

**Factors that Influence Dentists' Decisions to Treat  
Patients in Long-term Care**

**by**

**Nita Chowdhry**

**BSc., University of British Columbia 2006**

**A THESIS SUBMITTED IN PARTIAL FULFILMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF**

**MASTER OF SCIENCE**

**in**

**The Faculty of Graduate Studies**

**(Craniofacial Science)**

**THE UNIVERSITY OF BRITISH COLUMBIA  
(Vancouver)**

**January 2010**

**© Nita Chowdhry, 2010**

# ABSTRACT

The purpose of this study was to evaluate what factors influence dentists in their decision to provide services in long-term care facilities within British Columbia. The secondary purpose was to determine if dentists practicing in rural areas of British Columbia are more willing to provide services in LTC compared to dentists in urban areas. Also, to assess if there were any changes in opinions of dentists (practicing in Metro-Vancouver) in providing services to patients in long-term care compared to a similar study from 1985.

A questionnaire was developed to determine views and opinions of general dentists practicing in British Columbia with respect to the provision of services in long-term care. Eight hundred dentists from urban and rural areas of British Columbia were randomly selected to participate in this study. The British Columbia Dental Association mailed a package containing 3 questionnaires. The participants were to fill out one of the questionnaires based on whether they treated, never treated or stopped treating patients in long-term care. These questionnaires were faxed back to the British Columbia Dental Association. A reminder was sent out to the dentists 3 weeks after the initial mail-out.

About thirty percent of those dentists surveyed responded with completed questionnaires for analysis. Dentists who treated patients in long-term care reported that it was a part of their professional responsibility to provide services. The lack of a dental operatory and lack of experience/training in geriatric dentistry were primary concerns of dentists who never provided services. Compared to 1985, dentists in 2008 showed increased awareness for a need for dental services by patients in long-term care facilities. Dentists in rural areas were more likely to be providing services to patients in long-term care facilities, compared to dentists in urban areas. Dentists who never provided services in long-term care facilities expressed interest in providing dental services.

# TABLE OF CONTENTS

Abstract.....	ii
Table of Contents.....	iii
List of Tables.....	v
List of Figures.....	vii
Acknowledgements.....	viii
Dedication.....	ix
CHAPTER 1 Introduction.....	1
1.1 The Aging Population.....	1
1.2 Oral Healthcare in Long-term Care Facilities.....	2
1.3 Daily Mouth care in Long-term Care Facilities.....	4
1.4 Dentists' Attitudes and Willingness to Provide Services in Long-term Care Facilities.....	5
1.5 Urban and Rural Dentists.....	7
CHAPTER 2 Objectives of the Study.....	9
CHAPTER 3 Materials and Methods.....	10
3.1 Development of the Questionnaire.....	10
3.2 Pre-testing the Questionnaire.....	11
3.3 Sampling.....	12
3.4 Administration of the Questionnaire.....	12
3.5 Statistical Analysis.....	13
3.6 Non-Response Analysis.....	13
3.7 Reliability Testing.....	14
CHAPTER 4 Results.....	15
4.1 Non-Response Analysis.....	15
4.2 Reliability Testing.....	16
4.3 Comparison between Dentists who Currently Treat, Never Treated, and Stopped Treating Patients in Long-term Care Facilities.....	21
4.4 Comparison of 1985 study and 2008 study.....	39
4.5 Urban and Rural Differences in the 2008 study.....	45
CHAPTER 5 Discussion.....	46
5.1 Discussion of Findings.....	46
5.2 Limitations of the Study.....	50
5.3 Conclusion.....	52
5.4 Suggestions for Future Research.....	53
References.....	54

Appendices.....	62
Appendix A Instruction Sheet for Questionnaire Package .....	63
Appendix B Letter of Initial Contact and Consent .....	64
Appendix C Questionnaires .....	
i. Dentists who Currently Treat Patients in Long-term Care Facilities.....	67
ii. Dentists who Never Treated Patients in Long-term Care Facilities .....	70
iii. Dentists who Stopped Treating Patients in Long-term Care Facilities .....	72
Appendix E Modifications from 1986 Questionnaire.....	74

# LIST OF TABLES

Table 1: Responders & Non-Responders.....	15
Table 2: Comparison of demographic characteristics of dentists who currently treat, never treated and stopped treating patients in LTC .....	22
Table 3: Personal characteristics of dentists who currently treating, dentists who stopped treating and dentists who never treated patients in LTC.....	24
Table 4: Perceptions treating the elders-a comparison among dentists currently treating, dentists who stopped treating and dentists who never treated patients in LTC .....	26
Table 5: Preferred methods of payment for treating patients in LTC facilities - a comparison among dentists who currently treat, never treated, and stopped treating patients in long-term care.....	28
Table 6: Comparison of common services provided by dentists that never treated, and stopped treating patients in LTC.....	29
Table 7: Important considerations of dentists who currently treat patients in LTC .....	30
Table 8: Methods of payment and fee guide used when providing services to patients in LTC .....	31
Table 9: Reasons for providing treatment in LTC answered by dentists who currently treat patients in LTC .....	33
Table 10: Perceptions of dentists who treat patients in LTC .....	34
Table 11: Factors influencing decisions of not treating patients in LTC.....	36
Table 12: Reasons for stopping treatment in LTC facilities .....	37
Table 13: Importance of factors for stopping treatments in LTC facilities .....	38
Table 14: Comparison of personal characteristics of dentists surveyed in 1985 and 2008 .....	40
Table 15a: Perceptions and important considerations for treating patients in LTC-comparison between dentists surveyed in 1985 and 2008 .....	42
Table 15b: Important considerations for treating patients in LTC .....	42

Table 16: Reasons for not providing services and stopping services in LTC compared in the 1985 and 2008 studies..... 44

Table 17: Location of dentists who currently treat, never treat, and stop treating patients in LTC (2008 study)..... 46

# LIST OF FIGURES

Figure 1a: Box-and-Whisker Plot for reliability testing of how often oral hygiene instruction was provided by dentists who currently treat patients in LTC ..... 17

Figure 1b: Box-and-Whisker Plot for reliability testing of how often bridges or crowns were provided by dentists who currently treat patients in LTC..... 19

Figure 1c: Box-and-Whisker Plot for reliability testing of how often endodontic treatment was provided by dentists who currently treat patients in LTC ..... 20

## ACKNOWLEDGEMENTS

I offer my enduring gratitude to all of the thesis committee members: Dr. Chris Wyatt, Dr. Jolanta Aleksejuniene, Dr. Michael MacEntee, & Dr. Ross Bryant for providing me with guidance throughout the entire process.

The UBC Faculty of Dentistry and the British Columbia Dental Association have provided support in kind for this thesis and I extend my appreciation. I am indebted to all the dentists who participated in this study.

I would like to express my deepest gratitude to my supervisor, Dr. Chris Wyatt, for his excellent guidance and patience and for providing me with encouragement and support through each step of the way in completing my Master of Science.

I am so thankful to Dr. Jolanta Aleksejuniene for her guidance and ideas, and teaching me how to be a successful researcher.

I would like to express gratitude to my family for their encouragement and support for my education.

Finally, I would like to thank my husband, Kevin, for always supporting me and standing by me throughout the entire process.

# DEDICATION

*To my Family*

# I INTRODUCTION

## 1.1 The Aging Population

The Canadian population is aging due to a combination of increased life expectancy and decreased birthrate (Canada's Aging Population, 2002).

The life expectancy is 78.0 years for males and 82.7 years for females in British Columbia (Statistics Canada, 2002), some argue that individuals who are over 65 years should no longer be considered seniors (Posner, 1995) and that a numerical value of 65 should not be a standard to define old age. Nevertheless, age in years continue to define the elderly population and within the general definition of seniors, subcategories have been constructed; there is now the young-old (65-74), the old-old (75-84) and the oldest old (85+). Amongst these three groups, the standards of care and health conditions of individuals may vary significantly.

In the 1920s and 1930s, only 5% of the Canadian population consisted of seniors, whereas in the 1950s and 1960s, the senior population reached nearly 8% (A Portrait of Seniors in Canada, 2006). Over this time, the percentage growth of the total population was greater than for those over the age of 65 years. Today, the situation is far different: low fertility rates, longer life expectancy and the large baby boom generation are among the most prominent factors contributing to the aging population, resulting in a greater growth rate of seniors compared to the remaining population (A Portrait of Seniors in Canada, 2006). In fact, the proportion of seniors in the Canadian population is expected to double by the year 2025 (A Portrait of Seniors in Canada, 2006).

Amongst seniors, the number of individuals who are 85+ has rapidly increased over the last two decades. From 1981 to 2005 the number of seniors in this group grew from 196,000 to 492,000 and by 2021, the total number of seniors 85+ is estimated to increase to 800,000 (A Portrait of Seniors in Canada, 2006). The rapid growth in this cohort of the population has caused a shift in the patient population at long-term care (LTC) facilities. Currently, seniors that reside in LTC facilities are significantly frailer

(McGrath & Jackson, 1996) and at a later stage of dementia than seniors who resided in LTC 23 years ago.

## **1.2 Oral Healthcare in Long-term Care Facilities**

In Canada, the utilization of health care services drastically increases beyond the age of 75 years and is correlated with a consistent decline in health status (Rosenberg, 1997). Individuals aged 75+ are more likely than other adults to suffer from a decline in their health status; 40% of women and 30% of men that are 85+ reside in long-term care facilities and this rapidly increased with age (Rosenberg, 1997). Despite this, the majority of elderly patients in LTC lack access to basic dental care (Lamy, 1999). Challenges regarding health care for seniors in Canada include health-care provider preparedness, educational background, experiences and attitudes (Rosenberg, 1997). The College of Dental Surgeons of British Columbia, the British Columbia Dental Association (BCDA Report on Seniors' Oral Health, 2008), the Canadian Dental Association (CDA Report on Seniors' Oral Health, 2008), and the Ministry of Health are developing strategies to improve oral health for elderly individuals and in particular those residents of LTC facilities.

With the mean age of residents in a typical LTC facility in Vancouver being 85 years old (Wyatt, 2006), significant challenges exist in providing these patients with adequate dental care. Due to these challenges, many of the seniors who reside in LTC facilities suffer from poor oral health and have limited access to dental care (Wyatt, 2002). The dental care provided within LTC facilities is often worse than dental services that frail elders received in the community (Longhurst, 1999). The perceived need for dental care is greater for seniors than for the general public, but their use of dental services is less than that for the general public (Marvin, 2001).

Routine oral care and screening for oral diseases has increased the demand for dental services (Marcus et al., 1997). Patients who are admitted into LTC facilities are older, frailer (Robichaud, 2006), and are in great need of oral health care than previous

generations (McNally, 1998). In the past, elders in the United States composed a small proportion of the population, the majority being edentate, and only seeking dental care when there is pain or an oral problems (Eklund, 1999). In Ottawa, Canada, the rate of edentulism has decreased as well (Locker et al, 1991). Cross-sectional studies in Ottawa indicate a steady decline in rates of edentulism from 45% to 20% in seniors (Leake et al., 1988). Presently, a high proportion of elders retain their teeth, which increase the demand for treatment of oral conditions than in the past (Ettinger, 2007). Previously, the majority of seniors admitted to LTC facilities were younger and wearing dentures. However, with improved community dental services, fluoridation of drinking water and fluoride toothpaste, and better access to dental services, the rate of edentulism has decreased (Beltrán-Aguilar et al., 2005). A growing number of seniors have retained their natural teeth, but the prevalence of dental diseases remains extremely high amongst this population; they now have an increased risk of suffering from chronic oral conditions (dental caries & periodontal disease) which increases their need for dental care (Alian, 2006). In America, although the dental health status has improved over the past decade, a lack of services available to this group remains to be a concern (Hurtado, et al., 2001, Nelson, 2003). Over 70% of institutionalized English seniors had not seen a dentist in over five years (Frenkel, 2000).

Oral health should be given the same priority as other health care services provided in LTC facilities (Pino et al., 2003). The World Health Organization has defined health as “a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity.” This definition reflected a view of western medicine, which has expanded well beyond the scope of physical health, and into social, psychological and physical functioning (Reisine, 1985). Oral health is fundamental for quality of life, psychological well-being, and life satisfaction (Thorne et al., 2001 & Pino et al., 2003). Poor oral health in elders includes oral pain, difficulty with eating and communication (Reisine, 1988, Tickle et al., 1997). Seniors suffer from untreated dental caries, periodontal complications and loose dentures (Kiyak et al., 1993); as a result, seniors tend to eat less and lose weight, which causes deterioration in overall health (Andrews, et al., 1990).

Poor oral health adversely affects nutrition, dietary habits, and leads to diminished social interaction (Pino et al., 2003). Residents of LTC facilities are prone to gingivitis, dental caries, halitosis and improperly fitting dentures (MacEntee, 2006). Tooth decay, missing teeth, periodontal disease, and gingivitis should not be considered a part of healthy aging.

