the dentist (73.2%). The proportion declined to 52.9% for the specialty group, another 25.0% reported they consulted occasionally and a further 21.2% indicated that others did the consultation.

Respondents that reported the dentist sees all their active treatment clients at the same appointment were more likely to cite always compared to the “dentist doesn’t see” group; proportions were 80.1% and 65.9% respectively.

9.8.2 Periodontist

Regarding frequency of consulting with a periodontist, the specialty group was almost six times more likely than the general group to report they always consulted - 44.7% versus 7.7%. Among the specialty group, another 25.5% consulted occasionally and a further 23.4% cited “done by others”. Among respondents that worked in a specialty office, the greatest portion consulted occasionally regardless of whether they worked in periodontics or another type of specialty – 48.4% and 45.6% respectively. However, the periodontics group were next most likely to report they consulted always (36.8%) whereas the “other specialty” group reported that others consulted with the periodontist (25.4%).

9.8.3 Client's Physician

The frequency with which dental hygienists consult with the client's physician is similar to the pattern involving periodontists – that is, they tend to consult occasionally. Overall, 3 out of 5 respondents cited “occasionally” (59.1%), another 22.5% indicated rarely or never, and a further 16.9% reported it was done by others. Respondents in a general office tended to consult with the physician occasionally (60.3%). In contrast, while “occasionally” was predominant among the specialty group (42.3%), another 36.1% indicated others did the consulting and a further 17.5% reported they rarely or never did it. Respondents that ranked high in terms of professional development (i.e., High-PD) were more likely to consult the physician occasionally and less likely to report they rarely or never did, compared to the Moderate-PD and Low-PD groups; proportions for “occasionally” were 69.0%, 57.8% and 49.3% respectively.

9.8.4 Other Health Care Professionals

Among the relatively few respondents that indicated they consulted and/or collaborated with other types of health care professionals (17.8%), those that worked in a general dental office tended to consult occasionally (45.3%) whereas those in a specialty office were most likely to cite “done by others” (39.1%).

9.9 RESPONSIBILITY FOR PLANNING APPOINTMENTS

The study briefly examined decision-making responsibility with respect to planning dental hygiene appointments. Four aspects were considered:

1. number of appointments to schedule
2. services to provide at each appointment
3. length of each appointment, and
4. interval of time between appointments.

Responses choices were *dental hygienist independently*, *dentist independently*, *dental hygienist and dentist jointly*, and *routine – standard policy*. Overall results are presented in Table 9.10, with regional distributions in Table 9.11 and influencing factors in Table 9.12 (a and b).

9.9.1 Distribution

Overall, dental hygienists tend to perceive that they make appointment-related decisions independent of the dentist, and a somewhat smaller portion perceives they make them jointly. Relatively few think that the decisions are made by the dentist independently or are based on routine policy. As indicated in Table 9.10, the vast majority of respondents (9 out of 10) reported that they made the four types of decisions either independently or jointly with the dentist; across the four types, there was little variation - proportions ranged from 51.9% to 62.4% and from 24.4% to 39.5% respectively.

9.9.2 Variation

Findings varied regionally (see Table 9.11 and Figure 9.1). For all four decisions, at least 7 out of 10 respondents for the three western regions reported that they made the decisions independently. In contrast, respondents for Quebec tended to think they made the decisions jointly with the dentist, with one exception – they were slightly more inclined to think they decided independently the length of time to schedule for each appointment. Regarding the Atlantic and Ontario regions, proportions tended to be more evenly distributed between the two predominant response categories, with the dental hygienist as sole decision-maker being slightly more prevalent.

Distributions varied also based on a number of factors examined (see Table 9.12a,b). There were several interesting observations. First, regarding the workplace and as illustrated in Figure 9.2, respondents in a specialty dental office were far less likely than those in a general office to make decisions regarding appointment planning on their own; decisions typically are made either jointly or by the dentist. This relationship prevailed regardless of the other factors involved.¹

¹ The use of 3-way cross-tabulations disclosed that this relationship prevailed regardless of the other factors involved.

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Second and not unexpectedly, respondents that had greater autonomy in one area of practice tended to have greater autonomy in other areas also. For example, where the dentist typically sees all dental hygiene active treatment clients (i.e., AT) during their appointment, decision-making is almost equally distributed between the dentist and dental hygienist jointly or the dental hygienist independently (Table 9.12a,b). The exception was the decision regarding appointment length - it typically is made by the dental hygienist. However, appointment-related decisions are made by the dental hygienist in workplaces where the dentist does not see all AT clients – unless it is a specialty office. The pattern was similar regarding participation in other types of decisions including, for example, the purchase of equipment and supplies.

Third, respondents that had indicated the amount of time scheduled for an adult client was adequate (see Chapter 7) were more likely to make all appointment-related decisions themselves. On the other hand, the group that preferred more time was more likely to report that decisions, in particular regarding the number of and internal between appointments, were made jointly and the proportion that indicated the dentist made the decisions increased slightly.

Fourth, graduates of university-based dental hygiene programs were more likely to perceive they make appointment-related decisions independently, compared to graduates of college-based programs. Fifth, respondents that reported a high level of professional development activity (i.e., High-PD) tended to make the decisions themselves. In comparison, respondents that were less active made the decisions jointly or, if they were relatively inactive (i.e., Low-PD) and worked in a specialty office, the dentist was more likely to make the decisions.

A more complete analysis of decision-making as it relates to appointment planning and service delivery is beyond the scope of this study. The topic merits further investigation.

9.10 SUMMARY

In summary, dental hygienists tend to always, more so than occasionally or never, perform a broad range of activities associated with dental hygiene diagnosis and care planning. Of the 23 activities examined, 11 are performed *always* by at least 7 out of 10 dental hygienists; of those, 3 are performed always by 9 out of 10. Another 8 activities are performed always by at least one-half, with the remaining 4 activities being performed always by less than 1 out of 3. The relatively few activities that are not performed always are most likely to be performed occasionally by the dental hygienist rather than rarely/never or done by others.

The vast majority of dental hygienists always analyze assessment data; 8 out of 10 always determine significant findings (77.2%), 9 out of 10 always identify current and potential dental hygiene care needs (91.1%), and 7 out of 10 always identify factors contributing to current and potential disease pathology (71.4%).

Dental hygienists tend to always inform the client regarding their oral hygiene findings (96.3%). Nine out of ten always counsel the client regarding the short and long-term consequences of their oral condition (89.9%) as well as the likely causes (89.1%). There was minimal variation regionally or based on the other factors examined.

The majority of dental hygienists always establish, together with the client (or their advocate), treatment priorities (71.8%), options (65.4%), short- and long-term goals (55.1%), behavioural objectives (60.4%) and clinical interventions (66.1%). Relatively few rarely or never do the procedures nor do others do them.

Regarding documentation, it was surprising to find that relatively few dental hygienists always (27.6%) or occasionally (24.4%) document in writing the client's informed consent even though it is a legal requirement for many jurisdictions. It was equally surprising that relatively few dental hygienists record elements of the treatment plan and the appointment schedule always (25.2% and 53.9% respectively) - especially since 4 out of 5 work in an office with other dental hygienists (84.7%) who also may have to implement the plan. Documentation of informed consent and elements of the plan occurs most frequently among dental hygienists in Ontario, followed by B.C. On the other hand, documentation of the appointment plan occurs most frequently among dental hygienists in Alberta, followed closely by B.C.

Overall, 8 out of 10 dental hygienists reportedly either always (70.0%) or occasionally (15.8%) obtain a client's informed consent to proceed. However, 36.5% rarely or never record it in writing and another 24.4% do so occasionally; a further 27.6% record it always. Dental hygienists in Ontario are most likely to record it always whereas those in Man/Sask. are least likely - 33.9% and 18.6% respectively.

In contrast to informed consent, approximately one-half of dental hygienists reportedly prepare a detailed appointment plan always (48.1%) and/or document that plan in writing always (53.9%). However, there is a high probability that the documentation does not include planned goals, objectives and desired outcomes - just over one-third (36.0%) do so occasionally and another 25.2% always; 31.7% rarely or never record them.

Dental hygienists typically involve clients in the decision-making process always (70.5%). They are less likely to do so when formulating the dental hygiene care plan (48.4%).

The majority of dental hygienists follow the steps involved in making a dental hygiene care plan. However, they are less inclined to periodically review and update that plan and even less inclined to inform the client about the review.

As expected, dental hygienists tend to consult more frequently with dentists than they do with other health care professionals. Overall, 7 out of 10 always consult and/or collaborate with the dentist (71.7%) and another 24.3% consult occasionally. In contrast, one-half consult with a periodontist and/or the client's physician occasionally.

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Regarding appointment-related decisions, at least 1 out of 2 dental hygienists perceive they decide independent of the dentist, although a somewhat smaller portion reports that decisions are made jointly. Relatively few think that the decisions are made by the dentist independently or are based on routine policy.

Major factors associated with dental hygiene diagnosis and care planning include region, type of workplace and professional development activity of the dental hygienist. Regarding region, many of the activities examined are more likely to be performed by dental hygienists in British Columbia and less likely in Quebec and the Atlantic region. Dental hygienists working in a general dental office tend to perform the activities more frequently whereas the “specialty” group is more likely to report the activity is done-by-others. Frequency is associated also with the range and frequency of professional development activity undertaken by dental hygienists (see Chapter 5) – those that score high are considerably more likely to perform the activities always compared, in particular, to those that score low.

For some procedures, frequency is associated with workplace policies and procedures such as availability of a dental assistant and decision-making responsibilities. For example, where the dentist does not see all “active treatment” clients during their dental hygiene appointment, those dental hygienists are considerably more likely to always specify clinical interventions compared to the “dentist sees AT” group. Similarly, dental hygienists that have opportunities to consult regarding dental hygiene care, to participate in decisions regarding the purchase of equipment and supplies, or to use new technology are more likely to always establish priorities and goals, specify clinical interventions and perform other assessment activities. On the other hand, among dental hygienists that apparently lack those same opportunities, assessment activities tend to be performed occasionally or are done by others. Regarding hours worked, dental hygienists that work 35 hours or more per week are more likely to always perform a procedure. Regarding years of employment, dental hygienists that have been in the workplace for 6 to 10 years tend to perform the procedures more frequently than do those who have worked either less time or been employed longer. The pattern was similar regarding years of experience.

There is little variability based on type of school (university- or college-based program) or year of graduation.

The relationship to dental hygiene care planning of both dental hygienists’ professional development behaviour and workplace policies merits further investigation. In addition, a more complete analysis of decision-making as it relates to appointment planning and service delivery is warranted. Both are beyond the scope of this study.

Table 9.1: Frequency With Which Dental Hygienists Perform Selected Diagnostic and Planning Activities, Canada, 2001 (n=1438)

ACTIVITY	FREQUENCY			
	Rarely/Never	Occasionally	Always	Done by Others
1. Analyze assessment data				
a. determine significant findings	3.3	16.7	77.2	2.9
b. identify dental hygiene needs	1.5	6.8	91.1	0.7
c. identify factors	5.0	20.1	71.4	3.4
2. Inform client regarding:				
a. oral hygiene findings	0.0	3.4	96.3	0.3
b. consequences	--	9.6	89.9	0.5
c. likely causes	0.2	9.5	89.1	1.2
d. obtain informed consent	7.2	15.8	70.0	7.0
3. Establish/Specify:				
a. treatment priorities	1.3	16.5	71.8	10.4
b. treatment options	2.0	19.1	65.4	13.4
c. goals	3.1	33.3	55.1	8.5
d. interventions	2.7	24.3	66.1	6.9
e. behavioural objectives	3.9	30.0	60.4	5.6
f. appointment plan	9.8	27.7	48.1	14.4
4. Document in writing:				
a. client's informed consent	36.5	24.4	27.6	11.5
b. goals and objectives	31.7	36.0	25.2	7.0
c. appointment plan	12.7	21.5	53.9	11.9
5. Client participates in:				
a. formulation of care plan	9.9	39.6	48.4	2.1
b. decision-making process	4.3	23.4	70.5	1.8
6. Review plan and modify as needed	4.5	37.9	53.3	4.3
7. Consult/collaborate with:				
a. dentist	1.6	24.3	71.7	2.3
b. periodontist	18.3	57.5	10.2	14.0
c. client's physician	22.5	59.1	1.5	16.9

* Missing responses: less than 5.0%

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Table 9.2: Dental Hygienists that *Always*¹ Analyze Selected Client Assessment Information, by Region, Canada, 2001 (%)

TYPE OF ACTIVITY (% "always")	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
How frequently do you analyze client assessment data to:							
1. Determine significant findings	72.9	61.4	81.1	79.8	84.7	89.2	77.2
2. Identify current and potential dental hygiene care needs	87.8	82.7	93.5	92.0	95.0	96.7	91.1
3. Identify factors contributing to current and potential disease etiology	71.2	50.0	77.3	72.4	80.6	85.5	71.4
Total	214	256	291	203	225	249	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 9.3: Percent of Dental Hygienists that *Always or Occasionally*¹ Perform Selected Diagnostic and Planning Activities, by Type of Workplace and Professional Development Activity, Canada, 2001 (%)

FACTORS (% "always or occasionally do it")	N	ANALYZE DATA			CONSULT	
		Determine Findings	Identify Needs	Identify Factors	Dentist	Periodontist
1. Total						
% Always		77.2	91.1	71.4	71.7	10.2
% Occasionally		16.7	6.8	20.1	24.3	57.5
2. Type of Workplace						
General	1317	78.4	91.9	72.4	73.2	7.7
Specialty	119	61.2	79.4	59.8	52.9	44.7
3. Type of Specialty						
Orthodontics	47	56.2	78.6	49.3	71.9	10.4
Periodontics	50	72.6	87.3	68.6	65.4	36.8
4. Professional Development Activity						
Low	470	65.1	84.2	57.8	n.s.	7.0
Moderate	467	79.2	93.3	72.0		11.5
High	499	86.5	95.1	83.7		11.9

Missing responses: 5.6% or less.

Statistical significance: p=.000 and contingency coefficient $\geq .151$ unless indicated.

¹Response choices were *Always*, *Occasionally*, *Rarely/Never* and *Done By Others*.

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Table 9.4: Percent of Dental Hygienists that “Always”¹ Perform Selected Activities to Prepare a Dental Hygiene Care Plan, by Region, Canada, 2001

TYPE OF ACTIVITY (% “always”)	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
1. Inform/counsel the client regarding:							
a. oral hygiene findings	94.3	95.6	96.1	97.0	97.2	98.0	96.3
b. short and long term consequences	88.6	90.1	89.3	90.0	89.3	92.1	89.9
c. likely causes of oral condition	82.8	88.8	88.2	87.9	92.6	93.0	89.1
d. informed consent	57.6	57.0	77.5	71.4	65.6	75.8	70.0
2. Establish/discuss/specify/prepare, together with the client:							
a. priorities for treatment	59.0	71.7	70.5	69.6	70.1	83.1	71.8
b. treatment options	55.2	70.7	61.3	58.9	67.5	74.4	65.4
c. short and long term goals	49.3	55.8	53.6	46.4	53.3	65.4	55.1
d. clinical interventions	58.5	54.8	69.6	56.9	70.7	79.7	66.1
e. behavioural objectives	51.2	51.4	62.4	57.9	67.9	70.8	60.4
f. detailed appointment plan	39.8	51.0	46.3	48.5	52.6	49.0	48.1
3. Document in writing:							
a. client’s informed consent	23.5	22.0	33.9	18.6	23.6	25.7	27.6
b. goals, objectives and desired outcomes	22.0	22.4	28.6	16.2	19.8	27.8	25.2
c. appointment plan	44.9	45.8	54.6	53.0	65.0	63.4	53.9
4. Review plan and revise as needed							
	45.9	36.4	59.5	52.0	57.3	54.5	53.3
5. Consult and/or collaborate with:							
a. dentist	78.5	78.4	73.2	65.5	58.2	63.0	71.7
b. periodontist	7.0	6.7	15.6	6.1	6.4	5.0	10.2
Total	214	256	291	203	225	249	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. Response choices were Always, Occasionally, Rarely/Never and Done by Others.

Table 9.5: Percent of Dental Hygienists that Always¹ Perform Selected Care Planning Activities, by Type of Workplace and Professional Development Activity, Canada, 2001 (% “always”)

FACTORS (% “always do it”)	N	ESTABLISH/SPECIFY TREATMENT				
		Priorities	Options	Goals	Interventions	Objectives
1. Type of Workplace						
General	1317	73.3	68.1	56.6	67.4	-- ²
Specialty	119	52.9	33.3	36.5	49.5	
2. Type of Specialty						
Orthodontics	47	38.9	26.3	21.1	35.1	56.7
Periodontics	50	61.7	42.6	55.3	53.2	67.3
3. Professional Development Activity						
Low	470	-- ²	-- ²	49.2	55.6	51.6
Moderate	467			49.2	63.7	57.4
High	499			66.2	78.4	71.6
4. Dental Assistant Available						
Always/usually	331	-- ²	-- ²	64.6	75.8	-- ²
Rarely	673			53.3	65.4	
Never	421			50.5	59.8	
5. Opportunities to Consult						
Yes	1262	73.6	-- ²	57.2	67.5	-- ²
No	134	58.1		38.0	50.8	

Missing responses: 5.6% or less unless otherwise noted.

Statistical significance: p=.000 and contingency coefficient $\geq .151$ unless indicated (*); then $p<.05$.

¹Response choices were *Always*, *Occasionally*, *Rarely/Never* and *Done By Others*.

²While results may be statistically significant, differences were too small to be meaningful.

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Table 9.6: Percent of Dental Hygienists that *Always*¹ Document Selected Aspects of the Care Plan, by Type of Workplace, Professional Development Activity, Hours Worked and Opportunities to Consult, Canada, 2001 (%)

FACTORS (% "always or occasionally")	N	DOCUMENTATION ³			
		APPOINTMENT PLAN		Client's Informed Consent	Goals and Objectives
		Specify	Record		
1. Type of Workplace					
General	1317	49.7	55.9	28.1	25.9
Specialty	119	28.3	30.6	22.0	17.3
2. Type of Specialty					
Orthodontics	47	51.4	-- ²	-- ²	-- ²
Periodontics	50	55.8			
3. Professional Development Activity					
Low	470	-- ²	46.7	21.1	19.4
Moderate	467		52.5	23.8	22.9
High	499		62.1	37.5	33.0
4. Hours Worked/Week					
Less than 20	238	37.4	-- ²	-- ²	23.8
20 to 34	783	46.5			22.7
35 and more	332	60.5			31.6
5. Opportunities to Consult					
Yes	1262	49.9	-- ²	-- ²	-- ²
No	134	35.9			

Missing responses: 5.0% or less unless otherwise noted.

Statistical significance: p=.000 and contingency coefficient $\geq .151$ unless indicated (*); then p<.05.

¹Response choices were *Always*, *Occasionally*, *Rarely/Never* and *Done By Others*.

²While results may be statistically significant, differences were too small to be meaningful.

³Documentation refers to a written record.

Table 9.7: Percent of Dental Hygienists that Report the Adult Client Participates Always¹ in the Preparation of Their Dental Care Plan, by Region, Canada, 2001

TYPE OF ACTIVITY (% "always")	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
How frequently, on average, does the adult client participate in the:							
1. Formulation of the care plan	43.3	40.9	52.2	46.3	50.0	51.9	48.4
2. Decision-making process	65.7	67.9	72.6	63.7	71.5	72.3	70.5
Total	214	256	291	203	225	249	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. Response choices were Always, Occasionally, Rarely/Never and Done By Others.

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Table 9.8: Dental Hygienists, by Frequency With Which Adult Clients Participate in Planning Their Dental Hygiene Care and by Region and Other Factors, Canada, 2001 (n=1438)

ADULT CLIENTS PARTICIPATE IN:	FREQUENCY		
	Rarely / Never/ Done by Others	Occasionally	Always
A. Formulation of the Care Plan			
1. Total	13.0	39.6	48.4
2. Region			
Atlantic	9.0	47.6	43.3
Quebec	17.0	42.1	40.9
Ontario	10.7	37.1	52.2
Man/Sask.	13.9	39.8	46.3
Alberta	11.1	38.9	50.0
B.C.	8.2	39.9	51.9
3. Professional Development			
Low	15.3	45.2	39.4
Moderate	12.6	41.2	46.2
High	8.3	32.8	58.9
4. Opportunity to Consult			
Yes	10.7	38.4	50.9
No / Don't Know	22.4	45.6	32.0
B. Decision-Making Process			
1. Total	6.1	23.4	70.5
2. Region			
Atlantic	3.3	31.0	65.7
Quebec	6.1	25.9	67.9
Ontario	7.4	20.0	72.6
Man/Sask.	8.5	27.9	63.7
Alberta	4.7	23.8	71.5
B.C.	2.9	24.8	72.3
3. Professional Development			
Low	6.5	31.0	62.5
Moderate	5.9	22.9	71.2
High	5.9	16.8	77.3
4. Opportunity to Consult			
Yes	5.0	21.3	73.7
No / Don't Know	11.3	38.7	50.0

Missing responses were 5.0% or less.

Chi-square: p=.000 and contingency coefficient $\geq .151$ unless indicated.

Table 9.9: Dental Hygienists That (1) Always¹ Review the Care Plan, Modifying It As Needed, and (2) Always¹ Inform the Client about the Review, by Selected Factors, Canada, 2001 (n=1438)

FACTORS (% "always" review and inform)	DENTAL HYGIENE CARE PLAN	
	Review/Modify	Inform Client
1. Region		
Atlantic	45.9	71.1
Quebec	36.4	56.7
Ontario	59.5	76.9
Man/Sask.	52.0	76.0
Alberta	57.3	82.7
B.C.	64.5	84.5
Canada	53.3	73.1
2. Professional Development		
Low	41.0	64.7
Moderate	51.0	71.3
High	66.8	82.5
3. Type of Workplace		
General	54.0	74.6
Specialty	45.0	54.7
4. Opportunity to Consult		
Yes	55.6	75.8
No	35.0	51.6
5. Opportunity to Participate In \$\$ Decisions		
Yes	54.1	76.2
No	45.8	54.5
6. Years Employed in Workplace		
1 to 5 years	54.9	72.3
6 to 10	62.2	83.4
11 to 15	43.6	65.7
16 years and more	51.3	70.8

Missing responses were 5.0% or less.

Chi-square: p=.000 and contingency coefficient $\geq .151$ unless indicated.

1. Response choices were Always, Occasionally, Rarely/Never and Done By Others.

DIAGNOSIS AND CARE PLAN

Table 9.10: Dental Hygienists by Decision-Maker For Planning Dental Hygiene Appointments, Canada, 2001

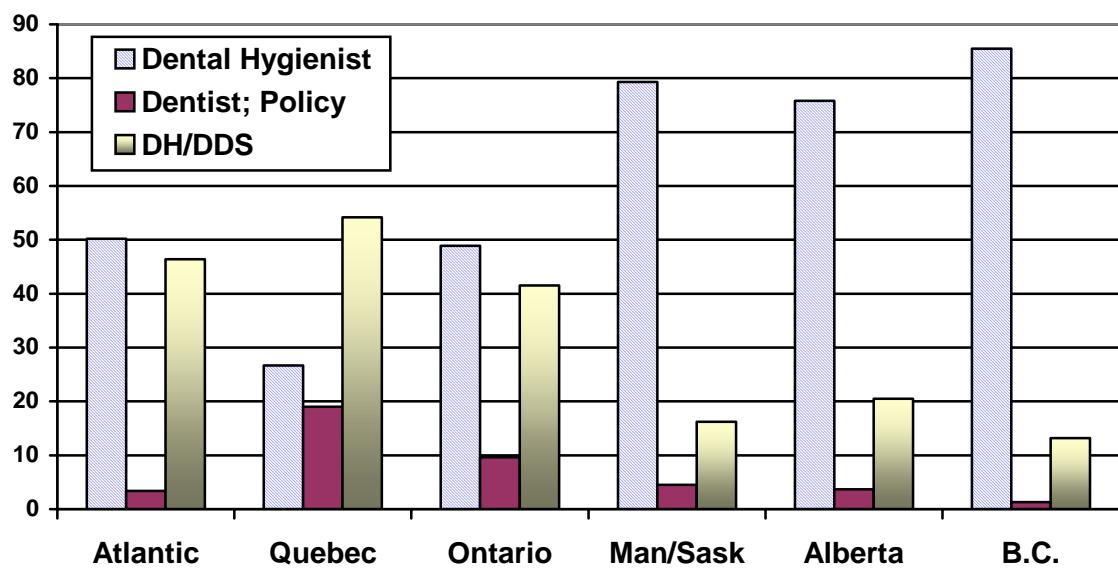
DECISION RE. APPOINTMENT PLAN	DECISION MAKER				Total
	Dental Hygienist	Dentist	Both Jointly	Routine Policy	
1. Number to schedule	51.9	6.3	39.5	2.2	100.0
2. Services to provide	52.2	7.0	38.1	2.7	100.0
3. Length for each	62.4	6.5	24.4	6.8	100.0
4. Interval between	53.0	7.6	33.4	6.1	100.0

Table 9.11: Dental Hygienists by Decision-Maker¹ for Planning Dental Hygiene Appointments and by Region, Canada, 2001 (% DH and DH/DDS)

DECISION (% DH and DH/DDS)	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
1. Number of appointments to schedule							
Dental hygienist	51.2	29.8	47.3	78.4	74.1	82.9	51.9
DH and DDS jointly	44.0	56.0	43.1	18.1	21.8	15.5	39.5
2. Services to provide at each appointment							
Dental hygienist	50.2	26.7	48.9	79.3	75.8	85.5	52.2
DH and DDS jointly	46.4	54.2	41.5	16.2	20.5	13.2	38.1
3. Length of each appointment							
Dental hygienist	70.2	46.8	58.5	76.1	77.5	85.4	62.4
DH and DDS jointly	24.9	33.1	27.8	11.7	14.2	8.5	24.4
4. Time interval between appointments							
Dental hygienist	53.7	30.8	49.3	74.1	74.2	83.7	53.0
DH and DDS jointly	36.1	47.0	36.1	17.8	20.3	13.1	33.4
Total	214	256	291	203	225	249	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

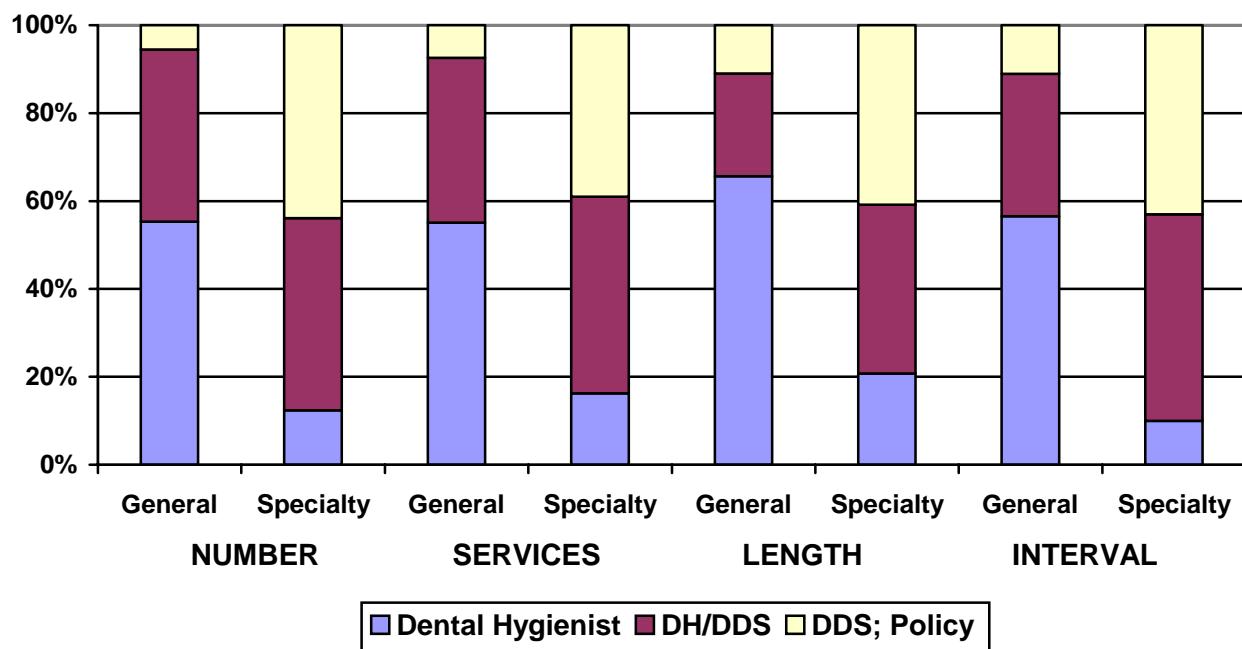
1. Proportions for respondents reporting "dental hygienist independently" and "dental hygienist and dentist jointly" are presented. The other two categories were "dentist independently" and "routine - standard policy".

Figure 9.1: Dental Hygienists, by Responsibility for Deciding the Services to Provide at Each Dental Hygiene Appointment and by Region, Canada 2001



DIAGNOSIS AND CARE PLAN

Figure 9.2: Dental Hygienists, by Decision-Making Responsibility for Planning Dental Hygiene Appointments and by Type of Workplace, Canada, 2001



**Table 9.12a: Decision-Making Responsibility¹ for Planning Dental Hygiene Appointments - 1. Number and 2. Services, by Selected Factors, Canada, 2001
(% DH and DH/DDS)**

FACTORS	N	DECISION RE APPOINTMENT			
		1. Number to Schedule		2. Services to Provide	
		Dental Hygienist	DH/DDS	Dental Hygienist	DH/DDS
1. Type of Workplace					
General	1317	55.2	39.1	55.1	37.5
Specialty	119	12.5	44.2	16.2	44.8
2. Dentist Sees DH Clients²					
Yes	225	44.7	46.1	41.3	42.7
No	208	68.1	27.9	70.0	27.6
3. Participates in \$\$ Decisions					
Yes	1163	53.9	40.0	54.9	37.4
No	202	42.6	37.3	38.1	43.6
4. Adequate for Adult Client					
Yes	475	58.2	36.3	57.1	33.0
Need More Time	289	40.4	47.3	44.8	33.6
5. Professional Development					
Low	460	42.9	45.5	42.8	42.2
Moderate	452	54.5	38.1	53.2	39.3
High	487	58.0	35.0	60.0	33.0
6. School of Graduation (Canada)					
University	289	68.2	26.9	67.8	28.6
College	1045	46.8	43.6	47.1	40.7

Chi-square: p = .000

¹Response choices were *dental hygienist independently*, *dentist independently*, *dental hygienist and dentist jointly* (both), and *routine-standard policy*. Findings for the two predominant choices only are presented.

²Based on item that asked whether or not the dentist typically saw all dental hygiene active treatment clients at the same appointment.

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**Table 9.12b: Decision-Making Responsibility¹ for Planning Dental Hygiene Appointments- 3. Length and 4. Intervals, by Selected Factors, Canada, 2001
(% DH and DH/DDS)**

FACTORS	N	DECISION RE APPOINTMENT			
		3. Length of Appointment		4. Interval Between	
		Dental Hygienist	DH/DDS	Dental Hygienist	DH/DDS
1. Type of Workplace					
General	1317	65.6	23.3	56.4	32.3
Specialty	119	20.8	38.6	10.0	47.0
2. Dentist Sees DH Clients²					
Yes	225	56.6	27.4	45.2	37.8
No	208	74.9	15.9	66.8	26.1
3. Participates in \$\$ Decisions					
Yes	1163	64.8	23.7	55.0	33.6
No	202	49.8	29.1	43.0	33.0
4. Adequate for Adult Client					
Yes	475	67.8	22.1	55.6	38.1
Need More Time	289	46.7	32.1	41.5	43.9
5. Professional Development					
Low	460	56.3	25.0	43.6	38.8
Moderate	452	64.6	24.8	54.1	33.2
High	487	65.9	23.4	61.0	28.5
6. School of Graduation (Canada)					
University	289	75.6	15.5	69.2	24.0
College	1045	57.4	27.4	47.1	36.7

Chi-square: p = .000

¹Response choices were *dental hygienist independently*, *dentist independently*, *dental hygienist and dentist jointly* (DH/DDS), and *routine-standard policy*. Findings for the two predominant choices only are presented.

²Based on item that asked whether or not the dentist typically saw all dental hygiene active treatment clients at the same appointment.

CHAPTER 10

THERAPEUTIC SERVICES

In this chapter, selected dental hygiene therapeutic services are described – that is, clinical treatment activities performed by the dental hygienist. Procedures examined include debridement, topical application of preventive and therapeutic agents, and selected restorative and orthodontic procedures. The focus is the circumstances under which the dental hygienist performs the procedures. Three response choices approximated frequency – namely, *routinely for all*, *selectively as indicated* and *never*; the fourth choice was *not applicable*. It should be noted that practice standards and guidelines vary depending on the procedure – that is, one would not expect to see all procedures used routinely.

The use of pain control measures for dental hygiene clients also was examined. Aspects considered were circumstances for their use, decisions regarding selection, and procedures performed by the dental hygienist.

Findings apply to the principal clinical workplace as designated by the respondent. Information was derived from responses to Section G of the questionnaire. With few exceptions, missing responses were less than 3.0%.

10.1 THERAPEUTIC PROCEDURES - OVERVIEW

Regarding the set of 19 therapeutic procedures examined, the majority of dental hygienists perform 8 selectively as indicated, another 7 never, and a further 4 routinely for all clients; almost none consider the procedures not applicable. Procedures considered “core” to dental hygiene practice would be those performed either selectively or routinely. The “selective” group includes root planing, application of fluoride for root sensitivity, tooth whitening, sub gingival periodontal irrigation, topical application of sealants and fluorides, desensitization, and implant debridement. The “routine” group includes supra and sub gingival debridement (i.e., scaling), tooth polishing, and topical application of fluoride for children. It was interesting to note that, for two of the four “routinely performed” procedures – namely, sub gingival debridement and tooth polishing, practice guidelines¹ recommend they be performed “selectively as indicated”.

Procedures that typically are never done include supervised brush-on fluorides, finishing restorations, fabricating and fitting mouth protectors, placing temporary and permanent restorations, orthodontic bonding, and application of anti-cariogenic and/or anti-microbial agents.

¹ For example, Health and Welfare Canada, *Preventive Dental Services*, 2nd Ed. 1988. Ottawa. ISBN 0-662-16423-7.

THERAPEUTIC SERVICES

For the majority of procedures examined, frequency varied primarily by region and type of workplace, including type of specialty. Interestingly, other relevant factors differed somewhat from those related to dental hygiene assessment, and diagnosis and planning activities. (See Chapters 8 and 9.) Therapeutic services tended to be associated with the respondent's school and year of graduation and years of experience and, regarding the workplace, the availability of a dental assistant, opportunities to use new technology and to consult regarding care, and whether the dentist routinely sees all active treatment dental hygiene clients. Little if any association was evident with professional development activity of the dental hygienist – a factor that was significant with respect to dental hygiene assessment and diagnosis and planning activities.

Matching data were not available for 1987. However, there appeared to be little change regarding the proportion of dental hygienists that rarely or never perform supra and sub gingival scaling, root planing and tooth polishing – less than 10.0%.

10.2 DEBRIDEMENT AND RELATED PROCEDURES

The term debridement, also called periodontal debridement, refers in part to what traditionally was described as scaling and root planing. It involves the non-surgical, mechanical removal of tooth surface irritants using manual and/or ultrasonic methods². It is the treatment of gingival and periodontal inflammation through supra gingival and sub gingival debridement and deplaqueing within the gingival sulcus or periodontal pocket³. Tooth polishing, debridement of implant prostheses and sub-gingival periodontal irrigation, while not always defined as such, are included in this category for reporting purposes. Similarly, the sharpening of hand scaling instruments is relevant to debridement and included in this section.

Results overall are presented in Table 10.1. Regional distributions are reported in Table 10.2, for procedures performed routinely, and Table 10.3 for those performed selectively. Workplace-specific distributions are presented in Table 10.5.

10.2.1 Overview

For four of the six procedures examined – namely, supra gingival debridement, root planing, debridement of implants and sub gingival irrigation, dental hygienists tend to practice consistent with current guidelines or as expected. On the other hand, a relatively large proportion performs sub-gingival debridement and tooth polishing routinely rather than selectively, as recommended. Regarding instruments used for hand scaling, 4 out of 10 dental hygienists sharpen them for each client as required or daily.

For some procedures, results vary regionally and by year of graduation, professional development activity, type of workplace and workplace-specific characteristics and policies.

² Wilkins, EM, *Clinical Practice of the Dental Hygienist*, 7th ed. Baltimore: Lea and Febiger. 1994

³ Woodall, IR, *Comprehensive Dental Hygiene Care*, 4th ed. St. Louis: Mosby, 1993

10.2.2 Supra Gingival Debridement

Overall, 7 out of 10 respondents reported they routinely perform supra gingival debridement (72.3%) and another 26.3% do so selectively. (See Table 10.1.) Supra gingival debridement was most likely to be performed routinely across all regions. Proportions ranged from a high of 85.8% for the Atlantic region to a low of 65.7% for Man/Sask., for the latter region, another 33.8% indicated they did it selectively (Table 10.2).

Findings varied also by type of workplace (Table 10.5). Respondents that worked in a general dental office were more likely to routinely perform supra gingival debridement (73.9%), compared to those in a specialty office (54.5%). Not unexpectedly, respondents in periodontics were considerably more likely to perform supra gingival debridement routinely compared to those in orthodontics - proportions were 83.0% and 53.4% respectively.

10.2.3 Sub Gingival Debridement

It was surprising to find that just over one-half of respondents perform sub gingival debridement routinely (53.0%) and only 44.8% do it selectively, as recommended. As evident in Table 10.2, respondents for Man/Sask. were slightly more likely to indicate they practiced consistent with the guidelines – that is, 51.0% performed it selectively whereas 48.5% did it routinely. The proportion for “selectively” was lowest for the Atlantic region (35.5%), followed by Alberta (39.3%). Among the other regions, corresponding proportions were 46.0% for Ontario, 45.4% for British Columbia, and 45.0% for Quebec.

Not unexpectedly, respondents in periodontics were considerably more likely to perform sub gingival debridement procedures routinely compared to those in orthodontics. Proportions were 65.7% and 37.9% respectively.

Sub gingival debridement is associated with a dental hygienist's years of experience. Three out of 5 respondents that had worked as a dental hygienist for 11 to 15 years perform sub gingival debridement routinely (62.8%), compared in particular to 46.8% for the group that had worked five years or less; the proportion overall was 53.0%. The pattern was the same regarding years employed in the principal workplace and years since graduation.

10.2.4 Root Planing

As expected, the vast majority of respondents perform root planing selectively - 81.8%. Respondents for Quebec were considerably less likely to perform root planing. Whereas, across the other regions, approximately 9 out of 10 respondents performed it selectively, the proportion decreased to 60.6% for Quebec and another 30.1% never performed it (Table 10.3).

Findings varied also by type of workplace (Table 10.5). Respondents that worked in a general dental office were more likely to selectively root plane (85.6%), compared to those in a specialty office (38.9%). Not unexpectedly, respondents in periodontics were considerably more likely to perform root planing procedures routinely compared to those in orthodontics - 71.0% versus 58.2%.

10.2.5 Tooth Polishing

Similarly, it was surprising to find 7 out of 10 respondents polish teeth routinely and only 30.3% do it selectively - as recommended. Across all regions, the majority of respondents did not practice consistent with the guideline – that is, they did not polish selectively (Table 10.2). Respondents for British Columbia were over six times more likely to meet the guideline in comparison to Quebec – proportions for “selectively” were 48.8% and 7.5% respectively. Corresponding proportions for the remaining regions were 38.6% for Alberta, 37.3% for Ontario, 30.5% for the Atlantic and 19.3% for Man/Sask.

Findings varied also by type of workplace (Table 10.5). Respondents that worked in a general dental office were more likely to routinely perform tooth polishing (71.8%), compared with those in a specialty office (40.2% respectively).

Several additional factors were associated with tooth polishing. Regarding level of professional development, across all groups the majority of respondents polish routinely. However, the proportion was greatest among the Low-PD group (85.6%) and decreased steadily to 70.8% for the Moderate-PD group and 52.6% for the High-PD group; among the latter group, another 47.4% polish selectively.

Respondents that reported a dental assistant was rarely or never available were more likely to polish routinely (73.3%), compared to the group that reported an assistant was usually or always available (56.3%). Among the latter group, there was a corresponding increase for the proportion that polishes selectively – 42.8% versus 30.3% overall.

The close involvement of the dentist in the delivery of dental hygiene care apparently does not ensure that polishing guidelines are met. Respondents that reported the dentist typically sees all active treatment dental hygiene clients during the same appointment were more likely to polish routinely compared to the “dentist doesn’t see” group – 73.4% versus 54.4%; among the latter group, another 45.6% polish selectively as recommended.

10.2.6 Sub Gingival Irrigation

Overall, 3 out of 5 respondents perform sub gingival irrigation selectively (60.8%) and another 34.3% never perform it. Regionally, the group that irrigated “selectively” was proportionately greatest for British Columbia (81.4%); however, it declined to a low of 52.8% for Quebec and 53.3% for the Atlantic region – where, for both regions, another 42.9% cited “never”. (See Table 10.3, item #3.)