### **1.3 Daily Mouth Care in Long-term Care Facilities**

Access to dental services, healthy diets, and the use of fluoride toothpaste along with the fluoridation of the water supply has reduced tooth loss due to dental caries in Western populations. However, while many more seniors retain more teeth, daily mouth care within LTC facilities seems to be at the bottom of the priority list for nursing staff (Pino et al., 2003).

Oral hygiene (daily mouth care) is significantly neglected in LTC settings (Pino et al., 2003). The lack of daily mouth care in LTC facilities has been a significant concern since it was first documented in the 1960s. For example in Brooklyn, Massachusetts, more than half of denture wearers in LTC had not removed their dentures for nightly cleaning for at least four months (Maloof, 1964). In a survey from a UK hospital, 80% of patients with complete dentures and 69% of patients that had natural teeth did not receive any daily mouth care (tooth & denture cleaning) (Longhurst, 1999). Eighty percent of complete denture users had not had their dentures cleaned and 69% of dentate patients did not have their teeth cleaned daily (Preston et al., 2006). In Edinburgh Scotland, 65% of LTC residents had dentures with visible soft debris, calculus and stains (Munroe, 1990). To date, denture cleaning and elimination of plaque remain to be neglected in long-term care facilities in Canada (Gornitsky et al., 2002).

#### **1.4 Dentists' Attitudes and Willingness to Providing Services in Long-term Care Facilities**

Dentists' attitudes and their willingness to provide services to LTC residents were analyzed over 20 years ago within Metro-Vancouver (MacEntee, et al., 1992). In this study, a multiple choice and open ended questionnaire was sent to 603 general dentists in the Metro-Vancouver area of British Columbia to determine dentists' views on working with LTC residents. Socio-cultural, professional, and an economic models were investigated to identify the key factors that would determine whether a dentist would provide treatment to patients in LTC facilities. Findings suggested that both professional and economic factors influenced treatment decisions. Professional models, such as limited treatment options and lack of training in dental school influenced the desire to treat this group. Economic factors, such as loss of leisure time, age, unrewarding finances, type of practice, years of practice and loss of private practice time were amongst the most common barriers to providing treatment to long-term care residents. Major barriers to providing dental care within LTC include lack of support for the service, time constraints, limited financial support, difficulty providing care to residents, lack of training of health care workers, and a poor comprehension of the necessity of care (Weeks, 1994). Patient compliance with dental treatment plans was also reported to be a major factor that encouraged or discouraged provision of dental services (Preston et al., 2006). Perhaps some dentists felt they were not adequately trained to work with frail seniors (MacEntee et al., 1992).

In 1994, a qualitative study was performed in Metro-Vancouver to identify ethical problems that may influence decision making for dentists who provide services in LTC facilities (Bryant, 1995). This study investigated the views and experiences of dentists working with institutionalized elders as well as the ethical difficulties of treating seniors in LTC. Ten dentists who treated institutionalized patients in Vancouver were interviewed to identify their ethical viewpoints to treating elderly patients. Attention was paid to the varying view points of the dentists on their bioethical principles (non-

maleficence, beneficence, patient's autonomy and justice) and decision making for treatment. Both ethical and practical problems influenced decision making for dentists who attempted to provide oral care to elders in long-term care facilities. Findings from this study also indicated that dentists faced practical problems such as the lack of support for services and the inefficiency with the delivery of services associated with providing dental care in LTC facilities (Bryant, 1994). Consequently, the environment of the facility and the lack of training and experience with providing services to the elderly were significant factors that impacted decisions to treat (Bryant, 1994). Such factors may have deterred dentists to consider providing treatment within the LTC setting. To date, there has been no follow-up study in Metro-Vancouver to evaluate any changes in dentists' decisions in treating the institutionalized elderly and reasons behind their opinions.

Coordination between the dental profession and health authorities is needed to address oral health care needs of elders to educate the public concerning the relationship between oral and systemic health as oral infections are now recognized as a risk factor for systemic diseases (Lamster, 2004). In the United States, there are an increasing number of seniors requiring dental service, but not enough dentists that are willing to provide dental services to geriatric patients (Hurtado et al., 2001). Similarly in Canada, there are only a few dentists who serve frail elders residing in long-term care (Bryant et al., 1995). It is important to identify if the increased need for dental services in LTC facilities has influenced and changed dental professionals' decisions on providing services to this vulnerable age group. A qualitative interview was conducted to understand how dentists view the concept of social responsibility and its relationship with access to oral health in North America (Dharamsi et al., 2007). Findings from this study suggested that economic, professional, personal choice and politics were the main factors that influenced social responsibility in dentistry. A balance between social and fiscal responsibilities were identified as well, along with a reminder that dentists make reasonable efforts to provide their services to all people, regardless of social status (Dharamsi et al., 2007).

## 1.5 Urban and Rural Dentists

Medical professional's job satisfaction and job-related pressure differed significantly between those working in urban and rural areas (Luman et al., 2007). Family physicians in rural California tended to have a greater sense of professional satisfaction and community satisfaction compared to urban counterparts (Luman et al., 2007 & Bible, 1970). Background information such as the physician's hometown had a significant influence on the size of the community where the physician would chose to practice (Bible, 1970). Medical students from a rural background were approximately 2.5 times more likely to practice in a rural environment compared to urban raised students (Woloschuk & Tarrant, 2004). It was difficult to recruit physicians who were raised in a metropolitan environment to work in a rural setting (Luman et al., 2007). Exposure to rural medicine through electives and rotations had a significant influence on choosing a rural practice over an urban practice (Chan et al., 2005). Gender differences have also been identified in rural and urban practice location in mid-level health care providers in New York State and Pennsylvania (Lindsay, 2007). Although women comprise the majority of medical professionals, they were less likely to work in a rural environment compared to men (Lindsay, 2007). Some identified advantages of practicing in a rural location were greater autonomy, respect, professional satisfaction, expansion of skills, less commute time, and a more personable nature and relation with patients (Lindsay, 2007). In a similar Australian study, benefits of practising rural medicine were a sense of belonging attained from working in a close-knit community and the greater amount of respect given to the medical professional (Rashid, 2007). However, general practitioners also admitted that working in an intimate network in which they knew their patients on a personal level also made it difficult to draw the line between professional and personal life (Rashid, 2007). Medical professionals also indicated some disadvantages of working in a rural environment; such factors were professional isolation and longer practice hours (Lindsay, 2007). In contrast, both males and females enjoyed practicing in the urban locations as they preferred a fast paced, team oriented approach, with greater technology and wider breadth of medical practice (Lindsay, 2007).

In Canada, the majority of physicians serving rural populations expressed greater overall job satisfaction than their urban counterparts and indicated that a wider range of procedures was linked to higher overall job satisfaction (Rivet & Ryan, 2007). In Canada, the majority of physicians serving rural populations expressed greater overall job satisfaction than their urban counterparts (Rivet & Ryan, 2007). However, the reasons for job satisfaction varied in different countries: in Australia, rural physicians had higher job satisfaction scores for autonomy (Ulmer & Harris, 2002), whereas in New Zealand, rural general practitioners expressed a greater concern for their independence than urban medical professionals (Walton et al., 1990). Evidently, rural and urban health care professionals present a variety of pros and cons of working in rural and urban settings. Research was conducted in nine small town communities across Canada to identify how the concept of community operates with respect to the provision for community care services for seniors (Skinner et al., 2008). From a medical perspective, the growing need for geriatric care and long-term care was recognized in small town communities. A strong belief existed amongst service providers in which rural communities were able to provide for their seniors despite limitations associated with services in small town communities (Skinner, et al., 2008).

Although many studies suggest differences in attitudes between medical professionals practicing in a rural or urban environment, a study of dental professionals has not been performed. This thesis will explore whether dental professionals in rural and urban British Columbia differ in their reasons behind treating elders in long-term care facilities.

## **2 OBJECTIVES OF THE STUDY**

- a) To examine factors behind why dentists decide to treat, not to treat, or why they stopped treating patients in Long-term Care (LTC) facilities.
- b) To determine if dentists practicing in rural areas of British Columbia are more willing to provide services in LTC compared to dentists in urban areas.
- c) To identify if there has been any changes in attitudes and willingness of dentists (practicing in Metro-Vancouver) to treat patients in long-term care from 1985.

## 3 MATERIALS & METHODS

### 3.1 Development of the Questionnaire

A questionnaire to investigate attitudes of dentists working with LTC patients was developed previously and used as the basis for this study (Weiss, 1986). The objective of this study was to examine attitudes of dentists working with elderly patients and to also see if attitudes had changed from 23 years ago. Many of the original questions were included in the new survey questionnaire (**Appendix A**); however, the questionnaire was updated to include new questions relevant today, and to eliminate questions which were not of interest, and to reduce repetition. Wording and language were modified to enhance readability and understanding of the new questionnaire.

Instead of creating one long questionnaire as was done for the 1985 survey, three separate questionnaires were created to target the different groups of dentists: those who treat patients in LTC, those who do not, and those who have stopped treating patient's in LTC. Breaking the questionnaire into 3 parts was intended to reduce the amount of time that participants would need to fill out applicable questions, and therefore, to achieve a higher response rate. Each questionnaire was clear and concise, and took an average of 10 minutes to complete.

Each questionnaire was divided into two sections; the first section related to personal information including gender, years of practice, and post graduate training; and the second section had questions that targeted professional, personal, and economic factors to explore opinions on treating patients in LTC.

Three colour-coded questionnaires were created which were specific to dentists who a) currently treat, b) never treated, and c) stopped treating patients in LTC. The questionnaires were mailed out in a semi-anonymous fashion: each package had a unique numerical code which was used to identify information pertaining to which questionnaire

was returned or not returned. In addition, the code was used to determine demographic data from the non-respondents.

Responses from all three groups were analyzed to determine key differences in opinions towards providing services in LTC. Additional questions were incorporated to shed light on why dentists decide to treat, stop treat or never treat patients in LTC. Also, questions were used to determine if there were any differences in decisions to treat in LTC based on location of practice.

Questions that were common between the questionnaires administered in 1985 and 2008 were compared to explore professional, personal and economic factors with respect to dentists decisions to treat in LTC facilities. Certain questions may have fallen into more than one of the three categories (**APPENDIX F**).

### **3.2 Pre-testing the Questionnaire**

The survey was provided to eight dentists of various ages, genders, and experience working with LTC patients. The sample group included dentists who treated, never treated, and stopped treating patients in LTC. In addition, the sample group included dentists from both rural and urban parts of British Columbia. Each dentist filled out the questionnaire depending on his or her private practice situation. After completing the questionnaire, each participant was interviewed for feedback on the wording and appropriateness of the questions. In addition, the questionnaire was also given to three UBC Dentistry faculty members for their feedback. All comments and/or suggestions related to wording or structure of the questionnaire were used to refine the final questionnaires.

### **3.3 Sampling**

A sample of size of 300 dentists (10%) was determined to be representative of the over 3,000 dentists in British Columbia. Past survey experience by the British Columbia Dental Association has found that 50% of dentists will likely respond. Therefore a randomly selected sample of 600 dentists was considered. Since the survey was to be sent out in the summer, when dentists often are on holidays, an additional 200 surveys were sent out for a total of 800.

In 1985, only Vancouver, Burnaby, North and West Vancouver were included in the survey of dentists, however, this study used Metro-Vancouver, which also includes Anmore, Belcarra, Bowen Island, Burnaby, Coquitlam, Delta, Langley, Lions Bay, Maple Ridge, New Westminster, North Vancouver, Pitt Meadows, Port Coquitlam, Port Moody, Richmond, Surrey, Vancouver, West Vancouver, and White Rock.

### **3.4 Administration of the Questionnaire**

The British Columbia Dental Association (BCDA) assisted in this study by randomly selecting 800 general dentists from their database. The questionnaires were packaged and mailed out to the dentists from the BCDA office.

An introductory letter was included in the package which provided instructions on which questionnaire was to be filled out, along with an incentive to participate (**Appendix E**); the dentists were asked to fax back the completed questionnaire to the BCDA.

Although the majority of questionnaires were faxed back to the BCDA, some questionnaires were mailed or faxed back to the Faculty of Dentistry at UBC. Three weeks after the initial mail-out, a fax reminder was sent to encourage the non-responders to fill out the questionnaire. A second reminder was sent out five weeks after the initial mail out as a broadcast email by the BCDA

Each survey package included a letter of initial contact with a consent form and a questionnaire. The letter of initial contact and consent explained the purpose, benefits, description and confidentiality agreement for this study (**Appendix B**).

The study was approved by the Ethics Committee of the University of British Columbia, Canada. The Ethical Approval Number for this study is H08-00222.

### **3.5 Statistical Analysis**

For all the statistical analyses, the SPSS programme, Version 16.0 was used (SPSS Inc., Chicago, IL). Data were analyzed based on general responses that were common amongst the three questionnaires and later analyzed separately for groups of dentist who currently treated, never treated, or stopped treating the elderly in LTC.

Firstly, the three groups of dentists (currently treating, never treated, and stopped treating elderly residents of LTC facilities) were compared by means of Chi Squared test and ANOVA with a post hoc Bonferonni adjustment. Descriptive statistics were employed to generate frequency distributions. Bivariate statistics were conducted for non-response analysis, reliability testing, and comparisons between the three groups of dentists namely the ones who currently treat, never treated and stopped treating patients in long-term care.

### **3.6 Non-Response Analysis**

A non-response analysis was performed in order to determine if there were any systematic differences among the responders and non-responders. Differences in demographic information (gender, year of graduation, and location of practice) were compared between the responders and non-responders. Information on year of graduation, gender and location of practice was provided by the BCDA. The year of graduation was used as a proxy measure of an estimate of how many years the dentists had been in clinical practice. In addition, the location of practice (urban/rural & Metro-Vancouver/outside of Metro-Vancouver) were compared between responders and non-

responders. Proportional distributions regarding aforementioned factors between the responders and non-responders were compared by a Chi-Square Test.

### **3.7 Reliability Testing**

Reliability testing was conducted in the questionnaire for dentists who currently treat patients in long-term care. In the first half of the questionnaire, dentists were asked how often they provide a list of services to patients in LTC. In the second half of the questionnaire, the same questions were slightly reworded, but asked the same question in the same order. For example, the first question asked ‘In an average work week, how often do you (or your staff) provide the following services to patients in long-term care?’ The second question asked ‘What are the most common dental services that you provide to patients in long-term care?’ Box-and-Whisker plots were created to illustrate any differences in responses. A paired sample t-test was used to test the reliability of self-reports on the p-values that were generated.

## 4 RESULTS

### 4.1 Non-Response Analysis

A total of 234 questionnaires were returned of the 800 that were sent out; creating a 29.3% response rate. There were no statistically significant proportional differences between responders and non-responders with respect to gender, years of practice, urbanization and or location of practise (Table 1).

Twenty-seven out of 44 rural dentists that were given a survey responded (61.36%). Two hundred and seven urban dentists out of a total of 756 urban dentists responded to the survey (27.38%).

**Table 1. Comparison between Responders & Non-Responders**

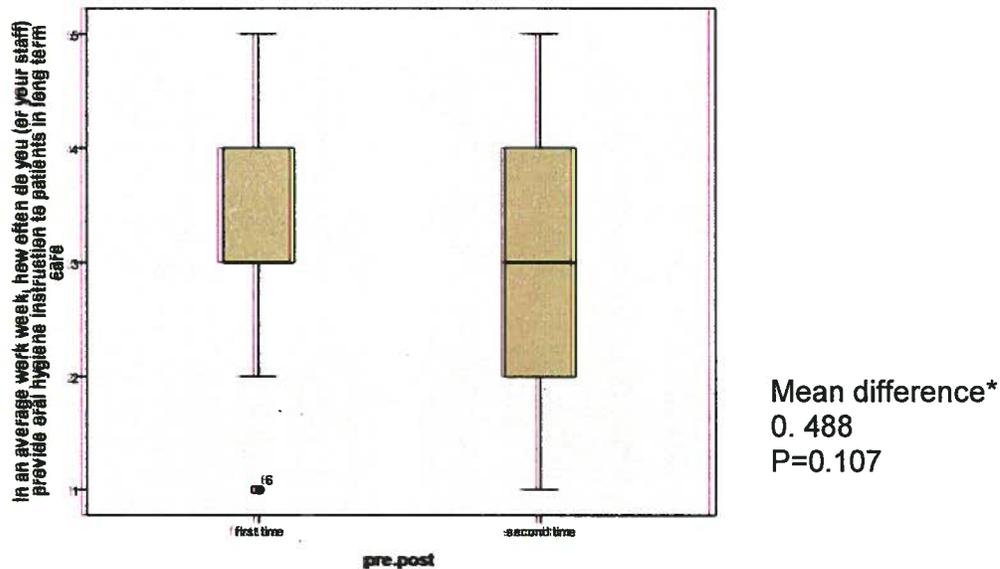
FACTORS		NON-RESPONDERS	RESPONDERS
URBANIZATION		Number of Dentists (% of total)	
	Urban	549(97.0)	207(88.5)
	Rural	17(3.0)	27(11.5)
	Chi square test, P=0.213		
LOCATION			
	Metro-Vancouver	340(60.1)	114(54.8)
	Outside of Metro-Vancouver	226(39.9)	93(45.2)
	Chi square test, P=0.349		
GENDER			
	Males	438(77.4)	191(81.6)
	Females	128(22.6)	43(18.4)
	Chi square test, P=0.183		
YEARS OF PRACTICE		Mean±SD	Mean±SD
		22.0±10.9	22.4±10.1
	Chi square test, P=0.089		

\* total number of responders=234

## **Reliability Testing**

Reliability testing was performed for the group of dentists that currently treat patients in LTC. Similar questions based on the services that are provided in LTC facilities were asked twice and the mean differences between similar questions were compared using a paired sample t-test. Box-and-Whisker plots were used to illustrate the results of this testing (**Figures 1 a-c**). The mean differences for similar questions were compared using a paired sample t-test and p-values were generated. There were no statistically significant differences between responses for the similar questions.

**Figure 1a. Box-and-Whisker Plot for reliability testing of how often oral hygiene instruction was provided by dentists who currently treat patients in LTC (paired sample t-test comparisons)**

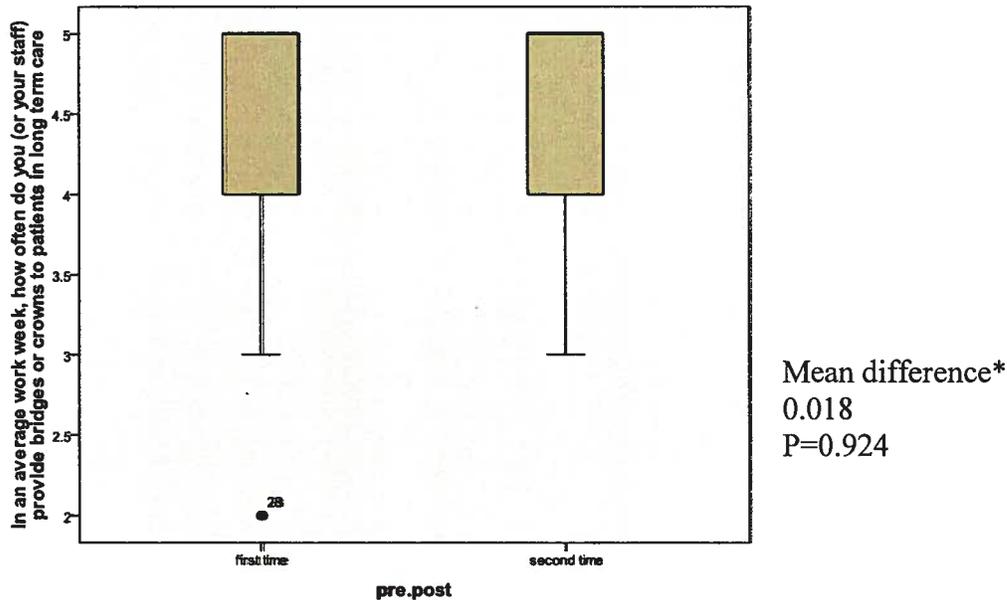


\*1=very often, 2=often, 3=sometimes, 4=seldom, 5=never

Dentists differed slightly in their responses during the first and second part of the questionnaire (**Figure 1a**). In the first question that asked how often they provided oral hygiene instruction to patients in LTC, responses fell between the two intervals for ‘sometimes’ to ‘seldom.’ Therefore, 50% of the responses from dentists that currently treat patients in LTC (n=35) indicated that they provided oral hygiene instruction sometimes to seldom. The highest and lowest observations ranged from ‘never’ to ‘often.’ Twenty-five percent of the dentists said they provided oral hygiene instruction often to sometimes; another 25% of responses from the dentists fell between seldom to never. Out of the total sample group, only one dentist stated that they provide oral hygiene instruction to patients in LTC facilities very often. The second time around the entire range of responses fell between very often to never. Fifty percent of the responses ranged between ‘often’ and ‘seldom’ and the median response was that oral hygiene instruction was provided only sometimes. Twenty-five percent of responses from dentists stated that they provide this service often to very often, while another 25% of

dentists said they provide oral hygiene instruction seldom to never. A p-value of 0.107 was attained which indicated that there was no statistically significant difference between the two repeated questions.

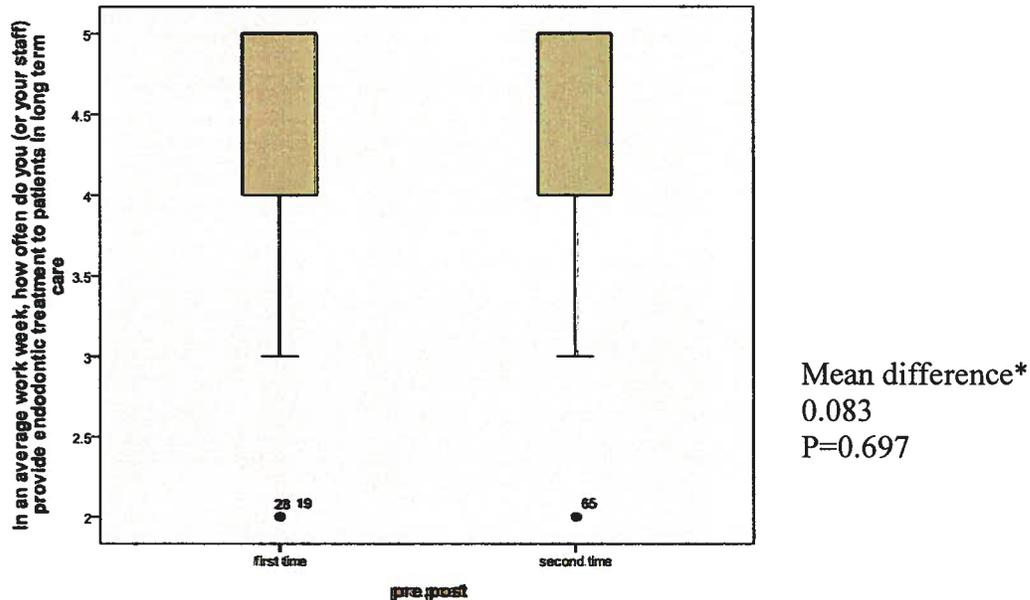
**Figure 1b. Box-and-Whisker Plot representation for reliability testing of how often bridges or crowns were provided by dentists who currently treat patients in LTC (paired sample t-test comparisons)**



\*1=very often, 2=often, 3=sometimes, 4=seldom, 5=never

Dentists were consistent in their responses during the first and second part of the questionnaire. In the first question that asked how often they provided bridges or crowns to patients in LTC, responses fell between 'seldom' to 'never.' For the second question, all responses were the same, except there were no outliers as seen in the first question. Box-and-Whisker plots for both questions indicated that the same upper bounds and lower bounds were attained. A p-value of 0.924 was attained which indicated that there was no statistically significant difference between the two repeated questions.

**Figure 1c. Box-and-Whisker Plot for reliability testing of how often endodontic treatment was provided by dentists who currently treat patients in LTC (paired sample t-test comparisons)**



\*1=very often, 2=often, 3=sometimes, 4=seldom, 5=never

Dentists were consistent in their responses to repeated questions in the first and second part of the questionnaire. In the first question that asked how often their provided endodontic treatment to patients in LTC, 75% of the responses fell between the two intervals for ‘seldom’ to ‘never.’ Box-and-Whisker plots for both had a lower bound which ranged between ‘seldom’ to ‘sometimes.’ For both questions, a total of 3 dentists were outliers and they indicated that they ‘often’ provided endodontic treatment to patients in LTC. A p-value of 0.697 was attained which indicated that there was no statistically significant difference between the two repeated questions.

### **4.3 Comparison between Dentists who Currently Treat, Never Treated and Stopped Treating Patients in Long-term Care Facilities**

Demographic characteristics among the dentists currently treating the institutionalized elderly, who stopped treating institutionalized elderly and, who never treated institutionalized elderly are presented in **Table 2**. There were statistically significant differences among the groups of dentists regarding age, gender and location of practice. In general, dentists currently treating institutionalized elderly tended to be males, and were slightly older than dentists who do not treat the elderly.