Findings varied also by type of workplace (Table 10.5). Respondents that worked in a general dental office were twice as likely to selectively perform sub gingival irrigation (63.5%), compared to those in a specialty office (31.0%).

Sub gingival irrigation varied by several workplace characteristics. For example, 3 out of 5 respondents that reportedly had opportunities to use new technology and/or participate in decisions regarding the purchase of equipment and supplies irrigate selectively - 65.7% and 63.3% respectively. The proportion decreased to one-half for the group that lacked the same opportunities and, with few exceptions, the remainder cited "never". Not unexpectedly, frequency of performing irrigation increased slightly among more recent graduates.

10.2.7 Debridement of Implanted Prostheses

As expected, the vast majority of respondents debride implanted prostheses selectively - 62.7%; the remaining group was four times more likely to cite "never" than "not applicable". Regionally, the proportion that debrided implants selectively ranged from a high of 74.5% for B.C. to a low of 54.5% for Man/Sask. where another 38.0% cited "never". (See Table 10.3, item #2.)

Findings varied also by type of workplace (Table 10.5). Respondents that worked in a general dental office were twice as likely to selectively debride implants (65.0%), compared to those in a specialty office (37.4%). Similarly, the periodontics versus the orthodontics group was more likely to debride implants selectively – 72.5% versus 55.5%.

10.2.8 Instrument Sharpening

Regarding the frequency with which respondents sharpen their hand scaling instruments, 28.3% sharpen for each client as required, another 16.1% do it daily, and a further 30.1% sharpen weekly. (See Figure 10.1.) While it was somewhat surprising to note that 1 out of 4 respondents sharpen only occasionally (25.6%) or never (0.7%), it was not possible to ascertain from the data available whether other personnel perform the sharpening procedures.

Findings varied widely. As indicated in Figure 10.2, the group that sharpens either as required or daily was proportionately greatest for B.C. (82.9%), followed by Alberta, Man/Sask., Atlantic and Ontario, with 71.4%, 62.3%, 55.0% and 42.5% respectively. Respondents for British Columbia were 6 times more likely than their counterparts in Quebec to sharpen for each client as required – 60.1% versus 6.3%. Regarding Quebec, the majority of respondents reportedly sharpen their instruments occasionally - 54.0% versus 24.9% overall, and fewer than 1 out of 10 do so as required or daily (9.4%). The majority of respondents for Ontario sharpen either weekly (35.4%) or occasionally (21.3%).

Over one-half of respondents in a general office sharpen their hand instruments either weekly (31.0%) or occasionally (24.7%). In comparison, over one-half of the specialty group sharpen for each client as required (40.6%) or daily (14.5%). The periodontics group was more likely to sharpen for each client as required, in comparison to the orthodontics group which tended to sharpen occasionally (41.7%).

Regarding instrument sharpening, over 3 out of 5 respondents that had graduated from a university-based dental hygiene program sharpened for each client as required (40.9%) or daily (23.4%) whereas 3 out of 5 respondents for the college-based group sharpened either weekly (32.4%) or less frequently (30.1%). Although frequency of sharpening varied by year of graduation, the pattern was non-linear.

Among respondents that scored high in terms of professional development activity (that is, the High-PD group), 38.8% sharpened for each client as required; the proportion declined for the Moderate-PD and Low-PD groups to 29.4% and 15.6% respectively. For the latter two groups, 30.8% of the Moderate-PD group sharpened weekly and 37.4% of the Low-PD group sharpened occasionally.

It was interesting to note that frequency of instrument sharpening is associated with the dental hygienist's perception regarding time allotted for the adult client maintenance appointment. Among respondents satisfied with the time allotted, 32.2% sharpen as required – almost double the proportion for the group that preferred more time (17.6%); among the latter group, the majority sharpen weekly or less often (63.3%).

As noted previously, having the dentist see all active treatment dental hygiene clients (AT) on the day of their appointment does not ensure practice guidelines are met. Among the group whose clients are not seen by the dentist, 37.0% sharpen their instruments for each client as required. Among the "dentist sees AT" group, almost the same proportion sharpens weekly – that is, 36.6%, and only 20.0% sharpen "as required".

10.3 TOPICAL APPLICATION OF FLUORIDES AND OTHER AGENTS

Respondents indicated the circumstances under which they performed topical application of fluorides, sealants and anti-microbial and/or anti-cariogenic agents. Regarding fluoride, two classifications of clients were considered - children 4-to-12 years of age and adults with root sensitivity. Similarly, two methods were examined - professionally applied and supervised brush-on fluoride. Findings overall are reported in Table 10.1, with regional distributions in Table 10.2, 10.3 and 10.4. Workplace-related distributions are presented in Table 10.6.

10.3.1 Overview

As expected, dental hygienists tend to apply topical fluoride routinely for children 4 to 12 years of age and selectively as indicated for adults with root sensitivity. The majority of dental hygienists use the professionally applied topical method selectively as indicated for the client; one-half never use the supervised brush-on method. Similarly, the majority of dental hygienists apply sealants selectively and another 1 out of 5 never do. Regarding anti-cariogenic and/or anti-microbial agents, 1 out of 2 dental hygienists never apply them.

Use of topical agents varies primarily by region and type of workplace. Dental hygienists that work in a general dental office are more likely to perform the application either selectively or routinely, depending on the type of agent or method involved. In contrast dental hygienists that work in a specialty dental office are many times more likely to never perform the application or to consider it not applicable. There was little variation between the orthodontics and periodontics groups.

10.3.2 Topical Fluoride for Children 4-to-12 Years of Age

Three-quarters of respondents indicated they routinely apply topical fluoride for children aged 4-to-12 years (74.4%) and another 17.3% do so selectively. There was little variation regionally; the proportion for “routinely” ranged from a high of 82.4% for Quebec, followed closely by 81.3% and 80.5% for Man/Sask. and British Columbia respectively, to a low of 67.6% for Ontario. Topical application varied also by type of workplace (see Table 10.6).

10.3.3 Topical Fluoride for Adults with Root Sensitivity

On the other hand, 3 out of 5 respondents apply topical fluoride selectively as indicated for adults with root sensitivity (58.3%) and another 32.6% do so routinely. Regional variation was marked. Respondents for the three western regions tend to routinely apply fluoride for root sensitivity whereas those for the three eastern regions do so selectively. Among the western regions, proportions for “routinely” varied little - 67.3% for B.C., 63.1% for Alberta, and 61.9% for Man/Sask., compared to 13.0% for Quebec, 23.3% for Ontario, and 33.5% for the Atlantic. Topical application varied also by type of workplace (see Table 10.6).

10.3.4 Professional Application of Fluoride

Professional application – that is, applied directly by the clinician rather than self-applied, reportedly is used selectively by the majority of respondents (71.8%) and another 18.5% perform it routinely. While across all regions, selective application was predominant, east-west differences again were evident. Whereas 8 out of 10 respondents for Ontario and the Atlantic region and 7 out of 10 for Quebec applied topical fluorides selectively, the proportion declined to 1 out of 2 for Alberta and 3 out of 5 for B.C. and Man/Sask. Among the western regions, there was a corresponding increase for the group that applied it routinely – 43.8% for Alberta, 43.0% for B.C. and 37.0% for Man/Sask., compared to 18.5% overall.

In addition, professionally applied fluoride varied by type of workplace (see Table 10.6). It also varied by type of dental hygiene program. While the majority of respondents applied topical fluoride selectively regardless of type of program, the group that graduated from a university-based program was more likely to apply it routinely compared to the college-based group. Proportions were 35.5% and 13.8% respectively; among the latter group, another 9.3% never applied topical fluoride.

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10.3.5 Supervised Brush-On Fluoride

The other method investigated – supervised brush-on fluoride, was never used by 1 out of 2 respondents (50.6%); another 39.8% reported using it selectively. The method was most prevalent for the Atlantic and Ontario regions - 53.6% and 47.3% respectively use it selectively. It was least prevalent for Quebec – 64.3% never use it.

Topical application varied also by type of workplace (see Table 10.6). In addition, respondents that lacked opportunity to consult regarding dental hygiene care tended not to use the supervised brush-on method for fluoride application; 62.8% cited “never”. In contrast, the “never” proportion declined to one-half for the group that reported they had opportunities (49.6%) and another 41.1% did the procedure selectively.

10.3.6 Sealants

Overall, 7 out of 10 respondents apply sealants selectively as indicated (71.1%) and another 20.9% never apply them. It would appear that the use of sealants by dental hygienists has increased. The proportion that reportedly never used them declined by almost one-half – from 37.8% in 1987 to 20.9% in 2001.

Again an east-west split was evident. The selective use of sealants was more prevalent among respondents for Ontario (77.5%), Atlantic (75.4%) and Quebec (72.0%), and least prevalent for British Columbia (64.3%), Man/Sask. (59.4%), and Alberta (50.9%). Among the three western regions, there was a corresponding increase for the group that never used sealants – 38.4% for Alberta, 30.7% for Man/Sask. and 26.1% for B.C., compared to 24.5% overall and 14.4% for Ontario.

Topical application varied also by type of workplace (see Table 10.6). In addition, regardless of the availability of a dental assistant, the majority of respondents applied sealants selectively – 71.1% overall. However, among the group that reported an assistant was never available, the proportion declined to 56.9% and another 35.4% never applied sealants – compared to 14.3% for the “rarely available” and 16.1% for the “always/usually available” groups.

10.3.7 Anti-Cariogenic and/or Anti-Microbial Agents

The vast majority of respondents topically apply anti-cariogenic and/or anti-microbial agents either never (47.6%) or selectively as indicated (44.6%). Another 7.3% indicated they were not applicable. (See Table 10.1.)

Regional variation was evident (Table 10.4). Three out of 5 respondents for Alberta and British Columbia applied the agents selectively - 62.3% and 61.6% respectively, more than twice the proportion for Quebec (26.5%). In contrast, respondents for Quebec and the Atlantic tended not to use the agents – 63.5% and 50.2% respectively. Respondents for Ontario and Man/Sask. were almost equally divided with one group applying the agents selectively and the other one never using them; corresponding proportions were 45.8% and 45.4% for Ontario and 46.7% and 47.7% for Man/Sask. Among the relatively few respondents that indicated application was not applicable, the proportion was slightly greater for Quebec and Ontario (9.6% and 8.5% respectively), compared to 3.1% for Alberta and 3.3% for B.C.

Topical application varied also by type of workplace (see Table 10.6). In addition, among the group that reported a dental assistant was never available to them, approximately one-half never (55.6%) apply topical anti-cariogenic/anti-microbial agents (AC/AM agents). In contrast, among the group that reported an assistant was available always or usually, one-half apply them selectively (52.1%).

Respondents that lack opportunities in the workplace to consult regarding dental hygiene care tend not to apply AC/AM agents - 63.8% cited “never”. In contrast, the “never” proportion declined to 45.8% for the “have opportunity” group and another 46.2% cited selectively. Similarly, among the group that reportedly lacks opportunity to use new technology, 62.4% never apply AC/AM agents; among the group that does, the greatest proportion applies them selectively - 49.2% compared to 30.5% for the “no opportunity” group and 44.6% overall, and another 43.0% never do.

The selective use of AC/AM agents was greater among respondents that scored higher in terms of professional development activity – 55.3% for the High-PD group compared to 44.1% for the Moderate-PD and 33.6% for the Low-PD groups. Among the latter groups, there was a corresponding increase for the proportion that never used AC/AM agents.

10.4 RESTORATIVE AND ORTHODONTIC PROCEDURES

Respondents provided information regarding selected restorative and orthodontic-type procedures. Results are presented in Table 10.1, with regional distributions in Table 10.4.

10.4.1 Overview

Overall, relatively few dental hygienists place or finish temporary and/or permanent restorations or bond for orthodontic purposes. This finding prevails regardless of whether they have successfully completed additional training in restorative or orthodontic procedures. The performance of restorative and orthodontic procedures varies primarily by region and, in some cases, type of workplace more so than the other factors examined.

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There apparently has been little change since 1987 when the majority of dental hygienists never placed temporary or permanent restorations – 72.2% and 84.8% respectively. Regionally, the pattern is similar for 1987 and 2001 – dental hygienists in the Atlantic and regions are considerably likely to place and finish restorations.

10.4.2 Place Temporary Restorations

Overall, 8 out of 10 respondents reported they either never place temporary restorations (68.8%) or the question is not applicable to them (11.1%). A relatively small proportion of respondents indicated they had completed training to perform restorative procedures (33.4%), either as part of their basic education program or through additional education (QA3). Regardless of whether they had completed this training, the majority of respondents never performed the restorative procedures investigated. (See Table 10.7.)

Findings were somewhat consistent with 1987. At that time, the proportion that placed and removed temporary restorations at least once a week, while consistently very low across all regions, was greatest for Quebec at 11.5%, exceeded only slightly by 12.4% for the Atlantic region.

Regional variation was evident, as indicated in Table 10.4. Across all regions, at least two-thirds of respondents indicated they either never placed temporary restorations or the procedure was not applicable. Among the group that did place temporary restorations, as expected, virtually all placed them selectively rather than routinely. Respondents for Quebec were the most likely to place temporary restorations (33.3%) whereas those for Alberta were the least likely (7.6%). Among the remaining regions, proportions were clustered: 20.2% for British Columbia, 20.0% for Man/Sask., 18.2% for the Atlantic and 14.8% for Ontario.

Regarding type of workplace – that is, general or specialty dental office, proportions are similar for respondents that either never place temporary restorations or indicate the item was not applicable. (See Table 10.8.) However, while the vast majority of the general office group report they never do the procedure, proportions for the specialty group are divided between “never” do it and “not applicable”. The proportion that places temporary restorations selectively varies only slightly by type of workplace - approximately 1 out of 5 respondents. Distributions were similar for both orthodontics and periodontics (Table 10.8).

10.4.3 Place Permanent Restorations

Overall, 9 out of 10 respondents reported they either never place permanent restorations (81.0%) or the question is not applicable to them (11.4%). Among the relatively small proportions of respondents that had completed specialized training to perform restorative procedures, the majority never placed permanent restoration. (See Table 10.7.)

Findings were consistent with 1987 when the proportion that placed and finished restorations reportedly was greatest for the Atlantic and Quebec regions – 27.7% and 16.9% respectively performed the procedure at least once a week.

Across all regions, at least 8 out of 10 respondents indicated they either never placed permanent restorations or the item was not applicable. The proportion for “not applicable” was greatest among respondents for Ontario (17.0%), followed by Alberta (11.6%), compared to 9.3% overall and a low of 3.8% for the Atlantic region. Among the relatively few that placed permanent restorations, the vast majority did so selectively; proportions were greatest for Quebec and the Atlantic regions – 16.1% and 14.6% respectively.

Similar to findings overall, relatively few place permanent restorations, regardless of type of workplace or type of specialty. (See Table 10.8.)

10.4.4 Finish Restorations

Similar to the placement of restorations, approximately 8 out of 10 respondents reportedly either never finish restorations (73.5%) or consider the item not applicable (10.8%). Another 14.6% finish them selectively and a further 1.1% do so routinely. Among the one-third of respondents that had completed specialized training to perform restorative procedures, the majority does not finish restorations. (See Table 10.7.)

The regional pattern was similar to the placement of restorations. Across all regions, at least approximately 7 out of 10 respondents never finish them. As expected, of the relatively few respondents that reportedly finish restorations, virtually all perform the procedure selectively. Again, proportions for “selective” were greatest for Quebec and the Atlantic regions – 22.5% and 17.6% respectively.

Frequency with which dental hygienists finish restorations varies by type of workplace. Over 8 out of 10 respondents in a general dental office indicated they never finish restorations (75.3%) or the item was not applicable (8.3%); another 16.4% finish restorations and 15.4% do so selectively. In comparison, among the specialty group, the proportion that reported “never” finishes restorations decreased to 52.2% and there was a marked increase to 40.7% for “not applicable”; the portion that finished restorations declined by one-half to 7.1% and 5.3% did them selectively. Again, distributions for orthodontics and periodontics were similar.

10.4.5 Bonding for Orthodontic Purposes

Dental hygienists rarely or never bond for orthodontic purposes. Overall, 78.8% of respondents reported “never” and another 10.5% cited “not applicable”. Only approximately 1 out of 10 bond and, as expected, they do so selectively more so than routinely – 8.2% and 2.5% respectively.

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Even among the group that has completed specialized training in orthodontic procedures, the majority of respondents do not bond - 68.3% compared to 94.9% for the group without specialized training. (See Table 10.7, item 4.) Among the relatively few respondents with specialized training that do perform the procedure, 23.2% do it selectively and 8.5% routinely.

Across all regions, at least 8 out of 10 respondents reported they either never perform the procedure or the item was not applicable. The relatively small group that does bonding tends to be concentrated among the three eastern regions and to bond selectively more so than routinely. Proportions ranged from a high of 11.4% for Ontario, followed by 9.8% for Quebec and the Atlantic region, to less than 3.0% for each of the western regions.

It was not surprising to find that, compared to results regarding the placement and finishing of restorations, frequency of bonding for orthodontic purposes was more closely associated with type of workplace. As indicated in Table 10.8, whereas 9 out of 10 respondents that worked in a general dental office cited either "never" or "not applicable", the combined proportion declined to 6 out of 10 for the specialty group and the remainder reported they bonded either routinely (20.0%) or selectively (16.5%). As expected, the group that performed bonding procedures was most likely to work in orthodontics more so than periodontics or other type of specialty office. Among the orthodontics group, 24.1% bonded selectively and another 18.7% did so routinely; the majority however cited never (50.6%) or not applicable (6.6%). While respondents that had graduated from a college versus a university-based dental hygiene program were more likely to perform bonding procedures, proportions were small and, hence, less meaningful (12.9% and 2.8% respectively).

10.5 OTHER THERAPEUTIC PROCEDURES

Respondents provided information regarding the circumstances under which they perform tooth whitening and desensitization procedures and fabricate and fit mouth protectors. Overall results are presented in Table 10.1 (items 5, 9 and 10). Regional distributions for tooth whitening and desensitization are included in Table 10.3 (items 5 and 6) and for mouth protectors in Table 10.4 (item 6).

10.5.1 Overview

Overall, dental hygienists tend to perform tooth whitening and desensitization procedures selectively. However, the majority never fabricates and fits mouth protectors. Frequency varies regionally and by a number of personal and workplace-related factors.

10.5.2 Tooth Whitening

Just over one-half of respondents reported they perform tooth-whitening procedures selectively (55.1%). The remainder cited either “never” (34.4%) or “not applicable” (9.8%); with few indicating they do it routinely (0.8%). Regionally, the proportion that indicated they performed tooth whitening selectively ranged from a high of 63.8% for Quebec, followed by 57.1% for Ontario, to a low of 41.3% for British Columbia, followed by 44.7% for Man/Sask.

Tooth whitening was four times more likely to be performed by respondents in a general versus a specialty dental office; the proportion summed over “selectively” and “routinely” was 59.4% and 13.4% respectively. While the majority of the remaining respondents indicated they never performed the procedure, the proportion was 33.2% for the general group versus 47.3% for the specialty group, with another 7.3% and 39.3% respectively citing “not applicable”.

Respondents that reported a dental assistant was never available were less likely to perform tooth-whitening procedures (46.5%). Tooth whitening appeared to be associated with having an assistant available more so than the amount of time the assistant was available, suggesting that the procedure occurred infrequently – proportions were almost the same regardless of whether the assistant was available always/usually or rarely – 59.6% and 59.3% respectively.

Tooth whitening was associated with both year of graduation and years of experience. The group that performed the procedure either selectively or routinely was proportionately greater among respondents that had graduated in the period 1996 to 2000 compared, in particular, to those that graduated prior to 1976 – 65.5% and 39.8% respectively. Similarly, almost two-thirds of respondents that had worked in dental hygiene for 5 years or less performed tooth whitening (64.7%) and the proportion decreased to 58.5% for the 6-to10 year group and even further to 48.6% for the group that had worked for 11 or more years.

10.5.3 Desensitization

Overall, 9 out of 10 respondents perform desensitization procedures selectively and another 1.2% do them routinely. Only 5.8% never perform the procedures or consider them not applicable (2.1%). (See Table 10.1.) There was little variation regionally. With the exception of Quebec (82.2%), over 9 out of 10 respondents performed desensitization either selectively or routinely.

Respondents working in a general versus a specialty dental office were considerably more likely to perform desensitization either selectively (see Table 10.5) or routinely – proportions were 94.3% and 65.8% respectively. Among the specialty group, another 17.6% indicated the procedure was not applicable and 16.7% cited “never”. As expected, respondents that worked in periodontics were considerably more likely to perform desensitization, compared to those in orthodontics – proportions were 95.7% and 72.6% respectively (see Table 10.5).

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10.5.4 Mouth Protectors

Respondents were asked to indicate the circumstances under which they fabricated and fitted mouth protectors. Overall 7 out of 10 reported they never do (68.0%), another 2 out of 10 indicated they do so selectively (21.5%) or routinely (0.6%), and a further 9.8% cited "not applicable". (See Table 10.1, item #9.) The procedure has increased in prevalence among dental hygienists – in 1987, 97.1% reported they rarely or never "constructed and fitted mouth guards".

Mouth protector procedures were more prevalent among respondents for the three eastern regions. The proportion that fabricated and fitted them ranged from a high of 26.1% for Ontario and 25.9% for Quebec to a low of 9.4% for Alberta.

Regarding the proportion of respondents that actually performed mouth protector procedures, findings varied little by type of workplace – 21.5% for the "general dental office" group and 29.7% for the "specialty" group. However, those in a specialty office were less likely to cite "never" - 36.9% versus 70.7% for the general group, and more likely to indicate the procedure was not applicable - 33.3% versus 7.8%.

Frequency of performing the procedures was slightly greater among respondents that reported a dental assistant was available and/or they had opportunities to use new technology. However, differences were small and less meaningful.

10.6 PAIN CONTROL PROCEDURES

Respondents provided information regarding the use of pain control measures for their clients. Three aspects were examined – type used, decision-making regarding use, and measures administered by the dental hygienist. Findings regarding use are presented in Table 10.9, with regional distributions in Table 10.10.

10.6.1 Overview

When pain control is required for dental hygiene clients, the predominant measures used are topical and local anaesthetic and they are used selectively as indicated, more so than routinely. Electronic dental anaesthesia and nitrous oxide are rarely or never used. Decisions regarding the use of pain control are made primarily by the dentist and, for some decisions, jointly with the dental hygienist. While the majority of dental hygienists apply topical anaesthetic, only 1 out of 5 administer local anaesthetic and very few perform electronic dental anaesthesia or nitrous oxide sedation.

10.6.2 Use of Pain Control Measures

The frequency of using selected pain control measures is described in Table 10.9, with regional distributions in Table 10.10. Missing responses were less than 3.0%.

Overall, 8 out of 10 respondents reported that topical anaesthetic and/or local anaesthetic are used for their clients selectively (86.9% and 85.6% respectively). There was little regional variation (see Table 10.10). While use tended to be greater among respondents for British Columbia and Alberta (97.2% and 96.9% respectively) compared in particular to Quebec and the Atlantic region (86.1% and 88.3%), differences were slight.

Findings varied also by type of workplace. (See Table 10.11.) Topical and local anaesthetic were more likely to be used by respondents working in a general dental office or periodontics compared to those in orthodontics. Further, respondents that had completed specialized training in the administration of local anaesthetic were more likely to report local anaesthetic was used for their clients - 99.0% compared to 86.4% for the group without training. Findings varied little based on the other factors examined.

Regarding the two other pain control measures examined, the vast majority of respondents reported they typically were not used for their clients. Overall, 93.8% reported that electronic dental anaesthesia was either never used or not applicable and 80.5% reported the same for nitrous oxide sedation. Regarding nitrous oxide, 1 out of 5 respondents indicated it was used selectively (19.4%) and a very few cited "routinely" (0.2%); while proportions remained small, use was more prevalent for Ontario (29.4%), Alberta (27.4%) and, to a lesser extent, Man/Sask. (19.2%), compared in particular to Quebec (5.6%). There was little variation based on workplace or other factors examined.

10.6.3 Decision-Making

Respondents provided information regarding the decision-making process for pain control. Four aspects were examined – who will provide it and the type and amount of agent to use; use of nitrous oxide was specified separately. Response choices were the *dental hygienist independently*, *dentist independently*, *dental hygienist and dentist jointly*, and *routine policy*. Findings are presented in Table 10.12. Missing responses were less than 5.0% with one exception; for nitrous oxide sedation, both valid and total percentages are reported to reflect the effect of the missing responses (42.2%).

10.6.3.1 Overview

Decisions involving who is to provide a pain control measure and the type and quantity of agent to use vary in terms of whether the decision is made by the dental hygienist and/or the dentist. In contrast to the first three decisions, the dentist primarily decides whether to use nitrous oxide and there is little variation.

Regarding the “who”, “what” and “amount” decisions, dental hygienists in the three western regions, and British Columbia in particular, tend to perceive the dental hygienist decides, either independently or jointly with the dentist. In contrast, dental hygienists in the three eastern regions, Quebec in particular, tend to perceive the dentist as decision-maker, again either independently or jointly with the dental hygienist.

With the exception of the type of agent to use, decision-making patterns are remarkably similar regardless of type of workplace, type of specialty, opportunities for consultation, decision-making and using new technology, availability of a dental assistant, and appointment scheduling. There are also few differences based on type of dental hygiene program and year of graduation, professional development activity, years of experience, years employed and hours worked per week.

10.6.3.2 Who Will Perform the Procedure

Regarding the decision as to who will provide the pain control measure, overall 7 out of 10 respondents reported that the dentist decides either independently (35.3%) or jointly with the dental hygienist (37.4%); only 23.6% indicated the dental hygienist made the decision.

Considerable variation was evident regionally. Respondents for the three western regions tended to report the dental hygienist decides independently or jointly with the dentist, whereas those for the three eastern regions indicated the dentist decides either independently or jointly with the dental hygienist. Among respondents for British Columbia, 3 out of 5 indicated the dental hygienist decides independently (64.2%); the proportion declined to 44.2% for Man/Sask. and 41.6% for Alberta and another 35.2% and 41.1% respectively indicated it is a joint decision. In contrast, among respondents for Quebec, two-thirds reported the dentist decides independently (66.1%); another 24.8% indicated it typically is a joint decision – only 4.3% reported the decision is made by the dental hygienist and a further 4.8% cited routine policy. For the Atlantic and Ontario, the majority of respondents reported the decision typically is made by the dentist (43.0% and 34.7% respectively) or jointly (39.1% and 45.3% respectively). There was little variation based on type of workplace and other factors examined.

10.6.3.3 Type of Agent to Use

Regarding the type of pain control agent to use, 40.0% of respondents reported the decision typically is made jointly, another 36.6% indicated the dentist decides, and a further 22.0% said the dental hygienist does; only 1.4% cited “routine policy”.

Regionally, the distribution was almost identical to the one regarding “who provides it”. Respondents for the three western regions tended to report the dental hygienist decides either independently or jointly with the dentist (95.5% for British Columbia, 82.8% for Alberta and 80.8% for Man/Sask.). In contrast, respondents for the three eastern regions reported the dentist decides independently or jointly with the dental hygienist (92.1% for Quebec, 90.4% for the Atlantic, and 86.3% for Ontario). The proportion that reported the dental hygienist decides ranged from a high of 63.8% for British Columbia to a low of 4.8%

for Quebec – the proportions were almost reversed regarding the dentist as decision-maker – 64.2% for Quebec versus 4.1% for British Columbia.

Where relationships were evident, they typically involved the decision regarding type of pain control agent to use. Respondents that had graduated from a university-based rather than a college-based program tended to report the dental hygienist decides which agent to use either independently or jointly with the dentist – 76.8% versus 57.2%, whereas the college group was twice as likely to cite the dentist as decision-maker – 41.3% versus 21.2%. Regarding level of professional development activity, 1 out of 2 respondents for the Low-PD group reported the dentist decided the agent to use (49.8%), compared to 28.9% for the High-PD and 32.1% for the Moderate-PD groups; for each of the latter two groups, 41.3% indicated it was a joint decision.

Decision-making regarding pain control agent to use varied depending on whether the dentist typically is in the office when the dental hygienist provides intra-oral services. Where the dentist is present always or usually, respondents are more likely to report the decision typically is made by the dentist either independently or jointly (77.0%). In comparison, where the dentist typically is present only sometimes, rarely or never, 8 out of 10 respondents report the decision is made by the dental hygienist or jointly with the dentist.

Similarly, respondents that reported the dentist typically sees all active treatment dental hygiene (AT) clients on the same day are more likely to report the dentist rather than the dental hygienist is the decision-maker – proportions were 43.5% and 14.0% respectively. In comparison, where the dentist does not see all AT clients, the proportion that cited the dentist as decision-maker decreased to 23.2% with a corresponding increase for the dental hygienist to 36.7%.

Regarding type of specialty, the orthodontics group was slightly more likely to report the dentist alone decides - 62.0%, whereas the periodontics group indicated it typically is decided either by the dentist (47.2%) or jointly (39.9%).

10.6.3.4 Amount of Agent to Use

Similar to decisions regarding “who” and “what”, overall the decision regarding the amount of agent to use typically is decided by the dentist either independently (60.7%) or jointly with the dental hygienist (21.1%). Another 16.8% indicated the dental hygienist decides. Only 1.4% cited “routine policy”.

The same regional disparity was observed. That is, the dental hygienist either independently or jointly with the dentist is the predominant decision-maker for the western regions, in particular British Columbia. Conversely, the dentist, either independently or jointly, is the predominant decision-maker for the eastern regions, in particular, Quebec.

Regarding the third decision – the amount of agent to use, respondents that had graduated from a college-based program were more likely to report the dentist as decision-maker more so than the dental hygienist – proportions were 65.1% and 13.2% respectively. Results were reversed for the university-based group – the proportion that reported the dental hygienist as decision-maker doubled to 28.6%, with a corresponding decline to 45.9% for the dentist category.

Similar to findings regarding the type of agent to use, respondents that reported the dentist typically sees all active treatment dental hygiene (AT) clients on the same day are more likely to report the dentist rather than the dental hygienist as the decision-maker – proportions were 71.3% and 12.9% respectively. In comparison, where the dentist does not see all AT clients, the proportion that cited the dentist as decision-maker decreased to 49.3% and the corresponding proportion for dental hygienist as decision-maker more than doubled to 28.5%.

10.6.3.5 Use of Nitrous Oxide

Regarding the decision about using nitrous oxide sedation, a large proportion of respondents overall selected not to answer – that is, 42.2% of potential responses were missing. Since dental hygienists typically are not legally qualified to administer nitrous oxide and it is rarely used for dental hygiene clients, the high rate of non-response was not surprising. Both valid and overall percents are presented in Table 10.12.

Of the 57.8% of respondents that provided information regarding the use of nitrous oxide, the majority reported the dentist typically decides independently (73.2%) and another 17.8% indicated it is a joint decision. Less than 1 out of 10 respondents reported the dental hygienist decides independently (4.6%) or bases the decision on routine policy (4.3%).

In contrast to the other three decisions regarding pain control, there was little variation regionally. Across all regions, the majority of respondents reported the dentist makes the decision independent of the dental hygienist. Not unexpectedly given the previous findings, the proportion was greatest among respondents for Quebec and the Atlantic (87.9% and 82.9% respectively) and decreased to a low of 53.8% for Alberta and 58.3% for British Columbia; the proportion for Ontario was 71.9% and for Man/Sask. 62.8%.

10.6.4 Pain Control Administered by the Dental Hygienist

Respondents provided information regarding the types of pain control measures that they performed. Since the proportion of missing responses was relatively high – 14.5%, both valid and overall percentages are reported in Table 10.13.

Of the four types examined, virtually all respondents (98.9%) administered topical anaesthetic and 1 out of 4 administered local anaesthetic (24.0%). Relatively few used electronic dental anaesthesia or nitrous oxide sedation - proportions were 4.5% and 5.3% respectively.

Regarding local anaesthesia, findings were consistent with provincial scopes of practice and an east-west dichotomy was evident. For the east, essentially all respondents reported they do not perform the procedure; proportions were 98.3% for Ontario, 98.2% for the Atlantic and 96.8% for Quebec. In comparison, for the west, the majority do administer local anaesthetic; at 92.9%, the proportion was greatest for British Columbia and decreased to 62.7% for Man/Sask. and 51.2% for Alberta. Regional variation was not evident regarding the frequency with which the dental hygienist administers the other three types – namely, topical anaesthetic, electronic dental anaesthesia and nitrous oxide sedation.

Not surprisingly, respondents that have completed specialized training in the administration of local anaesthetic were 34 times more likely to perform it than those that had not – 88.3% versus 2.6%. Graduates of university-based dental hygiene programs are more than twice as likely to administer local anaesthetic compared to graduates of college-based programs – 42.0% and 18.2% respectively.

Respondents that reported the time allotted for an adult maintenance appointment was adequate were more than twice as likely to administer local anaesthetic, compared to the group that preferred more time – 28.8% versus 12.2%. Respondents that reported the dentist does not see all active treatment dental hygiene (AT) clients also were twice as likely to administer the anaesthetic compared to the “not see AT” group – 18.2% versus 36.5%.

Compared to 1987, there is a slight increase in the proportion of dental hygienists that administer local anaesthetic, but little change regarding nitrous oxide. In 1987, 92.6% of survey respondents reported they rarely or never administer local anaesthetic compared to 76.0% in 2001 that cited “never”. Regarding the administration of nitrous oxide sedation, in 1987, 98.2% of respondents reported they administered it rarely or never and in 2001, 94.7% indicated “never”.

10.7 SUMMARY

In summary, of the 19 therapeutic procedures examined, the majority of dental hygienists perform 8 of them selectively as indicated. Procedures performed selectively include root planing, application of fluoride for root sensitivity, tooth whitening, sub gingival periodontal irrigation, topical application of sealants and fluorides, desensitization, and implant debridement.

Dental hygienists typically perform another 4 procedures routinely for all clients – namely, supra and sub gingival debridement (i.e., scaling), tooth polishing, and topical application of fluoride for children aged 4-to-12 years. The pattern observed regarding sub gingival debridement and tooth polishing was contrary to practice guidelines that recommend both procedures be performed selectively as indicated.

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A further 7 procedures typically are never performed. They include supervised brush-on fluorides, finishing restorations, fabricating and fitting mouth protectors, placing temporary and permanent restorations, orthodontic bonding and application of anti-cariogenic and/or anti-microbial agents.

Regarding the frequency with which dental hygienists sharpen their hand scaling instruments, less than 1 out of 2 sharpen for each client as required (28.3%) or daily (16.1%).

For the majority of therapeutic procedures, frequency varied primarily by region, type of workplace and type of specialty – that is, orthodontics or periodontics. Interestingly, where other factors were identified, they differed somewhat from the set associated with dental hygiene assessment, diagnosis and planning activities. For therapeutic services, personal factors include the respondent's school, year of graduation and years of experience. Workplace-related factors include the availability of a dental assistant, opportunities to use new technology and to consult regarding care, and whether the dentist routinely sees all active treatment dental hygiene clients.

Regarding pain control for dental hygiene clients, topical and local anaesthetic are used predominantly and selectively more so than routinely. Electronic dental anaesthesia and nitrous oxide are rarely or never used. Decision-making responsibility regarding the use of pain control tends to vary between the dental hygienist and/or the dentist. In contrast to decisions regarding who will provide it and the type and amount of agent to use, the dentist primarily decides whether to use nitrous oxide rather than the dental hygienist or jointly; there is little variation. Among dental hygienists in the three western regions (British Columbia in particular), the dental hygienist is perceived to be the decision-maker, either independently or jointly with the dentist. In contrast, in the eastern regions (Quebec in particular), the dentist is perceived by dental hygienists to be the decision-maker, again either independently or jointly with the dental hygienist.

Overall, 9 out of 10 dental hygienists apply topical anaesthetic, 1 out of 5 administer local anaesthetic, and less than 5.0% administer either electronic dental anaesthesia or nitrous oxide sedation. Regarding local anaesthesia, the distribution is consistent with provincial scopes of practice, with the result that an east-west dichotomy is evident. Among dental hygienists in the three eastern regions, 9 out of 10 do not administer local anaesthetic. The pattern changes for the west where 9 out of 10 dental hygienists in British Columbia administer it, 6 out of 10 in Man/Sask. and one-half in Alberta. As expected and contrary to the other types of specialized training examined for this study, frequency is proportionately greater among dental hygienists that have completed specialized training in administering local anaesthetic.

Table 10.1: Dental Hygienists By Frequency With Which They Perform Selected Therapeutic Procedures, Canada, 2001 (n=1438)

PROCEDURES	FREQUENCY			
	Never	Selectively	Routinely	Not Applicable
1. Debridement				
a. supra gingival	0.6	26.3	72.3	0.7
b. sub gingival	1.1	44.8	53.0	1.1
2. Root planing	8.8	81.8	6.9	2.4
3. Tooth polishing	0.1	30.3	69.3	0.2
4. Topical fluoride application:				
a. children 4 to 12 years	3.8	17.3	74.4	4.5
b. adults with sensitive roots	6.6	58.3	32.6	2.6
5. Tooth whitening	34.4	55.1	0.8	9.8
6. Sub gingival irrigation	34.3	60.8	1.0	3.8
7. Topical application of:				
a. sealants	20.9	71.1	2.4	5.6
b. fluoride:				
i) professionally applied	7.2	71.8	18.5	2.5
ii) supervised brush-on	50.6	39.8	2.4	7.2
c. anticariogenic/ antimicrobial agents	47.6	44.6	0.5	7.3
8. Finish restorations	73.5	14.6	1.1	10.8
9. Fabricate and fit mouth protectors	68.0	21.5	0.6	9.8
10. Desensitization	5.8	90.9	1.2	2.1
11. Place restorations:				
a. temporary	68.8	19.9	0.1	11.1
b. permanent	81.0	6.5	1.1	11.4
12. Bonding (orthodontic)	78.8	8.2	2.5	10.5
13. Debride implant prosthesis	26.8	62.7	4.1	6.3

* Missing responses: 5.0% or less

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Figure 10.1: Frequency with Which Dental Hygienists Sharpen Instruments Used to Debride Teeth by Hand (i.e., “hand scalers”), Canada 2001

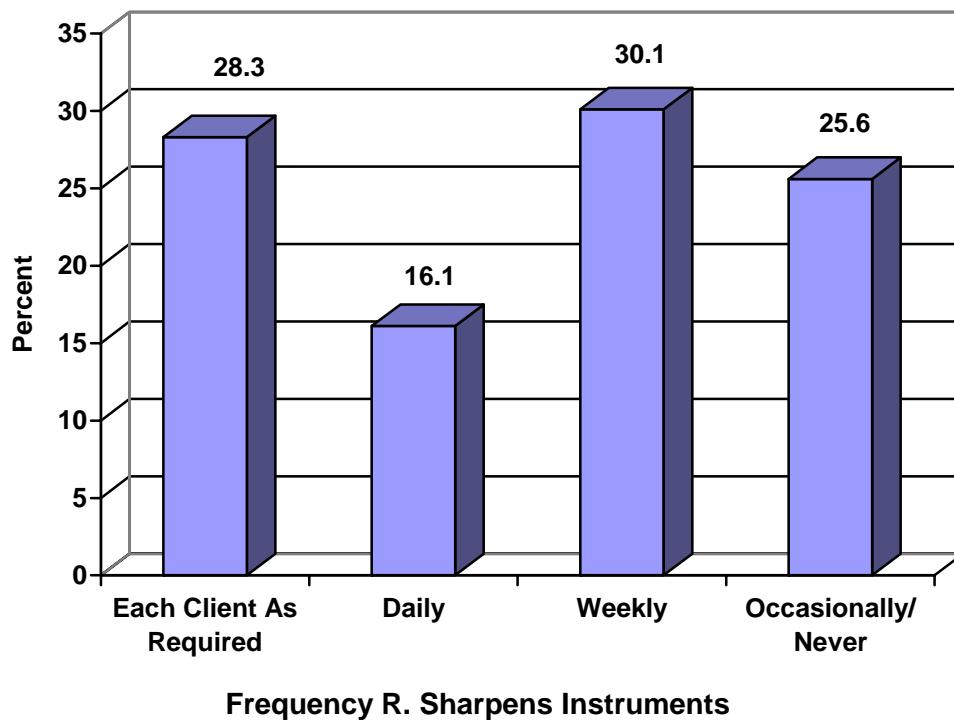


Table 10.2: Percent of Dental Hygienists Most Likely to Perform Therapeutic Procedures “Routinely for All”¹, by Type of Procedure and Region, Canada, 2001

PROCEDURES PERFORMED SELECTIVELY	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
1. Supra gingival debridement	85.8	75.0	71.1	65.7	73.7	68.3	72.3
2. Sub gingival debridement	63.5	50.2	51.9	48.5	60.7	54.2	53.0
3. Tooth polishing	69.0	92.1	62.3	80.7	61.0	51.2	69.3
4. Topical application of fluoride for children	73.3	82.4	67.6	81.3	73.4	80.5	74.4
Total	214 100.0	256 100.0	291 100.0	203 100.0	225 100.0	249 100.0	100.0

¹Response choices were routinely for all, selectively as needed, never and not applicable.
Missing responses: < 5.0%.