**Table 2. Comparison of demographic characteristics of dentists who currently treat, never treated and stopped treating patients in LTC**

DEMOGRAPHIC FACTORS	TREATING ELDERLY IN LONG-TERM CARE FACILITIES		
	YES (n=35)	NEVER (n=152)	STOPPED (n=47)
	Number of Dentists (% of total)		
<b>GENDER</b>			
Males	33(94.3)	116(76.4)	41(87.2)
Females	2 (5.7)	36(23.6)	6(12.8)
	Chi Squared Test or Fishers Exact Test P=0.024		
<b>URBANIZATION</b>			
Urban	25(83.3)	138(90.8)	38(82.6)
Rural	5(16.7)	14(9.2)	8(17.4)
	Chi Squared Test P=0.186		
Metro-Vancouver	9(26.0)	63(41.4)	10(21.3)
Outside Metro-Vancouver	26(74.0)	88(57.8)	37(78.7)
	Chi Squared Test P=0.012		
<b>AGE</b>	mean±SD	Mean±SD	mean±SD
	53.8±8.0	47.0±9.0	51.0±9.0
	ANOVA with Bonferonni Post Hoc adjustment Currently vs. Never: P=0.001; Currently vs. Stopped: P=0.568; Never vs. Stopped P=0.034		

In general dentists in all three groups had many years of clinical experience (currently treating: mean=26.3 years, never treated: mean=20.3 years, & stopped treating: mean=24.5 years) (Table 3). Dentists who currently treat patients in LTC or who stopped treating them had significantly more years of dental practice compared to the dentists who never treated the elderly in LTC.

A very small percentage of dentists in all three groups had training in geriatric dentistry, whether it was clinical training or lectures. Overall, within all three groups, about 20% of the dentist's patient pool consisted of patients that were 65 years or older.

**Table 3. Personal characteristics of dentists currently treating, dentists who stopped treating and dentists who never treated patients in LTC**

CHARACTERISTICS	TREATING ELDERS IN LONG-TERM CARE FACILITIES		
	Number of Dentists (% of total)		
	YES (n=35)	NEVER (n=152)	STOPPED (n=47)
YEARS OF PRACTICE	mean±SD	mean±SD	mean±SD
	26.3 ±10.9	20.3±9.9	24.5±9.7
	ANOVA with Bonferonni Post Hoc adjustment P=0.002		
HOURS PER WEEK	mean±SD	mean±SD	mean±SD
	35.1±8.0	33.4±5.7	33.6±5.2
	ANOVA with Bonferonni Post Hoc adjustment P=0.403		
ADVANCED TRAINING	Number of Dentists (% of total)		
	No	148(91.4)	42(89.4)
Yes	5(14.3)	14(8.6)	5(10.6)
	Chi Squared Test P=0.376		
PERCENTAGE OF PATIENTS 65 YEARS OR OLDER	mean±SD	mean±SD	mean±SD
	21.4±10.1	18.4±10.7	20.8±12.9
	ANOVA with Bonferonni Post Hoc adjustment P=0.220		

All 3 groups of dentists (currently treating, never treated, and stopped treating patients in LTC) 'slightly agreed' that treating patients is a pleasant experience (Table 4).

Responses from all groups of dentists tended to be neutral when asked if elders rarely follow-up with recommended treatment. All three groups of dentists agreed that it is hard to improve oral health of elders. Age of a patient was not perceived as influencing decisions to the provision of care. Overall, dentists who currently treat elders or who stopped treating them agreed that it is hard to improve health of elders, while dentists who never treated elders had a more neutral perception. Dentists from all three groups agreed that treating elders is time-consuming. The most profound difference in perception among three groups related to the statement 'elders present difficulties due to medical problems/dementia.' Dentists who stopped treating patients in long-term care agreed to this statement (mean=2.1) and dentists who currently treat patients in LTC were also in agreement with this statement (mean =2.5). Self-reports from dentists who never treated patients in long-term care, indicated that they 'slightly agreed' to this statement (mean = 3.7).

**Table 4. Perceptions treating the elderly - a comparison among dentists currently treating, dentists who stopped treating and dentists who never treated patients in LTC**

PERCEPTIONS OF TREATING ELDERERS	TREATING ELDERERS IN LONG-TERM CARE FACILITIES		
	YES (n=35)	NEVER (n=152)	STOPPED (n=47)
Treating elders is a pleasant experience	mean±SD* 2.8±1.3	mean±SD* 2.8±1.3	mean±SD* 3.0±1.5
	P=0.643		
Patients age does not influence my decision to provide services	2.5±1.8	2.5±1.6	2.7±1.6
	P=0.777		
Elders rarely follow up with recommended treatment	3.7 ±1.3	4.1±1.5	4.1±1.5
	P=0.235		
Elders present difficulties due to medical problems/dementia	2.5±1.5	3.7±1.6	2.1±1.1
	P=0.000		
It is hard to improve oral health of elders	2.1±1.2	2.8±1.1	3.2±1.7
	P=0.001		
Treating elders is time-consuming	2.3±1.0	2.9±1.3	2.5±1.5
	P=0.013		
Treating elders is financially unrewarding	3.2±1.6	3.8±1.3	3.2±1.5
	P=0.017		

\* the means are derived from the following Likert scale:

1=strongly agree, 2=agree, 3=slightly agree, 4=neutral, 5=slightly disagree, 6=disagree, 7=strongly disagree

\* Multiple comparisons by ANOVA with Bonferonni Post Hoc adjustment

The largest difference in preferred method of payment was between dentists who currently treat patients in LTC versus the other two groups (dentists who never treated & stopped patients in LTC). Dentists who currently treated institutionalized elderly preferred to be paid by fee-for-service (73.5 %) as opposed to being paid by fee-for-time (27.3%) (Table 5). Dentists who never treated and stopped treating in LTC were neutral on whether they preferred to be paid by fee-for-time, or by fee-for-service. Only a few dentists preferred a session fee or a retainer fee when providing services in long-term care facilities.

**Table 5. Preferred methods of payment for treating patients in Long-term care facilities - a comparison among dentists who currently treat, never treated, and stopped treating patients in LTC.**

<b>PREFERRED METHOD OF PAYMENT</b>	<b>TREATING ELDERLY IN LONG-TERM CARE FACILITIES</b>		
	<b>YES (n=35)</b>	<b>NEVER (n=152)</b>	<b>STOPPED (n=47)</b>
	Number of Dentists (% of total)		
<b>FEE-FOR-TIME</b>			
No	24 (68.6)	75 (49.4)	24 (51.1)
Yes	9 (25.7)	77 (50.6)	23 (48.9)
	1 missing answer		
	Chi-Square Test P=0.048		
<b>FEE-FOR-SERVICE</b>			
No	9 (27.3)	76 (50.0)	24 (51.1)
Yes	25 (73.5)	76 (50.0)	23 (48.9)
	1 missing answer		
	Chi-Square Test P=0.154		
<b>SESSIONAL FEE</b>			
No	30 (85.7)	141(92.7)	45(95.7)
Yes	3(8.57)	11(7.2)	2(4.3)
	2 missing answers		
	Chi-Square Test P=0.672		
<b>RETAINER FEE</b>			
No	33 (94.3)	145(95.7)	45(95.7)
Yes	0(0.0)	7(4.6)	2(4.3)
	2 missing answers		
	Chi-Square Test P=0.482		

Dentists who never provided LTC services provided more periodontal treatment in their own practices than those who stopped providing services in LTC. Both groups of dentists occasionally provided biopsies and extractions. The most common services provided by both groups were restorations, oral hygiene instruction, bridges/crowns, periodontal treatment and endodontic treatment.

**Table 6. Comparison of common services provided by dentists that never treated, and stopped treating patients in LTC**

SERVICES	NEVER TREATED IN LTC (n=152)	STOPPED TREATING IN LTC (n=47)	P Value
	Mean ± SD*	Mean ± SD*	
Extractions	2.3±1.1	2.3±0.9	0.850
Biopsies	4.1±0.8	3.9±0.8	0.056
Oral hygiene instruction	1.3±0.6	1.4±0.7	0.445
Restorations	1.1±0.4	1.12±0.4	0.708
Bridges/crowns	1.6±0.8	1.6±0.6	0.643
Denture Fabrication	3.3±1.0	3.3±1.0	0.930
Denture Adjustments	3.0±0.9	3.1±0.9	0.562
Denture Relines	3.3±1.0	3.3±1.0	0.990
Periodontal Treatment	1.6±0.9	1.2±0.4	0.000
Endodontic Treatment	1.7±0.8	1.7±0.7	0.978

\* the means are derived from the following Likert scale: 1=very often, 2=often, 3=sometimes, 4=seldom, 5=never

Dentists who currently treated the institutionalized elderly indicated that ‘moderately important’ factors that influenced their decisions to treat were availability of a dental operatory and equipment at the facility (mean 2.1), the amount of private practice time (mean 2.5), and personal satisfaction in working with elderly patients (mean 2.2) (Table 7). Dentists who currently treat patients in LTC tended to be neutral (mean 2.9) when asked if remuneration was an important consideration for providing services in long-term care facilities. A substantial proportion of dentists were fairly neutral when asked if experience and training was an important factor. One-third of the dentists felt that the distance to the facility was an important consideration, whereas 1/3 of the dentists felt that this was not of great importance in their decision to provide services.

**Table 7. Important considerations of dentists who currently treat patients in LTC**

CONSIDERATIONS	Very Important (1)	Moderately Important (2)	Neutral (3)	Minimally Important (4)	Not Important (5)
	Number of Dentists (% of total) n=35				
Amount of Private Practice Time	12(32.4)	8(21.6)	5(13.5)	2(5.4)	6(16.2)
	Mean ± SD: 2.5±1.58* (2 missing answers)				
Amount of Personal Time	7(18.9)	11(29.7)	7(18.9)	5(13.5)	4(10.8)
	Mean ± SD: 2.7±1.3* (1 missing answer)				
Distance to Facility	4(10.8)	8(21.6)	6(16.2)	6(16.2)	10(27.0)
	Mean ± SD: 3.3±1.4*				
Remuneration	3(8.1)	12(32.4)	7(18.9)	7(18.9)	4(10.8)
	Mean ± SD: 2.9±1.2*				
Availability of dental operatory and equipment	19(51.4)	4(10.8)	4(10.8)	4(10.8)	3(8.1)
	Mean ± SD: 2.1±1.2*				
Personal satisfactions in working with the elderly	8(21.6)	11(29.7)	13(35.1)	1(2.7)	0(0.0)
	Mean ± SD: 2.2±0.9* (1 missing answer)				
Experience/Training in treating elderly	2(5.4)	7(18.9)	15(40.5)	6(16.2)	3(8.1)
	Mean ± SD: 3.0±1.0* (1 missing answer)				

\* the means are derived from a Likert scale ranging from 1-5.

The majority of dentists that currently treated patients in LTC facilities were paid by fee-for-time, and only a small number of dentists were paid by fee-for-service, retainer fee, and sessional fee (**Table 8**). Out of the total number of dentists (n=35) who currently provided service in LTC, 45.9% used the British Columbia Dental Association (BCDA) General Fee Guide, and only 24.3% of the responding dentists used the BCDA Fee Guide for LTC. However, 16.2% of the dentists did not use any fee guide when treating in LTC facilities.

**Table 8. Methods of Payment and Fee Guide used when providing services to patients in LTC**

<b>METHOD OF PAYMENT</b>	<b>Number of Dentists (% of Total) n=31*</b>
Fee-for-time	28(75.7)
Fee-for-Service	1(2.7)
Retainer Fee (on call)	1(2.7)
Sessional Fee	1(2.7)
<b>FEE GUIDE USED IN LTC</b>	
	<b>Number of Dentists (% of Total) n=32**</b>
BCDA General Fee Guide	17(45.9)
BCDA Fee Guide for Dental Treatment Services in LTC Facilities	9(24.3)
No Fee Guide	6(16.2)

\* = 4 missing answers, \*\* = 3 missing answers

The most common reason for providing services in LTC facilities was the perception of dentists that it was a part of their professional responsibility (mean=2.1); 86.4% of the dentists that currently treat patients in LTC facilities tended to agree with this statement (Table 9). Out of the total number of dentists currently treating patients in LTC, 75.6% tended to agree that they decided to provide services because they wanted to perform a public service in their community, 51.3% of the dentists reported that they decided to provide services because a past patient or family member was in a LTC facility. Other reasons were as follows: 62% of the dentists decided to treat in LTC because they were asked to provide services and 43.2 % of the dentists wanted to provide services because they felt that social contacts with elders were rewarding. The least popular reasons for providing treatment in LTC facilities were: to increase the size of their practice, because it was a part time practice opportunity, or because it was a part of a semi-retirement practice.