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**Table 10.3: Percent of Dental Hygienists that Perform Therapeutic Procedures
“Selectively as Indicated”¹, by Type of Procedure and Region, Canada, 2001**

PROCEDURES PERFORMED SELECTIVELY	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
1. Root Planing	90.1	60.6	87.8	91.6	92.3	86.7	81.8
2. Debride implant prosthesis	60.4	61.0	60.9	54.5	65.2	74.5	62.7
3. Sub gingival irrigation	53.3	52.8	57.2	60.5	74.9	81.4	60.8
4. Topical application of:							
a. fluorides	80.4	71.0	81.8	61.0	51.3	55.0	71.8
b. sealants	75.4	72.0	77.5	59.4	50.9	64.3	71.1
c. fluorides for adult root sensitivity	62.7	68.0	68.1	37.6	33.3	30.6	58.3
5. Desensitization	93.9	79.8	93.0	97.5	95.5	97.6	90.9
6. Tooth whitening	51.0	63.6	57.1	44.7	50.0	41.3	55.1
Total N	214	256	291	203	225	249	
%	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Response choices were *routinely for all*, *selectively as needed*, *never* and *not applicable*.
Missing responses: < 5.0%.

Table 10.4: Percent of Dental Hygienists That Never Perform Selected Therapeutic Procedures or Consider Them to Be Not Applicable¹, by Region, Canada 2001

PROCEDURES TYPICALLY NOT PERFORMED (% "never or n/a")	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
1. Fluoride-supervised brush-on application	46.0	73.5	50.6	63.0	60.0	54.1	57.8
2. Application of Anti-cariogenic and/or Anti-microbial agents	55.5	73.1	53.9	53.2	35.8	37.6	54.9
3. Place restorations:							
a. temporary	81.8	66.2	85.2	80.0	92.4	79.8	79.9
b. permanent	85.5	81.2	96.2	89.6	99.5	100.0	92.4
4. Finish restorations	82.4	74.7	87.7	85.4	92.3	86.1	84.3
5. Bonding for orthodontic purposes	89.7	87.0	84.7	97.0	98.7	99.2	89.3
6. Fabricate and fit mouth protectors	78.0	74.2	74.0	83.4	90.6	87.1	77.8
Total	n	214	256	291	203	225	249
	%	100.0	100.0	100.0	100.0	100.0	100.0

¹Response choices were routinely for all, selectively as needed, never and not applicable.

Missing responses < 5.0%

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Table 10.5: Frequency with Which Dental Hygienists Perform Selected Therapeutic Procedures, by Type of Workplace, Canada, 2001

TYPE OF PROCEDURE	TYPE OF WORKPLACE			
	General (n = 1317)	Specialty (n = 119)	Orthodontics (n = 47)	Periodontics (n = 50)
1. PERCENT “ROUTINELY FOR ALL”¹				
1. Debridement:				
a. Supra gingival	73.9	54.5	53.4	83.0
b. Sub gingival	53.3	50.0	37.9	65.7
2. Tooth polishing	71.8	40.2	66.3	72.3
2. PERCENT “SELECTIVELY AS INDICATED”				
1. Root Planing	85.6	38.9	58.2	71.0
2. Debride implant prosthesis	65.0	37.4	55.5	72.5
3. Sub gingival irrigation	63.5	31.0	--	--
4. Desensitization	93.2	63.9	70.6	92.6
5. Tooth whitening	58.6	13.4	--	--
3. PERCENT “NEVER”				
1. Fabricate and fit mouth protectors	70.7	36.9	--	--

¹Response choices were *never*, *selectively as indicated*, *routinely for all*, and *not applicable*.

Table 10.6: Frequency With Which Dental Hygienists Perform Topical Application of Selected Agents, by Type of Procedure and Workplace, Canada, 2001

TYPE OF TOPICAL PROCEDURE	N (100.0)	FREQUENCY / CIRCUMSTANCES			
		Never	Selectively	Routinely	Not Applicable
1 Fluoride for children 4-12 years:					
a. Type of dental office:	i) general	1310	2.5	18.1	77.6
	ii) specialty	109	19.3	8.3	35.8
b. Type of specialty:	i) orthodontics	160	13.1	10.6	63.8
	ii) periodontics	165	7.3	13.3	67.3
2 Fluoride for adults with root sensitivity:					
a. Type of dental office:	i) general	1309	6.0	59.5	34.1
	ii) specialty	113	14.2	43.4	15.0
b. Type of specialty:	i) orthodontics	161	17.4	47.8	20.5
	ii) periodontics	166	7.9	64.6	27.4
3 Fluoride, professionally applied:					--
a. Type of dental office:	i) general	1302	6.5	74.0	18.8
	ii) specialty	113	15.9	45.1	15.0
b. Type of specialty:	i) orthodontics	160	14.4	60.6	12.5
	ii) periodontics	166	6.6	74.1	14.5
4 Fluoride – supervised brush-on:					
a. Type of dental office:	i) general	1289	51.7	41.0	1.9
	ii) specialty	112	38.4	25.9	7.1
b. Type of specialty:	i) orthodontics	159	50.9	29.6	0.6
	ii) periodontics	162	53.7	31.5	3.1
5 Sealants:					
a. Type of dental office:	i) general	1306	19.9	74.9	2.3
	ii) specialty	112	32.1	26.8	3.6
b. Type of specialty:	i) orthodontics	161	19.3	66.5	2.5
	ii) periodontics	166	18.1	66.3	2.4
6 Anti-cariogenic and/or anti-microbial agents:					
a. Type of dental office:	i) general	1292	49.1	45.4	0.4
	ii) specialty	113	31.0	34.5	2.7
b. Type of specialty:	i) orthodontics	160	46.9	30.6	--
	ii) periodontics	164	38.4	45.7	1.8
					14.0

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Table 10.7: Frequency with Which Dental Hygienists Perform Selected Restorative, Orthodontic and Anaesthetic Procedures, by Specialized Training in Those Procedures, Canada, 2001 (n and %)

FREQUENCY OF PROCEDURE	TYPE OF SPECIALIZED TRAINING					
	RESTORATIVE		ORTHODONTIC		LOCAL ANAESTHETIC	
	Yes (n=429)	No (n=858)	Yes (n=322)	No (n=956)	Yes (n=314)	No (n=965)
1. Place Temporary Restorations:						
Never/not applicable	65.6	85.7				
Selectively	34.1	14.4				
Routinely	0.2	--				
Total	100.0	100.0				
2. Place Permanent Restorations:						
Never/not applicable	80.0	97.4				
Selectively	17.2	2.2				
Routinely	2.8	0.4				
Total	100.0	100.0				
3. Finish Restorations:						
Never/not applicable	74.0	87.8				
Selectively	23.6	11.6				
Routinely	2.4	0.6				
Total	100.0	100.0				
4. Bonding / Orthodontic Purposes:						
Never/not applicable			68.3	94.9		
Selectively			23.2	4.2		
Routinely			8.5	0.8		
Total			100.0	100.0		
5. Respondent performs local anaesthetic:						
Yes					88.3	2.6
No					11.7	97.4
Total					100.0	100.0

Missing: If trained in restorative, then 10.4% (149); if orthodontics, 11.0% (158); if local anaesthetic, 10.9% (157)
Relationships that are statistically and meaningfully significant are reported.

Table 10.8: Percent of Dental Hygienists That Never¹ Perform Selected Restorative and Orthodontic Procedures, by Type of Procedure and Workplace, Canada, 2001

FREQUENCY OF PROCEDURE	TYPE OF WORKPLACE			
	Dental Office		Specialty	
	General (n=1317)	Specialty (n=119)	Orthodontics (n=47)	Periodontics (n=50)
1. Place Temporary Restorations:				
Never	70.5	49.6	56.8	50.0
Selectively	20.2	17.7	22.2	31.1
Routinely	(n=1)	--	(n=1)	(n=1)
Not applicable	9.2	32.7	20.4	18.3
Total	100.0	100.0	100.0	100.0
2. Place Permanent Restorations:				
Never	82.1	68.4	67.3	70.7
Selectively	7.1	--	8.5	9.6
Routinely	1.0	1.8	4.2	4.2
Not applicable	8.3	29.8	20.0	15.6
Total	100.0	100.0	100.0	100.0
3. Finish Restorations:				
Never	75.3	52.2	62.7	59.3
Selectively	15.4	5.3	12.4	14.2
Routinely	1.0	(n=2)	3.1	3.1
Not applicable	8.3	40.7	21.7	23.5
Total	100.0	100.0	100.0	100.0
4. Bonding / Orthodontic Purposes:				
Never	81.3	50.4	50.6	72.1
Selectively	7.5	16.5	24.1	9.7
Routinely	0.9	20.0	18.7	3.0
Not applicable	10.2	13.0	6.6	15.2
Total	100.0	100.0	100.0	100.0

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**Table 10.9: Use of Selected Pain Control Procedures for Dental Hygiene Clients,
Canada, 2001 (n = 1438)**

TYPE OF PROCEDURE	FREQUENCY OF USE				Total
	Never	Selectively as Indicated	Routinely for All	Not Applicable	
1. Topical anaesthetic	6.0	86.9	4.5	2.6	100.0
2. Local anaesthetic	8.0	85.6	3.4	3.0	100.0
3. Electronic anaesthesia	77.5	6.2	0.0	16.3	100.0
4. Nitrous oxide sedation	66.2	19.4	0.2	14.3	100.0

Missing responses were less than 3.0%.

Table 10.10: Use of Selected Pain Control Measures for Dental Hygiene Clients, by Region, Canada 2001

TYPE OF PAIN CONTROL MEASURE	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask	Alberta	B.C.	
1. Topical Anaesthetic							
a. Never	10.3	9.1	5.2	7.0	3.2	2.8	6.0
b. Selectively	80.3	73.4	90.6	89.6	94.6	95.6	86.9
c. Routinely	8.0	12.7	(3)	2.5	2.3	(4)	4.5
d. Not applicable	(3)	4.8	3.1	(2)	--	--	2.6
2. Local Anaesthetic							
a. Never	5.6	18.5	5.9	5.0	2.7	1.2	8.0
b. Selectively	85.5	67.7	89.2	92.6	95.0	97.6	85.6
c. Routinely	6.1	8.7	(4)	(3)	(4)	(3)	3.4
d. Not applicable	2.8	5.1	3.5	(2)	(1)	--	3.0
3. Electronic Anaesthesia							
a. Never	81.3	75.0	76.7	77.0	73.5	85.9	77.5
b. Selectively	(3)	4.4	7.1	8.5	11.9	3.7	6.2
c. Routinely	--	--	--	--	(1)	--	--
d. Not applicable	17.2	20.6	16.3	14.5	14.2	10.4	16.3
4. Nitrous Oxide Sedation							
a. Never	75.4	73.4	58.4	69.7	61.2	76.8	66.2
b. Selectively	10.0	5.2	29.4	19.2	27.4	11.2	19.4
c. Routinely	--	(1)	--	--	--	(1)	0.2
d. Not applicable	14.7	21.0	12.2	11.1	11.4	11.6	14.3
Total	n	214	256	291	203	225	249
	%	100.0	100.0	100.0	100.0	100.0	100.0

Missing responses < 3.0%

Table 10.11: Dental Hygienists By Frequency With Which Selected Pain Control Procedures Are Used for Their Clients, by Type of Procedure and Workplace, Canada, 2001

TYPE OF PAIN CONTROL PROCEDURE	TYPE OF WORKPLACE			
	General (n = 1317)	Specialty (n = 119)	Orthodontics (n = 47)	Periodontics (n = 50)
1. Topical anaesthetic				
	a. selectively or routinely	91.2	62.5	76.6
2. Local anaesthetic	b. never or not applicable	8.8	37.5	23.5
	a. selectively or routinely	93.2	69.3	68.3
3. Electronic dental anaesthesia	b. never or not applicable	6.8	30.7	31.7
	a. selectively or routinely	6.5	3.6	7.5
4. Nitrous oxide sedation	b. never or not applicable	93.5	96.4	92.6
	a. selectively or routinely	19.4	22.3	12.4
	b. never or not applicable	80.6	77.7	87.6
				71.6

¹Response choices were *never*, *selectively as indicated*, *routinely for all*, and *not applicable*.

**Table 10.12: Dental Hygienists by Perceived Decision-Making Responsibility
Regarding Pain Control Procedures, Canada, 2001 (n = 1438)**

DECISIONS RE PAIN CONTROL	DECISION MAKER				TOTAL % n
	Dental Hygienist	Dentist	Both Jointly	Routine Policy	
1. Who will provide it?	23.6	35.3	37.4	3.7	100.0
2. Type of agent to use	22.0	36.6	40.0	1.4	100.0
3. Amount to use	16.8	60.7	21.1	1.4	100.0
4. Whether to use nitrous oxide:					
a. valid percent (m = 37.5%)	4.6	73.2	17.8	4.3	100.0
b. percent overall	2.9	45.8	11.1	2.7	62.5

Missing responses were less than 5.0% with the exception of item 4 for which both valid and overall percentages are reported.

**Table 10.13: Pain Control Procedures Performed by Dental Hygienists, Canada, 2001
(Percent “Yes” – valid, overall, missing; n)**

PROCEDURE	N	PERFORMED BY DENTAL HYGIENIST			
		Valid % “Yes”	Percent Overall		
			Yes	No	Missing
1. Topical anaesthetic	1421	98.9	82.1	0.9	17.0
2. Local anaesthetic	1425	24.0	19.9	63.1	17.0
3. Electronic anaesthesia	1396	4.5	3.7	79.3	17.0
4. Nitrous oxide sedation	1402	5.3	4.4	78.6	17.0

CHAPTER 11

EDUCATIONAL SERVICES

In this chapter, selected health counseling and educational activities performed by the dental hygienist are described. Topics include self-care counseling, recommendation of preventive agents for use at home, provision of information to individual clients and community groups, and recommendation of in-office treatments. The focus was the frequency with which the dental hygienist performs the procedures - response choices were *rarely/never, occasionally, always* and *done by others*. It should be noted that practice standards and guidelines vary depending on the procedure –for example, one would not expect to see all procedures performed *always*.

Decision-making regarding client education also was examined. Aspects considered involved the decision as to who will provide the education, what to include, the amount of time to spend, devices and techniques to recommend, and whether to counsel in tobacco cessation.

Findings apply to the principal clinical workplace as designated by the respondent. Information was derived from responses to Section H of the questionnaire. With few exceptions, missing responses were less than 3.0%.

11.1 EDUCATIONAL SERVICES – CHAPTER OVERVIEW

Dental hygienists tend to provide educational services occasionally more so than always or rarely or never. Of the 20 services examined, the dental hygienist occasionally, another 2 always, and a further 2 performs 16 rarely or never. If the dental hygienist does not perform the service, it typically is not provided – that is, other persons in the workplace do not do it. Regarding decision-making, some decisions typically are made by the dental hygienist and others are made jointly with the dentist.

Compared to the dimensions of dental hygiene practice examined in previous chapters, there was little relationship between the frequency of performing client education services and the personal, occupational and workplace factors examined. The exception was type of workplace (i.e., general versus specialty) and, to a lesser extent, region of residence.

11.2 SELF-CARE COUNSELING

Regarding client counseling, five aspects were examined – namely, oral self-examination, self-care procedures for the new client, self-care review, dietary control of oral disease, and cessation of tobacco use. Results overall are presented in Table 11.1 and illustrated in Figure 11.1. Where regional disparities existed, distributions are reported in Tables 11.2. Workplace-specific distributions are presented in Table 11.3.

The dental hygienist typically always counsels the new client in self-care procedures and always reviews self-care at each appointment. The remaining three activities typically are performed occasionally – that is, counseling in oral self examination, dietary control, and cessation of tobacco use.

11.2.1 Self-Care Procedures – New Client

Over 8 out of 10 respondents always counsel the new client in self-care procedures and/or techniques (85.9%) and another 11.9% do so occasionally. There was no variation regionally or based on type of workplace or other factors examined.

11.2.2 Self-Care Procedures – Review

In contrast, respondents indicated they are slightly less inclined to always review the client's self-care procedures at each appointment (60.4%), and there was a proportionate increase for the group that reviews them occasionally (37.7%). Regionally, slight variation was evident. Respondents for Ontario, followed by Alberta, are the most likely to review self-care always whereas those for Man/Sask. are least likely; proportions were 65.7%, 64.5% and 50.0% respectively.

There appeared to be little change since 1987. At that time, 95.3% of respondents reported they provide oral hygiene and self-care instruction at least once a day and only 1.2% indicated they do it rarely or never.

11.2.3 Oral Self Examination

Regarding counseling in oral self-examination techniques, 49.3% of respondents reported they do it occasionally, another 32.9% cited "rarely or never", and a further 15.6% "always". Regionally, the greatest proportion of respondents for British Columbia, Ontario, Alberta and Quebec counsel occasionally – 60.0%, 52.1%, 49.3% and 41.9% respectively. In contrast, for Atlantic and Man/Sask. regions, the greatest proportion indicated they rarely or never does – 49.1% and 49.7% respectively. (See Table 11.2a.) Respondents for Quebec were at least three times more likely to counsel always, compared to the other regions and findings overall – 32.8% versus less than 10.0% for the Atlantic, Man/Sask., Alberta and B.C., and 13.1% overall.

Respondents that had graduated from a university-based dental hygiene program were, for the most part, divided into the group that counsel occasionally and the one that counsel rarely or never – 46.8% and 46.4% respectively; only 5.7% counsel always. In comparison, while graduates of college-based programs also tended to counsel occasionally (48.7%), proportionately more counsel always (18.8%) and fewer cited "rarely/never" (30.2%).

11.2.4 Dietary Control of Oral Disease

Overall, 3 out of 4 respondents reported they counsel occasionally in the dietary control of oral disease (75.4%), another 15.9% rarely or never do, and a further 7.6% cited "always"; only 1.1% indicated it is done- by-others. Although direct comparison to 1987 survey data was limited by differences in response choices, it would appear that diet counseling by dental hygienists has become more prevalent - the proportion that indicated rarely or never decreased from 63.5% in 1987 to 15.9% by 2001.

Across all regions, dental hygienists tend to perform diet counseling occasionally; proportions varied slightly, decreasing from 80.2% for Ontario to 67.5% for Quebec, where another 23.8% cited “rarely/never”. (See Table 11.2.)

Respondents that worked in a general dental office were more likely to counsel occasionally, compared to those in a specialty office - 76.7% and 60.0% respectively. (See Table 11.3.) Frequency varied also by type of specialty. Among respondents in periodontics, 3 out of 4 counsel occasionally (75.0%) and another 16.1% rarely or never do. Findings were more varied for the orthodontics group – while the majority counsel either occasionally (57.6%) or always (10.9%), another 27.9% rarely or never do, and a further 3.6% indicated it is done-by-others.

11.2.5 Cessation of Tobacco Use

Regarding counseling for the cessation of tobacco use, almost 3 out of 4 respondents do it either occasionally (61.6%) or always (12.7%), and another 1.1% indicate it is done-by-others; one-quarter of respondents rarely or never counsel (24.6%). There was no regional variation.

Findings varied by type of workplace (see Table 11.3). Among respondents working in a general dental office, 63.0% counsel occasionally, compared to 45.6% for the specialty group; among the latter group, another 38.6% rarely or never counsel. The dichotomy likely was due in part to variation in client types; as indicated in Table 11.3, distributions were more similar for the periodontics and the “general office” groups whereas patterns were similar for the orthodontics and “specialties” group.

Frequency varied also by professional development activity of the dental hygienist. While across all groups, the majority counseled occasionally, the Low-PD group was more likely to rarely or never counsel, compared to the Moderate-PD and, in particular, the High-PD groups - 33.0% versus 25.2% and 16.0% respectively.

11.3 RECOMMEND FOR USE AT HOME

Respondents provided information regarding the frequency with which they recommend selected agents for use by the client at home – for example, to control bacterial plaque. Five agents were examined – namely, bacterial control rinses (e.g., chlorhexidine), topical fluorides (e.g., mouth rinses), systemic fluoride (e.g., dietary supplements), oral irrigation, and tooth whitening agents. Results overall are presented in Table 11.1 and illustrated in Figure 11.2. Regional distributions are in Table 11.2 and selected workplace-related distributions in Table 11.4.

Overall, dental hygienists recommend the specified agents occasionally. The exception is systemic fluoride, which typically is rarely or never recommended.

11.3.1 Bacterial Control Rinses

Overall, 77.1% of respondents recommend bacterial control rinses such as chlorhexidine occasionally and another 7.0% always do. A further 13.2% rarely or never recommend them.

Across all regions, the majority of respondents recommend bacterial control rinses occasionally; proportions ranged from a high of 89.1% for British Columbia, followed by 85.6% for Alberta, to a low of 68.1% for the Atlantic. (See Table 11.2.) Respondents for the Atlantic were almost twice as likely to rarely or never recommend them – 24.9% versus 13.2% overall. In contrast, respondents for Quebec were almost twice as likely to recommend them always – 12.9% versus 7.0% overall.

There was little difference in frequency of recommending the rinses between the group that applies anti-cariogenic or anti-microbial agents “selectively as indicated” and those that never apply them. Although it would appear that the group that applies the agents “routinely for all clients” is considerably more likely to always recommend them for home use, there were insufficient numbers to be statistically conclusive.

Results varied by type of workplace (Table 11.4). Respondents that worked in a general rather than a specialty dental office are more likely to recommend them occasionally – 78.5% and 59.8% respectively. On the other hand, the specialty group is more than twice as likely to recommend them rarely or never – 24.1% versus 12.2%. There was little difference between the groups in orthodontics and periodontics.

11.3.2 Topical Fluoride

The vast majority of respondents occasionally recommend topical fluoride such as mouth rinses for home use (85.7%). Another 8.0% recommend them always and a further 5.0% never do; 1.3% indicated that others made the recommendation. There was minimal variation regionally or based on other factors examined.

11.3.3 Systemic Fluoride

In contrast, respondents tend to recommend systemic fluoride (e.g., dietary supplement) for home use either occasionally (41.0%) or rarely or never (53.7%). Less than 5.0% reported they always recommend it or indicated that others do.

Regionally, respondents for Quebec and British Columbia tend to recommend it occasionally more so than rarely or never – proportions were 55.5% versus 38.2% for Quebec and 55.8% versus 38.6% for B.C.. In contrast, respondents for the Atlantic, Ontario, Man/Sask. and Alberta were more likely to rarely or never recommend it; proportions ranged from a high of 73.8% for Alberta to a low of 53.7% for Man/Sask., with 61.8% for Ontario and 65.0% for the Atlantic.

Frequency of recommending systemic fluoride varied by type of workplace (Table 11.4). Respondents working in a general dental office were twice as likely to recommend it occasionally compared to the specialty group – 42.5% versus 24.1%. There was no difference between the orthodontic and periodontic groups.

Frequency varied also based on the dental hygienists' year of graduation, years of experience, and years employed in the principal workplace. There were no differences based on type of school – that is, a university or college based program. For all three factors, the relationship was similar and linear and involved only the two predominant groups – the ones that cited either "rarely/never" or "occasionally". Thus, more recent graduates are more likely to rarely or never recommend systemic fluoride for home use, compared to past graduates; proportions ranged from a high of 60.5% for the group that graduated after 1995 to a low of 45.7% for the pre-1976 group. Similarly, 3 out of 5 respondents that had worked in dental hygiene or been employed in the workplace for less than 6 years rarely or never recommend systemic fluoride, compared to almost 1 out of 2 for the groups that had worked/been employed for 16 years or more.

11.3.4 Oral Irrigation

Overall, 3 out of 5 respondents recommend oral irrigation occasionally for use at home (60.2%) and another 35.4% never recommend it; less than 5.0% always recommend it or indicate that others do.

Across all regions, the majority of respondents reported they recommend oral irrigation occasionally. (See Table 11.2.) Proportions ranged from a high of 74.1% for British Columbia to a low of 50.9% for the Atlantic, where another 46.3% indicated they rarely or never recommend it.

Findings varied by type of workplace (Table 11.4). Respondents working in a general dental office were more likely to occasionally recommend oral irrigation, compared to the specialty group – 62.0% versus 39.8%; among the latter group, the majority rarely or never recommend it (56.6%). There was little difference between the orthodontic and periodontic groups.

11.3.5 Tooth Whitening Agents

Frequency of recommending tooth whitening agents for home use was similar to the pattern for oral irrigation - 3 out of 5 respondents recommend them occasionally (66.4%) and another 25.8% never recommend them. In this case, a further 5.3% of respondents indicated that others recommend them and another 2.4% recommend them always.

Again, across all regions, the majority of respondents reported they recommend occasionally the use of tooth whitening agents at home. The proportion ranged from a high of 75.5% for Quebec to a low of 53.1% for the Atlantic, where another 39.4% indicated they rarely or never recommend them. (See Table 11.2.)

Among respondents that reported they perform tooth whitening procedures selectively as indicated, the vast majority recommend them occasionally for home use (85.2%). In comparison, among respondents that never perform tooth whitening, two groups were apparent – 45.7% recommend them occasionally and another 45.0% rarely or never do.

11.4 HEALTH INFORMATION

Respondents were asked to indicate the frequency with which they provided written or verbal information to clients and/or the general public. Six topics were specified – namely, fluoride therapy, replacement of missing teeth, mouth protection, occlusal equilibration, treatment of TMJ dysfunction, and substance abuse. Response choices were *rarely/never, occasionally, always and done by others*. Results overall are presented in Table 11.1 and illustrated in Figure 11.3, regional distributions are in Table 11.5 and selected workplace-related distributions in Table 11.6. Missing responses were less than 3.0%.

11.4.1. Overview

The majority of dental hygienists provide information occasionally to clients and/or the general public regarding fluoride therapy, replacement of missing teeth, mouth protection, and treatment for TMJ dysfunction. While the greatest proportion of dental hygienists provides information occasionally regarding occlusal equilibration, a relatively large group rarely or never provides it. They rarely or never provide information regarding substance abuse. If the dental hygienist does not provide the information, apparently no one else in the workplace does either.

There is little variation regionally, with two exceptions. Dental hygienists in Quebec are twice as likely to always provide information about replacement of missing teeth. They are also more likely to provide information regarding occlusal equilibration. There is also little variation based on type of workplace or other factors examined.

11.4.2 Fluoride Therapy

Overall, 7 out of 10 respondents reported they provide information occasionally regarding fluoride therapy (69.2%), another 13.9% provide it always, and a further 15.4% rarely or never do. Relatively few respondents indicated others provided it (1.5%).

Across all regions, at least 6 out of 10 respondents cited “occasionally”; proportions varied little, ranging from a high of 74.0% for British Columbia to a low of 68.3% for both Ontario and Man/Sask. Respondents that worked in a specialty versus a general dental office were almost three times more likely to rarely or never provide fluoride-related information – proportions were 40.5% and 14.8% respectively (Table 11.6).

11.4.3 Replacement of Missing Teeth

Almost 6 out of 10 respondents reported they provide information occasionally regarding the replacement of missing teeth (58.6%) and another 30.3% always do. A further 6.5% rarely or never provide the information and an additional 4.5% indicated it is provided by others.

For five regions, there was little variation – the proportion that provides information occasionally about replacing missing teeth ranged from 60.1% to 66.0%. For Quebec, the group that cited “occasionally” decreased to 47.2% and an equal proportion – that is, 47.2%, indicated they always provide the information. (See Table 11.5.)

Findings varied by type of workplace (Table 11.6). Regarding general versus specialty dental offices, among both groups of respondents, the majority provides information occasionally – proportions were 58.7% and 57.9% respectively. However, of the remaining respondents, those in a general dental office were two-and-one-half times more likely to provide the information always whereas the specialty group was three times more likely to rarely or never provide it. There was little difference by type of specialty.

11.4.4 Mouth Protection

Similar to findings regarding replacement of missing teeth, the majority of respondents provide information occasionally regarding mouth protection (70.3%) and another 16.4% provide it always. Less than 15.0% reported they rarely or never provide it or that others do. There was little variation regionally or based on the other factors examined. Proportions for “occasionally” ranged from a high of 75.0% for B.C. to a low of 64.9% for Man/Sask. (see Table 11.5).

Regardless of whether respondents fabricate and fit mouth protectors occasionally or never, approximately 7 out of 10 provide information occasionally about mouth protection. While it appeared that the group that performs mouth protection procedures routinely is more likely to always provide related information, there were insufficient numbers to be conclusive.

11.4.5 TMJ Dysfunction

Regarding treatment for TMJ (temporal mandibular joint) dysfunction, 3 out of 5 respondents provide information occasionally (58.4%) and another 7.6% always; 21.1% rarely or never provide information and another 12.9% indicated it is provided by others. There was minimal variation regionally; proportions for “occasionally” ranged from 54.2% for Man/Sask. to 59.3% for Ontario and the spread was proportionately similar for the other response choices.

Results varied by type of workplace (Table 11.5). The majority of respondents that worked in a general dental office provided TMJ-related information occasionally (59.4%) whereas the specialty group was slightly more likely to indicate they rarely or never provided it or that others did (51.3%). There was no apparent difference between the orthodontics and periodontics groups.

11.4.6 Occlusal Equilibration

Regarding occlusal equilibration, and in contrast to the above four topics, two groups were predominant – respondents that provided information occasionally (45.5%) and others that rarely or never did (34.6%). A further 12.6% of respondents indicated that others provided the information; relatively few always provided it (7.2%). (See Table 11.1.)

Across all regions, there was little proportionate difference between the group that cited “occasionally” and the other that cited “rarely/never”. (See Table 11.5.) The exception was Quebec where the majority of respondents (56.5%) reported they provided information “occasionally” and only 21.0% indicated they rarely or never did. For Quebec, Ontario and British Columbia, the group that cited “occasionally” was predominant; proportions are presented in Table 11.5. For the remaining three regions, “rarely or never” was predominant – specifically, Atlantic 38.3%, Man/Sask. 45.8% and Alberta 45.2%.

11.4.7 Substance Abuse

Almost two-thirds of respondents reported they rarely or never provide information about substance abuse (65.2%). Another 27.2% provide it occasionally. There was minimal variation regionally; proportions for “rarely/never” ranged from a high of 73.9% for the Atlantic, followed by 71.1% for Man/Sask., to a low of 59.8% for British Columbia.

11.5 In-Office Treatments

Participants were asked to indicate the frequency with which they typically recommend a set of four “in-office” treatments – namely, tooth whitening or “bleaching”, veneers, crowns and bridges, and replacement of amalgam restorations with composites. Findings overall are presented in Table 11.1 and illustrated in Figure 11.4. Distributions by type of workplace are presented in Table 11.7. There was no noteworthy variation regionally.

11.5.1 Overview

It would appear that, while 7 out of 10 dental hygienists occasionally recommend tooth whitening, veneers, and/or crowns and bridges, they are less inclined to recommend replacement of amalgam restorations.

Distributions tend to be consistent regionally. While dental hygienists that work in a general versus a specialty dental office are more likely to recommend the in-office treatments occasionally, the specialty group is considerably more likely to rarely or never recommend them. These findings may reflect differences in clientele and a more limited range of services typically provided in specialty practices.

11.5.2 Tooth Whitening

The majority of respondents recommend tooth whitening occasionally – 73.0%, and another 7.4% recommend the procedure always. A further 16.3% rarely or never recommend it nor do others in the office typically recommend it (3.2%).

As expected, respondents that reported they perform tooth whitening procedures are more likely to recommend them. Among the group that performs them selectively as indicated, 83.0% recommend them occasionally. In contrast, among the group that never performs tooth whitening, the proportion that recommends the procedure occasionally decreases to 62.9%, and another 31.4% rarely or never recommend it. Similarly and again as expected, respondents that recommend tooth whitening agents occasionally for home use tend also to occasionally recommend in-office treatments – 86.1%. In comparison, among the group that never recommends them for home use, one-half rarely or never recommend the in-office procedure (49.4%) and another 45.8% do so occasionally.

As noted in Table 11.7, respondents that worked in a specialty dental office were almost equally divided into the group that recommends tooth whitening occasionally (49.5%) and the one that either rarely or never recommends it or cites “done by others” (42.3% and 6.3% respectively). In comparison, 75.0% of respondents in a general office recommend the procedure occasionally. Regarding type of specialty – that is, orthodontics versus periodontics, no variance was observed.

11.5.3 Veneers

Regarding veneers, proportions were similar to those for tooth whitening - the majority of respondents recommend them occasionally – 71.0%, and another 8.5% do so always. While 12.7% indicated they rarely or never recommend veneers, an additional 7.8% reported that others recommend them.

Again, respondents in a general dental office are more likely to recommend them occasionally (73.6% versus 40.7%). In contrast, the specialty group is three times more likely to recommend them rarely or never (42.3% versus 14.1%). (See Table 11.7.)

11.5.4 Crowns and Bridges

The vast majority of respondents – approximately 9 out of 10 - recommend crowns and bridges either occasionally or always; proportions were 70.5% and 18.4% respectively. Another 6.4% indicated that others recommend them.

Approximately 9 out of 10 respondents in a general dental office recommend crowns and bridges. However, as expected, the proportion declines to 1 out of 2 for the specialty group; another 27.0% rarely or never recommends them and a further 16.2% indicated that others do.

11.5.5 Amalgam Replacement

In contrast to the previous three procedures, respondents were almost equally divided between the group that recommends occasionally the replacement of amalgam restorations with composites (44.8%) and those that rarely or never do (40.0%). (See Table 11.1.) Respondents that work in a specialty office are far less likely to recommend replacement – 66.1%; however, compared to the general group, they are more likely to report that others recommend the procedure – 17.9% versus 6.5% (Table 11.7).

11.6 DECISIONS REGARDING CLIENT EDUCATION

Respondents provided information regarding decision-making related to client education. Six types of decisions were considered – namely, who would provide it, what to include, amount of time to spend, devices and techniques to recommend, and whether to counsel in cessation of tobacco use. Response choices were *dental hygienist independently*, *dentist independently*, *dental hygienist and dentist jointly* and *routine policy*. Findings overall are presented in Table 11.8 and illustrated in Figure 11.5. Regional distributions are presented in Table 11.9 and workplace-related distributions in Table 11.10. There was no significant or meaningful variance based on whether the respondent worked in orthodontics or periodontics.

11.6.1 Overview

Regarding client education, dental hygienists independently tend to make decisions that involve the amount of time to spend and the devices and tooth brushing techniques to recommend. Decisions that involve who will provide the education, what to include in it and whether to counsel for cessation of tobacco use are more likely to be made jointly with the dentist.

Dental hygienists in the three western regions are more likely to perceive the dental hygienist as decision-maker, compared to those in the eastern regions. Similarly, dental hygienists working in a general versus a specialty dental office are more likely to cite the dental hygienist as decision-maker. Perceptions regarding client education decision-making are similar for dental hygienists that work in orthodontics versus periodontics.

11.6.2 Who Will Provide It

One-half of the respondents reported that the decision regarding who will provide the client education is made jointly by the dental hygienist and the dentist (54.0%). Another 37.8% indicated the dental hygienist decides. Less than 10.8% cited the dentist or routine policy.

Regionally there was an east-west split. (See Table 11.9.) Respondents for the Atlantic, Quebec and Ontario tended to perceive that it is a joint decision – proportions were 54.8%, 49.2% and 61.9% respectively. Among the western regions, respondents for British Columbia were somewhat more likely to perceive that the dental hygienist decides (50.2%). However, respondents for Man/Sask. and Alberta were divided – one group cited the dental hygienist (46.5% and 46.8% respectively) and the other indicated it is decided jointly (46.5% and 45.4% respectively).

Regardless of type of workplace Table 11.10, the majority of respondents perceive the decision is made jointly. Among the remainder however, respondents working in a general versus a specialty dental office are more likely to report that the dental hygienist decides – 39.0% versus 24.3%.

11.6.3 What to Include

Similar to the decision regarding who will provide client education, one-half of the respondents reported that the decision regarding what to include is made jointly (56.5%). Another 37.7% indicated the dental hygienist decides. Less than 6.0% cited the dentist or routine policy.

Again, an east-west dichotomy was evident and proportions were similar to those regarding “who is to provide client education”. (See Table 11.9.) Respondents for the Atlantic, Quebec and Ontario tend to perceive that it is a joint decision whereas respondents for British Columbia were more likely to report that the dental hygienist decides; both groups were equally prevalent for Man/Sask. and Alberta.

Similar to findings for the “who provides it” decision, while the majority of respondents in a general office reported it was a joint decision, the proportion that cited the dental hygienist as decision-maker was twice the proportion for the specialty group – 39.3% versus 19.8%. (See Table 11.10.)

11.6.4 Amount of Time

In contrast to the two decisions reported above, one-half of the respondents reported that the dental hygienist independently decides the amount of time to spend on client education (54.5%). Another 36.2% indicated it typically is decided jointly with the dentist.

Across all regions, the majority of respondents reported that the dental hygienist decides the amount of time to spend on client education. Proportions ranged from a high of 68.3% for Man/Sask. to a low of 46.7% for Quebec. (See Table 11.9.)

The majority of respondents that worked in a general dental office cited the dental hygienist as decision-maker (57.2%). In contrast, the majority of the specialty group indicated the decision was made jointly (54.4%) and another 14.0% reported it is based on routine policy. (See Table 11.10.)

11.6.5 Oral Hygiene Devices to Recommend

Overall, 6 out of 10 respondents reported that the dental hygienist decides the oral hygiene devices to recommend (62.8%) and another 34.2% indicated it is a joint decision with the dentist. (See Table 11.8.)

Similar to the distribution for the amount of time to spend, the majority of respondents in all regions reported that the dental hygienist decides the devices to recommend. Again, the proportion for Man/Sask. was greatest at 76.9% and it decreased to a low of 48.8% - again, for Quebec. (See Table 11.9.)

Regarding type of workplace (Table 11.10), the general office group was considerably more likely to report the dental hygienist decides which devices to recommend (64.8%) whereas 1 out of 2 respondents in the specialty group indicated it was a joint decision (50.0%) and another 39.7% cited the dental hygienist.

11.6.6 Tooth Brushing Technique to Recommend

Overall, 8 out of 10 respondents reported the dental hygienist decides which tooth brushing technique to recommend (82.0%). The remaining respondents primarily indicated it is decided jointly with the dentist (15.4%). (See Table 11.8.)

Across all regions, approximately 8 out of 10 respondents reported that the dental hygienist decides the tooth brushing technique to recommend. The majority of respondents reported the dental hygienist decides, regardless of type of workplace; however, the proportion was significantly greater for the general compared to the specialty group – 84.3% and 55.3% respectively.

11.6.7 Counsel in Cessation of Tobacco Use

In contrast to the decisions involving oral hygiene devices and techniques, respondents were divided as to who makes the decision regarding counseling for the cessation of tobacco use. (See Table 11.8.) Overall, 2 out of 5 respondents reported it typically is made jointly by the dental hygienist and dentist, and another 2 out of 5 cited the dental hygienist; proportions were 44.9% and 41.0% respectively. A further 10.8% cited the dentist as decision-maker – an increase over the corresponding proportion reported for the other client education-related decisions.

Dichotomy was evident in the regional distributions (see Table 11.9). The dental hygienist as decision-maker versus joint decision-making was slightly more prevalent among respondents for British Columbia, Ontario, Alberta and Man/Sask. In contrast, respondents for the Atlantic and Quebec regions were most likely to report the decision is made jointly. Findings for Quebec varied considerably from those for the other regions. Almost 8 out of 10 respondents reported the decision is made either jointly or by the dentist independently or based on routine policy; proportions were 55.8%, 16.4% and 5.3% respectively. The proportion that cited the dental hygienist as decision-maker was notably lower for Quebec - 22.6% compared to 41.0% overall and at least 44.0% for Ontario and the three western regions.

Results varied by type of workplace (table 11.10). Among respondents in a general dental office, two groups were evident – 44.1% reported the decision is made jointly and another 42.0% cited the dental hygienist as decision-maker. In contrast, over one-half of respondents in a specialty office reported the decision is made jointly (55.1%) and another 13.5% cited the dentist as decision-maker.

11.6.8 Other Relevant Factors

For some of the decisions specified, in addition to region and type of workplace, results varied based on professional development activity and year of graduation of the respondent, and whether the dentist typically sees all dental hygiene active treatment (AT) clients on the day of their appointment.

Regarding year of graduation, results are presented in Table 11.11. Findings were noteworthy for five of the six decisions – namely, who will provide client education, what to include, amount of time to allow, devices to recommend, and counseling for tobacco cessation. While an apparent relationship was evident, it was non-linear. Respondents that had graduated in 1975 or earlier, compared to later graduates, consistently were least likely to report that the decisions were made jointly by the dental hygienist and the dentist and more likely to cite the dental hygienist as decision-maker. For all decisions, the group that graduated during the 5-year period 1981 to 1985 was considerably more likely to perceive that the decisions are made jointly or by the dentist and least likely to perceive the dental hygienist as decision-maker.