**Table 9. Reasons for Providing Treatment in LTC answered by dentists who currently treat patients in LTC (n=35)**

REASONS	Strongly Agree (1)	Agree (2)	Slightly Agree (3)	Neutral (4)	Slightly Disagree (5)	Disagree (6)	Strongly Disagree (7)
	Number of Dentists (% of Total)						
To increase size of Practice	0(0.0)	6(16.2)	1(2.7)	4(10.8)	2(5.4)	10(27.0)	12(32.4)
	Mean ± SD: 5.3±1.9*						
Social contacts with elders are rewarding	0(0.0)	5(13.5)	11(29.7)	16(43.2)	0(0.0)	1(2.7)	1(2.7)
	Mean ± SD: 3.5±1.1*						
Public service	5(13.5)	14(37.8)	9(24.3)	5(13.5)	0(0.0)	0(0.0)	1(2.7)
	Mean ± SD: 2.6±1.2*						
Part of professional responsibility	9(24.3)	16(43.2)	7(18.9)	2(5.4)	0(0.0)	0(0.0)	0(0.0)
	Mean ± SD: 2.1±0.9*						
Part time practice opportunities	0(0.0)	3(8.1)	1(2.7)	8(21.6)	2(5.4)	6(16.2)	12(35.1)
	Mean ± SD: 5.4±1.7*						
Part of semi-retirement practice	0(0.0)	0(0.0)	0(0.0)	3(8.1)	7(18.9)	0(0.0)	22(59.5)
	Mean ± SD: 6.5±0.9*						
Broadens scope of Practice	1(2.7)	2(8.1)	12(32.4)	6(16.2)	0(0.0)	5(13.5)	7(18.9)
	Mean ± SD: 4.3±1.9*						
I was asked	8(21.6)	11(29.7)	4(10.8)	2(5.4)	1(2.7)	0(0.0)	7(18.9)
	Mean ± SD: 3.2±2.3*						
Past patient or family member was in LTC facility	8(21.6)	8(21.6)	3(8.1)	4(10.8)	0(0.0)	4(10.8)	6(16.2)
	Mean ± SD: 3.5±2.3*						

\* the means are derived from a Likert scale ranging from 1-7.

The majority of dentists considered that certified dental assistants were important members of the clinical team in LTC facilities (Table 10). Dentists who currently treated the elderly in LTC reported continuing geriatric education beyond dental school to be helpful tool in treating patients in LTC facilities.

**Table 10. Perceptions of dentists who treat patients in LTC (n=35)**

PERCEPTION	Strongly Agree (1)	Agree (2)	Slightly Agree (3)	Neutral (4)	Slightly Disagree (5)	Disagree (6)	Strongly Disagree (7)
	Number of Dentists (% of total)						
Dental hygienists are important members of the clinical team in LTC	25(67.6)	8(21.6)	1(2.7)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
	Mean ± SD: 1.3±0.5*						
Certified Dental Assistants are important members of the clinical team in LTC	15(40.5)	14(37.8)	5(13.5)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
	Mean ± SD: 1.7±0.7*						
Continuing education beyond dental school would be helpful to treat patients in LTC	17(45.9)	11(29.7)	3(8.1)	2(5.4)	1(2.7)	0(0.0)	0(0.0)
	Mean ± SD: 1.8±1.0*						
Additional paperwork such as consent is for treatment is a concern	8(21.6)	7(18.9)	7(18.9)	5(13.5)	2(5.4)	4(10.8)	1(2.7)
	Mean ± SD: 3.1±1.8*						

\* the means are derived from a Likert scale ranging from 1-7.

### **Questions asked to dentists who never treated patients in LTC**

The majority of dentists (87.3%) indicated that the lack of a dental operatory and dental equipment in facilities were the most important reasons for not providing services to patients in LTC. The second most common reason why dentists were not providing services in LTC facilities was that they felt that they were too busy in private practice (84.9%), and thus may have not been able to take time to provide services in LTC facilities (**Table 11**). Many dentists also indicated that the amount of their personal time was another common reason for not providing services in LTC facilities (81.3%). Dentists had varying opinions about the level of training and experience as a reason for not providing services in LTC (49.0%). Approximately 37% of the dentists stated that distance to the facility was an important consideration for not providing service in LTC facilities.

**Table 11. Factors influencing decisions of not treating patients in LTC answered by dentists who never treated patients in LTC (n=152)**

FACTORS	Very Important (1)	Moderately Important (2)	Neutral (3)	Minimally Important (4)	Not Important (5)
	Number of Dentists (% of Total)				
Amount of Private Practice Time	86(56.6)	43(28.3)	10(6.6)	5(3.6)	5(3.6)
	Mean ± SD: 1.7±1.0* (3 missing answers)				
Amount of Personal Time	79(51.8)	45(29.5)	16(10.2)	5(3.0)	6(4.2)
	Mean ± SD: 1.8±1.0* (1 missing answer)				
Distance to Facility	18(10.8)	43(25.9)	52(31.3)	20(12.0)	21(18.7)
	Mean and SD: 3.0±1.3*				
Remuneration	21(13.9)	67(44.0)	46(30.1)	6(4.2)	7(4.8)
	Mean ± SD: 2.4±1.0*				
Availability of dental operatory and equipment	87(57.2)	46(30.1)	16(10.2)	0(0.0)	1(0.6)
	Mean ± SD: 1.5±0.7*				
Personal satisfaction in working with the elderly	23(15.1)	63(41.0)	44(28.9)	10(6.6)	10(6.6)
	Mean ± SD: 2.5±1.1*				
Experience/Training in treating elderly	27(17.5)	49(31.9)	45(29.5)	15(9.6)	9(7.8)
	Mean ± SD: 2.6±1.1*				

\* the means are derived from a Likert scale ranging from 1-5.

### Questions asked to dentists who stopped treating patients in LTC

The most common reason for discontinuing services was uncomfortable work environment in the facility (Table 12). Of all, 93.8% of the dentists who stopped treating patients in long-term care did not report 'it is not my responsibility' as a reason for stopping treatment. A large proportion of dentists (64.6%) stopped providing services because they felt that LTC facilities entailed an uncomfortable work environment. Only 12.5% of dentists stopped treating elderly due to lack of demand for services. Responses varied regarding the administrative difficulties and increased commitment to their own private practice.

**Table 12. Reasons for stopping treatment in LTC Facilities (n=47)**

REASONS	Number of Dentists (% of total)	
	Yes	No
Lack of demand for services	6(12.5)	40(83.3)
Administrative difficulties in patient management	24(50.0)	22(45.8)
Uncomfortable work environment	31(64.6)	15(31.3)
It was financially unrewarding	21(43.8)	25(52.1)
It resulted in a loss of leisure time	14(29.2)	32(66.7)
Increasing commitments to private office practice	24(50.0)	22(45.8)
It was professionally unsatisfying	10(20.8)	36(75.0)
It is not my responsibility	0(0.0)	45(93.8)

The most important reasons for stopping treatment in LTC were: a lack of a dental operatory (mean=2.0), the amount of private practice time (mean=2.3), and the amount of personal time (mean=2.5) (Table 13). Dentists had varying opinions about remuneration (mean=2.9), personal satisfaction (mean=3.1), and training and experience with treating the elderly (mean=3.2).

**Table 13. Importance of factors for stopping treatments in LTC facilities (n=47)**

<b>FACTORS</b>	<b>Very Important (1)</b>	<b>Moderately Important (2)</b>	<b>Neutral (3)</b>	<b>Minimally Important (4)</b>	<b>Not Important (5)</b>
	Number of Dentists (% of Total)				
Amount of Private Practice Time	16(33.3)	13(27.1)	5(10.4)	2(4.2)	6(12.5)
	Mean ± SD: 2.3±1.4*				
Amount of Personal Time	14(29.2)	10(20.8)	7(14.6)	6(12.5)	6(12.5)
	Mean ± SD: 2.5±1.4*				
Distance to Facility	1(2.1)	6(12.5)	12(25.0)	8(16.7)	15(31.3)
	Mean ± SD: 3.7±1.2*				
Remuneration	2(4.2)	16(33.3)	15(31.3)	4(8.3)	5(10.4)
	Mean ± SD: 2.9±1.1*				
Availability of dental operatory and equipment	25(52.1)	9(18.8)	2(4.2)	3(6.3)	5(10.4)
	Mean ± SD: 2.0±1.4*				
Personal satisfaction in working with the elderly	4(8.3)	11(22.9)	12(25.0)	8(16.7)	7(14.6)
	Mean ± SD: 3.1±1.2*				
Experience/Training in treating elderly	2(4.2)	10(20.8)	15(31.3)	9(18.8)	6(12.5)
	Mean ± SD: 3.2±1.1*				

\* the means are derived from a Likert scale ranging from 1-5.

#### **4.4 Comparison of 1985 study and 2008 study**

The 2008 data were compared with the 1985 data to determine if there were any changes in opinions of dentists towards treating patients in LTC within Vancouver (**Table 14**). When comparing age, in 1985 most responding dentists were under the age of 35; while the highest percentage of dentists in the 2008 study were in the age group 36-45 years. Most of the responders in both studies had practiced for 6-15 years, however there was slightly higher number of dentists who practised 16-25 years in the current study. In 1985, the substantial proportion (42.0%) of dentists had 5% of their patients who were 65 years or older, while in the 2008 study, there were considerable number of dentists (38.0%) whose practice consisted of 11-24% of patients who were 65+. A higher percentage of current dentists stated that they did not have any advanced training in geriatric dentistry compared to the 1985 study. In the 2008 study only 11% of dentists in Vancouver reported that they had some form of geriatric dental training, whereas 22% of the dentists from the 1985 study had geriatric training.

**Table 14. Comparison of personal characteristics of dentists surveyed in 1985 and 2008**

PERSONAL CHARACTERISTICS	1985 STUDY IN GREATER VANCOUVER	2008 STUDY IN METRO- VANCOUVER
	Number of Dentists (% of total)	
	n=327	n=83
<b>AGE GROUPS</b>		
35 or under	120(37)	3(3)
36-45	103(31)	36(41)
46-55	49(15)	30(34)
56-65	41(13)	10(11)
65 or older	14(4)	4(5)
<b>YEARS OF PRACTICE</b>		
	n=327	n=114
5 years or less	61(19)	2(1)
6-15 years	129(39)	91(39)
16-25 years	72(22)	75(32)
26-35 years	44(14)	51(22)
36 years or more	21(6)	14(6)
<b>% OF PATIENTS ARE 65+</b>		
	n=331	n=84
1-4%	15(5)	0(0)
5%	140(42)	10(11)
6-10%	83(25)	19(22)
11-24%	64(19)	33(38)
25% or more	29(9)	22(25)
<b>ADVANCED TRAINING IN GERIATRIC DENTISTRY</b>		
	n=234	n=86
No	159(48)	76(86)
Yes		
Clinical & lectures	21(6)	3(3)
Lectures	13(4)	4(5)
Clinical	41(12)	3(3)

In 2008, a greater percentage of dentists agreed that treating the elderly is a pleasant experience, however these dentists also agreed that elderly patients present difficulties due to medical problems or dementia. Between 1985 and 2008 there was a slight difference in agreement about elders rarely following up with recommended dental treatment from 1985 to 2008. When asked if the patients' age had an influence on providing service, 73.7% agreed with this statement in 2008, whereas only 37% were in agreement in 1985.

In the 1985 study, the most common considerations about providing services in LTC were: availability of a dental operator or equipment, personal satisfaction in working with the elderly, remuneration and the amount of private practice time. In the 2008 study, the most common considerations were: availability of a dental operator or equipment, amount of private practice time, amount of personal time, and remuneration. In both studies, the availability of a dental operator or equipment remained an important factor for treating elderly in LTC facilities. In the 2008 study, these considerations were more important for the dentists who never provided services compared to the dentists who currently treated, or who stopped treating elderly in LTC. Distance to the facility was a greater concern in 1985 compared to 2008, whereas personal time was of higher importance in 2008 compared to 1986.

**Table 15a. Perceptions of treating patients in LTC- comparison between dentists surveyed in 1985 and 2008**

PERCEPTIONS	1985	2008
	Number of Dentists (% of total)	
Treating elders is a pleasant experience	182(54.0)	64(73.0)
Elders present difficulties due to medical problems/dementia	109(33.0)	65(74.0)
Elders rarely follow up with recommended treatment	102(30.0)	34(39.0)
It is hard to improve the oral health of elders	90(27.0)	50(57.0)
Patients age does not influence my decision to provide service	125(37.0)	185(73.7)

**Table 15b Important considerations for treating patients in LTC**

CONSIDERATIONS	1985	2008
	Number of Dentists (% of total)	
Amount of private practice time	217(74.0)	190(75.8)
Amount of personal time	163(56.0)	177(70.6)
Distance to facility	193(67.0)	80(31.9)
Remuneration	220(76.0)	129(51.4)
Availability of dental operatory/equipment	269(91.0)	188(80.5)
Personal satisfaction in working with elderly	243(85.0)	127(50.7)
Experience/training in treating elderly	108(51.0)	103(41.1)

One of the most common reasons for not providing services was because dentists were not asked to provide services in LTC in both the 1985 and 2008 studies (**Table 16**). Sixty-six percent of the dentists from 2008 study stated that they did not provide services in LTC because they were too busy in private practice; in 1985 this was only 31%. Sixty-one percent of the dentists from 2008 felt that providing services in LTC was financially costly and unrewarding, whereas only 15% of the dentists felt this way in 1985. Although a slightly higher percentage of dentists felt that there was a lack of appropriate treatment facilities in 2008, the percentages from both studies indicate that there has not been a substantial change in opinion on this matter.