Regarding dental hygiene active treatment (AT) clients, an association was evident for four of the client education decisions – namely, who will provide it, amount of time, devices to recommend, and counseling with regard to tobacco use. (See Table 11.12.) Respondents that reported the dentist typically sees all AT clients were considerably less likely to cite the dental hygienist as decision-maker and more likely to perceive that decisions are made jointly or by the dentist, compared to the group whose AT clients are not seen as frequently by the dentist.

Level of professional development (PD) activity of the dental hygienist is associated with two decisions – oral hygiene devices to recommend and, again, tobacco counseling. (See Table 11.13.) The proportion of respondents that perceived the dental hygienist as decision-maker was greatest among the High-PD group and decreased to as PD activity declined. Correspondingly, the Low-PD group was most likely to report that decisions were made either jointly or by the dentist.

Similar to decision-making patterns reported in previous chapters, further investigation is warranted to more fully understand the relationship of decision-making responsibility to dental hygiene practice.

11.7 TIME SPENT COUNSELING

Participants were asked to specify the amount of time per appointment they spent, on average, counseling a client on oral self-care. The distribution was adjusted to eliminate extreme responses.¹ Findings are presented in Table 11.14.

Dental hygienists spend, on average, 5 minutes per appointment counseling a client on oral self-care. Respondents overall indicated they spent from 1 to 30 minutes per appointment; the mean average was 7.36 minutes, with a standard deviation of 4.23 minutes. One-half of respondents (the median) counseled for 5 minutes; that also was the time reported most frequently (40.0%) – that is, the mode. The time reported next most frequently was 10 minutes – by 20.1% of the respondents.

Regional variation was evident (Table 11.14). The mean average ranged from a high of 8.2 minutes for Quebec to a low of 6.6 for the Atlantic and 6.7 for Man/Sask. The maximum of 30 minutes reported for all regions may reflect respondents that incorporate counseling techniques throughout the entire appointment. The exception was Man/Sask. for which the maximum reported was 15 minutes.

Results were consistent with previous findings regarding self-care counseling. Respondents that reported they counseled a new client always regarding oral self-care tend to spend more time per appointment on that counseling, compared to those that counseled occasionally or rarely or never. The mean average was 7.5 minutes versus 6.7 and 5.2 minutes respectively. Similarly, respondents that reportedly always reviewed oral self-care procedures at each appointment spent more time counseling compared to those that reviewed only occasionally or rarely or never; mean averages were 7.8 minutes versus 6.6 and 5.0 minutes respectively. On the other hand, there was little association between the amount of time spent counseling and responsibility for making the actual decision regarding the amount of time to spend for client education.

There was little variation in the time spent by respondents in a general versus a specialty dental office. However, one-half of respondents in periodontics counseled for 8 minutes on average whereas one-half of those in orthodontics counseled for 6 minutes on average. Findings varied little based on the personal, occupational and other workplace-related factors examined. It was interesting to note that, regarding year of graduation, the group that graduated in the period 1981-to-1985 again was unique – the median average was 7 minutes of counseling compared to 5 minutes for all other “year of graduation” categories.

¹ A very small proportion of responses were “outliers” (n=7) – that is, they were beyond the range for 99.05% of responses and typically well beyond the bounds. The one response that indicated zero minutes was set to missing and the remaining 6 responses that exceeded 30 minutes were set to 30.

11.8 SUMMARY

Dental hygienists tend to provide health counseling and other educational services occasionally more so than always or rarely or never; depending on the procedure, this frequency may be consistent with practice guidelines. Regarding decision-making, some decisions typically are made by the dental hygienist and others are made jointly with the dentist. Compared to the dimensions of dental hygiene practice examined in previous chapters, there was little relationship between the frequency of performing and deciding client education services and the personal, occupational and workplace factors examined. The exception was region of residence, type of workplace (i.e., general versus specialty), and, to a lesser extent, type of specialty (i.e., orthodontics versus periodontics).

Of the 20 educational services examined, 16 are performed occasionally by the dental hygienist, another 2 always, and a further 2 rarely or never. If the dental hygienist does not perform the service, it typically is not provided – that is, other persons in the workplace do not do it.

Regarding the two services that typically are performed always, dental hygienists tend to always counsel the new client in self-care procedures (85.9%). They tend also to always review self-care at each appointment (60.4%). There has been little change since 1987, when 95.3% of dental hygienists reportedly provided oral hygiene and self-care instruction at least once a day and only 1.2% did it rarely or never.

The likelihood of a review always occurring is greater among dental hygienists in Ontario and Alberta and declines slightly among dental hygienists in Man/Sask.; proportions are 65.7%, 64.5% and 50.0% respectively. One-half of dental hygienists spend 5 minutes per appointment, on average, counseling a client on oral self-care. (The mean is 7.36 minutes, with a standard deviation of 4.23 and range of 1 to 30.)

Regarding the other two services, the dental hygienist rarely or never recommends systemic fluoride such as dietary supplements for home use (53.7%) and rarely or never provides information about substance abuse (65.2%). There is little variation regionally.

The remaining activities typically are performed occasionally by the dental hygienist. They include counseling in oral self-examination techniques (49.3%), dietary control of oral disease (75.4%), and cessation of tobacco use (61.6%). It would appear that diet counseling by dental hygienists has become more prevalent - the proportion that indicated rarely or never decreased from 63.5% in 1987 to 15.9% by 2001.

Regarding home-use products, the dental hygienist recommends occasionally the use of bacterial control rinses such as chlorhexidine (77.1%), topical fluorides such as mouth rinses (85.7%), oral irrigation (60.2%), and tooth whitening agents (66.4%). Verbal or written information typically is provided to clients and/or the general public occasionally regarding fluoride therapy (69.2%), replacement of missing teeth (58.6%), mouth protection (70.3%), and treatment for TMJ dysfunction (58.4%); information regarding occlusal equilibration tends to be provided either occasionally (45.5%) or rarely or never (34.6%).

Regarding in-office treatments, 7 out of 10 dental hygienists occasionally recommend tooth whitening, veneers, and/or crowns and bridges; regarding the latter procedure, another 18.4% always recommend them. Regarding the replacement of amalgam restorations with composites, dental hygienists tend to recommend the procedure either occasionally (44.8%) or rarely or never (40.0%).

The frequency with which a dental hygienist performs educational services tends to vary by region of residence. Other factors include professional development activity of the dental hygienist, type of workplace and type of specialty, if orthodontics or periodontics. While dental hygienists that work in a general versus a specialty dental office tend to provide diet and tobacco counseling and recommend the in-office treatments more frequently, this likely is due, in part, to differences in clientele and a more limited range of services typically provided in specialty practices.

Regarding decisions related to client education, dental hygienists tend to decide independently the amount of time to spend and the devices and tooth brushing techniques to recommend. Decisions that involve who will provide the education, what to include in it and whether to counsel for cessation of tobacco use are more likely to be made jointly with the dentist. Dental hygienists in the three western regions are more likely to perceive the dental hygienist as decision-maker, compared to those in the eastern regions. Similarly, dental hygienists working in a general versus a specialty dental office are more likely to cite the dental hygienist as decision-maker. Perceptions are similar for dental hygienists that work in orthodontics versus periodontics. Similar to decision-making patterns reported in previous chapters, further investigation is warranted to more fully understand the relationship to and implications for dental hygiene practice and service delivery.

Table 11.1: Frequency With Which Dental Hygienists Perform Selected Educational Activities, Canada, 2001 (n = 1438)

TYPE OF ACTIVITY	FREQUENCY			
	Rarely/Never	Occasionally	Always	Done by Others
1. Counsel in:				
a. oral self-examination techniques	32.9	49.3	15.6	2.1
b. self-care procedures	0.9	11.9	85.9	1.3
c. review self-care procedures at each appointment	1.5	37.7	60.4	0.4
d. dietary control of oral disease	15.9	75.4	7.6	1.1
e. tobacco cessation	24.6	61.6	12.7	1.1
2. Recommend for Home Use:				
a. bacterial control rinses	13.2	77.1	7.0	2.7
b. topical fluoride	5.0	85.7	8.0	1.3
c. systemic fluoride	53.7	41.0	1.9	3.4
d. oral irrigation	35.4	60.2	2.2	2.1
e. tooth whitening agents	25.8	66.4	2.4	5.3
3. Provide Information Re:				
a. fluoride therapy	15.4	69.2	13.9	1.5
b. replace missing teeth	6.5	58.6	30.3	4.5
c. mouth protection	9.3	70.3	16.4	3.9
d. occlusal equilibration	34.6	45.5	7.2	12.6
e. TMJ dysfunction	21.1	58.4	7.6	12.9
f. substance abuse	65.2	27.2	1.6	6.1
4. Recommend Treatments:				
a. tooth whitening	16.3	73.0	7.4	3.2
b. veneers	12.7	71.0	8.5	7.8
c. crowns and bridges	4.7	70.5	18.4	6.4
d. amalgam replacement	40.0	44.8	7.7	7.4

Missing responses were less than 5%

Figure 11.1: Dental Hygienists That Perform Selected Counseling Services, Canada 2001 (percent always and occasionally; n=1438)

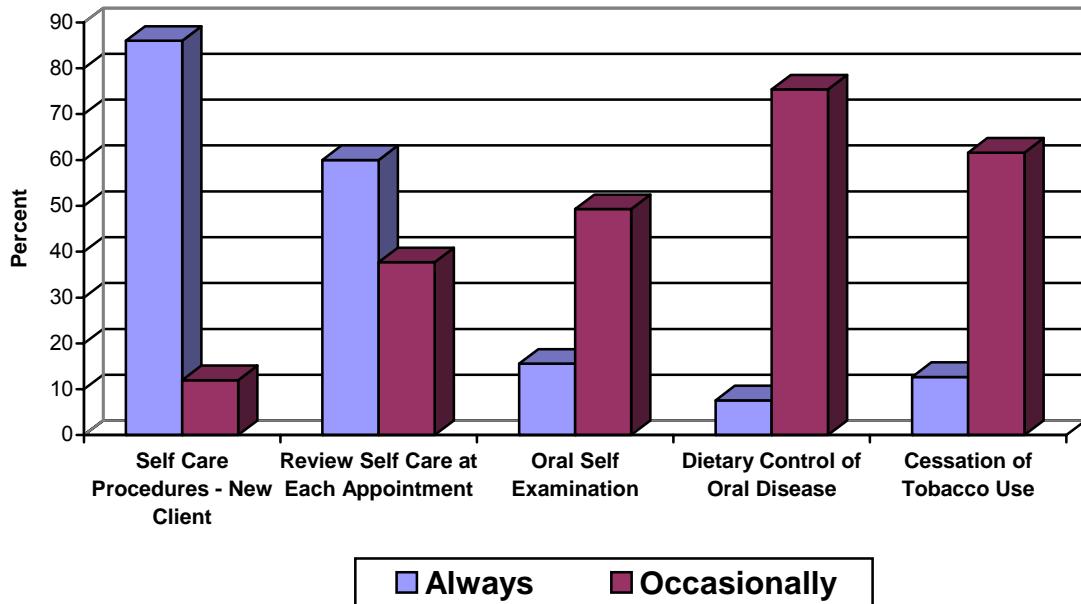


Figure 11.2: Dental Hygienists That Recommend Selected Agents for Home Use, Canada 2001 (percent always and occasionally; n=1438)

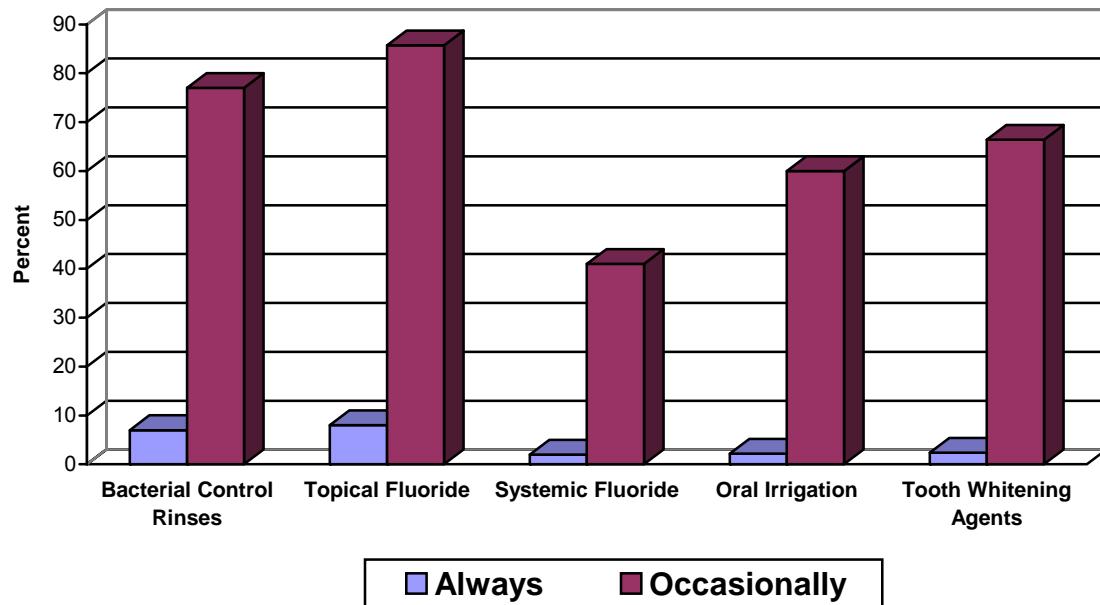


Figure 11.3: Dental Hygienists That Provide Oral Health Information, by Topic, Canada 2001 (percent always and occasionally; n=1438)

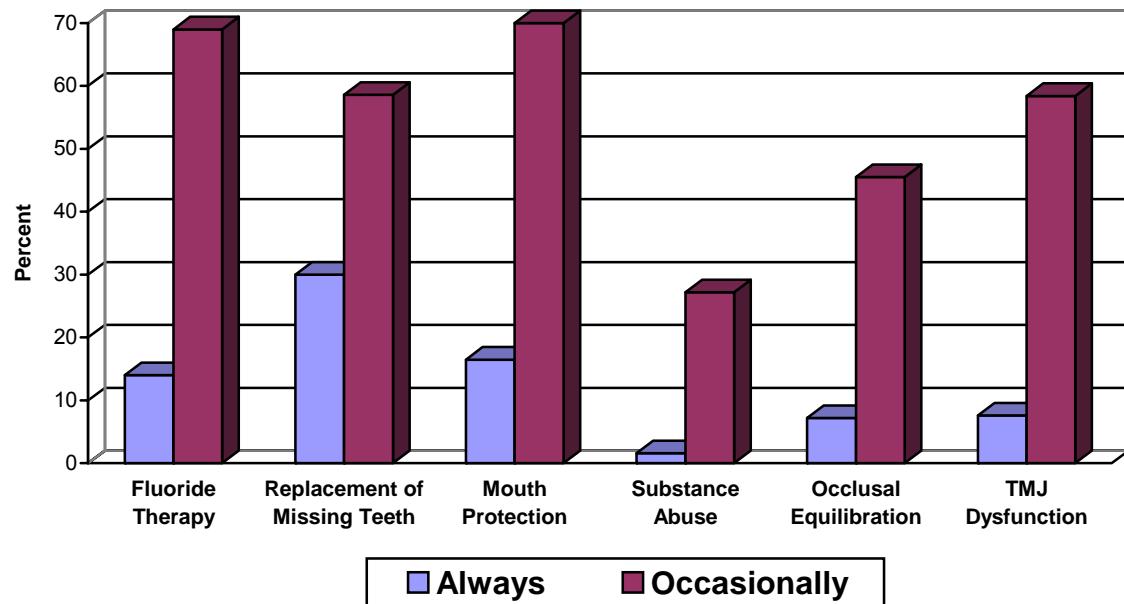


Figure 11.4: Dental Hygienists That Recommend Selected Dental Treatments, Canada 2001 (percent always and occasionally; n=1438)

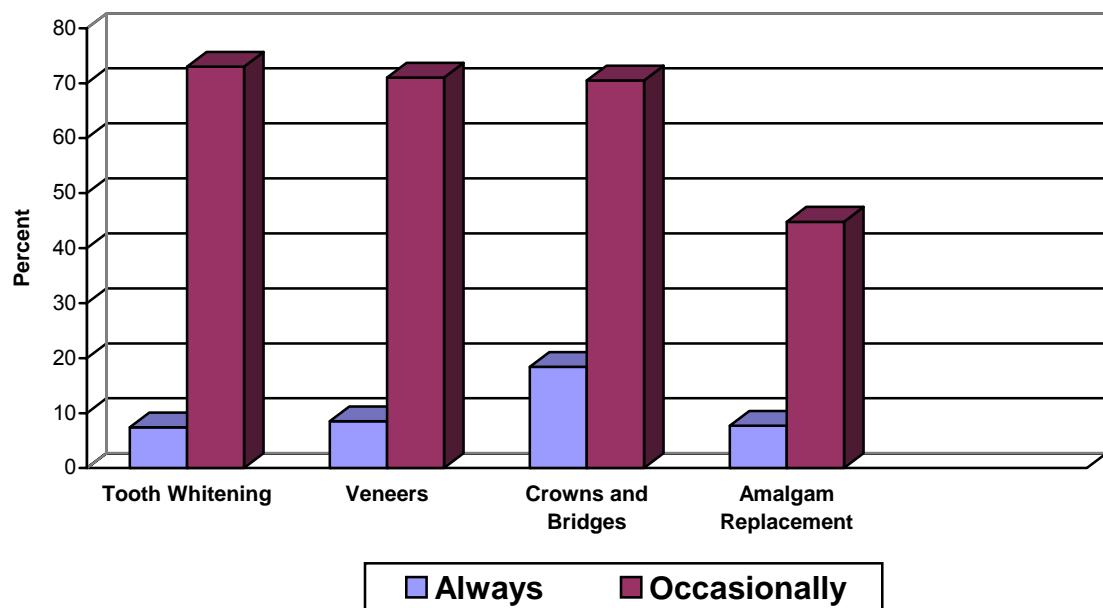


Table 11.2: Frequency with which Dental Hygienists Perform Selected¹ Counseling Services and Recommend Self-Care Products, by Region, Canada, 2001

PROCEDURES	REGION						National Weighted Total	
	Atlantic (n=214)	Quebec (n=256)	Ontario (n=291)	Man/Sask. (n=203)	Alberta (n=225)	B.C. (n=249)		
A. COUNSEL								
1. Oral Self-examination Techniques								
Rarely/never/dbo ²	50.5	25.3	36.5	51.2	42.6	31.0	35.0	
Occasionally	40.1	41.9	52.1	43.7	49.3	60.0	49.3	
Always	9.4	32.8	11.3	5.0	8.1	9.0	15.6	
2. Dietary Control Of Oral Disease								
Rarely/never/dbo	19.7	25.8	12.8	26.4	18.4	8.9	17.0	
Occasionally	73.7	67.5	80.2	69.2	73.1	78.5	75.4	
Always	6.6	6.7	6.9	4.5	8.5	12.6	7.6	
B. RECOMMEND FOR USE AT HOME								
1. Bacterial Control Rinses								
Rarely/never/dbo	30.1	9.2	21.2	18.8	8.6	6.9	15.9	
Occasionally	68.1	76.9	73.3	74.8	85.6	89.1	77.1	
Always	(4)	12.9	5.6	6.4	5.9	4.0	7.0	
2. Systemic Fluoride								
Rarely/never/dbo	67.8	40.2	67.1	56.2	74.7	41.0	57.1	
Occasionally	30.8	55.5	32.6	41.3	24.4	55.8	41.0	
Always	(3)	4.3	(1)	2.5	(2)	3.2	1.9	
3. Oral Irrigation								
Rarely/never/dbo	47.7	44.0	37.6	41.7	31.1	23.5	37.5	
Occasionally	50.9	54.3	59.9	55.8	65.8	74.1	60.2	
Always	(3)	(4)	2.4	2.5	3.2	2.4	2.2	
4. Tooth Whitening Agents								
Rarely/never/dbo	45.5	21.4	32.5	40.8	28.3	37.6	31.1	
Occasionally	53.1	75.5	65.4	57.2	68.2	60.7	66.4	
Always	(3)	3.2	2.1	(4)	3.6	(4)	2.4	

1. Services for which distributions varied regionally are presented.
2. Response choices were *rarely/never*, *occasionally*, *always* and *done by others* - i.e., "dbo".

Table 11.3: Frequency With Which Dental Hygienists Provide Selected Counseling Services, by Type of Workplace, Canada, 2001 (n=1438)

TYPE OF PROCEDURE	TYPE OF WORKPLACE			
	General (n=1317)	Specialty (n=119)	Orthodontics (n=47)	Periodontics (n=50)
1. Dietary Control				
Rarely/never/dbo ¹	16.1	28.8	31.5	18.5
Occasionally	76.7	60.0	57.6	75.0
Always	7.2	12.2	10.9	6.5
2. Cessation of Tobacco Use				
Rarely/never/dbo	24.2	42.1	41.5	22.3
Occasionally	63.0	45.6	44.5	59.6
Always	12.8	12.3	14.0	18.1

¹"dbo" refers to the response choice "done by others."

Missing responses were less than 3.0%

Table 11.4: Frequency With Which Dental Hygienists Recommend Selected Agents for Use at Home, by Type of Workplace, Canada, 2001 (n=1438)

TYPE OF PROCEDURE	TYPE OF WORKPLACE			
	General (n=1317)	Specialty (n=119)	Orthodontics (n=47)	Periodontics (n=50)
1. Bacterial Control Rinses				
Rarely/never/dbo ¹	14.4	33.0	21.6	13.8
Occasionally	78.5	59.8	69.1	75.4
Always	7.1	7.1	9.3	10.8
2. Systemic Fluoride				
Rarely/never/dbo ¹	55.4	75.9	54.0	55.4
Occasionally	42.5	24.1	42.9	41.6
Always	2.1	---	3.1	3.0
3. Oral Irrigation				
Rarely/never/dbo ¹	35.9	56.6	43.0	35.7
Occasionally	62.0	39.8	55.2	61.3
Always	2.1	3.5	1.8	3.0
4. Tooth whitening				
Rarely/never/dbo ¹	28.0	68.8	32.1	29.1
Occasionally	69.4	31.2	64.2	66.1
Always	2.6	---	3.8	4.8

¹"dbo" refers to the response choice "done by others."

Missing responses were less than 3.0%

Table 11.5: Frequency with which Dental Hygienists Provide Selected Educational Information¹, by Region, Canada, 2001

PROCEDURES	REGION						National Weighted Total
	Atlantic (n=214)	Quebec (n=256)	Ontario (n=291)	Man/Sask. (n=203)	Alberta (n=225)	B.C. (n=249)	
1. Replacement Of Missing Teeth							
Rarely/never/dbo ²	17.8	5.6	13.8	15.5	9.6	8.6	11.0
Occasionally	64.9	47.2	60.1	64.0	65.8	66.0	58.6
Always	17.3	47.2	26.1	20.5	24.7	25.4	30.3
2. Occlusal Equilibration							
Rarely/never/dbo	59.2	31.1	51.7	59.2	56.5	47.3	47.2
Occasionally	37.9	56.5	43.6	34.8	38.0	44.0	45.5
Always	4.9	12.5	4.6	6.0	5.4	8.6	7.2

1. Topics for which distributions varied regionally are presented.

2. Response choices were *rarely/never*, *occasionally*, *always* and *done by others* - i.e., "dbo".

Table 11.6: Frequency With Which Dental Hygienists Provide Educational Information, by Type of Workplace, Canada, 2001 (n=1438)

TYPE OF INFORMATION	TYPE OF WORKPLACE			
	General (n=1317)	Specialty (n=119)	Orthodontics (n=47)	Periodontics (n=50)
1. Fluoride Therapy				
Rarely/never/dbo ¹	14.8	40.5	31.7	19.9
Occasionally	70.3	57.7	57.1	68.3
Always	14.9	1.8	11.2	11.8
2. Replacement of Missing Teeth				
Rarely/never/dbo ¹	9.3	29.8	18.5	8.1
Occasionally	58.7	57.9	39.5	52.2
Always	32.0	12.3	42.0	39.8
3. Treatment for TMJ Dysfunction				
Rarely/never/dbo ¹	32.5	51.3	37.5	33.1
Occasionally	59.4	46.8	50.6	56.3
Always	8.1	1.8	11.9	10.6

¹"dbo" refers to the response choice "done by others."

Missing responses were less than 3.0%

Table 11.7: Frequency with Which Dental Hygienists Recommend Selected In-Office Treatments, by Type of Procedure and Workplace, Canada, 2001

TYPE OF PROCEDURE	TYPE OF WORKPLACE			
	General (n=1317)	Specialty (n=119)	Orthodontics (n=47)	Periodontics (n=50)
1. Tooth Whitening:				
Rarely/usually/dbo ¹	17.0	48.6	20.1	26.7
Occasionally	75.0	49.5	68.6	63.4
Always	7.9	(2)	11.3	9.9
2. Veneers:				
Rarely/usually/dbo ¹	17.4	57.4	26.8	22.7
Occasionally	73.6	40.7	60.5	67.9
Always	9.1	(2)	12.7	9.4
3. Crowns and Bridges:				
Rarely/usually/dbo ¹	8.2	43.2	17.6	12.6
Occasionally	71.9	54.1	60.4	65.4
Always	19.8	(3)	22.0	22.0
4. Amalgam Replacement:				
Rarely/usually/dbo ¹	44.3	84.0	53.1	46.2
Occasionally	47.4	15.2	31.9	40.5
Always	8.3	(1)	15.0	13.3

Missing responses were less than 3.0%

¹"dbo" refers to the response choice "done by others".

**Table 11. 8: Dental Hygienists by Perceived Decision-Making Responsibility
Regarding Client Education, Canada, 2001 (n = 1438)**

DECISIONS REGARDING CLIENT EDUCATION	DECISION MAKER				TOTAL % N	
	Dental Hygienist	Dentist	Both Jointly	Routine Policy		
1. Who will provide it?	37.8	3.1	54.0	5.1	100.0	1398
2. What to include?	37.7	2.7	56.5	3.2	100.0	1406
3. Amount of time to schedule?	54.5	4.1	36.2	5.2	100.0	1401
4. Oral hygiene devices?	62.8	1.4	34.2	1.7	100.0	1404
5. Tooth brushing technique?	82.0	0.7	15.4	1.9	100.0	1421
6. Tobacco cessation counseling?	41.0	10.8	44.9	3.3	100.0	1281

Missing responses: Less than 5.0% with the exception of item 6 (m = 10.8%)

**Figure 11.5: Dental Hygienists, by Perceived Decision-Making Responsibility
Regarding Client Education, Canada 2001 (percent DH and DH/DDS; n=1438)**

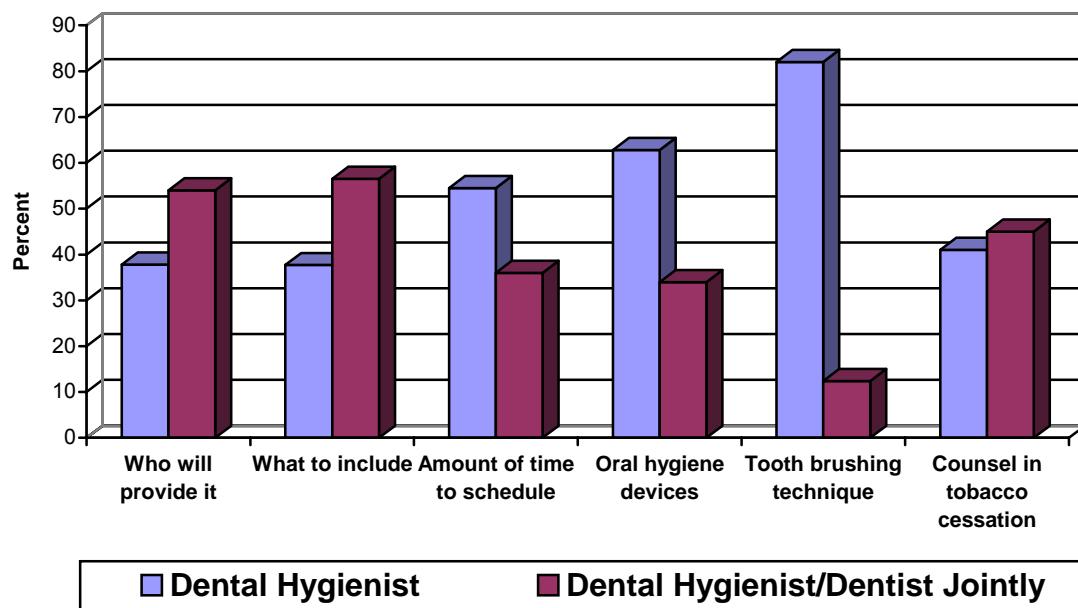


Table 11.9: Dental Hygienists, by Decision Maker¹ Regarding Client Education and by Region, Canada, 2001 (% dh and dh/dds)

DECISION (% DH and DH/DDS)	REGION						National Weighted Total
	Atlantic (n = 214)	Quebec (n = 256)	Ontario (n = 291)	Man/Sask (n = 203)	Alberta (n = 225)	B.C. (n = 249)	
1. Who Will Provide It							
Dental Hygienist	36.7	36.1	32.5	46.5	46.8	50.2	37.8
DH and DDS jointly	54.8	49.2	61.9	46.5	45.4	44.4	54.0
2. What To Include							
Dental Hygienist	40.6	33.7	31.6	48.5	48.9	52.9	37.7
DH and DDS jointly	52.4	55.7	63.9	48.0	46.6	44.3	56.5
3. Amount of Time							
Dental Hygienist	57.8	46.7	50.5	68.3	66.7	66.9	54.5
DH and DDS jointly	36.5	37.4	41.4	26.1	26.5	26.9	36.2
4. Oral Hygiene Devices							
Dental Hygienist	61.5	48.8	63.9	76.9	70.5	75.2	62.8
DH and DDS jointly	36.6	44.8	33.7	22.6	28.6	23.1	34.2
5. Tooth Brushing Technique							
Dental Hygienist	78.8	80.2	80.9	89.5	86.6	84.3	82.0
DH and DDS jointly	18.4	15.9	16.7	10.0	12.5	13.3	15.4
6. Counsel in Cessation of Tobacco Use							
Dental Hygienist	41.0	22.6	46.6	44.1	45.3	52.5	41.0
DH and DDS jointly	43.7	55.8	41.2	42.5	40.8	41.3	44.9

1. Results for respondents that selected the response choices "dental hygienist independently" and "dental hygienist and dentist jointly" are presented. Relatively few respondents selected the other two response choices — namely, "dentist independently" and "routine policy".

Table 11.10: Dental Hygienists, by Decision-Maker for Client Education Services and by Type of Workplace, Canada, 2001

DECISION RE CLIENT EDUCATION	DECISION MAKER				Total % n
	Dental Hygienist	Dentist	Both Jointly	Routine Policy	
1. Who will provide it?					
General	39.0	3.0	53.1	4.8	100.0 1283
Specialty	24.3	(4)	64.3	7.8	100.0 115
2. What to include					
General	39.3	2.5	55.5	2.7	100.0 1292
Specialty	19.8	4.3	67.2	8.6	100.0 116
3. Amount of time					
General	57.2	3.7	34.6	4.4	100.0 1286
Specialty	23.7	7.9	54.4	14.0	100.0 114
4. Devices to recommend					
General	64.8	1.2	32.8	1.2	100.0 1288
Specialty	39.7	(3)	50.0	7.8	100.0 116
5. Tooth brushing technique					
General	84.3	0.6	13.8	1.3	100.0 1306
Specialty	55.3	(2)	34.2	8.8	100.0 114
6. Counsel in cessation of tobacco use					
General	42.0	10.6	44.1	3.3	100.0 1192
Specialty	28.1	13.5	55.1	(3)	100.0 89

Table 11.11: Responsibility¹ for Selected Decisions Regarding Client Education, by Year of Graduation, Canada, 2001 (% DH and % DH/DDS)

DECISION AND DECISION-MAKERS	Total ²	YEAR OF GRADUATION					
		1975 (n = 83)	1976-80 (n = 172)	1981-85 (n = 185)	1986-90 (n = 247)	1991-95 (n = 327)	1996-00 (n = 372)
1. Who will provide it							
Dental hygienist	37.8	43.9	38.2	25.1	38.4	42.9	39.1
DH/DDS jointly	54.0	40.2	52.7	67.0	53.1	50.8	53.7
2. What to include							
Dental hygienist	37.7	46.9	41.4	23.9	36.9	44.4	36.9
DH/DDS jointly	56.5	42.0	52.1	71.1	54.5	51.6	58.4
3. Amount of time							
Dental hygienist	54.5	58.0	51.2	40.0	54.3	64.5	56.5
DH/DDS jointly	36.2	30.9	36.9	48.9	37.4	28.9	34.8
4. Oral hygiene devices							
Dental hygienist	62.8	60.8	65.5	58.3	62.6	66.0	64.2
DH/DDS jointly	34.2	34.2	30.4	40.6	33.7	30.8	33.6
5. Counsel re tobacco							
Dental hygienist	41.0	50.0	44.3	32.7	38.3	43.8	42.6
DH/DDS jointly	44.9	37.1	40.3	46.8	46.8	43.8	47.5

Chi-square: p = .000

¹Response choices were *dental hygienist independently*, *dentist independently*, *dental hygienist and dentist jointly* (i.e. both) and *routine policy*. Findings for the two predominant choices are presented.

²Total refers to the weighted estimate for Canada.

Table 11.12: Responsibility¹ for Selected Decisions Regarding Client Education, by Whether Dentist Sees Dental Hygiene Clients² at Each Appointment, Canada, 2001 (% DH and %DH/DDS)

DECISION AND DECISION-MAKERS	Total ³	DENTAL HYGIENE ACTIVE TREATMENT CLIENTS	
		Dentist Sees (n=223)	Dentist Does Not See (n=208)
1. Who will provide it			
Dental Hygienist	37.8	34.6	49.3
DH/DDS jointly	54.0	57.0	44.9
2. Amount of time			
Dental Hygienist	54.5	50.7	67.5
DH/DDS jointly	36.2	37.8	28.2
3. Oral hygiene devices			
Dental Hygienist	62.8	61.9	77.4
DH/DDS jointly	34.2	33.0	22.1
4. Counsel re tobacco			
Dental Hygienist	41.0	33.8	50.3
DH/DDS jointly	44.9	49.0	44.6

Chi-square: p = .000

¹Response choices were *dental hygienist independently*, *dentist independently*, *dental hygienist and dentist jointly* (i.e. both) and *routine policy*. Findings for the two predominant choices are presented.

²Based on survey item that asked whether or not the dentist typically sees all dental hygiene active treatment clients at the same appointment as the dental hygienist.

³Total refers to the weighted estimate for Canada.

Table 11.13: Responsibility¹ for Selected Decisions Regarding Client Education, by Professional Development Activity of the Dental Hygienist, Canada, 2001

DECISION AND DECISION-MAKERS	Total ²	LEVEL OF PROFESSIONAL DEVELOPMENT ACTIVITY		
		Low (n=470)	Moderate (n=467)	High (n=499)
1. Oral hygiene devices				
Dental Hygienist	62.8	52.9	64.9	70.2
DH/DDS jointly	34.2	44.0	31.2	27.7
2. Counsel re tobacco				
Dental Hygienist	41.0	31.1	41.8	49.5
DH/DDS jointly	44.9	48.9	44.6	41.4

Chi-square: p = .000

¹Response choices were *dental hygienist independently*, *dentist independently*, *dental hygienist and dentist jointly* (i.e. both) and *routine policy*. Findings for the two predominant choices are presented.

²Total refers to the weighted estimate for Canada.

Table 11.14: Dental Hygienists by the Number of Minutes Spent Per Appointment, On Average, Counseling a Client on Oral Self-Care, by Region, Canada, 2001 (mean, median, standard deviation and range)

STATISTICS	REGION						National Weighted Total
	Atlantic	Quebec	Ontario	Man/Sask.	Alberta	B.C.	
Number	210	252	280	197	221	245	
Mean	6.59	8.20	7.13	6.66	7.35	7.16	7.36
Median	5.00	7.00	5.00	5.00	6.00	5.00	5.00
Standard Deviation	3.60	4.83	4.26	2.88	3.72	3.71	3.96
Range	2-30	2-30	1-30	1-15	2-30	1-30	1-30

Missing responses = 2.2%

CHAPTER 12

SAFETY AND PROTECTION

In this chapter, selected safety and protection measures are described. Aspects examined include emergency protocols, CPR certification, radiation protection practices, and infection control procedures. Decision-making regarding infection control protocols also was investigated.

Findings apply to the principal clinical workplace as designated by the respondent; for this group, all workplaces were general or specialty dental offices. Information was derived from responses to Section I of the questionnaire. With few exceptions, missing responses were less than 3.0%.

12.1 EMERGENCY PROTOCOLS AND PRACTICES

Respondents provided information regarding the workplace – namely, whether there was a written emergency protocol and an oxygen supply on site, and whether they knew the location of that supply. They were also asked to provide information regarding their current CPR certification and first aid status. Results are presented in Table 12.1 and illustrated in Figure 12.1. Regional distributions are described in Table 12.2.

12.1.1 Overview

Approximately 1 out of 2 dental hygienists works in a dental office that apparently lacks a written emergency protocol or the dental hygienist does not know if one exists. Dental hygienists in the three eastern regions are more likely to report a protocol exists. Regarding an emergency oxygen supply, 9 out of 10 dental hygienists report one exists in their workplace and the majority knows its location.

With respect to CPR, almost 9 out of 10 dental hygienists are currently certified and 7 out of 10 renew their certification at least every two years. They are less likely to renew their first aid knowledge – 3 out of 5 have not completed a course within the past three years.

12.1.2 Written Emergency Protocol

Overall, 43.8% of respondents reported their workplace has a written emergency protocol and another 31.4% indicated there was none; a further 24.8% did not know. Respondents that reside in the three eastern regions, in particular Quebec (51.0%) and Ontario (50.3%) are more likely to report the presence of a written emergency protocol; respondents in British Columbia and Man/Sask. are least likely (26.2% and 26.7% respectively). (See Table 12.2.)

Although the reported existence of an emergency protocol did not vary by type of workplace, it was associated with policies that may be indicative of a workplace's safety and other organizational systems. For example, 64.7% of respondents in offices that provide them with a job description reported that a written protocol existed; the proportion declined to 34.2% among respondents without a job description. Similarly, 45.8% of respondents that reportedly have opportunities to consult with others regarding dental hygiene care indicated a written protocol existed, compared to 30.6% for the group that lacks the opportunities. The pattern was the same regarding the opportunity to use new technology. Regarding the availability of a dental assistant, the majority of respondents that reported one is always or usually available indicated a written protocol exists (53.4%), whereas the proportion declined among those that reported one is available rarely (45.1%) or never (34.5%).

12.1.3 Emergency Oxygen Supply

Almost 8 out of 10 respondents know the location of the emergency oxygen supply; another 15.1% do not know and a further 7.1% reported one is not available on site. There was little regional variation - the proportion that knows the location was greatest for Ontario and least for Man/Sask. and Quebec - 83.6% versus 70.0% respectively.

Results did not vary by general versus specialty dental office. However, respondents in periodontics compared to orthodontics were more likely to know the location – 84.4% and 68.5% respectively. As indicated in Table 12.3, results varied also by professional development activity of the dental hygienist – the proportion that knows where the oxygen is located ranged from a high of 86.1% for the High-PD group to 78.1% for the Moderate-PD and 68.5% for the Low-PD groups.

12.1.4 CPR Certification

Current CPR certification is a requirement for registration in some jurisdictions in Canada. Participants were asked to provide information regarding their current CPR status - that is, the Basic Level of cardiopulmonary resuscitation, as defined by the Heart and Stroke Foundation. Results are presented in Table 12.1, with regional distributions in Table 12.2.

Almost 9 out of 10 respondents were certified at the time of the survey (87.7%). The proportion currently certified ranged from 100.0% of respondents for Alberta, followed by British Columbia and Ontario, to a low of 71.8% for Quebec. While the proportion of respondents currently certified was relatively high for all groups (Table 12.3), it was greatest among the High-PD group (94.8%) and declined to 77.5% for the Low-PD group.

12.1.5 Frequency of CPR Renewal

Almost 6 out of 10 respondents renew their basic level of CPR annually (56.9%), another 24.2% renew every 2 years, and a further 10.5% review every 3 to 4 years; fewer than 1 out of 10 renew less frequently or never. Respondents for Alberta, Ontario and British Columbia were most likely to renew annually; the proportion was greatest for Alberta at 99.6%.

Frequency of renewal is associated with professional development activity of the dental hygienist. (See Table 12.3.) Whereas 70.8% of the High-PD group renew annually, the proportion decreases to 55.8% for the Moderate-PD group and 39.8% for Low-PD; among the latter group, another 39.5% renew every 3 to 4 years or less frequently, if at all.

CPR renewal is associated also with type of workplace and selected workplace characteristics, suggesting it may be encouraged in some workplaces more so than others. Respondents that work in a specialty dental office were more likely to renew annually compared to those in a general office; proportions were 71.0% and 55.7% respectively. Among respondents that reported a dental assistant was always or usually available, 7 out of 10 renewed annually (69.3%); the proportion declined to 53.9% and 51.1% respectively among those that indicated a dental assistant was rarely or never available. Regarding time allotted for an adult client, the group that would prefer more time was less likely to renew annually, compared to the group that was satisfied – 45.0% versus 60.4%. Regarding the dentist hygienist whose active treatment clients are not also seen by the dentist on the day of the appointment, the pattern was similar to the one observed on several previous occasions in this study. That group is more likely to renew annually – 67.2%, compared to 48.6% for the group where the dentist does see the clients; among the latter group, a full 1 out of 4 renew every 3 to 4 years or less frequently (25.7%).

12.1.6 First Aid Courses

Participants were asked whether they had successfully completed a First Aid course within the 3 years prior to the study. Overall, 3 out of 5 respondents reported “no”; another 37.3% indicated they had, and a further 1.9% did not know. Regional variation was slight. The proportion that responded “yes” was greatest for the Atlantic region (49.3%), followed by British Columbia and Quebec, and declined by approximately one-half to 22.7% for Alberta.

12.2 RADIATION PROTECTION

Participants were asked to indicate the circumstances under which leaded body shields – specifically, full coverage apron and thyroid cervical collar, are used to protect clients during the exposure of radiographs. Response choices were *all clients*, *clients of reproductive age*, *at client's request* and *never used*. They also were asked the circumstances under which they wear a radiation-monitoring badge. Results are presented in Table 12.4 and illustrated in Figures 12.2 and 12.3. Regional distributions are described in Table 12.5.

Virtually all dental hygiene workplaces comply with provincial regulations regarding the use of leaded body shields for clients during the exposure of dental radiographs. With few exceptions, dental hygienists report that full coverage lead aprons are used for all clients. Use of lead thyroid collars is slightly less prevalent; it may be the apron used is the type that has a cervical thyroid collar attached. Use of the collar is considerably more prevalent in Ontario compared to the other regions. Regarding the radiation-monitoring badge, dental hygienists tend to wear one either always or never, with the proportion for “never” being slightly greater. Use of the badge varies widely; dental hygienists in Quebec are 9 times more likely to wear a badge always compared to dental hygienists in British Columbia.

12.2.1 Lead Apron

Overall, 99.4% of respondents reported a full coverage lead apron is used for all clients during exposure of radiographs. There was no variation regionally or based on other factors examined.

12.2.2 Lead Thyroid Collar

Overall, 78.2% of respondents reported that a lead thyroid collar is used for all clients during exposure of radiographs and another 16.6% indicated one is never used. As noted above, some aprons have a thyroid cervical collar attached.

As indicated in Table 12.5, use of a lead collar was considerably more prevalent for Ontario (93.6%), compared to the other regions, in particular Alberta (55.9%). Use of a lead collar is associated with professional development activity of the dental hygienist. Respondents in the High-PD group were more likely to report the use of a lead collar compared to those in the Moderate-PD and Low-PD groups – proportions were 86.0%, 78.4% and 69.6% respectively.

12.2.3 Radiation-Monitoring Badge

In contrast to the use of lead body shields, only approximately 2 out of 5 respondents reportedly always wear a radiation-monitoring badge as recommended (37.5%), and another 18.1% wear one either sometimes or when exposing a radiograph. It was surprising to note that 44.4% never wear a badge.

Regionally, results varied widely. (See Table 12.5.) Respondents for Quebec were almost twice as likely to wear a badge always – 64.7% versus 34.2% overall; they were nine times more likely than respondents for British Columbia (6.9%), who tend to never wear one (85.5%). For the remaining regions, the proportion that always wears a badge was 46.0% for Man/Sask., 34.4% for Ontario, 31.6% for the Atlantic, and 21.0% for Alberta.

While it appeared that the respondent's school and year of graduation, professional development score, and years of work experience were associated with the frequency of wearing a radiation-monitoring badge, the pattern did not hold across all regions – that is, region of residence was the stronger factor. Findings were similar regarding the number of hours worked per week and years employed in the principal workplace.

12.3 INFECTION CONTROL PROTOCOLS

Respondents provided information regarding infection control protocols in their clinical workplace. Aspects examined included the infection control policy, disposal of bio-hazardous waste, policies regarding infectious diseases, Hepatitis B vaccination, and use of latex-free gloves. Response choices were *yes*, *no* and *don't know*. Missing responses were less than 4.0%. Results are presented in Table 12.6, with regional distributions in Table 12.7.

12.3.1 Overview

While almost 9 out of 10 dental hygienists perceive that the infection control policy is consistent for all personnel in the workplace, only 1 out of 3 report that procedures are specified in writing – for example, in an office manual. There is little variation regionally.

Regarding bio-hazardous waste, 8 out of 10 dental hygienists think it is disposed of in compliance with government regulations; of the remainder, the majority doesn't know. Again, there is little regional variation.

Consistent with practice guidelines, 3 out of 5 dental hygienists treat clients with known infectious diseases, including HIV and AIDS, the same as other clients. Almost all dental hygienists have received a Hepatitis B vaccination; however, only approximately two-thirds have received a booster or been monitored. Three-quarters of dental hygienists in Ontario avail themselves of a Hepatitis B booster shot and/or monitoring, compared to one-half of dental hygienists in Quebec and a slightly greater proportion in Man/Sask.

Use of latex-free gloves is not prevalent among dental hygienists. Two-thirds do not wear them routinely and the proportion increases to 4 out of 5 for British Columbia and 3 out of 4 for Alberta.

12.3.2 Infection Control Policies

Regarding infection control policies, two aspects were considered – consistency and documentation. Findings are presented in Table 12.6.

12.3.2.1 Consistency

Overall, the vast majority of respondents reported that the infection control policy was consistent for all personnel in the office (87.7%); relatively few indicated that it was not consistent (7.5%) or that they did not know (4.7%). (See Table 12.6.) Regionally, there was little variation. Respondents for Quebec were the most likely to think it was consistent whereas those for Man/Sask. were least likely; proportions were 91.0% and 77.7% respectively.

12.3.2.2 Documentation

One-third of respondents reported that infection control procedures were specified in writing – for example, an office manual, and another 21.5% did not know. Given the number of personnel typically employed in a dental hygiene workplace (see Chapter 7), it was surprising to find that almost one-half of dental hygiene workplaces (45.6%) reportedly do not have infection control procedures specified in writing and thus available for reference, consistency and training purposes.

As noted in Table 12.7, according to respondents, infection control procedures in dental offices in Ontario and Quebec were more than twice as likely to be specified in writing, compared to offices in British Columbia - 39.5% and 35.3% respectively versus 15.4%.

Not unexpectedly, respondents that had a written job description were two-and-one-half times more likely to report that infection control procedures were specified in writing, compared to the group that did not have one – 57.5% and 22.0% respectively. The pattern was similar regarding opportunities to use new technology – the group with opportunities was more likely to report procedures were written, compared to the group without the opportunity – 37.9% versus 21.0%.

12.3.3 Bio-Hazardous Waste

Overall 8 out of 10 respondents reported that bio-hazardous waste in the workplace was disposed of according to applicable municipal, provincial or federal regulations (82.1%), and another 4.5% indicated no. A further 13.4% did not know. There was little variation regionally or based on the other factors examined.

12.3.4 Clients with Infectious Diseases

Given practice guidelines and legal requirements, it was surprising to find that, in terms of infection control, just over one-third of respondents treat clients that have known infectious diseases, including HIV/AIDS and Hepatitis B, differently from other clients (36.8%). Overall, 3 out 5 respondents indicated they treat them the same and a further 3.8% did not know. There was little regional variation.

However, among more recent graduates –that is, the group that graduated during the period 1996 to 2000, 7 out of 10 indicated they do not treat the clients differently - 70.4% versus 59.5% overall. It was interesting to note that the group least likely to report they treat clients the same (51.9%) graduated next most recently – that is, 1991 to 1995.

12.3.5 Hepatitis B Protection

Regarding protection against Hepatitis B, virtually all respondents (97.1%) reported they had been vaccinated; another 2.8% indicated “no” and a very few did not know. As expected given the extremely high proportion that indicated “yes”, the finding did not vary based on the factors examined.

Respondents that reportedly have been vaccinated were asked whether they had received a booster or been monitored. Almost 2 out of 3 indicated “yes” and another one-third cited “no” – proportions were 65.0% and 33.0% respectively; only 2.0% did not know.

As indicated in Table 12.7, results varied regionally. The proportion that reported having had a booster or being monitored was greatest for Ontario (76.9%), followed by the Atlantic (68.0%), and it declined to a low of 49.4% for Quebec.

Maintenance of one’s protection against Hepatitis B also was associated with year of graduation. For example, the proportion for the group that had maintained their protection increased gradually from a low of 51.2% for the 1996-2000 group to a high of 81.1% for the 1981-1985 group and 80.0% for those that graduated before 1976; among the 1976-1980 group, the proportion dipped to 62.8%. The relatively low rate among more recent graduates may be due in part to having been vaccinated as a requirement of their dental hygiene program.

12.3.6 Latex-Free Gloves

Latex-free gloves are recommended to avoid allergic reactions for clients and clinicians sensitive to latex. Overall, 7 out of 10 respondents reported that they do not wear latex-free gloves routinely (67.1%); relatively few did not know (0.5%). Respondents for British Columbia and Alberta were least likely to wear latex-free gloves routinely – 79.0% and 76.4% respectively cited “no”.

12.4 DECISION- MAKERS

Participants were asked to indicate the person(s) that typically decides a) the infection control precautions to use, and b) when to use each type of precaution. Response choices were *dental hygienist independently*, *dentist independently*, *dental hygienist, dentist and other staff jointly*, and *routine policy*. Results are presented in Table 12.8.

Approximately 2 out of 3 dental hygienists report that decisions regarding which infection control precautions to use and when to use them typically are made by the staff jointly – that is, the dentist, dental hygienist and other staff members. There is little variation regionally.

Regarding infection control precautions to use, 67.7% of respondents reported the staff decides, another 15.9% indicated the decision typically is based on routine policy, and a further 11.0% cited the dental hygienist; only 5.4% cited the dentist. Among respondents that indicated it was a staff decision, the proportion was greatest for Alberta and Ontario (73.4% and 72.8% respectively) and it decreased to 56.9% for Quebec, where proportions were relatively greater for the other three response choices. (See Table 12.7, item #4.)

Regarding when to use each type of precaution, the pattern was similar – 64.3% of respondents reported the staff decides, another 18.8% indicated the decision was based on routine policy, and a further 13.5% cited the dental hygienist; only 3.4% cited the dentist.

12.5 USE OF BARRIER PROTECTION

Respondents indicated the frequency with which they changed barrier material and their gloves and face masks. Response choices were *after each client or more often*, *twice a day*, *once a day*, and *not used routinely*. Results are presented in Table 12.9.

Regarding the use of barrier protection, the vast majority of dental hygienists remove and replace used barrier material and change their gloves after each client or more often. However, with the exception of dental hygienists in Alberta, approximately 3 out of 4 change their face mask less frequently; the majority change it twice a day.

12.5.1 Barrier Materials

The vast majority of respondents (85.6%) remove and replace used barrier material after each client or more often; another 13.4% do not use it routinely. There was no variation regionally.

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12.5.2 Gloves

Essentially all respondents reported they change their gloves after each client or more often (99.7%).

12.5.3 Face Mask

In contrast to the above findings, one-half of respondents change their face mask twice a day (51.0%). The exception was Alberta where 53.6% of respondents indicated they change their mask after each client or more often and the proportion that changed it twice a day declined to 29.3%. (See Table 12.7, item #5.)

12.6 EYE PROTECTION FOR THE CLIENT

Eye protection is recommended for the client, clinician and other team members to prevent physical injuries and infections of the eyes. Although some clinical procedures are considered to be particularly high risk, eye protection throughout the entire appointment is recommended.

Participants were asked to indicate the frequency with which they provided or advised eye protection for their clients. Response choices were *always*, *usually*, *sometimes* and *never*. Results are presented in Table 12.10, with regional distributions in Table 12.11.

12.6.1 Overview

Regarding eye protection for the client, approximately one-third of dental hygienists always advise or provide it during the entire appointment, as recommended by practice guidelines; another one-quarter never recommend it. Almost one-half of dental hygienists always recommend eye protection during the performance of two procedures – namely, air and/or rubber cup polishing and ultrasonic and/or sonic debridement. They are somewhat less inclined – specifically, 1 out of 3, to always recommend it for debridement that involves the use of hand instruments. Dental hygienists in Ontario and the Atlantic, compared in particular to Quebec and, to a lesser extent, Man/Sask., tend to always recommend eye protection, whether for the entire appointment or for the specific procedures.

12.6.2 Entire Appointment

Approximately one-third of the respondents indicated they always recommend the client wear eye protection throughout the entire appointment (34.4%), another 12.4% reported they recommend it usually, and a further 27.9% do so sometimes. It was interesting to find that 1 out of 4 respondents never recommend eye protection for the entire appointment (25.3%).

Findings varied regionally. (See Table 12.11.) The greatest proportion of respondents for the Atlantic and Ontario always recommend eye protection for the entire appointment – 46.0% and 44.1% respectively. In contrast, the greatest proportion for Quebec never recommend it (45.6%) and fewer than 1 out of 5 always do (16.9%). For the three western regions, proportions for the group that always recommends it were 36.2% for British Columbia, 30.5% for Alberta, and 24.8% for Man/Sask.

12.6.3 Tooth Polishing

When performing air and/or rubber cup polishing, 45.5% of respondents always recommend eye protection, another 13.7% usually do, and a further 23.5% sometimes; 17.3% never recommend it. The proportion that always recommends it ranged from a high of 55.7% for Ontario to a low of 28.8% for Quebec, where an even greater proportion never recommends it (35.6%).

12.6.4 Ultrasonic Debridement

Regarding eye protection during ultrasonic and/or sonic debridement, findings were similar to those for tooth polishing. Overall, 44.0% of respondents recommend eye protection always, another 12.9% usually, and a further 23.9% sometimes; 19.3% never do.

Regionally the proportion that always recommends it again was greatest for Ontario and the Atlantic – 57.5% and 51.9% respectively. The contrast with Quebec was even more marked; 28.8% of respondents always recommend eye protection – one-half the proportion for Ontario, whereas 35.9% never recommend it. Proportions for the group that always recommends it were 48.3% for British Columbia, 40.5% for Alberta and 33.0% for Man/Sask.

12.6.5 Debridement Using Hand Instruments

Dental hygienists appear to be slightly less inclined to always recommend eye protection during debridement using hand instruments, compared to both tooth polishing and ultrasonic debridement. There was a slight decrease in the proportion that recommends it always - to 35.2%, and a corresponding increase for sometimes (28.1%) and never (24.0%).

As noted in Table 12.11, the regional distribution was similar to findings regarding polishing and ultrasonic debridement. The proportion that always recommends protection was greatest for Ontario and the Atlantic and least for Quebec, followed by Man/Sask.

12.6.6 Influencing Factors

In addition to region of residence, several other significant relationships were observed ($p=.000$). Findings described in Table 12.12 pertain to the portion of respondents that indicated they always recommend eye protection.

Regarding professional development for the respondent, across all three procedures and for the entire appointment, the High-PD group is approximately twice as likely to always recommend eye protection compared to the Low-PD group.

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For all four situations examined, frequency of recommending client eye protection is associated with several characteristics of the workplace. Regarding the availability of a dental assistant, respondents that reported one is always or usually available are more likely to always recommend protection, compared to those that indicated one was rarely or never available. The pattern is similar regarding scheduling for the active treatment dental hygiene client (AT) – the group that reported the dentist does not see AT clients were up to twice as likely to always recommend protection, compared to the group where AT clients are seen by the dentist. Further, respondents that reportedly have a written job description are more likely to always recommend it , compared to the group without one.

12.7 INFECTION CONTROL PROCEDURES

Respondents provided information regarding the infection control method they typically use for hand pieces, syringe tips, oral evacuation tubes, xray head, and operating light switch. Response choices were *disinfect*, *sterilize (hot or cold)*, *barrier material*, and *dispose after use*. Results are presented in Table 12.13. For all five items examined, there was little variation based on personal, occupational and workplace factors investigated.

Regarding infection control for clinical instruments and equipment, 8 out of 10 dental hygienists sterilize hand pieces and air/water syringe tips, disinfect the xray head and the switch for the operating light, and/or dispose of oral evacuation tubes after use.

Regarding the hand piece specifically, the vast majority of respondents reportedly sterilize (85.6%) and another 12.1% disinfect it. It was surprising to note that a very small proportion of respondents apparently use barrier material for hand pieces, as well as air/water syringe tips and oral evacuation tubes. Regionally, the group that sterilizes was proportionately greatest for Alberta and least for British Columbia - 93.3% and 75.3% respectively. Sterilization for the hand piece accounted for 88.0% of respondents for Quebec, 87.0% for Ontario, 84.3% for Man/Sask. and 78.5% for the Atlantic.

Regarding the air/water syringe tip, while the vast majority of respondents again indicated they typically sterilize it (85.4%), another 7.6% dispose of it after use, and a further 6.8% disinfect it; very few cited "barrier material". In contrast, 85.8% typically dispose of oral evacuation tubes after use; however, 7.9% sterilize and 5.9% disinfect them.

For the xray head and the switch for the operating light, over 8 out of 10 respondents disinfect (85.8% and 85.0% respectively). In addition, barrier material is used by another 14.4% for the light switch and by 8.0% for the xray head. Regarding the light switch, respondents for Man/Sask. and Alberta are considerably more likely to use barrier material – the proportion was 37.3% and 26.6% respectively, compared to 14.4% overall.

12.8 SUMMARY

In summary, dental hygienists and their reported workplaces are more similar than dissimilar in terms of safety and protection measures.

Approximately 1 out of 2 dental hygienists works in a dental office that apparently lacks a written emergency protocol or the dental hygienist does not know if one exists. Dental hygienists in the three eastern regions are more likely to report a protocol exists.

Regarding an emergency oxygen supply, 9 out of 10 dental hygienists report one exists in their workplace and the majority knows its location.

Regarding CPR, almost 9 out of 10 dental hygienists are currently certified and 7 out of 10 renew their certification at least every two years. They are less likely to renew their first aid knowledge – 3 out of 5 have not completed a course within the past three years.

Virtually all dental hygiene workplaces comply with provincial regulations regarding the use of lead body shields for clients during the exposure of dental radiographs. With few exceptions, dental hygienists report that full coverage lead aprons are used for all clients. Use of lead thyroid collars is slightly less prevalent; it may be the apron used is the type that has a cervical thyroid collar attached. Use of the collar is considerably more prevalent in Ontario compared to the other regions. Regarding the radiation-monitoring badge, dental hygienists tend to wear one either always or never; the proportion for “never” is slightly greater. Use of the badge varies widely; dental hygienists in Quebec are 9 times more likely to always wear a badge, compared to dental hygienists in British Columbia.

While almost 9 out of 10 dental hygienists perceive that the infection control policy is consistent for all personnel in the workplace, only 1 out of 3 report that procedures are specified in writing – for example, in an office manual. There is little variation regionally.

Regarding bio-hazardous waste, 8 out of 10 dental hygienists think it is disposed of in compliance with government regulations; of the remainder, the majority doesn’t know. Again, there is little regional variation.

Consistent with practice guidelines, 3 out of 5 dental hygienists treat clients with known infectious diseases, including HIV and AIDS, the same as they treat other clients. Almost all dental hygienists have received a Hepatitis B vaccination; however, only approximately two-thirds have received a booster or been monitored. Three-quarters of dental hygienists in Ontario avail themselves of a Hepatitis B booster shot and/or monitoring.

Use of latex-free gloves is not prevalent among dental hygienists. Two-thirds do not wear them routinely and the proportion increases to 4 out of 5 for British Columbia and 3 out of 4 for Alberta.

Approximately 2 out of 3 dental hygienists report that decisions regarding which infection control precautions to use and when to use them typically are made by the staff jointly – that is, the dentist, dental hygienist and other staff members. There is little variation regionally.

Regarding the use of barrier protection, the vast majority of dental hygienists remove and replace used barrier material and change their gloves after each client or more often. However, with the exception of dental hygienists in Alberta, 3 out of 4 change their face mask less frequently - typically twice a day.

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Regarding eye protection for the client, approximately one-third of dental hygienists always advise or provide it during the entire appointment, as recommended by practice guidelines; another one-quarter never recommend it. Almost one-half of dental hygienists always recommend eye protection during the performance of two procedures – namely, air and/or rubber cup polishing and ultrasonic and/or sonic debridement. They are somewhat less inclined to always recommend it for debridement that involves the use of hand instruments. Dental hygienists in Ontario and the Atlantic, compared in particular to Quebec and, to a lesser extent, Man/Sask., tend to always recommend eye protection, whether for the entire appointment or for the specific procedures.

Regarding infection control for clinical instruments and equipment, 8 out of 10 dental hygienists sterilize hand pieces and air/water syringe tips, disinfect the xray head and the switch for the operating light, and/or dispose of oral evacuation tubes after use.

Overall, routine safety precautions appear to exist for the majority of dental hygienists and their clients and co-workers. However, a number of the findings will be of particular interest to practitioners, regulatory authorities, professional organizations, clients, consumer groups and other stakeholders.

Table 12.1: Dental Hygienists by Selected Emergency Protocols in the Workplace and Personal Practices, Canada, 2001 (n=1436)

	SAFETY AND PROTECTION MEASURES	RESPONSE CHOICE			TOTAL	
		YES	NO	DON'T KNOW	%	n
1	Workplace has: Written emergency protocol	43.8	31.4	24.8	100.0	1427
2	Respondent: Knows location of emergency oxygen supply	77.8	15.1	7.1 ¹	100.0	1421
3	Currently is CPR certified (basic level)	87.7	11.6	0.7	100.0	1430
4	Renews basic level CPR: a. annually b. every 2 years c. every 3 to 4 years d. less frequently e. never	56.9 24.2 10.5 6.1 2.4			100.0	1439
5	Has completed First Aid course in past 3 years	37.3	60.8	1.9	100.0	1424

Missing responses: less than 5.0%, with the exception of 13.8% for item 4.

- Refers to the proportion of respondents (7.1%) that reported an emergency oxygen supply does not exist in the workplace.

Figure 12.1: Dental Hygienists by Selected Safety and Protection Measures, Canada 2001 (N=1438)

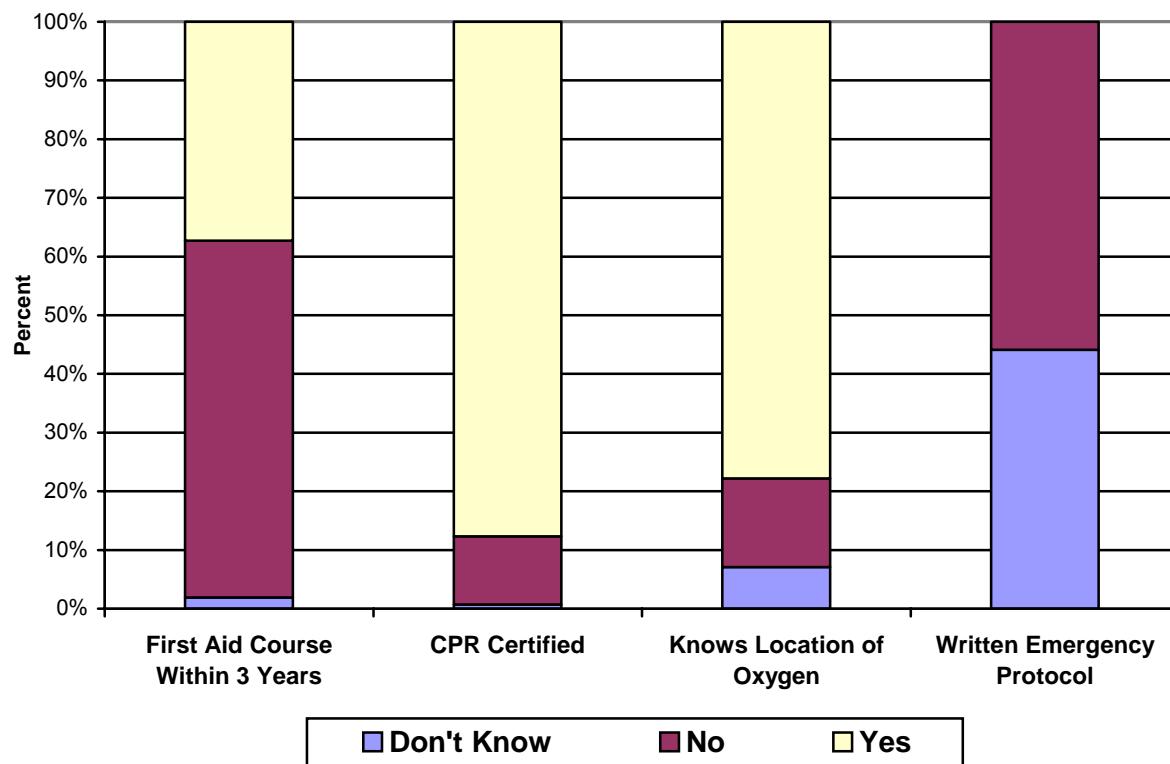


Table 12.2: Dental Hygienists' Familiarity with Emergency Protocols in the Workplace and Their CPR Renewal Status¹, by Region, Canada, 2001

EMERGENCY MEASURES	REGION						National Weighted Total
	Atlantic (n=214)	Quebec (n=256)	Ontario (n=291)	Man/Sask. (n=203)	Alberta (n=225)	B.C. (n=249)	
1. Workplace has a written emergency protocol:							
Yes	39.0	51.0	50.3	26.7	30.7	26.2	43.8
No	32.9	29.0	26.7	41.6	39.1	41.9	31.4
Don't know	28.2	20.0	22.9	31.7	30.2	31.9	24.8
2. Respondent is currently certified at Basic Level of CPR							
Yes	85.0	71.8	93.4	77.8	100.0	95.2	87.7
No	14.1	26.7	5.9	22.2	0.0	4.8	11.6
Don't know	0.9	1.6	0.7	0.0	0.0	0.0	0.7
3. Respondent renews CPR:							
a. Annually	40.2	9.6	72.8	32.5	99.6	55.1	56.9
b. Every 2 years	43.0	22.5	20.5	47.1	0.4	40.2	24.2
c. Less frequently	16.7	68.0	6.8	20.4	0.0	4.7	19.0
Total	214	256	291	203	225	249	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Only procedures for which distributions varied regionally are presented.

Table 12.3: Dental Hygienists' Compliance With Safety Procedures, by Professional Development Activity¹, Canada, 2001 (N = 1438)

SAFETY PROCEDURES	R's PROFESSIONAL DEVELOPMENT ACTIVITY					
	Low		Moderate		High	
	%	n	%	n	%	n
Respondent:						
1. Knows location of emergency oxygen supply	68.5	318	78.1	361	86.1	426
2. Is currently CPR certified	77.5	361	90.3	419	94.8	473
3. Renews CPR certification annually	39.8	141	55.8	232	70.8	332
4. Uses lead thyroid collar for all clients during exposure of radiographs	69.6	311	78.4	356	86.0	419
5. Wears radiation monitoring badge.	47.5	222	35.9	165	29.4	145

¹Based on a PD-score derived from indices described in Chapter 5.

Table 12.4: Dental Hygienists by Selected Radiation Protection Measures in the Workplace, Canada, 2001 (n=1436)

	CONDITIONS FOR USE	RADIATION PROTECTION MEASURES		
		Lead Apron	Lead Thyroid Collar	Radiation Monitoring Badge
1. Exposure of Radiographs:	a. All clients	99.4	78.2	
	b. Clients of reproductive age	---	0.5	
	c. At client's request	0.4	4.7	
	d. Never used	0.2	16.6	
2. Frequency of Wearing Monitoring Badge:	a. Never			44.4
	b. Sometimes			16.5
	c. Only when exposing a radiograph			1.6
	d. Always			37.5
		Total n	100.0 1429	100.0 1388
				100.0 1419

Missing responses: less than 4.0%.

Figure 12.2: Use of Leaded Body Shields During Exposure of Radiographs as Reported by Dental Hygienists, Canada 2001 (N=1438)

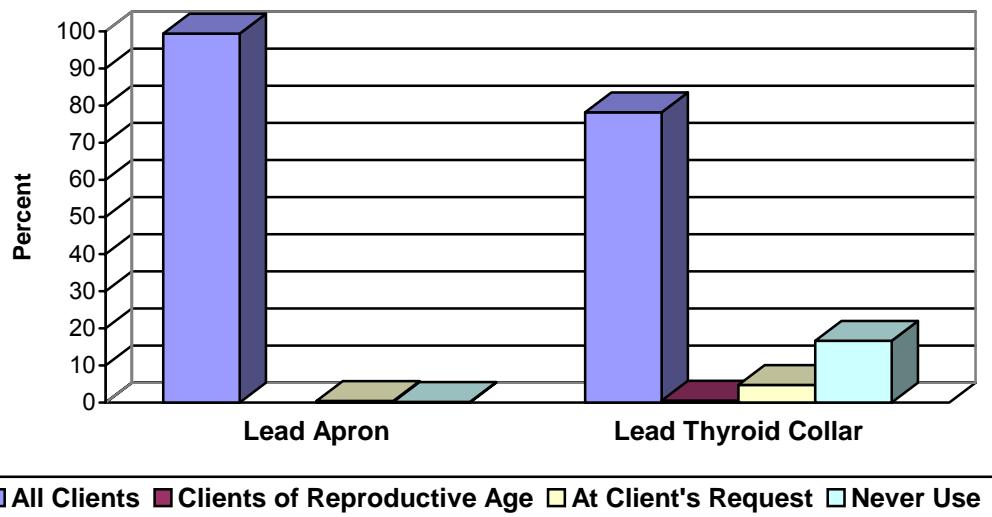


Figure 12.3: Dental Hygienists by Frequency of Wearing A Radiation Monitoring Badge, Canada 2001 (N=1438)

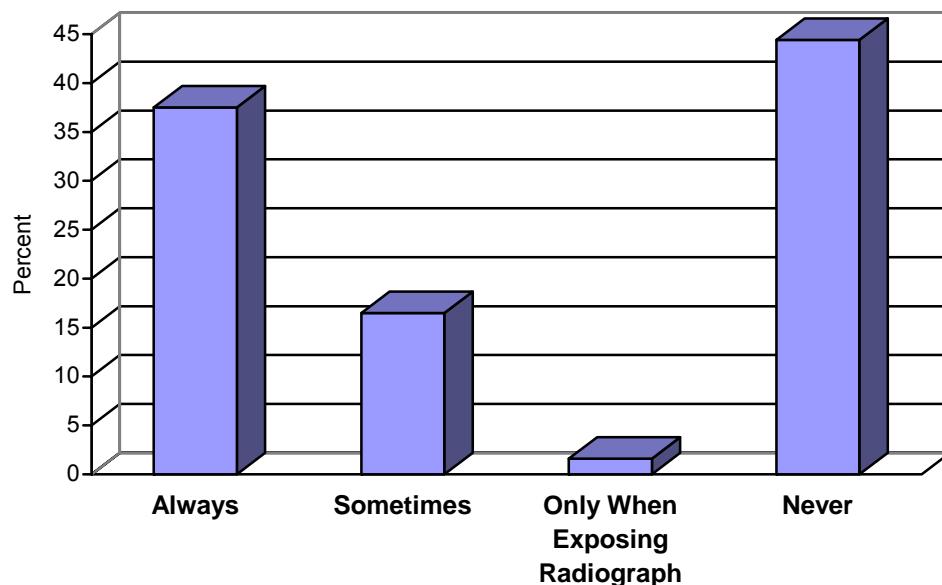


Table 12.5: Percent of Dental Hygienists, By Use of Radiation Protection Measures¹ and by Region, Canada, 2001

RADIATION PROTECTION MEASURES	REGION						National Weighted Total
	Atlantic (n=214)	Quebec (n=256)	Ontario (n=291)	Man/Sask. (n=203)	Alberta (n=225)	B.C. (n=249)	
1. Full coverage lead aprons:							
a. all clients	99.5	99.2	99.3	99.5	100.0	99.6	99.4
b. other	0.5	0.8	0.7	0.5	0.0	0.4	20.6
2. Lead thyroid collars:							
a. all clients	70.9	65.6	93.6	74.6	55.9	69.1	78.2
b. clients of reproductive age or client's request	6.3	4.4	4.3	4.1	9.0	7.4	5.2
c. never used	22.8	30.0	2.1	21.2	35.1	23.5	16.6
3. Respondent wears a radiation monitoring badge:							
a. never	51.4	15.3	43.9	35.6	68.8	85.5	44.4
b. sometimes	14.6	17.3	20.4	17.3	9.4	7.3	16.5
c. when exposing a radiograph	2.4	2.7	1.4	1.0	0.9	0.4	1.6
d. always	31.6	64.7	34.4	46.0	21.0	6.9	37.5

¹Only procedures for which distributions varied regionally are presented.

Table 12.6: Dental Hygienists by Selected Infection Control Protocols and Procedures, Canada, 2001 (n=1436)

	INFECTION CONTROL PROTOCOLS	RESPONSE CHOICE			TOTAL	
		YES	NO	DON'T KNOW	%	n
	Workplace has infection control policy:					
1	Consistent policy for all personnel in office	87.7	7.5	4.7	100.0	1423
2	Specified in writing – e.g., office manual	33.0	45.6	21.5	100.0	1415
3	Disposes of biohazardous waste in compliance with government regulations	82.1	4.5	13.4	100.0	1415
	Respondent:					
1	Treats clients with known infectious diseases including HIV/AIDS and Hepatitis differently from other clients	36.8	59.5	3.8	100.0	1399
2	Hepatitis B:					
	a. has received Hepatitis B vaccine	97.1	2.8	0.1	100.0	1420
	b. has received booster or been monitored	65.0	33.0	2.0	100.0	1381
3	Wears latex-free gloves routinely	32.4	67.1	0.5	100.0	1421

Missing responses: less than 4.0%.

Table 12.7: Dental Hygienists By Infection Control Protocols and Procedures, by Region, Canada, 2001

INFECTION CONTROL PROTOCOLS AND PROCEDURES	REGION						National Weighted Total
	Atlantic (n=214)	Quebec (n=256)	Ontario (n=291)	Man/Sask. (n=203)	Alberta (n=225)	B.C. (n=249)	
1. Procedures are specified in writing:							
Yes	25.9	35.3	39.5	26.2	38.3	15.4	33.0
No	51.9	49.2	35.3	53.0	52.5	63.0	45.6
Don't know	22.2	15.5	25.2	20.8	19.3	21.5	21.5
2. Respondent has received a vaccination for Hepatitis B:							
Yes	96.7	96.8	97.6	95.0	97.3	96.8	97.1
No	3.3	3.2	2.4	4.0	2.7	2.8	2.8
Don't know	--	--	--	(2)	--	--	0.1
3. Respondent has received a Hepatitis B booster or been monitored:							
Yes	68.0	49.4	76.9	54.1	60.9	60.4	65.0
No	31.1	48.6	21.7	43.3	37.3	35.8	33.0
Don't know	(2)	2.1	(4)	2.6	(4)	3.8	2.0
2. Respondent wears latex-free gloves routinely:							
Yes	34.4	37.7	34.5	32.0	23.6	21.0	32.4
No/Don't know	65.5	62.3	65.5	68.0	76.4	79.0	67.6
4. Who decides the procedures to use:							
DH	10.5	16.5	6.5	17.2	7.3	15.3	11.0
DDS	4.3	8.5	5.4	6.1	2.8	1.2	5.4
Staff	65.6	56.9	72.8	64.1	73.4	69.8	67.7
Routine Policy	19.6	18.1	15.2	12.6	16.5	13.6	15.9
5. Respondent changes face mask:							
a. After each client at least	25.5	17.6	26.2	28.9	53.6	26.7	26.6
b. Twice a day	50.0	58.4	50.0	50.2	29.3	54.7	51.0
c. Once a day or less	24.5	23.9	23.8	20.9	17.2	18.6	22.4

**Table 12.8: Dental Hygienists by Perceived Decision-Making Responsibility
Regarding Infection Control Protocols, Canada, 2001**

DECISION RE INFECTION CONTROL	DECISION MAKER				TOTAL N
	Dental Hygienist	Dentist	Staff Jointly	Routine Policy	
1. Infection control precautions to use	11.0	5.4	67.7	15.9	1380
2. When to use each type of precaution	13.5	3.4	64.3	18.8	1390

Missing responses: less than 5.0%

Table 12.9: Frequency With Which Dental Hygienists Replace Barrier Protection Products, Canada, 2001 (n = 1438)

BARRIER PROTECTION	N	FREQUENCY			
		After Each Client or More Often	Twice a Day	Once a Day	Not Used Routinely
How often do you:					
1. Remove and replace used barrier material	1364	85.6	0.6	0.5	13.4
2. Change your gloves	1432	99.7	0.1	---	0.2
3. Change your face mask	1419	26.6	51.0	20.5	1.9

Missing responses were less than 5.0%

Table 12.10: Frequency With Which Dental Hygienists Recommend Eye Protection for the Client, by Type of Clinical Procedure, Canada, 2001

PROCEDURE	N	FREQUENCY			
		Always	Usually	Sometimes	Never
1. Air polishing/rubber cup polishing	1402	45.5	13.7	23.5	17.3
2. Ultrasonic/sonic debridement	1376	44.0	12.9	23.9	19.3
3. Debridement using hand instruments	1385	35.2	12.7	28.1	24.0
4. The entire appointment	1407	34.4	12.4	27.9	25.3

Missing responses were less than 5.0%

Table 12.11: Frequency with Which Dental Hygienists Recommend Eye Protection for the Client, by Type of Procedure and Region, Canada, 2001

PROCEDURES FOR WHICH EYE PROTECTION IS RECOMMENDED (n=214)	REGION						National Weighted Total
	Atlantic (n=256)	Quebec (n=291)	Ontario (n=203)	Man/Sask. (n=225)	Alberta (n=249)	B.C. (n=249)	
1. Air Polishing and Rubber Cup Polishing							
Always	49.3	28.8	55.7	33.8	42.9	47.5	45.5
Usually	10.9	11.2	14.5	19.9	11.6	15.6	13.7
Sometimes	24.6	24.4	21.3	24.9	27.7	25.8	23.5
Never	15.2	35.6	8.5	21.4	17.9	11.1	17.3
2. Ultrasonic/Sonic Debridement							
Always	51.9	19.6	57.5	33.0	40.5	48.3	44.0
Usually	10.1	11.4	13.1	20.0	12.6	13.2	12.9
Sometimes	27.4	26.9	19.6	25.5	28.4	27.3	23.9
Never	10.6	42.0	9.8	21.5	18.5	11.2	19.3
3. Debridement Using Hand Instrumentation							
Always	45.7	17.1	45.7	24.9	30.8	37.0	35.2
Usually	11.5	10.2	13.7	16.4	12.5	13.2	12.7
Sometimes	25.0	29.4	25.5	26.4	30.4	34.2	28.1
Never	17.8	43.3	15.1	32.3	26.3	15.6	24.0
4. The Entire Appointment							
Always	46.0	16.9	44.1	24.8	30.5	36.2	34.4
Usually	10.0	10.5	13.3	14.9	11.7	13.6	12.4
Sometimes	26.0	27.0	25.5	29.2	31.4	35.4	27.9
Never	18.0	45.6	17.1	31.2	26.5	14.8	25.3

Table 12.12: Factors Associated with Dental Hygienists' Recommendation of Eye Protection for Clients, by Type of Factor and Clinical Procedure, Canada, 2001 (% "always recommend")

FACTORS (% of DHs that "always" recommend eye protection)	N	CLINICAL PROCEDURE			
		Tooth Polishing	Debridement Instrument		Entire Appointment
			Ultrasonic	Hand	
1. R's Professional Development					
Low	470	30.6	28.2	22.1	22.5
Moderate	467	46.0	42.8	34.1	33.4
High	499	58.6	59.5	48.4	46.5
2. Availability of a Dental Assistant					
Always/usually	331	57.2	60.5	49.7	46.9
Rarely	673	43.1	39.8	32.1	30.8
Never	421	39.8	37.7	28.6	30.3
3. R. Has Written Job Description					
Yes	417	55.7	57.4	45.5	45.3
No/Don't know	951	40.6	37.8	30.3	29.4
4. Dental Hygiene Active Treatment Clients					
Yes	223	32.1	34.9	24.1	23.4
No	208	58.9	57.9	48.8	48.1

Chi-square: p = .000

1. Response choices were *always*, *usually*, *sometimes* and *never*.

Table 12.13: Percent of Dental Hygienists by Type of Infection Control Method They Use for Selected Equipment, Canada, 2001

TYPE OF EQUIPMENT	N	INFECTION CONTROL METHOD			
		Disinfect	Sterilize (heat or cold)	Barrier Material	Dispose After Use
1. Hand pieces	1333	12.1	85.6	0.6	1.7
2. Air/water syringe tips	1367	6.8	85.4	0.3	7.6
3. Oral evacuation tubes	1390	5.9	7.9	0.4	85.8
4. X-ray head	1382	85.8	4.5	8.0	1.7
5. Operating light's switch	1325	85.0	0.5	14.4	0.1

Missing responses were less than 10.0%

CHAPTER 13

EVALUATION

In this chapter, selected procedures used by the dental hygienist to evaluate the outcomes of care are described. They include measures to assess therapeutic and behavioural outcomes and to review and assess the appropriateness of the dental hygiene care plan and factors associated with quality of care. The focus is the frequency with which the dental hygienist performs the procedures.