In 1985, 32.0% of the dentists felt that there was a lack of demand for services in LTC (**Table 16**) and in 2008, only 12.5% of the dentists felt this way. Dentists from 1985 and 2008 agreed that they stopped treating institutionalized elderly due to increasing commitments in their own private practices. Dentists from 1985 and 2008 stated that they stopped providing services due to administrative difficulties in patient management. Half of the dentists in 2008 admitted that they stopped due to administrative difficulties in patient management, whereas in 1985, only 12% of dentists felt this way. In 2008, 64.6% of dentists stopped providing services because they found it financially costly and unrewarding-this was only the case for 9.0% of the dentists in 1985. Loss of leisure time and lack of professional satisfaction were more common reasons for stopping treatments in LTC in 2008 compared to 1985.

**Table 16. Reasons for not providing services and stopping services in LTC compared in the 1985 and 2008 studies**

<b>REASONS FOR NOT PROVIDING SERVICES IN LTC FACILITIES</b>	<b>1985</b>	<b>2008</b>
	Number of Dentists (% of total)	
Too busy in private practice	85(31)	58(66)
Inadequate training and experience with medically compromised patients	64(24)	41(47)
Financially costly and unrewarding	42(15)	41(61)
Bureaucratic barriers would hinder proper treatment of patients	33(12)	34(39)
Lack of appropriate treatment facilities	95(35)	44(39)
I have not been asked by residents/administrators/family	152(56)	55(63)
<b>REASONS FOR STOPPING TREATMENT</b>		
Lack of demand for services	21(32)	6(12.5)
Administrative difficulties in patient management	8(12)	24(50)
Financially unrewarding	6(9)	21(64)
Loss of leisure time	9(15)	14(43)
Increasing commitments to private office practice	24(38)	24(29)
Professionally unsatisfying	11(18)	10(50)

### **Urban and Rural Differences in the 2008 study**

Location of practice and decision to treat was compared between urban and rural dentists in the sample group (Table 17). Comparing responders to the surveys, 14.5% of urban dentists and 18.5% rural dentists currently treat patients in LTC. In summary, 66.7% of urban dentists and 51.9% of rural dentists never treated patients in LTC while 18.8% of urban dentists stopped treating in LTC, and 29.6% of rural dentists stopped treating in LTC.

**Table 17. Location of dentists who currently treat, never treat, and stop treating patients in LTC (2008 study).**

<b>STATUS OF TREATING</b>	<b>LOCATION</b>	
	Number of Dentists (% of total)	
	<b>URBAN BRITISH COLUMBIA n=207</b>	<b>RURAL BRITISH COLUMBIA n=27</b>
Currently Treating	30(14.5)	5(18.5)
Never Treated	138(66.7)	14(51.9)
Stopped Treating	39(18.8)	8(29.6)

## 5 DISCUSSION

### 5.1 Discussion of Findings

The non-response bias of mail-out surveys has been identified as a validity problem (Armstrong & Overton, 1977). If results from the non-responders differ significantly from the responders, it is not possible to say how the entire sample would have responded. A non-response analysis was performed which showed no systematically significant differences amongst responders and non-responders with respect to age, gender, location and years of practice. Although non-response analysis did not show any systematically significant difference between responders and responders, it doesn't imply the same for other parts of the questionnaire where data from non-responders was not collected.

Many of the opinions and attitudes of dentists within Metro-Vancouver regarding treatment for elders in LTC have changed from 1985 to 2008. In 2008, a greater number of dentists treated patients who were 65 years or older in their practice compared to dentists practising 1985. This difference between the two studies might be that there was a greater number of seniors in the population requiring dental treatment compared to 1985. In 1985, the majority of dentists were 35 years or younger; while in 2008 the highest proportion of participants were between the ages of 36-45 (MacEntee et al., 1992). This may be a reflection of the aging population of dentists in British Columbia, or a lack of interest in treating LTC seniors by younger dentists. Dentists who never treated patients in LTC had fewer years of practice compared to dentists who currently treated, and dentists who stopped treating patients in LTC. In both studies, professional and economic factors were important in whether or not dentists decided to provide services in LTC.

In 1985, 24% of the dentists reported that they had inadequate training to treat medically compromised patients compared to 47% in 2008. A qualitative study identified that some

dentists did not feel good about the services that they were capable of offering to patients in LTC facilities because it seemed to contradict their professional ethics, idealism and autonomy (Bryant, 1994). Besides from this, nursing staff also lacked adequate training when it came to oral health needs (Dolan & Atchison et al., 2005). Interestingly, fewer dentists admitted to having advanced training in geriatric dentistry in 2008 compared to 1985. Dentists today may not be seeking or find available post-graduate or continuing education courses in geriatric dentistry.

Distance to the facility was a greater concern for dentists in providing services in LTC in 1985 compared to 2008. Not only has the general population increased, but also the number of dentists in British Columbia, increasing the likelihood of dentists living or practicing closer to a long term care facility. The availability of a dental operatory and equipment was the most dominant consideration in providing services in LTC both in 1985 and in 2008. In the USA, only 3% of LTC facilities have dental operatories (Smith et al., 2007). In 2008, dentists admit that personal time was a significant factor in determining whether they decided to provide services in LTC facilities in contrast to 1985. In 2008, dentists stated that they decided not to treat patients in LTC due to busyness in their own private practice, and the lower financial gain associated with treating patients in LTC. These findings agree with previous findings where dentists reported that practical problems such as a lack of support for the service and inefficiency with the service were the primary reasons for the lack of interest in providing services to seniors in LTC facilities (Bryant, 1994).

In 2008, a greater percentage of dentists felt that treating patients in LTC was financially unrewarding, patients had more complex medical conditions, and it was harder to improve their oral health. Previous studies have also indicated issues encountered in long-term care facilities such as difficulties with providing treatment on-site at facilities (Gift et al., 1998), time constraints with treatment and a lack of support from hospital staff (MacEntee et al., 1999 & Bryant, 1994) in LTC facilities.

In 1985, 32% of dentists stated that they stopped treating in LTC facilities due to a lack of demand for services; while only 12.5% of dentists reported this reason in 2008. This difference between the two studies might be due to an increase in the retention of teeth into old age along with an increased awareness of the importance of oral health. Dentists reported that they stopped treating the elderly because they were not requested to provide services in LTC, and because there was poor administrative support from facilities. From the 2008 study, some dentists commented in writing that they felt that it was inefficient for them to visit the facility to treat a small number of patients.

Of the dentists who never provided treatment in LTC facilities from the 2008 study, 20.5% indicated an interest in providing services. The most prevalent reasons behind why dentists refused to treat patients in LTC in the currently study were: because they were too busy in their private practice, they were not asked to provide services, and because of a lack of appropriate treatment facilities in their area. Approaching potential dentists who are willing to provide services in LTC facilities and creating a work space (dental operatory) may encourage these dentists to start and continue to provide services.

Dentists who currently treated patients in LTC were slightly older and their practices were comprised of a greater percentage of seniors than the 1985 cohort. Dentists who currently treated patients in LTC firmly agreed that having dental hygienists & certified dental assistant as well as continuing dental education beyond dental school were important factors facilitating treatment in LTC facilities. Placing a greater emphasis on geriatric dentistry in the training of dentists, dental hygienists and certified dental assistants may encourage more dental professionals to provide services to this vulnerable population. Dentists self-reported that the most common reasons for providing dental services in a LTC facility were because: it was a part of their professional responsibility, they were asked to provide treatment, it was a public service, and they provided services for a past patient or family member. Compared to 1985, more dentists were aware that there is a demand for services in LTC facilities. Dentists who never treated, and dentists who stopped treating patients in LTC only 'sometimes' did denture fabrication, denture relines, and denture adjustments. Dentists who currently treat patients in LTC provided

these services more often, perhaps because they also offered these services more frequently in LTC facilities, or may have had extra training and experience.

Out of the total sample population (responders and non-responders), 94.5% of the dentists were from urban areas, and 5.5% were from rural areas. However, a higher proportion (61%) of the rural dentists responded; 27 out of the 44 rural dentists that were given a survey responded. For urban dentists, 207 out of 756 responded, resulting in a response rate of 27%. A greater percentage of rural dentists were interested or involved with dental treatment in LTC facilities, compared to urban dentists. Similarly, when comparing urban and rural practise and the decision of not providing services, there was a higher percentage of dentists who never provided services in LTC in urban areas of British Columbia. Despite the fact that a low percentage of dentists from both rural and urban areas currently treated patients in LTC, rural dentists were more involved than urban dentists in providing services in LTC facilities; this may reflect a greater sense of community responsibility and attachment within the rural community.

After 22 years, very little has changed with respect to the interest of dentists providing services within LTC. The widespread neglect for dental care of frail institutionalized elderly is an increasing concern. The inclusion of a dental operatory within LTC facilities may encourage more dentists to provide services to the frail elderly. Perhaps this way, dentists may feel that they have their own space to work with patients in the facility. To provide proper care for seniors, a multidisciplinary care team is required including dental professionals, dental auxiliaries and residential staff (Chalmers, 2000). In addition, the provision of more geriatric training in dental school as well as post-graduate training may help the situation. Increasing administrative, nursing, and patient's family support may encourage dentists to provide services in LTC. Many dentists indicated willingness to provide services if they were asked by family, patients, or administrators of facilities.

## 5.2 Limitations of the Study

This study only achieved a response rate of 30% compared to 51% for the 1985 study. Low response rates in questionnaire surveys are a common finding. For example, in 2007, a National Physician Survey (NPS) was mailed to Canadian physicians and physicians in training, and only a 34.1% response rate was achieved (Grava-Gubbins & Scott, 2008). However a low response rate does not necessarily affect the validity of the results, as long as the results gathered from the non-response analysis are documented, tested and understood (College of Family Physicians of Canada, Canadian Medical Association, Royal College of Physicians and Surgeons of Canada, 2007). However, generalizations of the present findings cannot be done with absolute certainty.

A low response rate from mail out surveys may occur as a result of a change of address and failure to receive (or return) the questionnaire, all of which may effect the nature of response bias (Etter & Pergner, 1997). The low response rate in the present survey may be due to the timing of the mail out; the questionnaires were mailed out in June, when dentists were more likely on holiday or may have been working fewer hours. Perhaps the staff may have been opening the mail and filtering what mail actually passed on to the dentist; therefore, the dentist may not have even seen the survey. Also, the complexity of the survey (3 different types of questionnaires in one package) may have deterred dentists from completing and mailing it back. Another reason for not responding might be the length of the questionnaire. Studies indicate that the length of the survey has a negative influence on mail survey response rates in which longer surveys are less likely to be filled out, resulting in a lower response rate (Steele, Schwendig & Kilpatrick, 1992). A shorter survey may have increased the response rate; however it would limit the amount of information that could be analyzed.

Previous studies based on response rates from mail-out surveys indicated that mail surveys have been criticized for non-response bias (Armstrong & Overton, 1977). If results from the non-responders differ significantly from the responders, it is not possible to say how the entire sample would have responded. Although maximizing the response

rate is important for surveys, there is not one single threshold for an acceptable response rate (Charlton, 2000). Mail surveys require a more self initiated cooperation than other survey techniques, thus the number of responses may differ as a result of personal characteristics as well as interest in the survey topic (Locker, 2000). Research on mail out surveys has indicated that responders and non-responders differ significantly based on interest of the topic (Scott, 1960). The 'interest hypothesis' is a widely recommended basis for subjective analysis for non-response which states that individuals who are interested in the topic of the survey are more likely to respond (Donald, 1960). A low response rate for this study may reflect the lack of interest in geriatric dentistry among dental practitioners.

The Leverage-Salience theory states that the probability of response from an individual is a combination of the leverage of the survey attribute and the salience of the same survey attribute (Grover, 2000). *“Leverage-salience theory does not simply predict that persons interested in the survey topic will be overrepresented among respondents (and underrepresented among non-respondents), relative to those uninterested. It predicts that the degree of overrepresentation will be a function of the salience of (and attitude toward) the survey topic among those deciding whether to cooperate, relative to the salience of (and attitudes toward) the other factors that are part of the survey request. If there are no other positive features to participation, the effect of topic should dominate the decision”* (Grover et al., 2004). Some people may be interested to participate in the questionnaire as a result of the topic (Grover, et al., 2004), whereas others may be interested as a result of the short length or incentive offered. A qualitative telephone survey targeting non-respondent medical doctors was conducted to gain a better understanding behind why decided not to respond to a mail out survey showed that they were more likely to respond to mail-out surveys that had a high personal interest factor (Kaner et al., 1998). Other reasons why medical doctors didn't reply to postal surveys, reasons were: the questionnaires got lost in paperwork (34%), too busy to do extra work (21%), and they just didn't fill out surveys (Kaner et al., 1998).