Findings apply to the principal clinical workplace as designated by the respondent; for this group, all workplaces were general or specialty dental offices. Information was derived from responses to Section J of the questionnaire. For the majority of items, the response choices were *routinely*, *selectively*, *never* and *not applicable/done by others*. With few exceptions, missing responses were less than 5.0% and typically less than 2.0%.

13.1 OUTCOMES OF DENTAL HYGIENE CARE

Respondents provided information regarding client-based measures to assess outcomes of dental hygiene care. Overall results are presented in Table 13.1 and illustrated in Figure 13.1. Regional distributions are presented in Table 13.2, with other relationships described in Tables 13.3 to 13.5.

13.1.1 Overview

Dental hygienists tend to perform, routinely or selectively, client-based activities associated with evaluating outcomes of care. With one notable exception, relatively few dental hygienists never perform the activities or consider them to be not applicable, nor do others evaluate outcomes. At least 3 out of 5 dental hygienists routinely re-chart soft tissue conditions, re-assess the client's self-care behaviours, and record relevant findings. One-half routinely re-chart periodontal attachment levels, re-assess a client's attitudes and knowledge, and assess the degree to which goals were achieved as well as the client's satisfaction with the outcomes. On the other hand, almost one-half never complete a follow-up plaque index. Overall, there tends to be little variation regionally.

Frequency of performing procedures to evaluate outcomes of care is associated with professional development activity of the dental hygienist. That is, the more extensive the range of PD activities undertaken, the greater the likelihood that the dental hygienist will perform procedures routinely to evaluate outcomes of care.

Frequency varies also by workplace characteristics, several of which tend to be indicative of procedural structures in the workplace. Most noteworthy, since it is associated with numerous outcome procedures, is the dental hygienist's perception that the workplace provides opportunities to consult with other health professionals regarding dental hygiene care. Interestingly, compared to other elements of dental hygiene care - for example, therapeutic services, an association with type of workplace is less prevalent.

13.1.2 Re-Chart Periodontal Attachment Levels

Almost one-half of respondents reported they re-chart periodontal attachment levels routinely (48.3%) and another 44.2% indicated they do so selectively; fewer than 1 out of 10 cited “never” or “not applicable/done by others”. Respondents for Ontario, Alberta and British Columbia are more likely to re-chart routinely, whereas those in the other three regions tend to re-chart selectively (see Table 13.2). Proportionately, the group that re-charts routinely was greatest for British Columbia (67.3%) and least for the Atlantic and Quebec regions (35.1% and 36.1%).

The group that re-charts routinely tends to engage in a relatively high level of professional development activity (see Table 13.3). They are also more likely to work in a general versus a specialty dental office (see Table 13.4), and perceive that they have opportunities to use new technologies and, in particular, to consult with other health professionals regarding dental hygiene care (see Table 13.5). They typically have a written job description and a dental assistant available to them always or usually, compared to rarely or never. The dentist typically does not see all their active treatment clients on the day of their dental hygiene appointment. It was interesting to note that working in an orthodontics versus a periodontics office apparently is not associated with the frequency with which they re-chart periodontal attachment levels.

13.1.3 Re-Chart Soft Tissue Conditions

Overall, 3 out of 5 respondents reported they re-chart soft tissue conditions routinely and another 34.7% do so selectively; again, fewer than 1 out of 10 cited “never” or “not applicable/done by others”. The group that re-charts routinely ranged from a high of 66.1% for British Columbia to a low of 43.0% for Man/Sask., followed by the Atlantic with 48.1%.

Frequency of re-charting soft tissue conditions was associated with type of workplace and opportunities to consult and to use new technologies. Respondents that re-chart routinely typically work in a general rather than a specialty dental office (61.1% versus 42.6%) and have opportunities to consult with others regarding dental hygiene care, compared to those that do not (61.3% versus 44.5%). (See Tables 13.4 and 13.5.)

13.1.4 Complete Follow-up Plaque Index

In contrast to re-charting, almost one-half of respondents reportedly never complete a follow-up plaque index. Across all regions, the greatest portion never complete one; proportions ranged from a high of 67.3% for Man/Sask. to a low of 40.9% for Ontario, where another 31.7% of respondents complete one selectively and a further 20.6% do so routinely.

Among the 65.5% of respondents that always take a plaque and deposit index as part of the initial client assessment (see Chapter 8), only 20.2% complete a follow-up plaque index routinely, another 39.2% do so selectively, and a further 36.8% never do. As expected, among the group that only “occasionally” or “rarely/never” complete an initial index, the majority never completes a follow-up index; proportions for “never” were 51.1% and 79.2% respectively.

There was little variation based on the other factors examined, with two interesting exceptions. The proportion that never completes a follow-up plaque index was greatest among those that had graduated most recently – 50.1% for the 1996-to-2000 group, and it declined gradually to a low of 34.2% for the pre-1976 group; among the latter group, another 44.3% complete an index selectively. Similar to other evaluation procedures, the group that reported they have opportunities to consult with others are less likely to never complete an index and more likely to do so selectively or routinely (see Table 13.5).

13.1.5 Assess Client's Attitudes and Knowledge

One-half of respondents re-assess the client's attitudes and knowledge routinely (51.7%) and another 42.9% do so selectively (Table 13.1). Respondents for Ontario, Alberta and British Columbia tend to re-assess routinely, whereas those for the other three regions do so selectively (Table 13.2).

Regarding professional development activity, as indicated in Table 13.3, 1 out of 2 respondents in the Low-PD and Moderate-PD groups never complete a follow-up plaque index, compared to 36.5% for the High-PD group. Among the latter group, another 36.3% complete one selectively and a further 22.7% do so routinely.

Regardless of year of graduation, there was little variation in the proportion of respondents that assess routinely - with one exception. Similar to findings regarding the completion of a plaque index, the group that had graduated prior to 1976 was most likely to assess attitudes and knowledge routinely – 65.0% compared to 51.7% overall.

Re-assessment of the client's attitudes and knowledge was associated with the dental hygiene workplace. (See Table 13.4.) Respondents that re-assess selectively are more likely to work in a general rather than a specialty dental office – 45.2% versus 24.1% respectively. Among those in a specialty office, the periodontics group tended to re-assess routinely (57.5%), whereas those in orthodontics were more likely to re-assess selectively (49.4%). The group that assesses routinely also is more likely to report opportunities exist to consult regarding dental hygiene care (Table 13.5).

13.1.6 Assess Client's Self-Care Behaviours

Regarding the client's self-care behaviours, 2 out of 3 respondents re-assess routinely (67.2%) and, with a few exceptions, the remainder do so selectively (31.4%). Across all regions, the majority of respondents re-assess routinely; proportions were greatest for Ontario, followed by Alberta - 74.8% and 71.6% respectively, and decreased to 53.9% for Quebec.

Not unexpectedly given previous findings, frequency of re-assessing client behaviour is associated with the dental hygienist's professional development activity. (See Table 13.3.) Among the High-PD group, 8 out of 10 re-assess routinely, compared to 3 out of 5 for the Moderate-PD and Low-PD groups.

Again as expected given previous findings, the group that reported they have opportunities to consult are more likely to assess client behaviour routinely compared to the group that perceives they lack those opportunities – 68.8% versus 53.9%. (See Table 13.5.)

EVALUATION PROCEDURES

13.1.7 Assess Goal Achievement

Overall, the vast majority of respondents assess the degree to which goals were achieved either routinely or selectively – proportions were 49.7% and 43.5% respectively. Similar to the pattern regarding assessment of client attitudes and knowledge, respondents for British Columbia, Alberta and Ontario tended to assess routinely whereas those for the Atlantic, Quebec and Man/Sask. were more likely to assess selectively. (See Table 13.2.)

It was not unexpected to find that respondents that scored “high” in terms of professional development were more likely to assess goal attainment routinely. (See Table 13.3.)

Regardless of type of workplace, the majority of respondents assessed routinely (Table 13.4). However, the group that assessed goal achievement selectively was twice as likely to work in a general than a specialty dental office – 45.2% versus 24.1%; among the latter group, 18.5% indicated the assessment was not applicable or others did it. Regarding type of specialty, the periodontics group was more likely to assess goal attainment routinely (Table 13.4).

13.1.8 Assess Client Satisfaction with Outcomes

Overall, one-half of the respondents routinely assess the client’s satisfaction with the outcomes of their care (53.9%) and another 41.0% assess it selectively. There was little variation regionally.

Respondents that assessed client satisfaction routinely tended to score high in terms of professional development activity (Table 13.3) and to report they have opportunities to consult with others regarding dental hygiene care (Table 13.5).

13.1.9 Record Findings

Overall, 3 out of 5 respondents reported that they routinely record findings that pertain to their client-based assessment activities (61.8%) and another 34.3% record them selectively. While across all regions, the majority of respondents record findings routinely, the proportion ranged from a high of 72.7% for British Columbia, followed by 67.7% for Ontario, to a low of 49.5% for Man/Sask. and 50.2% for Quebec.

Not unexpectedly, the proportion that records routinely was greatest among respondents that scored higher in terms of professional development – 71.7% for the High-PD group, compared to 60.3% for the Moderate-PD and 53.1% for the Low-PD groups. It was interesting to note that no workplace-related factors were identified.

13.2 APPROPRIATENESS OF DENTAL HYGIENE CARE PLAN

Respondents provided information regarding the frequency with which they reviewed and assessed the appropriateness of the dental hygiene care plan. Three aspects were considered: relevance of the care to the client’s needs, whether the care provided met accepted standards, and whether the dental hygienist recorded/documenting the findings.

Results overall are presented in Table 13.6 and illustrated in Figure 13.2. Regional distributions are presented in Table 13.7. Once again, frequency was associated with professional development activity of the dental hygienist; those relationships are described in Table 13.8.

Findings were very similar for the three aspects examined. (See Table 13.6.) A clear majority of respondents reported they routinely assess relevance of the care (64.6%) and its consistency with standards (70.4%) and record the findings (58.9%). Next most predominant was the group that performs the procedures selectively – 26.0%, 20.5% and 27.8% respectively. For each procedure, the proportion that cited “never” or “not applicable/done by others” was relatively small.

Across all regions and for each procedure, the majority of respondents reported they perform the procedure routinely; in each case, the proportion was greatest for Ontario, followed by British Columbia, and least for Quebec and Man/Sask. (See Table 13.7).

Frequency of assessing relevance and consistency and recording findings is positively associated with the respondent's level of professional development activity. That is, the proportion that assesses routinely was greatest among the High-PD group. (See Table 13.8.)

Frequency is associated also with type of specialty. For all three procedures examined, respondents in periodontics compared to orthodontics are more likely to perform the procedures routinely. For example, 64.8% of the periodontics group routinely assess relevance of care provided, compared to 49.4% for the orthodontics group.

13.3 QUALITY OF CARE FACTORS

Participants were asked to indicate the frequency with which they reviewed and assessed factors associated with quality of care and recorded the findings. The aspects considered were time and resources and skills of the care givers and support personnel.

Findings overall are presented in Table 13.9 and illustrated in Figure 13.3. Regional distributions are indicated in Table 13.10. Relationships with professional development activity and with opportunities to consult are described in Tables 13.11 and 13.12 respectively.

13.3.1 Overview

With respect to quality of care provided, 3 out of 5 dental hygienists routinely assess both time and resources and the skills of care-givers and support personnel; the remainder do it selectively more so than never. Almost one-half of dental hygienists record the findings routinely and another 3 out of 10 do so selectively.

Across all regions, the majority of dental hygienists performs the two assessments and records the findings routinely. There were two exceptions. Dental hygienists in Quebec tend to assess time and resources selectively. Dental hygienists in Man/Sask. are almost equally split regarding the recording of findings - one group records routinely and the other selectively. Dental hygienists that assess the two topics routinely tend to participate in a broader range of professional development activities and to perceive they have opportunities to consult with others regarding dental hygiene care.

EVALUATION PROCEDURES

13.3.2 Time and Resources

Overall, 58.7% of respondents reported they routinely review and assess whether sufficient time and resources were available to ensure quality of care and another 31.2% assess selectively; a further 10.1% cited never or indicated it was not applicable or done by others. Across all regions, the majority of respondents made the assessment routinely; the exception was Quebec where 46.0% assessed selectively and another 38.3% did so routinely (Table 13.10). The proportion for "routinely" was greatest for British Columbia, followed by Alberta with 68.3% and 67.7% respectively.

Respondents that assess routinely were more likely to participate in a broader range of professional development activities (Table 13.11) and to perceive they have opportunities to consult with others regarding dental hygiene care (Table 13.12).

13.3.3 Skills

The pattern was similar regarding the skills of care providers and/or support personnel – that is, their appropriateness for the tasks involved. Overall, 60.1% of respondents reported they performed this assessment routinely and another 22.4% indicated selectively, with a further 17.5% citing either "never" or "not applicable/done by others". Proportions for "routinely" ranged from a high of 64.6% for Ontario, followed by 63.0% for Alberta, to a low of 47.5% for Man/Sask. (See Table 13.10.)

Again, respondents that assess routinely were more likely to participate in a broader range of professional development activities (Table 13.11) and to perceive they have opportunities to consult with others regarding dental hygiene care (Table 13.12).

13.3.4 Record Findings

In contrast to the frequency of assessing quality-of-care factors, the proportion of respondents that recorded findings routinely declined to approximately one-half (47.5%), another 30.0% reported they recorded selectively, and a further 16.6% cited never. Proportions for "routinely" ranged from a high of 53.3% for Ontario, followed by 51.3% for British Columbia, to a low of 36.7% for Man/Sask., followed by 38.8% for Quebec. (See Table 13.10.)

13.4 TREATMENT GOALS AND OUTCOMES

Participants were asked to indicate the overall frequency with which they (a) achieve the treatment goals specified in a client's care plan and (b) discuss the treatment outcomes with the client. . Response choices were *always*, *usually*, *sometimes*, *occasionally* and *never*. Results are presented in Table 13.13 and illustrated in Figure 13.4.

Almost 8 out of 10 dental hygienists perceive that they usually achieve treatment goals, as specified in a client's care plan, and another 1 out of 10 always achieve them. In contrast, dental hygienists are more likely to discuss treatment outcomes with the client always or usually. Dental hygienists in Alberta, Ontario, British Columbia, and Quebec tend to discuss outcomes always.

Regarding treatment goals, 77.2% of respondents overall reportedly achieve them usually, another 16.1% indicated they achieve them sometimes, and a further 5.8% cited always. There was little regional variation.

Regarding treatment outcomes, 52.1% of respondents reported they discuss them with the client always, another 40.1% indicated usually, and a further 6.2% cited sometimes. The proportion that cited "always" ranged from a high of 58.3% for Alberta and 56.6% for Ontario, to a low of 34.0% for the Atlantic and 38.1% for the Man/Sask. regions.

Findings varied slightly. Regarding year of graduation, among the group that had graduated prior to 1976, the proportion that usually achieves treatment goals declined to 63.3%, compared to 77.2% overall; there was a corresponding increase to 25.3% for those that achieve them sometimes. The pattern was similar regarding treatment outcomes – among the "pre-1976" group, 39.8% always discuss outcomes with the client, compared to 52.1% overall; and there was a corresponding increase, in particular, for those that discuss outcomes sometimes – 12.0% versus 6.2% overall.

Respondents that always discuss treatment outcomes with the client tend to undertake a broader range of professional development activities - 60.1% for the High-PD versus 46.6% for the Low-PD groups. They are also more likely to work in a periodontics rather than an orthodontics dental office (62.4% versus 46.0%) and to have opportunities to consult with others regarding dental hygiene care (55.3% versus 30.8% for the group that lacks the opportunity).

13.5 EVALUATION METHODS USED WITH CLIENT

Respondents indicated, from a list of 5 types of evaluation methods/techniques, the ones that they typically use with a client. Results overall are presented in Table 13.14 and illustrated in Figure 13.5. Regional distributions are described in Table 13.15. The relationship with perceived opportunities to consult with others is presented in Table 13.16.

Overall, 9 out of 10 dental hygienists use observation and questioning and 8 out of 10 use pre and post treatment records when evaluating dental hygiene care with a client. One-half use dental indices and relatively few use a client satisfaction questionnaire.

Dental indices are slightly more likely to be used by dental hygienists in Quebec and Ontario – that is, 1 out of 2, compared in particular to British Columbia. On the other hand, 9 out of 10 dental hygienists in British Columbia and Alberta use pre and post treatment records for evaluation purposes, compared to 7 out of 10 for Quebec. There was little variation regionally for the other three methods. (See Table 13.15.)

Use of dental indices declines among more recent graduates. It was proportionately greater among respondents that graduated prior to 1981, compared to the post-1990 group – 62.0% versus 47.1%.

As expected, respondents that reported the use of dental indices and pre and post treatment records were more likely to participate in a broader range of professional development activities. Regarding the use of treatment records, the proportion was greatest at 91.6% for the High-PD group and decreased to 83.8% for the Moderate-PD and even further to 76.3% for the Low-PD groups.

EVALUATION PROCEDURES

Again as expected given previous findings in this chapter, use of indices and treatment records was positively associated with perceived opportunities to consult regarding dental hygiene care. (See Table 13.16.)

13.6 SUMMARY

In summary, the majority of dental hygienists use a range of procedures routinely to evaluate the outcomes of dental hygiene care. Some regional variation exists, depending on the specific procedure. Frequency with which the dental hygienist performs evaluative procedures also is associated closely with professional development activity - that is, the more extensive the range of PD activities undertaken, the greater the likelihood that the dental hygienist will perform procedures routinely to evaluate outcomes of care. Frequency varies also by workplace characteristics, several of which are indicative of procedural structures in the workplace. Most noteworthy is the dental hygienist's perception that the workplace provides opportunities to consult with other health professionals regarding dental hygiene care; it is associated with most of the evaluation procedures examined. Interestingly, compared to other elements of dental hygiene care - for example, therapeutic services, an association with type of workplace is less likely.

Dental hygienists tend to perform a range of seven client-based evaluation activities either routinely or selectively. With one notable exception, relatively few dental hygienists never perform an activity or consider it not applicable, nor do others do it. At least 3 out of 5 dental hygienists routinely re-chart soft tissue conditions, re-assess the client's self-care behaviours, and record relevant findings. One-half routinely re-chart periodontal attachment levels, re-assess a client's attitudes and knowledge, and assess the degree to which goals were achieved, as well as the client's satisfaction with the outcomes. On the other hand, almost one-half never complete a follow-up plaque index. Overall, there tends to be little variation regionally.

Regarding the dental hygiene care plan, at least 2 out of 3 dental hygienists routinely review and assess its relevance with respect to the client's needs and its consistency with practice standards; 3 out of 5 record the findings. The proportion that routinely performs these procedures tends to be greater for Ontario, followed by British Columbia, and least for Quebec and Man/Sask.

With respect to quality of care provided, 3 out of 5 dental hygienists routinely assess both time and resources and the skills of care-givers and support personnel; the remainder does it selectively, more so than never. Almost one-half of dental hygienists record the findings routinely, and another 3 out of 10 do so selectively. With two exceptions, the majority of dental hygienists perform the three procedures routinely. Dental hygienists in Quebec tend to assess time and resources selectively. Dental hygienists in Man/Sask. are almost equally split regarding the recording of findings - one group records routinely and the other selectively.

Almost 8 out of 10 dental hygienists perceive that they usually achieve treatment goals, as specified in a client's care plan, and another 1 out of 10 achieve them always. In contrast, dental hygienists – in particular, those in the Atlantic and Man/Sask. regions, are somewhat less likely to always discuss treatment outcomes with the client.

Regarding methods used with the client to evaluate outcomes of care, 9 out of 10 dental hygienists use observation and questioning and 8 out of 10 use pre and post treatment records. One-half use dental indices and relatively few use a client satisfaction questionnaire. Dental indices are slightly more likely to be used by dental hygienists in Quebec and Ontario – that is, 1 out of 2, compared in particular to British Columbia. On the other hand, 9 out of 10 dental hygienists in British Columbia and Alberta use pre and post treatment records for evaluation purposes, compared to 7 out of 10 for Quebec.

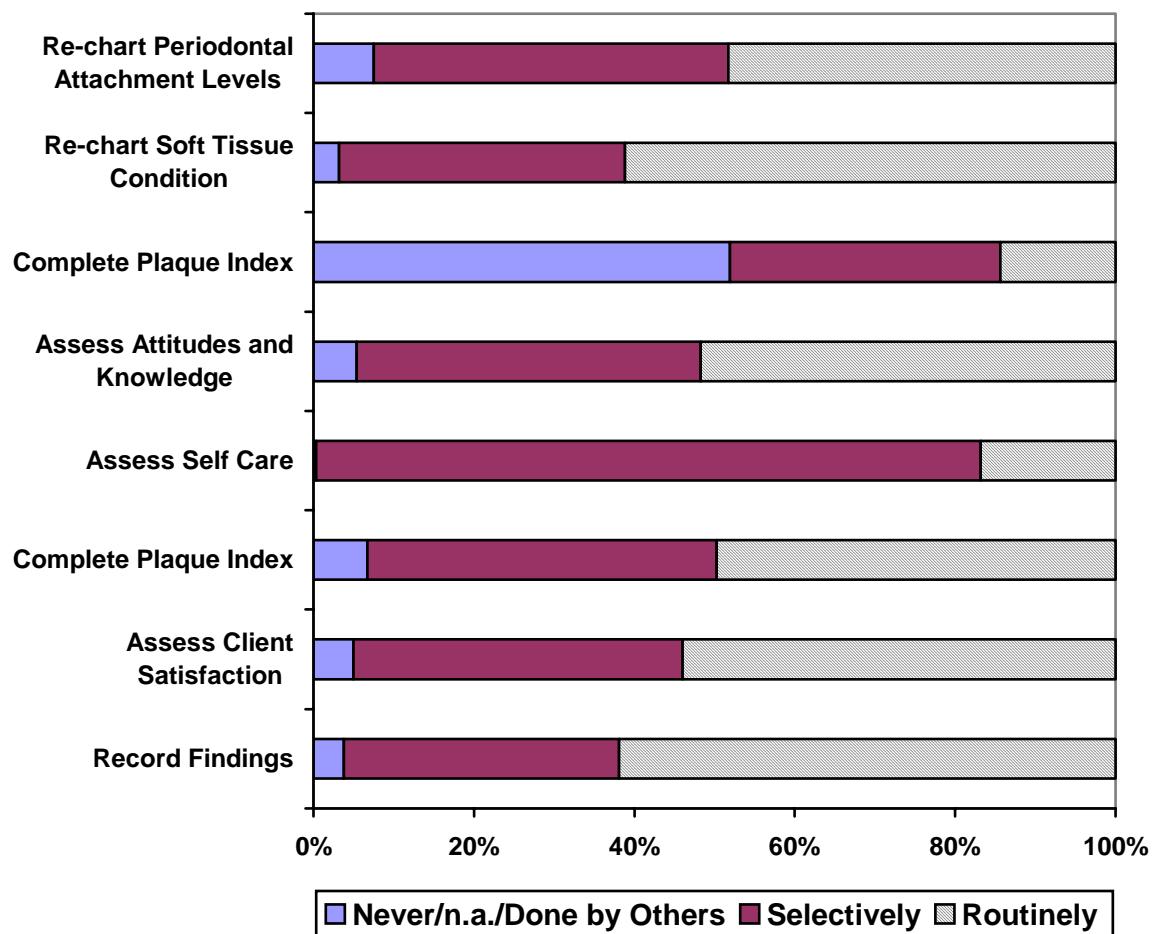
EVALUATION PROCEDURES

Table 13.1: Frequency With Which Dental Hygienists Use Client-Based Measures to Evaluate Outcomes of Care, Canada, 2001 (n = 1438)

TYPE OF PROCEDURE	FREQUENCY			
	Routinely	Selectively	Never	N/A/Done By Others
Evaluate outcomes:				
1. Re-chart periodontal attachment levels	48.3	44.2	2.1	5.4
2. Re-chart soft tissue conditions	59.6	34.7	1.7	4.0
3. Complete follow-up plaque index	14.4	33.7	47.0	5.0
4. Assess clients:				
a. attitudes and knowledge	51.7	42.9	4.3	1.1
b. self-care behaviours	67.2	31.4	0.8	0.6
c. attainment of goals	49.7	43.5	4.7	2.0
d. satisfaction with outcomes	53.9	41.0	3.7	1.3
5. Record findings for above	61.8	34.3	2.6	1.2

* Missing responses were less than 3.0%

Figure 13.1: Frequency with Which Dental hygienists Use Client-Based Measures to Evaluate Outcomes of Care, Canada, 2001 (n=1438)



EVALUATION PROCEDURES

Table 13.2: Frequency With Which Dental Hygienists Routinely¹ Perform Client-Based Evaluation Procedures, by Region, Canada, 2001

EVALUATION (% "routinely")	REGION						National Weighted Total
	Atlantic (n = 214)	Quebec (n = 256)	Ontario (n = 291)	Man/Sask. (n = 203)	Alberta (n = 225)	B.C. (n = 249)	
1. Re-chart:							
a. periodontal attachment levels	35.1	36.1	50.2	42.5	55.9	67.3	48.3
b. soft tissue conditions	48.1	63.0	59.2	43.0	59.6	66.1	59.6
2. Complete another plaque index	12.5	8.3	20.6	5.4	13.3	10.5	14.4
3. Assess clients:							
a. attitudes and knowledge	45.8	36.2	59.2	43.8	56.9	58.1	51.7
b. self-care behaviours	60.4	53.9	74.8	61.6	71.6	69.0	67.2
c. goal attainment	40.6	40.6	54.4	45.0	54.7	53.4	49.7
d. satisfaction with outcomes	46.7	50.4	57.2	47.0	52.2	56.5	53.9
4. Record findings for above	54.5	50.2	67.7	49.5	61.5	72.7	61.8
5. Discuss treatment outcomes with client:							
a. always	34.0	47.6	56.6	38.1	58.3	54.3	52.1
b. usually	52.4	42.5	36.8	53.0	34.1	40.5	40.1
c. sometimes/occasionally/never	13.6	9.9	6.6	8.9	7.6	5.2	7.8

Missing responses were less than 2.0%.

¹Response choices were *routinely*, *selectively*, *never* and *not applicable/done by others*.

Table 13.3: Frequency with Which Dental Hygienists Perform Client-Based Evaluation, by Type of Procedure and Professional Development Activity of the Dental Hygienist, Canada, 2001

EVALUATION PROCEDURE	R's PROFESSIONAL DEVELOPMENT ACTIVITY		
	Low (n=470)	Moderate (n=467)	High (n=499)
1. Re-chart Periodontal Attachment Levels:			
Routinely	35.9	49.5	58.9
Selectively	53.6	44.0	35.6
Never/ Not applicable/Dbo ¹	10.5	6.6	5.5
2. Complete a Follow-up Plaque Index:			
Routinely	8.7	11.2	22.7
Selectively	33.0	31.7	36.3
Never	52.9	52.1	36.5
Not applicable/Done by others	5.4	5.0	4.5
3. Re-Assess Clients' Attitudes and Knowledge:			
Routinely	40.3	50.3	63.6
Selectively	51.4	44.9	33.1
Never/ Not applicable/Dbo	8.2	4.8	3.2
4. Re-Assess Clients' Self-Care Behaviours:			
Routinely	58.4	62.3	79.8
Selectively	40.1	36.4	18.7
Never/ Not applicable/Dbo	1.5	1.3	1.4
5. Assess Degree to Which Goals Were Achieved:			
Routinely	43.4	46.5	58.6
Selectively	49.3	45.2	36.3
Never/ Not applicable/Dbo	7.3	8.2	5.0
6. Assess Clients' Satisfaction With Outcomes:			
Routinely	46.4	50.8	64.1
Selectively	47.7	42.9	32.9
Never/ Not applicable/Dbo	5.9	6.3	3.0
7. Record Findings For Above:			
Routinely	53.1	60.3	71.7
Selectively	41.9	36.0	25.6
Never/ Not applicable/Dbo	5.0	3.7	2.7

Missing responses were less than 5.0% unless noted otherwise.

¹"Dbo" refers to the response choice "Done by others".

EVALUATION PROCEDURES

Table 13.4: Frequency with Which Dental Hygienists Perform Client-Based Evaluation, by Type of Procedure and Workplace, Canada, 2001

TYPE OF PROCEDURE	TYPE OF WORKPLACE			
	General (n=1317)	Specialty (n=119)	Orthodontics (n=47)	Periodontics (n=50)
1. Re-chart Periodontal Attachment Levels:				
Routinely	49.2	37.6		
Selectively	45.8	23.9		
Never	1.8	5.5		
Not applicable/Done by others	3.2	33.0		
2. Re-chart Soft Tissue Conditions:				
Routinely	61.1	42.6		
Selectively	35.1	29.6		
Never	1.5	(3)		
Not applicable/Done by others	2.2	25.0		
3. Re-Assess Clients' Attitudes and Knowledge:				
Routinely	51.2	58.3	39.9	57.5
Selectively	44.2	27.8	49.4	37.7
Never	4.1	5.6	6.3	1.8
Not applicable/Done by others	0.5	8.3	4.4	3.0
4. Assess Degree to which Goals were Achieved:				
Routinely	49.5	52.8	44.3	59.9
Selectively	45.2	24.1	43.7	34.1
Never	4.8	4.6	3.2	2.4
Not applicable/Done by others	0.6	18.5	8.9	3.6

Missing responses were less than 3.0% unless noted otherwise.

Table 13.5: Frequency with Which Dental Hygienists Perform Client-Based Evaluation, by Type of Procedure and Perceived Opportunities to Consult Regarding Dental Hygiene Care, Canada, 2001

EVALUATION PROCEDURE	RESPONDENT HAS OPPORTUNITIES TO CONSULT	
	Yes (n=1262)	No / Don't Know (n=134)
1. Re-chart Periodontal Attachment Levels		
Routinely	50.3	27.9
Selectively	43.0	55.0
Never	1.5	8.5
Not applicable/Done by others	5.2	8.5
2. Re-chart Soft Tissue Conditions		
Routinely	61.3	44.5
Selectively	33.1	47.7
Never	1.5	(4)
Not applicable/Done by others	4.1	4.7
3. Complete a Follow-up Plaque Index:		
Routinely	14.8	9.4
Selectively	34.9	24.2
Never	45.3	60.9
Not applicable/Done by others	5.1	5.5
4. Assess Clients' Attitudes and Knowledge:		
Routinely	53.2	37.5
Selectively	42.3	47.7
Never	3.4	12.5
Not applicable/Done by others	1.0	(2)
5. Assess Clients' Self-Care Behaviours:		
Routinely	68.6	53.9
Selectively	30.1	44.5
Never	0.7	(1)
Not applicable/Done by others	0.6	(1)

Missing responses were less than 5.0% unless noted otherwise.

EVALUATION PROCEDURES

Table 13.6: Frequency With Which Dental Hygienists Review and Assess the Care Plan, Canada, 2001 (n = 1438)

TYPE OF PROCEDURE	FREQUENCY			
	Routinely	Selectively	Never	N/A/Done By Others
1. Was care relevant to clients' needs?	64.6	26.0	6.0	3.4
2. Does care meet accepted standards for care?	70.4	20.5	5.5	3.6
3. Record findings	58.9	27.8	9.7	3.5

* Missing responses were less than 5.0%

Figure 13.2: Frequency with Which Dental Hygienists Review and Assess the Dental Hygiene Care Plan, Canada 2001 (n=1438)

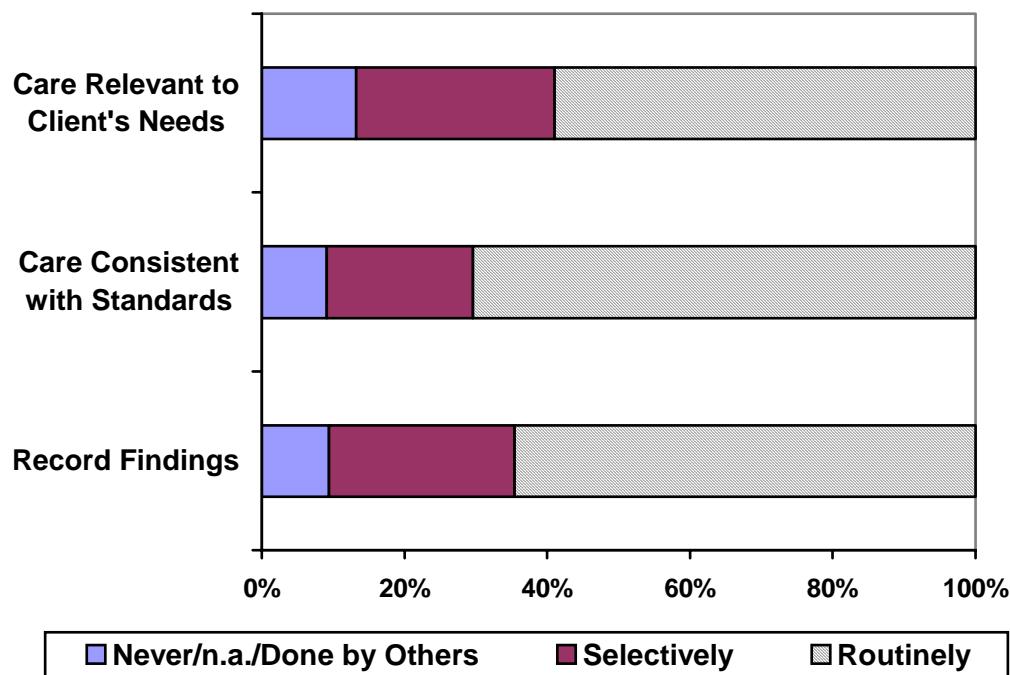


Table 13.7: Frequency With Which Dental Hygienists Routinely¹ Evaluate the Dental Hygiene Care Plan, by Region, Canada, 2001

EVALUATES ROUTINELY	REGION						National Weighted Total
	Atlantic (n = 214)	Quebec (n = 256)	Ontario (n = 291)	Man/Sask (n = 203)	Alberta (n = 225)	B.C. (n = 249)	
For the individual client:							
1. Was care relevant to needs?	58.5	51.8	73.0	56.7	61.1	68.9	64.6
2. Did care meet accepted standards?	64.5	60.2	77.8	60.2	67.0	73.9	70.4
3. Record findings	53.3	48.0	67.3	43.5	55.5	62.7	58.9

Missing responses were less than 5.0%.

¹Response choices were *routinely*, *selectively*, *never* and *not applicable/done by others*.

EVALUATION PROCEDURES

Table 13.8: Frequency with Which Dental Hygienists Review and Assess the Appropriateness of the Dental Hygiene Care Plan, by Type of Procedure and Professional Development Activity of the Dental Hygienist, Canada, 2001

EVALUATION PROCEDURE	R's PROFESSIONAL DEVELOPMENT ACTIVITY		
	Low (n=470)	Moderate (n=467)	High (n=499)
1. Assess Relevance of Care to Clients' Needs:			
Routinely	55.2	61.2	76.4
Selectively	31.8	27.4	19.0
Never	8.5	8.0	1.9
Not applicable/Done by others	4.5	3.3	2.7
2. Assess if Care Met Accepted Standards:			
Routinely	60.6	69.6	80.3
Selectively	25.9	20.0	15.9
Never	7.7	7.3	1.7
Not applicable/Done by others	5.8	3.1	2.1
3. Record Findings for Above:			
Routinely	50.4	59.3	66.5
Selectively	32.1	26.0	25.7
Never	11.8	11.9	5.8
Not applicable/Done by others	5.6	2.9	2.1

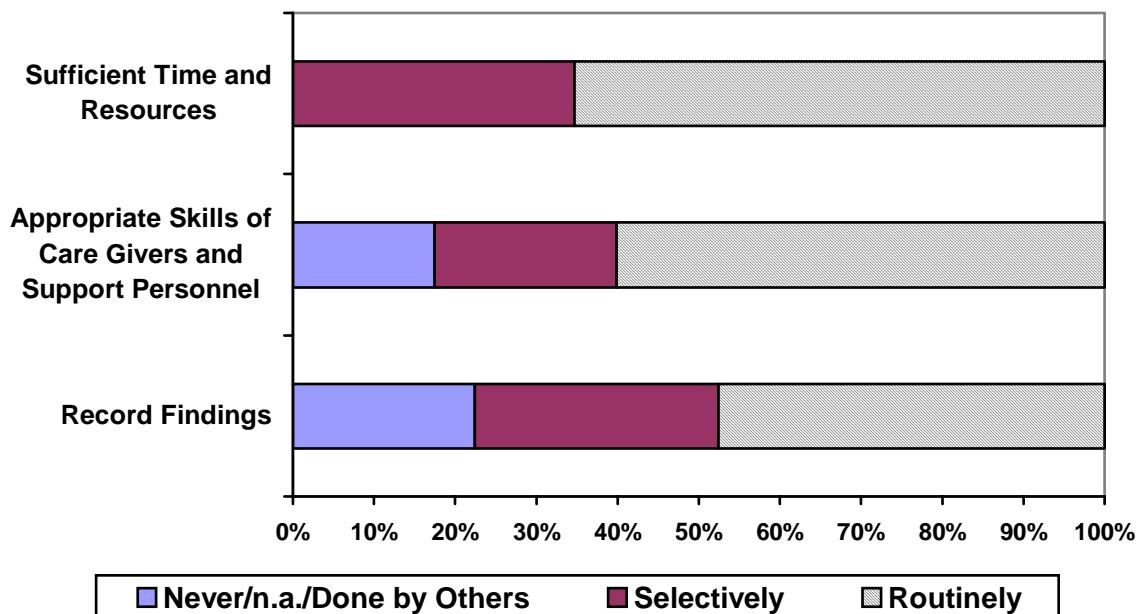
Missing responses were less than 5.0% unless noted otherwise.

Table 13.9: Frequency with Which Dental Hygienists Evaluate Quality of Care, Canada, 2001 (n = 1438)

FACTORS TO EVALUATE	FREQUENCY			
	Routinely	Selectively	Never	N/A/Done By Others
Review and assess:				
1. Was there sufficient time and resources	58.7	31.2	6.4	3.7
2. Were the skills of care providers and/or support personnel appropriate for the tasks	60.1	22.4	11.3	6.2
3. Record findings	47.5	30.0	16.6	5.8

* Missing responses were less than 2.0%

Figure 13.3: Frequency with Which Dental Hygienists Evaluate Quality of Care, Canada 2001 (n=1438)



EVALUATION PROCEDURES

Table 13.10: Frequency With Which Dental Hygienists Routinely¹ Evaluate Factors Associated with Quality of Care, by Region, Canada, 2001

R. EVALUATES ROUTINELY	REGION						National Weighted Total
	Atlantic (n = 214)	Quebec (n = 256)	Ontario (n = 291)	Man/Sask (n = 203)	Alberta (n = 225)	B.C. (n = 249)	
For the individual client:							
1. Was there sufficient time and resources?	63.5	38.3	65.2	55.8	67.7	68.3	58.7
2. Were the skills of care providers and/or support personnel appropriate for the tasks?	55.7	54.1	64.6	47.5	63.0	61.4	60.1
3. Record findings for above.	45.4	38.8	53.3	36.7	46.3	51.3	47.5

Missing responses were less than 5.0%.

¹Response choices were *routinely*, *selectively*, *never* and *not applicable/done by others*.

Table 13.11: Frequency with Which Dental Hygienists Evaluate Factors Associated with Quality of Care, by Professional Development Activity of the Dental Hygienist, Canada, 2001

FACTORS ASSOCIATED WITH QUALITY OF CARE	R's PROFESSIONAL DEVELOPMENT ACTIVITY		
	Low (n=470)	Moderate (n=467)	High (n=499)
1. Time and Resources:			
Routinely	46.6	59.3	69.6
Selectively	39.1	30.2	24.8
Never	8.4	7.3	3.5
Not applicable/Done by others	6.0	3.1	2.1
2. Skills of Care Givers and Support Personnel:			
Routinely	52.6	60.3	67.0
Selectively	22.7	22.1	22.3
Never	15.3	12.6	6.3
Not applicable/Done by others	9.4	5.0	4.4
3. Record Findings for Above:			
Routinely	41.3	49.6	51.5
Selectively	30.3	29.0	30.7
Never	19.3	17.0	13.8
Not applicable/Done by others	9.0	4.5	4.0

Missing responses were less than 5.0%.

EVALUATION PROCEDURES

Table 13.12: Frequency with Which Dental Hygienists Evaluate Factors Associated With Quality of Care, by Perceived Opportunities to Consult Regarding Dental Hygiene Care, Canada, 2001

FACTORS ASSOCIATED WITH QUALITY OF CARE	RESPONDENT HAS OPPORTUNITIES TO CONSULT	
	Yes (n=1262)	No / Don't Know (n=134)
1. Time and Resources:		
Routinely	60.6	44.6
Selectively	30.7	35.4
Never	5.4	14.6
Not applicable/Done by others	3.3	5.4
2. Skills of Care Givers and Support Personnel:		
Routinely	61.9	46.5
Selectively	22.4	21.3
Never	10.1	22.0
Not applicable/Done by others	5.6	10.2

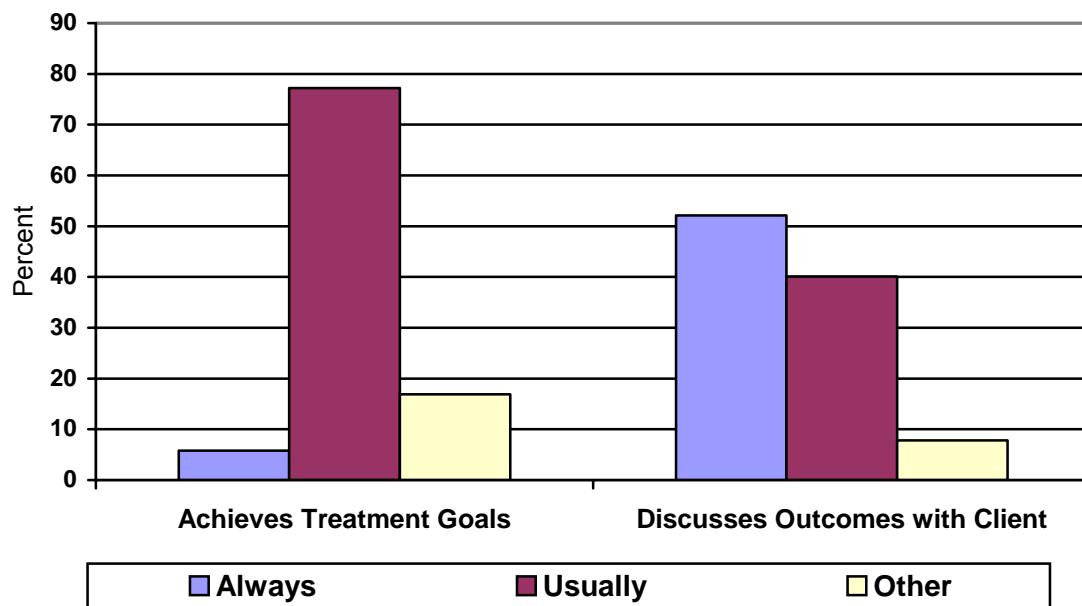
Missing responses were less than 5.0% unless noted otherwise.

Table 13.13: Dental Hygienists by Reported Frequency of (1) Achieving Treatment Goals and (2) Discussing Outcomes with Client, Canada, 2001 (n = 1438)

FACTORS TO EVALUATE	FREQUENCY			
	Always	Usually	Sometimes	Occasionally /Never
How frequently do you:				
1. Achieve the treatment goals specified in the care plan	5.8	77.2	16.1	0.8
2. Discuss treatment outcomes with the client	52.1	40.1	6.2	1.6

* Missing responses were less than 1.0%

Figure 13.4: Frequency with Which Dental Hygienists Achieve Treatment Goals and Discuss Outcomes With the Client, Canada 2001 (n=1438)



EVALUATION PROCEDURES

Table 13.14: Dental Hygienists by Type of Evaluation Techniques Typically Used With a Client, Canada, 2001 (n = 1438)

EVALUATION TECHNIQUE	YES	NO
1. Observation	96.8	3.2
2. Questioning	92.0	8.0
3. Dental Indices	51.3	48.7
4. Client Satisfaction Questionnaire	6.2	93.8
5. Pre and post treatment records	84.1	15.9

* Missing responses were less than 1.0%

Figure 13.5: Dental Hygienists by Type of Evaluation Techniques Used With A Client, Canada 2001 (n=1438)

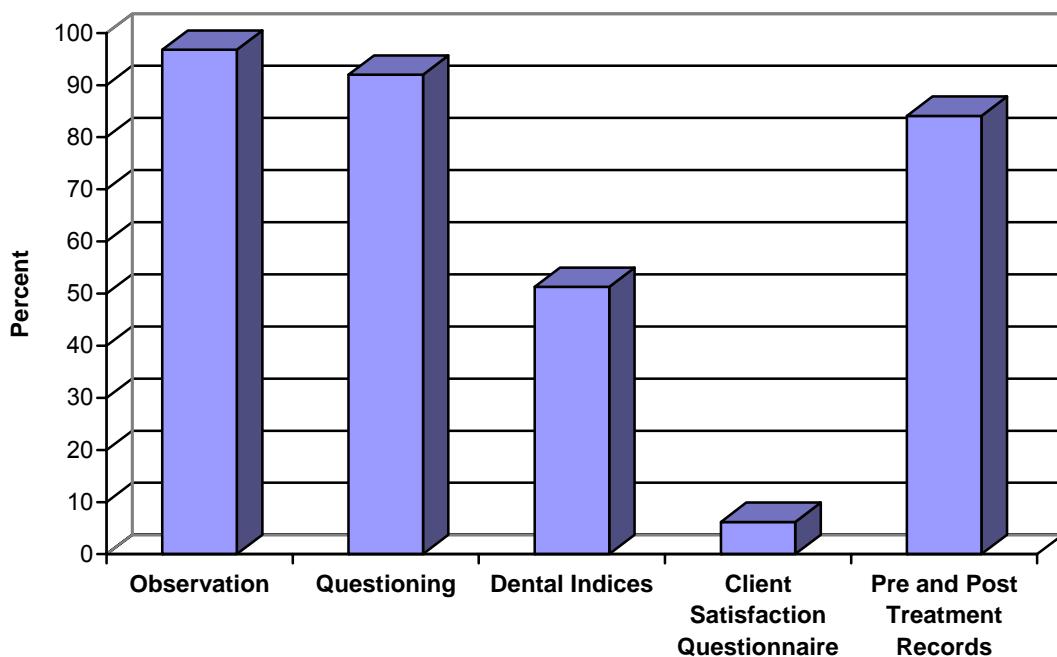


Table 13.15: Dental Hygienists by Type of Evaluation Method and by Region, Canada, 2001

METHOD (% "Yes")	REGION						National Weighted Total
	Atlantic (n = 214)	Quebec (n = 256)	Ontario (n = 291)	Man/Sask (n = 203)	Alberta (n = 225)	B.C. (n = 249)	
1. Observation	95.8	96.8	96.5	96.1	97.8	97.6	96.8
2. Questioning	92.5	91.3	91.7	90.6	93.8	93.6	92.0
3. Dental Indices	45.1	56.3	54.3	45.8	38.2	38.6	51.3
4. Client Satisfaction Questionnaire	6.1	6.3	6.6	3.9	7.6	4.4	6.2
5. Pre versus Post Treatment Records	77.5	73.4	87.9	79.8	90.6	91.2	84.1

Missing responses: < 1.0%.

EVALUATION PROCEDURES

Table 13.16: Dental Hygienists, by Use of Selected Evaluation Techniques and by Perceived Opportunities to Consult Regarding Dental Hygiene Care, Canada, 2001

EVALUATION PROCEDURE	R. HAS OPPORTUNITIES TO CONSULT	
	Yes (n=1262)	No / Don't Know (n=134)
1. Dental Indices		
Yes	52.5	38.3
No	47.5	61.7
2. Pre and Post Treatment Records		
Yes	85.6	70.7
No	14.4	29.3

Missing responses were less than 5.0%.

CHAPTER 14

RESPONDENTS' COMMENTS

Approximately 1 out of 4 respondents (23.5%) wrote additional comments in the space provided on the last page of the questionnaire. Using a coding system developed for the purpose, a content analysis was performed to identify major issues of concern to dental hygienists.

14.1 METHODS

Approximately 1 out of 4 respondents (23.5%) wrote additional comments in the space provided on the last page of the questionnaire. Using a coding system developed for the purpose, a content analysis was performed to identify major issues of concern to dental hygienists.

From the group that contained comments ($n=403$), a sample of 292 questionnaires (72.5%) was randomly selected for analysis purposes. Of this sample, 34.6% of respondents ($n=101$) provided comments on two topics and another 9.2% ($n=27$) wrote on three or more topics. Where a respondent mentioned multiple topics, a maximum of three topics was coded in order of appearance in the text. A total of 420 comments were included in the analysis.

14.2 OVERVIEW

Considering that respondents had already spent considerable time and effort to complete the survey form, the volume and detailed nature of comments overall was surprising. It would appear that among this group, there was a strong interest in the issues raised by the survey and a concern that their views and experiences be known.

Regionally, there was little variation in the proportion of respondents that provided comments. (See Table 14.1.) While respondents for the Quebec and Ontario regions were slightly more inclined to provide comments and those for Man/Sask. and Alberta were slightly less inclined, there was little meaningful difference. However, those that reported multiple topics were disproportionately more likely to reside in Quebec and, to a lesser extent, B.C. Findings also varied regionally in terms of the frequency with which certain topics and sub-topics were cited.

14.2.1 Predominant Topics

The distribution of comments is summarized in Table 14.2. The predominant topic was the survey itself (28%), followed closely by the dental hygiene work role (24%), work environment (19%), and job and/or career satisfaction (19%). Remaining comments involved either the respondent's employment status (6%) or a collection categorized as "other" (5%); the latter involved dental hygiene education, professional development, standards of practice, regulatory bodies and professional organizations.

14.2.2 Sub Topics

Totaled across up to three comments, the most frequently cited sub-topics were:

1. Supportive of the survey (n=48)
2. Item wording unclear or French translation inadequate (n=38)
3. Dissatisfaction with dental hygiene income or benefits (n=33)
4. Clarification of the work situation (n=28)
5. Survey considered to be irrelevant to respondent's work situation (n=26)
6. One or more survey questions not relevant to respondent's work (n=22).

When only the first comment provided by a respondent was considered, the same 6 sub-topics were predominant although the ranking changed. (It is possible that the topic cited first was the one the respondent considered to be most important.)

1. Support for the study
2. Item wording unclear or French translation inadequate
3. Survey considered to be irrelevant to respondent's work situation
4. Clarification of the work situation
5. One or more survey questions not relevant to respondent's work
6. Dissatisfaction with dental hygiene income or benefit.

14.3 THE SURVEY

Of the 117 comments that involved the survey, 50 were supportive and 49 expressed some dissatisfaction with the survey itself. Another 18 comments were an apology for either a delay in responding or messiness of the completed questionnaire. Of the "supportive" group of comments, the majority expressed support for the study's purpose and design (n=41) and the remaining 9 indicated that one or more practice deficiencies had been identified by completing the survey questionnaire. Of the "negative" group of comments, the majority reported difficulty with wording and/or translation (n=38) and the remaining 11 cited questionnaire length, complexity, or the bar code on the last page (i.e., a concern with anonymity).

The "supportive" group of comments came disproportionately from respondents in Man/Sask. and to a lesser extent Ontario, whereas BC was under-represented. That is, although Man/Sask. and Ontario comprised 14% and 20% respectively of total survey respondents, both regions each contributed 24% of the supportive comments. In contrast, while BC comprised 17% of respondents overall, it contributed 8% of the "supportive" comments. Respondents that indicated support tended to work full-time in dental hygiene, to be moderately satisfied with the income they received as a dental hygienist but very dissatisfied with the employment benefits, and to have worked more than 10 years in dental hygiene.

Regarding “negative” comments, again all six regions were represented. In this case, Quebec was notably over-represented (35% versus 19% overall) while the Atlantic and Man/Sask. regions in particular were under-represented (4% and 8% respectively). Regarding item wording and translation difficulties, the greatest proportion of comments were from respondents for Quebec (42%), suggesting that efforts to minimize the “language effect” had been inadequate.¹ Respondents that offered “negative” comments tended to work in dental hygiene, were satisfied with their income but dissatisfied with employment benefits and had graduated within the last decade (1991 or later).

14.4 WORK ROLE

The 101 comments regarding the respondent’s work role and responsibilities were distributed across all six regions. Within this category, the vast majority of comments indicated that the respondent felt that either the survey (n=26) or some of the questions (n=22) lacked relevance to their particular work situation. Next most frequently cited were comments that clarified either the respondents’ work activities (n=26) or their work role and decision-making responsibility (n=15). Another 19 comments referred to either lack of autonomy in performing their work, their perception that their role was under-valued, or the need to increase awareness of the dental hygiene role.

The group that indicated the survey in general or in part lacked relevance to their particular situation, although relatively small in terms of number, may have significance in terms of formalized practice standards and codes. That is, this group that apparently feels their clinical practice is different may also feel that practice standards, quality assurance requirements and professional ethics, for example, that apply generally to dental hygiene do not, in fact, pertain to them in their particular workplace.

The 26 respondents that stated the survey was not relevant to their work resided in either Quebec (n=15) or Ontario (n=7). They tended to work full time in dental hygiene, to work in either an orthodontic dental practice (n=11) or community health (n=10), to be more satisfied than dissatisfied with their dental hygiene income and social benefits, and to have graduated prior to 1986.

The 22 respondents that indicated one or more survey questions were not relevant to their work situation tended to reside in Ontario or Quebec, to work full-time in dental hygiene and to work in community health. In contrast to findings regarding relevance of the survey overall, this group of respondents were more likely to be somewhat dissatisfied with their income and social benefits and to have graduated in 1986 or later.

¹ For example, the English and French language versions of the questionnaire and covering letters had been reviewed by representatives of the provincial dental hygiene regulatory body (L’Corporation Professionnelle des Hygienistes Dentaire du Quebec). Also, a pretest of the French-language questionnaire had been conducted with a group of dental hygienists in Montreal.

COMMENTS

14.5 WORK ENVIRONMENT

Of the 79 comments regarding the work environment (19% of comments overall), two sub-topics were predominant - 41 provided clarification about the respondent's work situation (e.g., decision-making responsibilities, employment conditions) and another 32 expressed concern with one or more aspects of the work environment. A further 6 comments indicated the workplace was progressive and/or emphasized safety. The 32 work environment comments included safety or quality concerns in general, an employer's undue emphasis on the "bottom line" which negatively affected client care, pressure to comply or lose their job, lack of appointment time for quality work, and lack of staff support for the dental hygienist.

Comments that clarified the work situation came disproportionately from Alberta (34%) followed by Ontario (31%). Overall, respondents in this group tended to be satisfied with their dental hygiene income and had graduated prior to 1991.

Comments regarding safety and quality-related issues in the workplace were reported for all regions. However, they tended to be proportionately greater among respondents for Ontario (25%).

14.6 JOB AND CAREER SATISFACTION

Of the 79 comments that involved job and/or career satisfaction (19%), the vast majority (n=71) indicated the respondent was dissatisfied. Of the total comments, dissatisfaction with the dental hygiene income and/or social benefits was one of the most prevalent topics (n=33). Another 17 comments indicated general dissatisfaction and a further 8 indicated they found the work stressful, often due to lack of results. In addition, 11 comments suggested that dental hygienists needed a union or the opportunity to direct bill the client or insurance carriers for their services or to establish an independent practice. Only 8 indicated satisfaction with the profession.

Dissatisfaction was disproportionately greater among respondents for Quebec (36%) and BC (24%) and declined for the Atlantic region and Alberta (6% and 8% respectively). Respondents for Quebec made 69% of the comments that expressed general dissatisfaction with dental hygiene. Almost two-thirds of the comments that expressed dissatisfaction with dental hygiene income and/or employment benefits came from Quebec (33%) and BC (30%). (Interestingly, while data reported previously in this report support the findings for Quebec, reasons for economic-related discontent among BC respondents were less apparent.) Seven of the 9 comments that expressed the need for a union were reported by respondents for BC and Quebec, as were the 2 comments regarding direct billing and/or independent practice.

Dissatisfaction with income and benefits tended to be greater among respondents who worked full-time and had graduated after 1985.

14.7 EMPLOYMENT STATUS

A relatively small group of comments (6%) provided clarification regarding the respondent's employment status. The majority of this group were either on leave (n=10) or providing temporary services as a dental hygienist (n=9). This type of clarification was indicative of the overall effort of respondents to improve the quality of information they had provided for the survey and ensure the researcher understood the context for their responses. Overall, little regional variation was evident. Respondents in this group tended to be more satisfied than dissatisfied with their income and benefits and to have graduated relatively recently - 1991 or later.

14.8 OTHER

The relatively few comments remaining were categorized as "other" (5%). They addressed such topics as professional development activities and requirements, standards of practice, basic education, the provincial regulatory organization (where appropriate) and their national or provincial professional association. Comments tended to indicate dissatisfaction. Respondents for Alberta offered the most comments in the "other" category (37%) and over a wider range of sub-topics. Overall, respondents in this group tended to have graduated prior to 1991.

14.9 SUMMARY

As previously indicated, respondents answered the questionnaire very thoroughly. There were very little "missing" data or unanswered questions where a response was expected. In addition to completing the lengthy survey form, a surprising 24% of respondents added one or more written comments. Overall, it would appear that respondents felt a responsibility to complete the survey as thoroughly and accurately as possible including providing comments as needed. For some, the survey provided an opportunity to express opinions and concerns. For at least some of the relatively large group that provided statements clarifying work roles and employment situations, it is likely that the survey instrument did not adequately capture information relevant to them.

Based on these anonymous comments, it would appear three issues are of primary importance to dental hygienists in Canada. Two issues involve their workplaces – work roles and responsibilities and the work environment. The third issue concerns job and career satisfaction. All issues have implications for workforce retention and recruitment and for client care.

COMMENTS

Regarding the work role, a surprising number reported that they found all or part of the questionnaire to be not relevant to their clinical workplace, typically an orthodontic dental office or a community health setting. This finding, which was not evident in previous similar surveys (Canada, 1985, Ontario, 1995), may have implications for establishing standardized quality assurance guidelines and a professional code of ethics. Work role and workplace specific concerns included safety and infection control, pressure to comply with often economic-driven decisions coupled with the perception that otherwise they would lose their jobs, lack of appointment time and staff support to ensure quality care, lack of professional autonomy for their work and a feeling that their role as a healthcare provider is under-valued. Regarding job and career satisfaction, 9 out of 10 comments in this category indicated dissatisfaction, with by far the greatest proportion being made by respondents for Quebec, followed more distantly by BC. Almost one-half of those comments (46%) indicated dissatisfaction with the income and/or employment benefits received as a dental hygienist. A smaller proportion expressed interest in a union, direct billing for dental hygiene services and independent practice.

The relatively high portion of respondents that provided written comments and the issues addressed in those comments have implications for human resource and service planning. Further investigation is warranted.

Table 14.1: Distribution of Respondents that Provided Comments, by Region (N, %)

REGION	SURVEY RESPONDENTS		GROUP THAT PROVIDED COMMENTS	
	number	percent	number	percent
Atlantic	248	14.4	59	14.6
Quebec	323	18.8	88	21.8
Ontario	342	19.9	86	21.3
Man/Sask.	244	14.2	46	11.4
Alberta	274	15.9	57	14.1
British Columbia	287	16.7	67	16.6
Total	1718	100.0	403	100.0
National Distribution	1718		403	23.5
National Weighted Distribution	1719		424	24.6

COMMENTS

Table 14.2: Respondents' Comments, by Topic, Sub-topic and Order-of-Appearance, Canada, 2001

TOPIC	TOTAL N (%)	ORDER OF APPEARANCE		
		First (n)	Second (n)	Third (n)
1 The Survey	27.9%	41.8%	13.9%	25.9%
Supportive of study's purpose and design	41 (9.8)	30	8	3
Difficulty with wording and/or translation	38 (9.1)	33	3	2
R apologizes for delay or messiness	18 (4.3)	17		1
Too long; complex; bar code (anonymity)	11 (2.6)	10		1
Survey helped R to identify a deficiency	9 (2.1)	6	3	
2 Work Role and Responsibility	24.0%	15.4%	24.8%	18.5%
Survey not relevant to R's practice	26 (6.2)	26		
Some questions not relevant to R's practice	22 (5.2)	19	2	1
Clarifies work activities (process and records)	19 (4.5)	10	7	2
Lack of autonomy; feels under-valued	15 (3.6)	5	8	2
Participates in decision making	8 (1.9)	6	2	
Clarifies work role	7 (1.7)	4	3	
Need to increase awareness of DH role	4 (1.0)	1	3	
3 Work Environment	18.8%	16.8%	25.6%	14.8%
Clarifies work situation	28 (6.7)	22	6	
Safety and/or quality concerns; DDS \$\$-oriented	16 (3.8)	3	10	3
Clarifies conditions of work	13 (3.1)	10	2	1
Lack of time for quality work	11 (2.6)	8	3	
Workplace is safe, progressive	6 (1.4)	4	2	
Lack of support staff for dental hygienist	3 (0.7)	1	2	
Pressure to comply or lose job	1 (0.2)	1		
Difficult to effect change	1 (0.2)		1	
4 Level of Job/Career Satisfaction	18.8%	16.1%	23.7%	29.6%
Dissatisfied with DH income / benefits	33 (7.9)	19	11	3
Dissatisfied in general	17 (4.0)	11	6	
Need union; direct bill; independent practice	11 (2.6)	4	2	5
Satisfied	8 (1.9)	7	1	
Stressful; lack of results	8 (1.9)	5	3	
Lack of jobs	2 (0.5)	1	1	
5 Clarifies Employment Status	5.7%	7.2%	3.0%	
On leave	10 (2.4)	9	1	
Working in DH (temporary work: n=4)	9 (2.1)	8	1	
Not working in DH	5 (1.2)	4	1	
6 Other	4.8%	2.5%	9.0%	11.1%
College/Ordre; CDHA; provincial association (standards and/or fees)	12 (2.9)	3	6	3
Dental hygiene education	4 (1.0)	3	1	
Professional development	4 (1.0)	2	2	
TOTAL N (%)	420 (100.0)	292 (99.8) (100.0)	101 (100.0)	27 (99.9)

PART V

DISCUSSION AND CONCLUSIONS

CHAPTER 15

DISCUSSION AND CONCLUSIONS

The deployment of dental hygienists is an essential element in planning human resources for the oral health sector. The topic was of particular interest at the time of this study, in light of concerns about a possible shortage of dentists and dental hygienists. There has been a scarcity of comprehensive, current information on the dental hygiene profession. The purpose of this study was two-fold – namely, to identify characteristics and practice patterns of dental hygienists residing and working in Canada and to examine trends and changes over the past 14-year (and in some cases, 24-year) period.

The information presented in preceding chapters is noteworthy for its descriptive breadth and depth and should prove useful for reference purposes. In this chapter, apparent trends and changes are identified, the evolving profession is examined, prevailing myths and stereotypes are updated, factors associated with clinical practice are examined, and implications for the planning and delivery of oral health services are considered. Recommendations are offered and areas for future research identified.

15.1 PATTERNS, TRENDS AND CHANGES

In this section, key supply, demographic and workplace-related findings from 2001 are compared with previous survey information. Practice-related comparisons are presented in section 15.2. Supply data were available intermittently for the 33-year period 1965 to 1987, with estimates for 2001. Information regarding workforce behaviour and work environments was available for 1979, 1987 and 2001.

15.1.1 Sources of Comparative Data

Data for 2001 were obtained through a regionally-stratified, probability sample survey conducted for the purposes of this study ($n=2179$; RR=79.4%). The sampling frame consisted of dental hygienists registered to practice and residing in Canada at the time of the survey; the sample comprised 16.0% of the dental hygiene population. The self-administered questionnaire incorporated items from or consistent with the 1987 *Dental Hygiene Practice survey*¹. (See Chapter 2, Appendices A and B, and the Technical Report².)

¹ Johnson, P.M. **Dental Hygiene Practice in Canada: 1987 Part II. Report**. Ottawa: Canadian Dental Hygienists Assoc., 2000.

² Johnson, P.M. **Dental Hygiene Practice in Canada: 2001, Technical Report**. Ottawa: Canadian Dental Hygienists Assoc., November 2001.

DISCUSSION AND CONCLUSIONS

Data for 1987 were obtained through a two-part national survey. It involved a census mail survey of dental hygienists registered to practice and residing in Canada in 1987 (N=5399; RR=89.0%); data were used for a supply-side study.^{3,4,5,6} The second part involved a more detailed provincially stratified probability sample survey (n=2508; RR=86.0%), using a sub-set of the 1987 population; data were used for a deployment study¹.

Pre-1987 information was obtained from two sources, both of which involved the use of enumerative mail surveys. First was a series of since-discontinued supply-focused census surveys conducted by Statistics Canada.^{7,8} Second was a survey conducted by Lewis et al in 1979 (RR=84.0%).^{9,10,11,12} In addition to supply, the Lewis survey collected information regarding the dental hygiene work environment and clinical practice.¹³

15.1.2 Dental Hygiene Supply – 1968-to-1987, with Estimates for 2001

While this study was not intended to examine labour supply, the randomized, stratified, probability sampling design and the high response rate (79.4%) have produced statistically reliable estimates. (See Chapter 2 and the Technical Report².)

Over a 36-year period in Canada, dental hygienists increased dramatically in terms of numbers – from 211 in 1965, to 544 in 1968, 2508 in 1977, and 6699 in 1987, with an estimated 13,834 for 2001.¹⁴ In this same period, they increased also as a proportion of the population – from 1:16,637 in 1968, to 1:9326 in 1977, 1:3987 in 1987, and an estimated 1:2240 by 2001. With no corresponding growth in the number of dentists, the active-dental hygienist-to-active-dentist ratio increased - from 1:5 in 1977 to 1:2 in 1987⁸ and 1:1 by 2001¹⁵.

³ Johnson, P.M. **Dental Hygienists in Canada: Descriptive Profile and Labour Force Behaviour.** Ph.D. Dissertation. Toronto: University of Toronto. 1989.

⁴ _____ . Dental hygienist supply: workforce patterns and trends. **J. Can Dent Assoc.** 56(7): 621-25. 1990.

⁵ _____ . Canadian dental hygienist study, Part II: registration, licensure and employment (1987). **Can Dent Hyg/Probe**, 22(4): 169-72. 1988.

⁶ _____ . Canadian dental hygienist study, Part III: dental hygiene workplace and hours of work. **Can Dent Hyg/Probe**, 23(1): 26-9. 1989.

⁷ Canada. **Dental Hygienists.** Non-catalogued reports for 1977, 1981, and 1983. Cat. No. 83-230 Annual for 1976. Ottawa: Statistics Canada, Health Division.

⁸ Canada. **Health Personnel in Canada 1991.** Cat. H1-9/1-1991. Ottawa: Supply and Services Canada.

⁹ Lewis, D.W. and T. Krevins. Educational, demographic, professional, and employment characteristics of dental hygienists in Canada, 1979. **Can Dent Hyg.** 16(3):82-88, 1982.

¹⁰ _____ . Characteristics of dental hygiene positions in Canada, 1979, Part I. **Can Dent Hyg.** 16(4): 114-118. 1982

¹¹ _____ . Dental hygiene positions in Canada, Part 2: compensation and fringe benefits. **Can Dent Hyg.** 17(1): 20-4. 1983.

¹² Lewis, D.W. **Characteristics of Dental Hygiene Positions in Canada, 1979.** (Unpublished tabulations). Faculty of Dentistry, University of Toronto. 1982.

¹³ The population surveyed by Lewis demonstrated expected social-demographic similarities and differences to the 1987 and 2001 samples. For example, the population was, on average, slightly younger.

¹⁴ Canada. **Canada Health Manpower Inventory 1976.** Ottawa in Health and Welfare Canada. **The Practice of Dental Hygiene in Canada: Description, Guidelines and Recommendations. Part One.** Ottawa. Cat. No. H34-33/1-1988E. 1988.

¹⁵ Canadian Dental Association. Ottawa. Personal Communication.

During the period 1977 to 2001, there was a slight shift in proportional “share” of the potential dental hygiene workforce - the Atlantic provinces (with the exception of New Brunswick) and the four western provinces lost overall, whereas Quebec and Ontario gained. For the latter two regions, the combined gain overall was 16.0%; by 2001, they accounted for 7 out of 10 dental hygienists registered and residing in Canada (68.5%). The gain reflected an increase in the number of educational programs more so than in immigration - in 2001, only 5.2% had graduated outside Canada, a slight increase from 4.0% in 1987.

15.1.3 Labour Force Migration

There was little inter-provincial or territorial migration within the supply pool. In 2001, the proportion of respondents residing in the province in which they first graduated as a dental hygienist ranged from a low of 66.0% for Saskatchewan, followed by 74.8% for Ontario, to a high of 95.2% for British Columbia, followed by 85.2% for Quebec. While the proportion of graduates that remained in Nova Scotia was 55.4%, as that province had the only dental hygiene program for the Atlantic region, 88.6 was the more valid retention rate.

The migratory pattern had changed since 1987 when Nova Scotia ranked lowest with 78.0% of graduates retained and Quebec and Ontario were highest with 94.0% each. By 2001, when movement occurred, British Columbia most often was the province of choice for the Atlantic region (in comparison to 1987 when Ontario was more likely to be the destination), followed by Alberta and Ontario. Movement for the western provinces tended to be intra-regional; dental hygienists that had graduated in Manitoba and Saskatchewan tended to move to Alberta – 11.9% and 15.7% respectively by 2001.

15.1.4 Social-Demographic Characteristics

Characteristics of the population changed over the period 1977 to 2001. First, the dental hygiene population was aging. Mean age increased from 28 years in 1977 to 31 years in 1987 and 37 years by 2001. The proportion under 30 years of age declined three-fold over the 24-year period - from 68.0% in 1977 to 44.4% in 1987, with a further decline to 20.7% by 2001. This decline was accompanied by an eight-fold increase for the 40 years-and-over age group – from 4.4% in 1977 to 11.2% in 1987 and a remarkable 37.3% by 2001.

The likelihood of having at least one dependent child had doubled over the 24-year period. The proportion reporting the presence of dependent children increased from 1 out of 4 in 1977 (26.0%), to 2 out of 5 in 1987 (43.0%), and 3 out of 5 by 2001 (59.0%). Whereas in 1987, the predominant group was the one that had a child less than 5 years of age, by 2001, the “dependent aged 5-to-14 years” group was predominant.

15.1.5 Professional Education

It was not unexpected to find little change in terms of dental hygiene educational attainment; across the years, the proportion that had graduated from a diploma program in dental hygiene remained consistently high at over 90.0%. Similarly, across all survey years, for over 9 out of 10 dental hygienists, the diploma or associate degree was the highest level of dental hygiene education attained. These findings were not surprising, given that, with few exceptions, dental hygiene programs in Canada are offered at the diploma level and there are few post-diploma dental hygiene degree programs.

DISCUSSION AND CONCLUSIONS

Regarding specialized training, there was little proportionate change in the groups that had received formal training to perform restorative and orthodontic procedures. However, the group trained in local anaesthesia doubled from 11.9% in 1987 to 24.0% by 2001.

While relatively few dental hygienists - 3 out of 10, held academic qualifications in another field, the proportion had increased from 12.0% in 1987. It should be noted that survey findings do not reflect the relatively few persons that had withdrawn permanently from the dental hygiene workforce to pursue a career in, for example, dentistry or law.

While the educational profile changed little, the program setting did. This change was due, in large part, to a shift that commenced during the mid-1970's in several provinces from a university to a college based program, coupled with an increase in the number of programs. For example, over the period 1987 to 2001, the group that had graduated from a university-based program decreased by almost one-half – from 40.3% to 22.8%, and there was an increase for college-based graduates – from 59.7% to 76.5%. When year of graduation is taken into account, findings for 2001 show that, among the “university” group, 1 out of 2 had graduated in 1985 or earlier (55.1%), whereas among the “college” group, 1 out of 2 had graduated after 1990 (52.7%).

15.1.6 Registration and Licensure

The vast majority of dental hygienists are registered to practice in only one province or territory (95.9% in 2001). As noted previously, that province most typically is Ontario or Quebec.

Over the period 1987 to 2001, the relatively small portion registered in two or more jurisdictions declined from 10.0% to 4.0%. For 8 of the 10 provinces, at least 8 out of 10 registrants resided there in 2001. Exceptions were Prince Edward Island and Newfoundland, where the proportion declined to 1 out of 2 registrants, and the three territories, where fewer than 1 out of 20 registrants were residents.

15.1.7 Professional Development

In 2001, virtually all dental hygienists engaged in professional development (PD) or “continuing education”; only 1 out of 10 had not participated in the previous 2-year period. They pursue a wide range of topics and activities. Regarding type of activity, reading profession-related publications and attending profession-specific conferences are predominant, followed by continuing education courses, local society presentations and self-study. A relatively low rate of participation in study clubs, participatory courses and distance education may reflect lack of availability more so than lack of motivation. Regarding profession-specific reading, readership tends to be high but intensity of reading any one publication (e.g., *cover-to-cover*) is relatively low. Predominant topics undertaken for PD purposes included soft tissue management, dental hygiene process and communications.

The range (i.e., variety and number) of PD activities varies. Using a PD activity index constructed for the purpose, it was evident that PD activity tends to be proportionately greater among dental hygienists in British Columbia and least for Quebec. PD varies also by type of dental hygiene program setting (i.e., university or college-based) and by the dental hygienist's age and level of educational attainment; the score increases as age and/or level of education increase.

While information for the other survey years was not directly comparable, it would appear there was little change. For example, in 1987, 54.0% of dental hygienists reportedly participated in "continuing education courses" within the previous 12-month period, compared to 2001 when 66.5% participated in the past two-year period. Regionally, the pattern was the same – participation in continuing education courses, conventions and conferences, and reading and using audio-visual materials was least for Quebec and greatest for British Columbia.

15.1.8 Workforce Participation

Workforce participation among dental hygienists remains very high – in 2001, 9 out of 10 dental hygienists were working or available for work in dental hygiene (93.0%). Over the period 1977 to 2001 and consistent with trends among women in general, dental hygiene workforce participation had increased steadily.

The growth was due primarily to an increase in workforce retention. The employment rate grew from 79.6 in 1977, to 87.6 in 1987, and 92.6 by 2001; unemployment remained relatively low (0.4% in 2001). Similarly, an overall gain in labour supply was due primarily to a decline in the "not employed" group (1.7% in 2001); the proportion working outside dental hygiene remained relatively constant (1.2%).

15.1.9 Time Worked

The number of hours worked per week in dental hygiene showed greater variation.¹⁶ The proportion that worked 30-hours-or-more-per-week, excluding lunch period, increased initially - from 55.0% in 1977 to 75.0% by 1987; however, it subsequently declined to 57.3% in 2001. In terms of the average number of hours worked in dental hygiene, the mean declined - from 30.5 hours (± 8.6) in 1987 to 28.2 hours (± 9.6) in 2001. Presence of a dependent child in the home remains the predominant factor associated with hours worked per week and there is little variation regionally.

While presence of a dependent in the home, and in particular a child less than 5 years of age, tends to exert a downward pull on the rate of participation, the effect is slight (see 15.1.8). In contrast, presence of dependents has a greater effect on the total number of hours worked per week. For example, in 2001, 1 out of 2 dental hygienists that had a child under 5 years of age worked in dental hygiene and worked, on average, 25 hours per week – compared to an overall average of 28 hours.

¹⁶ Note: The method used to calculate "full time" varied. In 1977 and 1987, respondents reported the number of hours worked, on average, for each dental hygiene workplace and results were totaled across all workplaces. However, while respondents for 1987 were directed to exclude lunch hours, no similar direction was given for the Statistics Canada surveys; the *35 hours or more per week* category reported for 1977 was presumed to correspond to the 1987 *30 hours or more* category. For the 2001 survey, participants were asked to report "on average, the number of hours worked per week in dental hygiene, excluding lunch period".

DISCUSSION AND CONCLUSIONS

Overall, workforce retention remains high among dental hygienists. Even given the increased numbers of graduates in recent years, one half of dental hygienists in 2001 had worked 10 years or more in dental hygiene; almost 1 out of 5 had worked 21 years or more.

15.1.10 Dental Hygiene Workplaces

Among the 9 out of 10 dental hygienists that work in the field, 7 out of 10 have one workplace. The proportion with two or more workplaces has increased slightly - from 23.5% in 1987 to 27.5% in 2001.

Regarding type of workplace, while absolute numbers increased for all categories over the period 1977 to 2001, the private dental practice increased disproportionately in its share of the dental hygiene workforce. As the principal dental hygiene workplace (that is, the one at which the dental hygienist spends the most time), the private dental office accounted for 77.3% of dental hygienists in 1977, increasing to 85.4% in 1987, and 93.4% by 2001.

There was a corresponding decline for all other categories, with the exception of a relatively very small group that worked as independent practitioners. The proportion for community (i.e., public) health decreased three-fold - from 13.0% in 1977 to 3.8% by 2001; proportionately, the decrease was even more dramatic for the post-secondary educational institution – from 10.0% in 1977 to 1.7% by 2001. The proportionate decline in community health and educational settings was most notable for the Atlantic region and Quebec.

Regarding type of practice, the predominance of the general dental office continues to increase, albeit slightly. For example, it comprised 85.3% of principal workplaces in 2001, compared to 75.8% in 1977 and 83.3% in 1987. Among dental hygienists that work in a specialty dental office, the vast majority work in periodontics or orthodontics, compared to paedodontics, prosthodontics, and other types.

Employment in a group versus a solo dental practice has become more prevalent. As the principal workplace, group practice accounted for 42.6% of dental hygienists in 2001, compared to 31.4% in 1987.

15.1.11 Major Work Activity

As expected, 9 out of 10 dental hygienists cited clinical dental hygiene services as their major work activity. Overall, they have relatively little involvement in post-secondary teaching and administration/management functions, and negligible participation in research or consulting. This pattern was consistent over the period 1977 to 2001.

15.1.12 Remuneration in the Principal Workplace

Regarding remuneration in the principal workplace, 3 out of 5 dental hygienists (59.9%) receive a fixed salary versus commission or other method of payment – a steady and remarkable decrease from the 94.0% observed in 1979 and 84.4% in 1987. Among the other methods of payment, there was little proportionate change with the exception of a slight increase for self-employment and, in particular, the “other” category; apparently, variations have come into existence that were not captured in the 2001 survey.

The average hourly wage rate varies by region and type of workplace; wage differentials based on educational attainment, years of experience as a dental hygienist, and hours worked per week in the principal workplace continue to be virtually non-existent. The regional distribution has remained relatively unchanged – wage rates are highest for British Columbia, followed by Alberta, and lowest for Quebec. Regarding type of workplace however, a shift has occurred. Whereas, in 1979, the wage rate was highest among dental hygienists that worked in a post-secondary educational institution or the military, it had shifted by 1987 to the group in specialty dental offices, in particular group practices. That pattern held for 2001, with the exception of the relatively few dental hygienists working in independent dental hygiene practices that reported the highest rate. In contrast, in both 1979 and 1987, the wage rate was lowest among dental hygienists working in “public” health, followed, for 1987, by business, industry and “other” workplaces. By 2001, the group in business, industry and “other” workplaces ranked lowest, followed closely by those in long-term care facilities and hospitals.

Dental hygienists typically are not covered through their workplace for employment benefits common to other industries and occupations. That pattern has prevailed since 1979. In fact, for many benefits, the proportion covered has decreased, often many-fold – for example, the proportion of dental hygienists entitled to a retirement plan decreased from 51.6% in 1987 to 9.5% by 2001. The shrinkage is accounted for, in part, by the proportionate decline in public sector workplaces where entitlement to employment benefits has consistently been higher. Overall, 8 out of 10 dental hygienists are not entitled to coverage for extended health, retirement, life and/or disability insurance, cost of living increases, overtime pay, and paid time off to attend professional conferences and conventions, and other types of professional development.

There has been little change overall in dental hygienists’ satisfaction with their employment income – on a 7-point scale, the median average was 5 for both 1987 and 2001. Regarding employment benefits however, satisfaction declined slightly – the median was 4 in 1987 and 3 in 2001.

15.1.13 Personnel in the Principal Clinical Workplace

There was an overall, albeit slight, increase in the number and types of personnel in the principal clinical dental hygiene workplace. That increase was consistent with the growth in group practice as a portion of dental hygiene workplaces.

The number of dental assistants, secretary/receptionists, and additional dental hygienists per workplace increased more so than the number of dentists. The vast majority of dental hygienists are employed in workplaces where there is at least one dental hygienist other than themselves, and that proportion has increased – from 62.5% in 1987 to 84.7% in 2001. In contrast, the average number of dentists increased less rapidly - from 1.3 in 1979 to 2.0 in 1987 and 2.1 by 2001.

15.1.14 Clinical Workload

Regarding type and number of clients seen on a typical day, overall dental hygienists in clinical practice see 9 adult and no more than 3 child clients; for the adult group, 6 are maintenance or recall clients, 1 new one, and 2 undergoing active dental hygiene therapy. Clinical workload varies regionally and the pattern was consistent for both 1987 and 2001.

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That is, dental hygienists in the Atlantic region in particular tend to see the greatest number of clients whereas those in the three western regions, and in particular Alberta, see the fewest.

Regarding appointment scheduling for the maintenance client, 1 out of 2 dental hygienists have *as much time as needed* for an adult and 3 out of 4 have *16-to-30 minutes* for a child. Overall, 7 out of 10 dental hygienists are satisfied with the amount of time allotted for both types of client; with few exceptions, the remainder would prefer more time. Dental hygienists in Quebec continue to be less satisfied with the time allotted, compared to the other regions - in 2001, 1 out of 2 preferred more time for the adult client (54.1%), an increase from 35.9% in 1987; the pattern was similar for the child client.