The chance to win an iPod music player may not have been an effective incentive for dentists to participate in this study. Perhaps a larger incentive may have had a positive impact on the response rate.

Paper based questionnaires may be of limited appeal since some dentists failed to answer all questions. This may have been an indicator for dentists not being in favor of the skipped question or statement. A suggestion for the future studies may be to create an electronic survey instead of a paper questionnaire where one is not able to answer the next question until the previous questions have been answered. Other possible advantages of using internet based surveys include the reduction in cost of paper and mailing the surveys (Cobanoglu et al., 2001 & McMahon et al., 2003) as well as the time associated with returning the surveys (Kaplowitz, 2004). An additional advantage would be that the response times for web-based surveys are several days faster compared to mail-out surveys (Kroth et al., 2009). However, the downfall of this would be that the sample group may not entirely consist of people who feel comfortable using a computer, using the internet or have access to the internet. Since web-based surveys have recently become more popular, applying this method may have only piqued younger dentists to complete the survey. However, in 2009, a study was conducted which used a combination of web-based and mail-out surveys showed that although a higher number of results were obtained from the electronic survey, 24% of the responders preferred to use the paper form (Kroth et al., 2009).

### **5.3 Conclusions**

Only a small fraction of dentists continue to provide services to patients in long-term care facilities in British Columbia. Despite the increased awareness of lack of oral care in long-term care facilities, the majority of dentists choose not to serve this population. Although the senior population has increased significantly since 1985 and there is a greater need for dental care, dentists view delivery of care less favorably, especially with respect to economic and personal factors. Dentists in rural parts of British Columbia showed greater willingness to provide services to patients in LTC facilities compared to

their urban counterparts. The decision to provide dental services in long-term care facilities is a complex and includes the health of residents themselves, the behavior and attitudes of caregivers, family, LTC administrators and staff.

#### **5.4 Suggestions for Future Research**

Both qualitative (a more in-depth perspective) and quantitative (a more general view) research might be useful to provide a comprehensive in-depth study of attitudes of dentists concerning the provision of dental services within LTC. Given that low response rates might be expected in mail surveys, new data collection methods as well as better incentives to increase response should be explored. A combination of electronic surveys and mail-out surveys may increase the response rate for similar studies. It would be interesting to conduct a qualitative follow up study within the three groups of dentists who currently treat, never treated, or stopped treating patients in LTC to further investigate their reasoning behind their choice of providing services. A qualitative study could be conducted for the dentists who never treated patients in LTC facilities, yet expressed interest in this area of dentistry.

## REFERENCES

- Ahacic K, Barenthin I, Thorslung M. Changes in Swedish dental health 1968-91. *Swed Dent J* 1998;22(5-6):211-22.
- Alian AY, McNally ME, Fure S, Birkhed D. Assessment of Caries Risk in Elderly Patients Using the Cariogram Model. *J Can Dent Assoc* 2006; 72(5):459-63.
- Andrews M, Farnum S. Brain abscess secondary to dental infection. *Oral Surgery Oral Medicine Oral Pathology* 1990; 38:224-5.
- A Portrait of Seniors in Canada. Statistics Canada 2006. no. 89-519-XIE: 2-301.
- Armstrong JS, Overton TS. Estimating Nonresponse Bias in Mail Surveys. *Journal of Marketing Research*. Vol XIV, Aug 1977, 396-402.
- Bergner M, Bobbit RA, Pollard WE, Martis DP, Gilson BS. The Sickness Impact Profile: Validation of a Health Status Measure. *Med Care* 1976;14:57-67.
- Bergner M, Bobbit RA, Carter WB, Gilson BS. The Sickness Impact Profile: Development and Final Revision of a Health Status Measure. *Med Care* 1981; 19:787-805.
- Beltrán-Aguilar E, Barker L, Canto M. Surveillance for dental caries, dental sealants, tooth retention, edentulism, and enamel fluorosis—United States, 1988-1994 and 1999-2002. *MMWR* Aug 26, 2005;54(03):1-44.
- Berkley DB, Berg RG, Ettinger RL, Mann J. The Old-Old Dental Patient: The Challenge of Clinical Decision Making. *JADA* 1996;127(3):321-332.
- Bible BL. Physicians' views of medical practice in nonmetropolitan communities. *Professional and social aspects* 1970; 85(1):11-17.
- Bryant SR, MacEntee MI, Browne A. Ethical Issues Encountered by Dentists in the Care of Institutionalized Elders. *Special Care Dentistry* 1995; 15(2):79-82.
- Burry A. Public Health Dentistry: 2000 to 2020. *J Can Dent Assoc* 1999; 65:163-6.
- Canada's Aging Population. (2002) A report prepared by Health Canada in collaboration with the interdepartmental committee on aging and senior issues. Government of Canada. Accessed October 8, 2008 < [www.statcan.gc.ca/ads-annonces/89-519-x/index-eng.htm](http://www.statcan.gc.ca/ads-annonces/89-519-x/index-eng.htm)>.

Chalmers JM. Behavior management and communication strategies for dental professionals when caring for patients with dementia. *Spec Care Dent* 2000; 20(4): 147-54.

Chan B, Degani N, Crichon T, Pong, R., Rourke, J., Goertzen, J & McCready, B. Factors influencing family physicians to enter rural practice: Does rural or urban background make a difference? *Canadian family Physician* 2005; 51:1246-1247.

Charlton R. Research: is an 'ideal' questionnaire possible? *Int J Clin Pract* 2000;54(6):356-9.

Cobanoglu C, Warde B, Moreo PJ. A Comparison of Mail, Fax and Web Survey Methods. *International Journal of market Research* 2001;43:441-52.

College of Family Physicians of Canada, Canadian Medical Association, Royal College of Physicians and Surgeons of Canada. 2007. National Physician Survey methodology & comparability between the total eligible physician population, survey respondents and non-respondents. Mississauga, ON: College of Family Physicians of Canada; 2007. Available from [www.nationalphysiciansurvey.ca/nps/2007\\_Survey/pdf/2007.nps.methodologyy.and.generalizability.of.results\\_final.pdf](http://www.nationalphysiciansurvey.ca/nps/2007_Survey/pdf/2007.nps.methodologyy.and.generalizability.of.results_final.pdf). Accessed 2009 Sept 08.

Corbin S, Kleinman DV, Lane MJ. New Opportunities for Enhancing Oral Health: Moving Toward the 1990 Objectives for the Nation. *Public Health Reports*. Sept-Oct 1985; Vol. 100 No. 5 515-524.

Demographic Characteristics of British Columbia's Senior Population: An Environmental Scan. Service BC. Ministry of Labour and Citizens' Services. August 2005.

Dharamsi S, Pratt DD, MacEntee MI. How Dentists Account for Social Responsibility: Economic Imperatives and Professional Obligations. *Journal of Dental Education*. 2007; 71(12):1583-1592.

Dolan T, Atchinson K, Huynh T. Access to dental care among older adults in the United States. *Journal of Dental Education* 2005; Vol 69(9):961-974.

Donald, MN. Implications of Nonresponse for the Interpretation of Mail Questionnaire Data. *Public Opinion Quarterly* 1960; 24:99-114.

Durso S. Interaction with Other Health Team Members in Caring for Elderly Patients. *Dent Clin N Am* 2005; 49:377-388.

Dye BA, Tan S, Smith V, Lewis BG, Barker LK, Thornton-Evans G, Eke PI, Beltrán-Aguilar ED, Horowitz AM, Li CH. Trends in oral health status: United States, 1988-1994 and 1999-2004. *Vital and Health Statistics* 2007; (248):1-92.

- Eklund SA. Changing treatment patterns. *JADA* 1999;130(12):1707-12.
- Etter JF, Pergner TV. Analysis of Non-Response Bias in a Mailed health Survey. *J Clin Epidemiol* 1997;50(10) pp. 1123-1128.
- Ettinger RL. Demography and Dental Needs, an International Perspective. *Gerodontology* 1993; 10 (1): 3-9.
- Ettinger RL. Oral care for the homebound and institutionalized. *Clin Geriatr Med* 1992; 23:9-17.
- Ettinger RL. Oral health and the aging population. *JADA* 2007;138:5s-6s.
- Ettinger RL. Rational Dental Care: Part 2. A Case History. *J Can Dent Assoc* 2006; 72(5):447-52.
- Ferreira RC, Silami de Magalha C, Moreira AN. Tooth loss, denture wearing and associated factors among an elderly institutionalised Brazilian population. *Gerodontology* 2008; 25:168-78.
- Frenkel H, Harvey I, Rosin, A. Oral health care among nursing home residents in Avon. *Gerodontology* 2000; 17:33-38.
- Gift HC, Cherry-Peppers G, Oldakowski RJ. Oral health care in US nursing homes, 1995. *Spec Care Dent* 1998; 18(6):226-233.
- Gornitsky M, Paradis I, Landaverde G, Malo A, Velly, AM. A Clinical and Microbiological Evaluation of Denture Cleansers for Geriatric Patients in Long-Term Care Institutions. *Journal of the Canadian Dental Association* 2002;68(1)39-45.
- Grava-Gubins I, Scott S. Effects of various methodologic strategies: survey response rates among Canadian physicians and physicians-in-training. *Can Fam Physician* 2008;54:1424-1430.
- Groves RM, Presser S, Dipko S. The Role of Topic Interest in Survey Participation Decisions. *Public Opinion Quarterly* 2004; 68(1):2-31.
- Groves RM, Singer E, Corning A. Leverage-Saliency Theory of Survey Participation: Description and an Illustration. *Public Opin Q.*2000; 64: 299-308.
- Guay, AH. The Oral Health Status of Nursing Home Residents: What do we need to know? *Journal of Dental Education* 2005; 69(9):1015-1017.

Hurtado MP, Swift EK, Corrigan JM. Editors. Institute of Medicine Committee on the National Quality Report on Health Care Delivery. Envisioning the National Healthcare Quality Report. Washington, DC: National Academies Press; 2001.

Kaner, EF, Haighton CA, McAvoy BR. 'So much post, so busy with practice-so, no time!': a telephone survey of general practitioners' reasons for not participating in postal questionnaire surveys. *Br J Gen Pract* 1998; 48(428):1067-9.

Kaplowitz MD, Hadlock TD, Levine R. A comparison of Web and Mail Survey Response Rates. 2004. *Public Opinion Quarterly*. Vol 68:94-101.

Kiyak HA, Grayston MN, Crinean CL. Oral health problems and needs of nursing home residents. *Community Dent Oral Epidemiol* 1993; 17:102-105.

Kroth, PJ, McPherson L, Leverage R, Pace W, Daniels E, Rhyne RL, Williams, RL. Combining Web-Based and Mail Surveys Improves Response Rates: A PBRN Study From PRIME Net. 2009. *Annals of Family Medicine* 7:245-248.

Lamster I. Oral health care services for older adults: a looming crisis. *American Journal of Public Health* 2004; 94(5):699-702.

Lamy M, Mojon P, Kalykakis G, Legrand R, Budtz-Jorgensen E. Oral Status and Nutrition in the Institutionalized Elderly. *Journal of Dentistry* 1999; 27, 443-448.

Leake JL. A review of regional studies on the dental health of older Canadians. *Gerodontology* 1988; 7(1):11-19.

Lindsay S. Gender Differences in Rural and Urban Practice Location Among Mid-Level Health Care Providers. *National Rural Health Association* 2007; 23(1): 72-76.

Locker D. Response and non-response bias in oral health surveys. *Journal of Public Health Dentistry* 2000; 60(2):72-81.

Locker D, Leake JL, Hamilton M, Hick T, Lee J, Main, PA. The oral health status of older adults in four Ontario communities. *J Can Dent Assoc* 1991; 57(9):727-32.

Longhurst RH. An evaluation of the oral care given to patients when staying in hospital. *Prim Dent Care* 1999; 6:35-41.

Luman K, Zweifler J, Grumbach K. Physician perceptions of practice environment and professional satisfaction in California: from urban to rural. *National Rural Health Assoc*. Summer 2007: 222-227.

MacEntee MI. A look at the (near) future based on the (recent) past-how our patients have changed and how they will change. *Journal of Can Dent Assoc* 2005; 71(5):331.