Dental hygienists typically work without the availability of a chair-side assistant when performing intra oral procedures. There has been a slight shift from "never" to "rarely" and, to a lesser extent, "occasionally". In 1979, 56.0% of respondents cited "never", compared to 46.0% in 1987 and 29.5% in 2001; proportions for always and usually remained relatively unchanged.

The vast majority of dental hygienists – approximately 8 out of 10, have opportunities to consult with colleagues, experts and other health care professionals regarding dental hygiene care and other work-related concerns. There was little change since 1987.

15.1.15 Professional Autonomy

A person's perception of their professional autonomy in the workplace is associated with their job and career satisfaction and may influence work behaviour and productivity. Information regarding work roles and work supervision for dental hygienists – both indicators of professional autonomy, was available for 1987 and 2001; data for 2001 pertains to dental hygienists working in private dental offices. Overall, findings suggest that professional autonomy appears to be increasing gradually.

In 1987, 1 out of 2 dental hygienists perceived that they worked under direct supervision – that is, the dentist authorized the procedures, remained on-site while the dental hygienist performed them, and evaluated the work before the client left (48.0%). Another one-third indicated the same situation, with the exception that the dentist did not evaluate the work at the end of the appointment.

Relatively few dental hygienists worked without the dentist on-site, regardless of whether procedures were authorized by the dentist, based on written policies and procedures, or determined by the dental hygienist. At that time, 3 out of 5 dental hygienists preferred no change to their work arrangement (63.0%); with few exceptions, the remainder preferred less supervision. Exceptions were Quebec and Ontario where dental hygienists were more likely to work under closer supervision and more likely to prefer less supervision.

Regarding client care, the dental hygienist was the predominant service provider for the maintenance or "recall" client, more so than the "new" client. The dentist typically performed assessment activities and referrals for the new client, whereas the dental hygienist undertook planning of dental hygiene care. Regarding the maintenance client, the dental hygienist was the primary care provider, performing in addition to the usual range of services, 7 of the 9 procedures the dentist had performed for the new client.

By 2001, a number of measures implied professional autonomy for dental hygienists had increased. While the dentist continues to be in the office always or usually when the dental hygienist provides intra oral services (97.0%), respective roles have changed slightly.

First, the intensity of work supervision declined. Overall, 9 times out of 10, the dentist reportedly is in the office/clinic while the dental hygienist performs intra-oral procedures. The dentist typically sees all dental hygiene clients on the same day as their appointment with the dental hygienist; the proportion decreases to one-half of adult clients that are undergoing dental hygiene therapy and to three-quarters of adult recall clients. However, the dentist's purpose in seeing the clients, as perceived by the dental hygienist, is to communicate with the client more so than evaluate the dental hygienist's work (26.0%). Dental hygienists in Quebec are the most likely to report that adult recall clients are seen by the dentist, whereas those in Alberta are least likely – 88.0% versus 55.0%. The group that perceives the dentist evaluates their work is proportionately greater among dental hygienists in Quebec and those that work in a specialty and, in particular, a periodontics office.

The majority of dental hygienists perceives that decisions regarding procedures to be performed are made in collaboration with the dentist, more so than by the dental hygienist or dentist independently, and they prefer that method. The exception is when the decision involves radiographs to be taken, in which case the dentist is more likely to decide. Dental hygienists in Quebec are most likely to report that the dentist decides, whereas those in the Atlantic region and Alberta are least likely.

15.2 CLINICAL PRACTICE - THE EVOLVING PROFESSION

In this section, patterns in clinical dental hygiene practice are examined for 1979, 1987 and 2001. The focus is procedures common to at least two of the surveys; findings illustrate the evolution of the emerging profession of dental hygiene. For the 2001 survey, the set of dental hygiene activities examined was considerably more extensive - the reader is referred to Chapters 8 through 13 for a more complete description of clinical practice, together with related workplace policies and procedures.

The following information regarding clinical dental hygiene practice pertains to the 8 out of 10 dental hygienists that work in private dental offices. Further sub-group statistical analyses are required to investigate practice patterns for the relatively few respondents that work in non-dental office settings. Comparative practice-related information was available for 1979, 1987 and 2001; data sources are described in section 15.1.

15.2.1 Evolving Theoretical Perspective

As noted in Chapter 2, dental hygiene now is perceived as a comprehensive process. Five dimensions have been elaborated – namely, assessment, dental hygiene diagnosis, planning, implementation of therapeutic and educative strategies, and evaluation of the process and outcomes. A closer examination of the survey questionnaires used in 1979, 1987 and 2001, together with the frequency with which the dental hygienist typically performs selected clinical activities, illustrate the evolvement of the dental hygiene profession.

The 1979 survey collected information for only two assessment-related activities and no diagnostic, planning or evaluation activities. While 4 of 5 dimensions were included for the 1987 survey (the exception was diagnosis), the focus was implementation; a total of 27 direct-care services were examined, and few pertained to assessment, planning and/or evaluation. By 2001, all 5 dimensions were reflected in the 98 direct-care activities and procedures that were specified. The following description is based on the relatively few procedures that have prevailed over time and constitute the “core” of dental hygiene clinical practice.

Differences in survey methodology should be noted. First was the variation in response choices for the three surveys. The respective choices were equated as follows: (1) *regularly* (1979), *at least once a day* (1987), or *always* (2001); (2) *occasionally* (1979, 2001) or *at least once a week* (1987); and (3) *rarely* and *never*. Further, for the 2001 survey, response choices for “therapeutic” items were *never*, *selectively as indicated*, *routinely for all*, and *not applicable* and for “evaluation” items were *routinely*, *selectively*, *never*, and *not applicable/done by others*.

Secondly, regarding the 1979 data, results were totaled across all workplaces and the dental hygiene position was the unit of analysis, whereas for 1987 and 2001, results were reported for the principal clinical workplace and the dental hygienist was the unit of analysis.

15.2.2 Assessment

Regarding traditional or “core” assessment activities, there has been little change. Across all survey years, at least 3 out of 4 dental hygienists regularly/at least once a day/always performed an intra-oral examination and/or exposed radiographs.

By 1987, the intra-oral examination had been further categorized into dental and periodontal and three new categories had been added – namely, head, neck and oral soft tissue examination, medical history review and vital signs. While 1 out of 2 dental hygienists performed the extra-oral and soft tissue examination and 9 out of 10 reviewed the medical history at least once a day, 8 out of 10 rarely or never took a client’s vital signs.

By 2001, the list of activities had been further expanded to include assessment of client priorities, four types of indices, review of self-care procedures, photographs, three types of microbiologic and histologic tests, taking impressions and fabricating study models. Only 5 of the 12 assessment procedures typically are performed always by the dental hygienist – namely, client priorities, PSR, debris and bleeding indices, and self-care procedures.

The 2001 survey also collected information regarding radiographic procedures and decision-making protocols related to radiographs and to oral examinations. Dental hygienists typically take full mouth series, periapical, vertical bitewing and panoramic radiographs *based on a client's needs*, rather than at a pre-determined interval (i.e., *every 6 months or at least once a year*). On the other hand, they typically take horizontal bitewing radiographs either at least once a year or on a client's needs; very few take cephalometric radiographs. Frequency varies based on region, type of workplace and type of dental specialty. Across the different types of radiographs, there is little consistency between the frequency with which the dental hygienist takes them and decision-making responsibility – that is, whether the decision regarding which radiograph to take is made by the dental hygienist, the dentist, both jointly, or based on routine policy.

Regarding the oral examination of a client, the majority of dental hygienists perceive they make decisions – specifically, who will do it, what to include, and the amount of time to schedule, jointly with the dentist. Decisions as to “whom” and “what” are next most likely to be made by the dentist, whereas “time” is next most likely to be made by the dental hygienist or based on routine policy.

15.2.3 Diagnosis and Planning

As noted above, items pertaining to dental hygiene diagnosis and care planning were not included in the 1979 survey. In 1987, at least 7 out of 10 dental hygienists overall established a dental hygiene treatment plan and/or a periodontal maintenance care plan at least once a day. By 2001, the *diagnosis* and *planning* dimensions had been elaborated to include analysis of client assessment data (n=3 categories), counseling the client regarding findings (n=5), developing and updating a care plan (n=7), documentation (n=3), client involvement (n=2), and consultation (n=4). A clear majority of dental hygienists always perform the activities specified. Exceptions include preparation of a detailed appointment plan, documentation of the client's informed consent, involvement of the client in formulating the care plan, and consultation with health care professionals, other than the dentist; the majority performs them always or occasionally, or others do.

Factors associated with dental hygiene diagnosis and care planning include region, type of workplace and professional development activity of the dental hygienist. Regarding region, many of the activities examined are more likely to be performed by dental hygienists in British Columbia and less likely in Quebec and the Atlantic region. Dental hygienists working in a general dental office tend to perform the activities more frequently whereas the “specialty” group is more likely to report the activity is done-by-others. For some procedures, frequency varies based on the dental hygienist's hours worked, years employed and years of experience. Workplace-related factors include the availability of a dental assistant, decision-making responsibility, whether the dentist sees all dental hygiene active treatment clients at each appointment, and opportunities to consult regarding dental hygiene care, participate in decisions regarding the purchase of equipment and supplies, and/or use new technology. There is little variability based on type of school (university- or college-based program) or year of graduation.

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15.2.4 Implementation

As noted previously, the list of therapeutic and preventive activities specified for the 1979 survey was quite extensive. Findings indicated that the vast majority of dental hygienists routinely performed periodontal scaling, root planing and curettage, topical application of fluorides, and oral hygiene counseling; the pattern was similar for 1987 and 2001.

Regarding application of sealants, polishing restorations, fitting and removing orthodontic bands, and taking impressions, the proportion of dental hygienists that performed them occasionally increased slightly by 1987; however, overall the procedures tended to be rarely or never performed, and the pattern persisted for 2001. Regarding counseling for the dietary control of oral disease, while the frequency was consistently low for the three survey years, it was particularly low for 1987; for example, 63.5% rarely or never counseled, compared to 15.9% in 2001. Another six procedures – namely, application of rubber dam, placement and finishing of restorations, making mouth guards, administering local anaesthesia, and fitting and removing orthodontic bands, continue to be rarely or never performed by the majority of dental hygienists. Application of rubber dam was not included for 2001.

Additional topics included for the 2001 survey served to elaborate, for example, on the uses of various topical applications and pain control measures, to capture the use of newer technologies (e.g., tooth whitening), and to examine the dental hygienist's role in recommending products and treatments. Regarding pain control, topical and local anaesthetic is used selectively and electronic dental anaesthesia and nitrous oxide sedation rarely or never. Overall, 9 out of 10 dental hygienists apply topical anaesthetic and 1 out of 5 administer local anaesthetic; administration of the latter type is more prevalent among dental hygienists that have completed specialized training and is consistent with provincial scopes of practice – thus, an east-west dichotomy is evident.

15.2.5 Evaluation

No items pertaining to the evaluation of process and outcomes were included for the 1979 and 1987 surveys.

The 2001 data indicated that the majority of dental hygienists use a range of procedures routinely to evaluate the outcomes of dental hygiene care. At least 3 out of 5 dental hygienists routinely perform 8 client-based activities – for example, re-charting soft tissue conditions and re-assessing the client's self-care behaviours; however, almost one-half never complete a follow-up plaque index. At least 2 out of 3 dental hygienists routinely review and assess the dental hygiene care plan in terms of its relevance to the client's needs and its consistency with practice standards, and 3 out of 5 record the findings. Overall, 3 out of 5 dental hygienists routinely assess factors associated with quality of care – namely, time and resources and the skills of caregivers and support personnel. Almost 8 out of 10 dental hygienists perceive that they usually, not always, achieve treatment goals. Of five evaluation methods, observation and questioning are predominant (9 out of 10 dental hygienists), followed by pre and post treatment records (8 out of 10), and dental indices (1 out of 2); relatively few use a client satisfaction questionnaire. Across all evaluation-related items examined, where frequency varies, it typically occurs regionally (i.e., frequency tends to be higher for British Columbia and lower for Quebec) and based on the dental hygienist's professional development activity and perception that opportunities exist to consult with other health professionals regarding client care.

15.2.6 Decision-Making

Comparative information for both 1987 and 2001 was available for only one decision – namely, that the dental hygienist has opportunities to participate in decisions regarding the purchase of work-related equipment and supplies. In 2001, regardless of the type of dental office, 8 out of 10 dental hygienists reportedly may participate in the decision process – a marked increase over the 1 out of 2 observed in 1987. Regional disparities, in particular a low rate of participation noted for Quebec, diminished somewhat by 2001.

Patterns of decision-making in 2001, as they pertain to the five dimensions of clinical practice, are described in Chapters 8 through 13. Overall, it would appear that, based on the perceptions of dental hygienists, collaborative decision-making is predominant. For example, for 14 of the 24 clinical decisions examined, the greatest proportion of dental hygienists perceive they are made collaboratively or, when perceptions vary, collaboration still accounts for a significant portion of decision-making.

Turning now to the specific dimensions of dental hygiene practice, variation in decision-making patterns is apparent. The assessment-related decisions examined – namely, those involving the type of radiographs to be taken and the “who”, “what”, and “how long” for an oral examination, typically are made either collaboratively or by the dentist independently, more so than by the dental hygienist alone. On the other hand, the dental hygienist typically makes decisions related to dental hygiene care and appointment planning and to client education, including self-care counseling. Regarding pain control for the dental hygiene client, responsibility varies regionally and consistent with provincial legislation, as to whether the dentist and/or the dental hygienist decide who will provide it and the type of agent to use. However, decisions regarding the amount of agent to use and whether to use nitrous oxide typically are made by the dentist. Decisions involving infection control – that is, precautions to use and when to use them, are perceived by the dental hygienist to be made by the office staff collectively.

Further preliminary analysis using cross-tabulations disclosed some unsettling patterns and suggests that the relationship between decision-making responsibility and clinical practice merits further investigation. For example, there is an apparent association between the frequency with which the dental hygienist performs three types of oral examinations and the person(s) that makes three related decisions – namely, who will perform the oral examination, what to include in it, and the amount of time to schedule for it. When the dentist decides, almost 1 out of 2 dental hygienists *rarely or never* perform an extraoral examination, compared to 32.0% overall, and to 25.0% when the decisions are made jointly. In comparison, when the decisions are made by the dental hygienist singly or jointly, then approximately 1 out of 2 dental hygienists perform the procedures *occasionally*, and there is a corresponding decline in the group that performs it *rarely or never*. Regarding the soft and hard tissue examinations, dental hygienists are more likely to perform them *always* when the decisions are made jointly or by the dental hygienist, compared to when the dentist decides independently.

Decision-making responsibility has implications for quality of care. It may also be an issue for regulatory authorities responsible for ensuring dental hygienists practice in accordance with mandatory practice standards and guidelines.

15.2.7 Safety and Protection

The 2001 study examined safety and protection measures, including infection control, as reported for the principal workplace.

Approximately 1 out of 2 dental hygienists works in a dental office that either lacks a written emergency protocol or the dental hygienist does not know if one exists. On the other hand, virtually all workplaces have an emergency oxygen supply and the majority of dental hygienists know its location. Regarding CPR, almost 9 out of 10 dental hygienists are currently certified and 7 out of 10 renew their certification at least every two years. They are less likely to renew their first aid knowledge – 3 out of 5 have not completed a course within the past three years.

With few exceptions, dental hygienists report that full coverage lead aprons are used for all clients. While use of lead thyroid collars is slightly less prevalent, it may be the apron used has a cervical thyroid collar attached. Regarding the radiation-monitoring badge, dental hygienists tend to wear one either never or always; usage is considerably greater among dental hygienists in Quebec.

While almost 9 out of 10 dental hygienists perceive that the infection control policy is consistent for all personnel in the workplace, only 1 out of 3 report that procedures are specified in writing – for example, in an office manual. Regarding bio-hazardous waste, 8 out of 10 dental hygienists think it is disposed of in compliance with government regulations. Consistent with practice guidelines, 3 out of 5 dental hygienists treat clients with known infectious diseases, including HIV and AIDS, the same as they treat other clients. While almost all dental hygienists have received a Hepatitis B vaccination, only 2 out of 3 have received a booster or been monitored. Use of latex-free gloves is not prevalent among dental hygienists, especially those in British Columbia and Alberta. Approximately 2 out of 3 dental hygienists report that decisions regarding the infection control precautions to use and when to use them typically are made by the staff jointly – that is, the dentist, dental hygienist and other staff members. Overall, 8 out of 10 dental hygienists sterilize hand pieces and air/water syringe tips, disinfect the x-ray head and the switch for the operating light, and/or dispose of oral evacuation tubes after use.

Regarding the use of barrier protection, the vast majority of dental hygienists remove and replace used barrier material and change their gloves after each client or more often. However, with the exception of dental hygienists in Alberta, 3 out of 4 change their facemask less frequently - typically twice a day. Regarding eye protection for the client, approximately one-third always advises or provides it during the entire appointment and another one-quarter never does. Dental hygienists tend to recommend eye protection always when performing air and/or rubber cup polishing and ultrasonic and/or sonic debridement (1 out of 2), but are less inclined when using hand instruments.

15.2.8 Other Categories

Other activities examined as part of the 1979 and 1987 studies included those classified as assisting and administration. The frequency with which dental hygienists overall assisted chair side, performed reception procedures, and/or ordered supplies tended to increase – that is, the proportion that cited “rarely” or “never” decreased. Similar items were not included for 2001.

15.2.9 Summary

In summary, findings from the three surveys demonstrate the evolution of dental hygiene as a profession and a key element in the oral health service delivery system. A number of the findings for 2001 will be of particular interest to practitioners, regulatory authorities, professional organizations, clients, consumer groups and other stakeholders.

15.3 MYTHS AND STEREOTYPES

Findings for 2001 were consistent with those for 1979 and 1987 that had dispelled, or confirmed as the case may be, prevailing myths and stereotypes about the dental hygiene profession in Canada.

15.3.1 Attrition

The first myth was that workforce attrition was high – that is, retention was low. In fact, attrition has continued to decline. Across all survey years, at least 4 out of 5 registered dental hygienists were working or available for work in dental hygiene. By 2001, the proportion had increased to 93.0%; of the remainder, 4.0% indicated they were on temporary leave and, of those, the vast majority had a child less than 5 years of age. The portion working outside the field was relatively unchanged – 3.3% in 1977, 3.0% in 1987 and 1.2% in 2001.

The low rate of attrition is demonstrated also by the fact that dental hygienists continue to be active for a considerable length of time. The low rate prevails even given the dual demands of household and paid work on the predominately female workforce, coupled with the downward pull exerted on the retention rate by increased numbers of recent graduates. One-half of dental hygienists in 2001 had worked 10 years or more in dental hygiene and almost 1 out of 5 had worked 21 years or more.

15.3.2 Inactive Pool

Anecdotal reports of a shortage of dental hygienists had increased and there was interest in the pool of inactive dental hygienists that might be pulled back into the workforce. However, by 2001, that pool - never very large - had shrunk to an estimated 7.0% of the population, a decrease from 8.0% in 1987 and 14.7% in 1977. The composition of the inactive pool remained relatively unchanged - the majority had at least one child under 5 years of age at home. Also, workforce participation among dental hygienists with a young child in the home actually had increased - from 60.0% in 1979, to 79.0% in 1987 and 84.0% in 2001.

15.3.3 Workforce Stability

Several findings further dispelled the myth that the workforce was unstable. As noted, across all survey years, there had been very little inter-provincial migration. Dental hygienists that worked tended to work at least 50 weeks per year, rather than seasonally. In 2001, one-half had not changed jobs in the previous 10-year period; similar stability was observed for 1979 and 1987.

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15.3.4 Remuneration

There has been a perception that remuneration for dental hygienists is relatively high. In 1979 and again in 1987 and 2001, findings indicated that the remuneration package for dental hygienists consists almost entirely of the wage portion; the vast majority does not receive standard employment benefits, especially if they work in a private dental office (as 9 out of 10 did in 2001). For example, in 2001 the employment benefit portion typically amounted to 14.0% or more for registered nurses working in the hospital sector and 16.0%-to-20.0% in other industries. In addition, wage differentials for dental hygienists, based on years of experience, job tenure or hours worked per week, are not evident. When comparing across occupational groups, consideration should be given to adjusting estimates of dental hygiene earnings downwards by a factor of at least 10%, allowing for statutory holiday pay.

15.3.5 Predominant Service Areas

The stereotype of the dental hygienist as a clinical practitioner persists. Data for 1977, 1987 and 2001 confirm that 9 out of 10 dental hygienists work primarily as direct care providers providing therapeutic, preventive and educational services. Given the increasing need for periodontal therapy and maintenance among an aging population as well as the continuing need for caries prevention among high-risk groups, it was encouraging to note that the traditional "core" of dental hygiene services remains predominant. However, future surveys should continue to capture evolving areas of service activity and responsibility.

15.3.6 The Dental Hygienist as a Primary Service Provider

The myth that the dental hygienist functions as an auxiliary, rather than a labour substitute and primary care provider, continues to be diminished. In 1979, 1987 and 2001, the dental hygienist was, by far, the predominant provider for core dental hygiene services. In 1987, of 15 procedures examined, those typically not performed by the dental hygienist were more likely to be not provided for the client, rather than performed by the dentist, dental assistant or other service provider. The pattern was similar in 2001 - of 55 activities involving assessment, diagnosis, planning, therapy, education or evaluation and with few exceptions, the response choice *done by others* was cited by less than 8.0% of respondents. The increase in professional autonomy, an attribute of the primary service provider, was discussed previously (see 15.1.15 and 15.2.6).

15.4 FACTORS ASSOCIATED WITH CLINICAL PRACTICE

In this section, factors associated with dental hygiene clinical practice are discussed. For a description of the actual relationships involved, the reader is referred to the corresponding chapter.

As expected (see Chapter 2), a number of personal and occupation and workplace-specific factors (that is, *structural factors*) appear to be significantly ($p<0.05$) and meaningfully (variance $\geq 15.0\%$) associated with dental hygiene clinical practice as it existed in private dental offices in 2001. (See Table 15.1.) The observations discussed in this section are based on simple cross-tabulations and analysis of means; multivariate analysis, which is beyond the scope of this study, would determine the relative importance of each factor and clarify the direction and strength of relationships.

Overall, it was interesting to note that only two *personal* factors were identified. The first - professional development was closely associated with all dimensions of clinical practice and relationships tended to be strong. The second - the dental hygienist's years of experience was associated with relatively few aspects of practice. There was little association with a dental hygienist's age, level of educational attainment, hours worked, or satisfaction with employment wages and/or benefits.

Of the three *occupational* factors identified, region was predominant, more so than school and year of graduation. The remaining factors all involved the dental hygiene workplace; 5 ranked in the top 7 overall, in terms of influence on dental hygiene practice, and have implications in terms of safety, quality, technical efficiency, productivity and labour supply. (For example, Johnson 1995.¹⁷)

15.4.1 Overview

As indicated in Table 15.1, findings were most likely to vary by region of residence (that is, 66.0% of items examined), followed by the dental hygienist's level of professional development activity (40.0%) and type of workplace (37.0%). With respect to dimension of dental hygiene practice, factors tended to be associated with differences observed in diagnosis and planning, followed by therapy and evaluation, more so than with assessment, education/counseling, and safety.

15.4.2 Region

Region of residence of the dental hygienist ranked first. It was associated with variance involving all six dimensions examined. Among the items for which a statistically significant and meaningful relationship was observed, the greatest proportion related to evaluation, followed closely by diagnosis and planning and therapy, more so than assessment, education/counseling and safety.

Region captures, for example, differences in practice-related legislation, and hence, scopes of practice, and whether or not the profession is self-regulating. It also reflects macro level factors, such as variation in regional economies. As noted in previous chapters and in 15.2.6, an east-west dichotomy was evident for some aspects of clinical practice, including decision-making patterns, and distributions for Quebec and British Columbia were polarized.

Regional variation, in particular involving Quebec, might reflect language differences; the questionnaire, developed in the English language, was subsequently translated into French. Also, dental hygiene process, which provided the conceptual framework for the study and strongly influenced the wording of items in the questionnaire, may not be reflected to the same extent in French language curriculum and learning resources (e.g., textbooks). Thus, a dental hygienist might perform an activity consistent with the norm or the guideline, but does it unconsciously and, due to unfamiliar wording, is not triggered by the survey item to recognize the behaviour. (This possibility illustrates one disadvantage of using self-reported rather than observational and record-based data.)

¹⁷ Johnson, P.M. **Dental Hygiene Practice in Ontario 1995: A Multivariate Analysis**. Report to the College of Dental Hygienists of Ontario, 1996.

15.4.3 Professional Development Activity (PD)

Professional development activity (PD) refers to the number and range of activities pursued by the dental hygienist in the past two-year period. (See Chapter 5.) Variance in PD has implications for the quality and safety of dental hygiene practice and for planning educational and quality assurance programs for the profession.

As an influencing factor in clinical dental hygiene practice, PD ranked second – that is, it was associated with 40.0% of practice-related survey items. Using an index developed to summarize three categories of activities (see Chapter 5), it was found that the higher the score – that is, the greater the number and range of activities, the more likely the dental hygienist is to perform procedures either always or as recommended. PD is associated with all dimensions of practice – with diagnosis and planning being most prevalent, followed by evaluation and assessment, and to a lesser extent, therapy, education/counseling and safety (Table 15.1).

The survey identified reasons that a relatively small proportion of dental hygienists does not undertake PD. The predominant themes are time constraints and family obligations, followed by cost; relatively few dental hygienists perceive lack of need or of access to be barriers to their participation. It would appear that, for some dental hygienists, PD is not a priority; further analysis would establish the characteristics of this sub-group.

Reasons for regional variation merit further investigation. Findings for Quebec are of particular interest – as a group, dental hygienists there tend to participate less frequently and in fewer types of PD activity (see Chapter 5). The variation may reflect differences in availability and accessibility of the various PD modes. It may also reflect differences in educational preparation and involvement of the profession, as well as the respective roles of regulatory bodies and voluntary professional associations.

15.4.4 Type of Workplace and Specialty (Dental Office)

Regarding workplace, the analysis was based on the 9 out of 10 dental hygienists that work in the private sector in a dental office. Two aspects are significantly associated with clinical practice. First is type of workplace – that is, whether the dental hygienist works in a general (92.0%) or a specialty (8.0%) dental office. Type of workplace ranked third; it was significantly associated with 37.0% of items examined. The other aspect involved type of specialty – that is, orthodontics or periodontics; it ranked fourth, with 28.0% of items examined.

Both type of workplace and type of specialty were associated with all six dimensions examined. (See Table 15.1.) Whether the dental hygienist worked in a general or a specialty dental office was associated with diagnosis and planning and education/-counseling, followed by assessment, more so than evaluation, therapy and safety. In contrast, working in a periodontics versus an orthodontics office was associated with assessment activities, followed by diagnosis and planning and evaluation, and, to a lesser extent, with education/counseling, therapy and safety.

Variance associated with type of workplace and type of specialty reflects, in part, differences in work roles and responsibilities. This dichotomy arises, in part, from differences in clientele, services, and respective roles of the dentist, dental hygienist and other team members. For example, dental hygienists that work in a general versus a specialty dental office tend to perform diagnostic and planning and educational activities more frequently, including identifying treatment options, establishing goals, and specifying an appointment plan. On the other hand, the relatively small group that perceive the activity is “done-by-others” disproportionately consists of dental hygienists working in a specialty rather than a general dental office. Also, dental hygienists in a general office tend to perceive that the dental hygienist makes decisions more so than the dentist, whereas those in a specialty office, regardless of type of specialty, are more likely to perceive the dentist as decision-maker.

15.4.5 Professional Autonomy

The relevance of professional autonomy was discussed previously in this chapter. Two types of factors were identified and both were associated with the workplace – namely, perceived opportunities, for example, to consult, and whether the dentist confers with or examines dental hygiene clients on the day of their appointment.

15.4.5.1 Workplace Opportunities

The vast majority of dental hygienists perceive that they have opportunities to consult with other health professionals regarding dental hygiene care (90.0%), to participate in decisions regarding the purchase of equipment and supplies (85.0%), and to use new technologies (74.0%). As a factor associated with clinical activities and decisions, the opportunity to consult ranked fifth (20.3%), whereas the opportunity to participate in purchase-related decisions and to use new technology ranked considerably lower (see Table 15.1).

It was interesting to note that none of the three types of opportunity was associated with education/counseling. The opportunity to consult was associated with evaluation, in particular, followed by diagnosis and planning, and to a lesser extent with assessment, therapy and safety-related activities and decisions. Dimensions associated with the other two factors are noted in Table 15.1.

15.4.5.2 Active Treatment Clients

As a factor associated with clinical practice, the effect of the dentist seeing all dental hygiene “active treatment” clients on the day of their appointment ranked 7th (i.e., 13.1% of clinical items examined). It was associated predominately with safety, therapy, diagnosis and planning, education and, to a lesser extent, evaluation; no association with assessment was observed.

DISCUSSION AND CONCLUSIONS

As noted, congruence between the number of clients seen by the dental hygienist and also by the dentist on the same day was included as a measure of professional autonomy, as well as work organization. A subsequent item determined that, among dental hygienists whose clients are seen, 9 out of 10 perceive the dentist's purpose is to establish rapport, examine, and discuss diagnosis and/or treatment with the client, more so than to inspect and evaluate their work. Compared to British Columbia, in particular, clients in Quebec are three times more likely to be seen by the dentist and the purpose is twice as likely to be evaluation.

The close involvement of the dentist in the delivery of dental hygiene therapeutic services does not necessarily ensure that practice guidelines are met. For example, cross-tabulations disclosed that dental hygienists whose clients are seen by the dentist are more likely to polish routinely, compared to those whose clients are not seen - 73.0% versus 54.0%; among the latter group, another 46.0% polish selectively, as recommended. Also, dental hygienists whose clients are seen by the dentist are half as likely to sharpen their hand instruments for each client as required – 20.0%, compared to 37.0% for the group whose clients are not seen. Among the first group, the greatest portion sharpens weekly (37.0%) – well below the recommended frequency.

15.4.6 Clinical Workload

The effect of clinical workload was examined using two indicators. The availability of a dental assistant was found to be more closely associated with clinical dental hygiene practice, compared to appointment scheduling.

While working with a dental assistant during intra-oral procedures is expected to improve efficiency and effectiveness, 3 out of 4 dental hygienists rarely or never have one available. Availability of a dental assistant ranked 6th (17.0%). As a factor in clinical practice, it was not surprising to find it was associated with dental hygiene therapy in particular, followed by safety and assessment, and to a lesser extent, evaluation and diagnosis and planning; no relationship to educational services was observed.

The second factor - appointment scheduling, was of less relative importance (5.0%), compared to other factors. It was associated primarily with aspects of dental hygiene therapy, diagnosis and planning, assessment, and to a lesser extent, evaluation. Overall, 3 out of 5 dental hygienists are satisfied with the amount of time allotted for adult and child maintenance appointments; exceptions were dental hygienists in Quebec and those that work in an orthodontics office – both groups would prefer more time.

15.4.7 Dental Hygiene Education

Occupation-specific structural factors, in addition to region, included type of dental hygiene education program (i.e., university or college-based) and year of graduation in dental hygiene (basic level). The latter two factors were associated with 10.0% and 9.0% respectively of the clinical items examined and ranked 8th and 9th overall in terms of clinical practice.

Findings suggest that type of school is associated with all dimensions of practice except evaluation, and is most predominant with respect to dental hygiene therapy. On the other hand, year of graduation tends to be associated with only three dimensions – namely, evaluation, followed by education/counseling and safety. Relationships vary in terms of direction and, for year of graduation, linearity, depending on the clinical activity or decision examined. (See respective chapters for details.)

The two factors are not independent of each other – that is, more recent graduates are more likely to have graduated from a college-based program, whereas longer-term graduates tend to have completed a university-based program. Year of graduation likely reflects changes over time in technology and curriculum. Type of program reflects, in part, regional differences in scope of practice – for example, university-based programs are not found in all regions. Three-way tabulations suggest that differences in clinical practice that involve school and/or year of graduation are constant across most regions. The validity of the relationships should be confirmed and their strength and direction clarified using multivariate analysis.

15.4.8 Other Factors

Another three factors were identified. All appeared to be minimally associated with clinical practice activities and decision-making, compared to the other factors. (See Table 15.1.)

The number of years that a dental hygienist has worked in the field (that is, experience) may differ from the number since graduation, given the dual work roles and family responsibilities of the predominately female workforce. The dental hygienist's experience was associated with 5.0% of the items examined; relationships tended to be weak. Dimensions involved were assessment, evaluation and safety.

The number of years that the dental hygienist has been employed in the principal workplace is associated primarily with different patterns of therapeutic activities, and to a lesser extent, the educational, safety, diagnosis and planning and evaluation dimensions of practice. No association with assessment activities was observed.

A written job description is an indicator of workplace structure; its association with dental hygienists' practice patterns and quality of practice has been demonstrated (for example, Johnson, 1995¹⁷). Findings indicated the presence of a written job description is associated with two dimensions – namely, safety and evaluation. Among dental hygienists working in private dental offices in Canada in 2001, 7 out of 10 did not have a written job description.

15.4.9 Summary

In summary, of the factors found to be associated with dental hygiene clinical practice, the predominant ones are region, professional development activity of the dental hygienist and type of workplace (general versus specialty), and type of specialty (orthodontics versus periodontics). Overall, structural factors related to the workplace, in particular, and to the occupation appear to be more significant in terms of practice activities and decision-making, compared to personal characteristics of the dental hygienist. In terms of policy implications, they also may be more amenable to change.

DISCUSSION AND CONCLUSIONS

15.5 CONCLUSIONS

Planning the appropriate numbers, mix and management of oral health personnel is a complex process – one that has social and political-economic overtones. Dental hygienist planning is confounded by multiple and inter-related factors. These include:

1. population-based demographic and epidemiological changes and uncertainty over service need and demand,
2. shifting employment patterns among females, accompanied by fundamental changes in family structure, finances and consumption, and employment legislation (e.g., maternity and parental leaves),
3. anecdotal reports of a potential under-supply of dentists, with its implications for dental hygienists' employment and for re-structuring to improve technical efficiency,
4. increasing emphasis on cost containment, especially in the public sector, with the inherent concepts of:
 - technical efficiency, which implies provision of services by the least-qualified person commensurate with established practice standards, and
 - public-interest-determined health goals and service requirements, and
5. lack of information on service providers.

Results of this study have demonstrated that dental hygiene continues to evolve as a profession in the health care sector. Patterns and changes in workforce behaviour and deployment of dental hygienists should continue to be monitored in light of the above factors.

A multivariate analysis, beyond the scope of this study, would help to determine the key factors and relationships involved in dental hygiene clinical practice. The usefulness of dental hygiene process to guide data collection and analysis has been demonstrated. The existing 2001 data set, with its probability sample design, 79.0% response rate, low rate of missing responses (with few exceptions, typically less than 3.0%), broad range of topics covered, and depth of information related to clinical practice, will support further research. An item analysis to establish validity and reliability remains to be completed. Given the variation observed, models for a multivariate analysis should be estimated, in particular, for the separate regions and types of dental hygiene workplaces.

Results of this study confirm that policy initiatives to adjust supply and enhance deployment of dental hygienists should be directed to workplace and occupational structures, as well as to personal circumstances that often are less amenable to policy action. Three interdependent policy areas exist, should public intervention be deemed necessary; they include education and immigration to modify supply, professional regulation and governance to moderate practice behaviour, and delivery system financing and structuring/re-structuring. Private sector initiatives should be directed to employment policies and the organization of work. A multi-faceted approach is required if goals to improve access to oral health services and enhance technical efficiency in the production of those services are to be attained.

Specific to workplace-related initiatives, several observations are evident. First is the private versus public sector dichotomy in entitlement to basic employment benefits. Most employment benefits have a pecuniary value and may be perceived by the employee as an extrinsic reward of working. Entitlement to coverage may be of intrinsic value – that is, the availability of job benefits or lack thereof – may affect one's job satisfaction (or dissatisfaction), regardless of whether the employee actually uses the benefit or is otherwise covered, for example, through a spouse's benefit program. Compared to other occupations, the employment relationship for the majority of dental hygienists – that is, the 9 out of 10 working in private dental offices, appears to be that of a contractor of services, rather than an employee. Dental hygienists overall are moderately satisfied with their wage income, but less satisfied with employment benefits. Findings pertaining to pension and other employer contributions and to satisfaction with remuneration can have implications for retirement planning and for workforce retention and stability.

Second is professional autonomy - associated conceptually and empirically with an employee's job and career satisfaction, work behaviour and productivity. Professional autonomy includes perceived decision-making responsibility and, as such, may have implications for quality of care. It may also be an issue for regulatory authorities responsible for ensuring dental hygienists practice in accordance with mandatory practice standards and guidelines. Development of an index would facilitate further investigation of decision-making as it relates to dental hygiene clinical practice.

Professional development is undertaken, in large part, to ensure continued competence and quality and safety of practice. Given the relationship between dental hygienists' level of professional development activity and their practice behaviours, regional and other variations should be investigated. Policies and programs should target sub-groups nationally, provincially and locally within the population of dental hygienists and address concerns about perceived barriers to PD activities. There are implications for dental hygiene education and regulation, including planning quality assurance programs for the profession.

15.6 RECOMMENDATIONS FOR FURTHER STUDY

Given the extent of the data collected for 2001 and the complexity of the relationships identified to date, further analyses are required to more fully understand similarities and differences in the 2001 population of dental hygienists, identify influencing factors, examine human resource challenges, and identify issues, concerns and potential solutions. Findings will be of interest to practitioners, regulatory authorities, governments, professional organizations, clients, consumer groups, and other stakeholders.

1. Multivariate Analysis

The validity of the factors and relationships discerned in this study should be confirmed and their strength and direction clarified using multivariate analysis. Models should include workplace and occupation-specific factors, in addition to personal attributes.

2. Practice Index

Using data from the 2001 survey of dental hygienists, the development of a practice index to summarize key aspects of dental hygiene practice would facilitate the clarification of regional and other disparities and a review of practice standards and guidelines.

3. Decision-Making Index

Similarly, an index should be constructed for the purpose of examining decision-making responsibilities in the workplace and considering implications in terms of practitioners and health outcomes.

4. Additional Population-Based Studies

Issues were identified by respondents that have implications for workforce retention and recruitment and for quality of care. A number of those issues merit closer investigation – for example, work roles, decision-making responsibilities, the work environment, and job and career satisfaction. This group of studies likely will require sources of information in addition to the 2001 survey.

5. Supply Side Data Base

The existing national supply database for dental hygienists should be updated annually to provide longitudinal information for supply and demand studies, part of human resource planning.

6. Supply and Demand Analysis

Amid rising concerns in the dental profession about a potential shortage of oral health service providers, the supply and demand for dental hygienists should be determined. The findings will contribute to better human resource planning for the oral health sector.

7. Oral Health Sector Study

Within the context of the oral health sector, there is a need to identify the human resource challenges faced by the dental hygiene profession - for example, knowledge and skills required for the future. The policy implications of the continuing steady and dramatic increase in the number of dental hygienists available to provide an increasing range of services should be considered. Findings will provide the profession with direction regarding issues to address and will contribute to its participation as an active member in future health planning activities (for example, a proposed oral health sector council).

Table 15.1: Factors Associated with Dental Hygiene Clinical Practice, by Practice Dimension, Percent of Relevant Survey Items, and Rank, Canada 2001 (%)

FACTOR	DIMENSIONS ¹⁸ A: assessment, D/P: diagnosis and planning, T: therapeutic interventions, E/C: education /counseling, S: safety, E: evaluation	CLINICAL SURVEY ITEMS	
		%	Rank
Personal: Professional development activity Years of experience	All; D/P, followed by E and A, then T, E/C, S A, E, S	39.9 5.2	2
Occupational: Region Type of school Year of graduation	All: E, followed closely by D/P, T, then A, E/C, S All except E; T followed by D/P, S, A, E/C E, followed by E/C and S	65.7 9.8 8.5	1
Workplace: Type – general or specialty Specialty – orthodontics or periodontics Opportunity to: a. consult regarding client care b. decide re. purchases c. use new technologies Availability of a dental assistant Dentist sees all active treatment dental hygiene clients Years employed Adequacy of time allotted for adult client R. has written job description	All; D/P and E/C, followed by A, then E, T, S All: A, followed by D/P and E, then E/C, T, S All except E/C; E followed by D/P, then A, T, S D/P, then S, T, E T, then E, A, S All except E/C; T followed by S and A, then E, D/P All except A; S, T, D/P, E/C, then E T, then E/C, S, D/P, E T, D/P, A, then E S, then E	36.6 27.5 20.3 6.5 6.5 17.0 13.1 6.5 5.2 4.6	3 4 5 6 7

¹⁸ Dimension, for the most part, corresponds to the dimensions of dental hygiene practice - namely, assessment, diagnosis, planning, implementation of therapeutic and educative strategies, and evaluation. Those dimensions are reflected as sections of the questionnaire, which also includes a section on safety and infection control.