- MacEntee MI. Caring for Elderly Long-term Care Patients: Oral Health-Related Concerns and Issues. *Dent Clin N Am* 2005; 49:429-443.
- MacEntee MI, Thorne A, Kazanjian A. Conflicting Priorities: oral health in long-term care. *Spec Care Dent* 1999; 19:164-72.
- MacEntee MI. Missing links in oral health care for frail elderly people. *J Can Dent Assoc* 2006; 72(5):421-5.
- MacEntee MI, Hole R, Stolar E. The Significance of the mouth in old age. *Soc. Sci. Med* 1997; 45, 9:1449-1458.
- MacEntee MI, Stolar E, Glick N. Influence of age and gender on oral health and related behaviour in an independent elderly population. *Community Dent Oral Epidemiol* 1993; 21:234-9.
- MacEntee MI, Weiss RT, Waxler-Morrison NE, Morrison BJ. Factors influencing oral health in long-term care facilities. *Community Dent Oral Epidemiol* 1987; 12:314-6.
- MacEntee MI, Weiss RT, Waxler-Morrison NE, Morrison BJ. Opinions of dentists on the treatment of elderly patients in long-term care facilities. *J Publ Health Dent* 1992;52:239-44.
- Maloof E, Taubenhaus LJ, McCormick G, Penchansky R. Dental Needs of Nursing Home Patients. *A.J.P.H* (54)-6, June 1964.
- Marcus M, Reifel NM, Nakazono TT. Clinical measures and treatment needs. *Adv. Dent Res* 1997;11 (2):263-71.
- Marshall D. The Experience of Dental Avoidance. The University of British Columbia. March 1993.
- Marvin FM. Access to Care for Seniors-Dental Concerns. *J Can Dent Assoc* 2001; 67(9): 504-6.
- McGrath AM, Jackson GA. Survey of neuroleptic prescribing in residents of nursing homes in Glasgow. *BMJ* 1996; 312:611-12.
- McMahon SR, Iwamoto M, Massoudi MS, Hussain RY, Stevenson JM, David D, Chu SY, Pickering, LK. Comparisons of e-mail, fax, and postal surveys of pediatricians. *Pediatrics* 2003; 111(4 Pt 1):e299-e303.
- McNally L, Gosney MA, Field EA, Doherty U. The dental status of elderly in-patients. *Age Aging* 1998; 27:47.

Milner WE. Special Care Dentistry Delivers a Formula for Change: A model has been developed but must be implemented statewide. *NC Med J* November/December 2005. 66(6):460-4.

Mojon P, MacEntee MI. Estimates of time and propensity for dental treatment among institutionalized elders. *Gerodontology* 1994; 11(2):99-107.

Morhart RE, Davis ME, Weiss DJ, Fitzgerald, RJ, Rhyne RR. Dental Health Status of an Aging Population: Implications for a Preventative Dental Health Care Program. *Dental Health and Aging Veterans*. 1986;20(6.2):933-47.

Munroe D. The influence of registered nurse staffing on the quality of nursing home care. *Res Nurs Health* 1990; 13:263-70.

Needleman I, McGrath C, Floyd P, Biddle A. Impact of oral health on the life quality of periodontal patients. *J Clin Periodontol* 2004; 31: 454-7.

Nelson AR. Unequal treatment: report of the Institute of Medicine on racial and ethnic disparities in healthcare. *Ann Thorac Surg* 2003; 76:S1377-81.

Oral Disease and Quality of Life. *AJPH* January 1985. Vol 75. No. 1 (11-12).

Patrick DL. Constructing Social Metrics for Health Status Indexes. *Int J Health Serv* 1976; 6:443-54.

Pino A, Moser M, Nathe C. Status of oral healthcare in long-term care facilities. *Int J Dent Hygiene* 2003; 169-173.

Preston AJ, Kearns A, Barber M, Gosney M. The knowledge of healthcare professionals regarding elderly persons' oral care. *British Dental Journal* 2006; 201(5):293-295.

Posner RA. 1995. *Aging and Old Age*. Chicago, University of Chicago Press.

Rashid A. The Bush Isn't So Hedgy on the Other Side. *Aust Journal Rural Health*. Volume 15, Number 4, 2007: Aug15(4) 277-278.

Reisine ST. Dental Health and Public Policy: The Social Impact of Dental Disease. *AJPH* January 1985. Vol 7 No. 1.

Reisine S. T. The effects of pain and oral health on the quality of life. *CommunityDent Health* 1998;5:63-68.

- Rivet C. Is there an association between doing procedures and job satisfaction? *Can fam Physician* 2007; 53:92-93.
- Robichaud L, Durand PJ, Bedard R, Ouellet J. Quality of life indicators in long-term care: Options of elderly residents and their families. *Canadian Journal of Occupational Therapy* 2006; 73:4:245-251.
- Rosenberg MW, Moore E. The Health of Canada's Elderly Population: Current Status and Future Implications. *Can Med Assoc J.* Oct 15, 1997; 157 (8).
- Schwartz M. The oral health of the long-term care patient. *Annals of Long-term Care.* 2000; 8(12):41-6.
- Scott C. Research on Mail Surveys. *Royal Statistics Society.* 1961:124:143-95.
- Simmons, D., Kidd, E., Beighton, D. Oral health of elderly occupants in residential homes. *Lancet* 1999;354(9177):515.
- Skinner MW, Rosenberg MW, Lovell SA, Dunn JR, Everitt JC, Hanlon N, Rathwell TA. Services for Seniors in Small-Town Canada: The Paradox of Community. *CJNR* 2008; 40(1): 80-101.
- Slaughter YA, Malamud D. Oral Diagnostics for the Geriatric Populations: Current Status and Future Prospects. *Dent Clin N Am* 2005; 49:445-461.
- Smith BJ, Ghezzi EM, Manz MC, Markova CP. Perceptions of Oral Health Adequacy and Access in Michigan Nursing Facilities. *Gerodontology* 2008; 25:89-98.
- Statistics Canada. Statistics Canada Life expectancy at birth, by sex, by province in 2002. July 4, 2009. <<https://www40.statcan.gc.ca/01/cst01/health26-eng.htm>>.
- Steele TJ, Schwendig WL, Kilpatrick JA. Duplicate responses to multiple survey mailings: A problem? *Journal of Advertising Research* 1992;3:26-34.
- Steele JG, Walls AWG, Ayatollahi S, Murray J. Major clinical findings from a dental survey of elderly people in three different English communities. *Br Dent J* 1996;180:17-23.
- Taylor G, Loesche W, Lieberman D. Impact of oral disease on systemic health in the elderly: diabetes mellitus and aspiration pneumonia. *J Public Health Dent* 2000; 60:313-20.
- Tickle M, Craven R, Worthington HV. A comparison of the subjective oral health status of older adults from deprived and affluent communities. *Community Dent Oral Epidemiol* 1997; 25:217-222.

Ulmer B, Harris M. Australian GPs are satisfied with their job: even more so in rural areas. *Fam Pract* 2002;19(3):300-3.

Visser LM, Vanobbergen JN. Oral Health Care for Frail Elderly People: Actual State and Opinions of Dentists Towards a Well-organized Community Approach. *Gerodontology* 2006; 23:170-176.

Walton VA, Romans-Clarkson SE, Herbison GP. Variety and Views in General Practice. *N Z Med J* 1990;103(892):287-90.

Weeks JC, Fiske J. Oral care for people with disability: a qualitative exploration on the views of nursing staff. *Gerodontology* 1994; 11:13-17.

Wiseman M. The Treatment of Oral Problems in the Palliative Patient. *J Can Dent Assoc* 2006; 72(5):453-8.

Woloschuk W, Tarrant M. Do students from rural backgrounds engage in rural family practice more than their urban-raised peers? Blackwell Publishing Ltd. *Medical Education* 2004; 38: 259-261.

Wyatt CC, Elderly Canadians residing in long-term care hospitals: Part I. Medical and dental status. *J Can Dent Assoc* 2002; 68(6):353-8.

Wyatt CC, Elderly Canadians residing in long-term care hospitals: Part II. Medical and dental status. *J Can Dent Assoc* 2002; 68(6):359-63.

Wyatt CCL. The development, implementation, utilization and outcomes of a comprehensive dental program for older adults residing in long-term care facilities. *J Can Dent Assoc* 2006; 72(5):419.

Wyatt CCL, MacEntee MI. Caries management for institutionalized elders using fluoride and chlorohexidine mouthrinses. *Community Dent Oral Epidemiol* 2004; 32:322-8.

Yancik R. Cancer burden in the aged. An epidemiologic and demographic overview. *Cancer* 1997; 80:1273-1283.

## 6 APPENDICES

Appendix A

**\*\* Win a FREE 4 GB iPod Nano! \*\***

**How it works:**

**Fill out this questionnaire and fax it back to  
1-604-822-\_\_\_\_ Winners will be contacted by phone or email.**

**\*\*IT'S THAT EASY!!\*\***



**INSTRUCTIONS:**

**For dentists who:**

- a) **currently** treat patients in long-term care, please fill out the **PINK** survey
- b) **never** treated patients in long-term care, please fill out the **BLUE** survey
- c) **stopped** treating patients in long-term care, please fill out the **GREEN** survey

## Appendix B



**Department of Oral Health Sciences**  
2199 Wesbrook Mall  
Vancouver, B.C., Canada V6T 1Z3  
Tel: (604) 822-5064 Fax: (604) 827-4448  
[www.dentistry.ubc.ca](http://www.dentistry.ubc.ca)

## **Letter of Initial Contact and Consent**

June 4, 2008

Dear Dental Professional,

**Re: UBC Faculty of Dentistry Research Project: Factors that Influence Dentists to Treat Patients in Long-term Care.**

**Principal Investigator:** Dr. Christopher Wyatt, Department of Oral Health Sciences, Faculty of Dentistry, 604-822-1778.

**Co-Investigator:** Nita Chowdhry, Masters in Science, Department of Oral Health Sciences, Faculty of Dentistry, 604-729-0000.

### **Purpose**

The purpose of this study is to identify factors that influence dentists on treating the elderly. A similar study was completed in 1986 to determine factors that influence dentists' decisions on treating the elderly in British Columbia, and we are interested to see if the opinions of dentists have changed. In addition, this questionnaire will help to determine if dentists from different parts of British Columbia have different attitudes towards treating elders. The questionnaire should take no longer than 10 minutes to complete.

### **Benefits**

Participation in this study may not benefit you personally. However, your participation will help to support dental research and help to determine how to encourage dentists in British Columbia to treat elderly patients, specifically patients in long-term care facilities that are in great need for dental care.

### **Study Description**

A questionnaire will be administered in a semi-anonymous fashion to 800 dentists in British Columbia: no name will be used, but the questionnaire will be identified by the fax number of the dental practice. If you chose to participate in the study, the fax number from where the questionnaire is returned will be entered into a draw to win an iPod Nano in appreciation of your contribution to this study. If you do not wish to participate, you can still be entered in the draw by returning a blank questionnaire.

### **Who can participate in this study**

General dentists who are currently practicing in British Columbia will be eligible to participate in this study.

**Potential Risk**

There are no potential risks.

**Right to Leave the Study**

Your participation is greatly appreciated; however, you are completely free to decline the study. You may withdraw from this study at any time without providing any reason for your decision, without prejudice. If you have any concerns about your participation or rights as a research participant, you may call the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598.

**Confidentiality of Records**

By submitting the questionnaire, you have consented and you are advised to keep a copy of the consent form. Your confidentiality will be respected. No information that discloses your identity will be released or published without your specific consent to the disclosure. The information that you provide will be stored in a locked filing cabinet at the Faculty of Dentistry and placed on a computer that will be protected by a password. If you would like more information about the study or to schedule an interview, please contact Dr. Chris Wyatt at 604-822-1778.

**Authorization**

My signature below signifies that I understand and agree to the above, and affirms that I have volunteered to participate of my own free will. I have read and understand the nature, duration and purpose of this study. I understand that I can keep this signed and dated consent and send a fax back to UBC c/o the B.C Dental Association at 604-736-7588.

\_\_\_\_\_  
\_\_\_\_\_  
Subject Signature

Witness Signature

\_\_\_\_\_  
\_\_\_\_\_  
Date

Date



Please respond to the following statements:

	Strongly Agree (1)	Agree (2)	Slightly Agree (3)	Neutral (4)	Slightly Disagree (5)	Disagree (6)	Strongly Disagree (7)	
Treating elders is a pleasant experience								25
Patients age does not influence my decisions to provide services								26
Elders rarely follow up with recommended treatment								27
Elders present difficulties due to medical problems/dementia								28
It's hard to improve oral health of elders								29
Treating elders is time-consuming								30
Treating elders is financially unrewarding								31

How many years have you been attending patients in a long-term care facilities? _____ years	32
Approximately how many hours per week do you work in the facility? _____ hours	33

What are the most common dental services that you provide to patients in long-term care?

	Very Often (1)	Often (2)	Sometimes (3)	Seldom (4)	Never (5)	
Biopsies						34
Extractions						35
Oral Hygiene Instruction						36
Restorations						37
Bridges/Crowns						38
Denture Fabrication						39
Denture Relines						40
Denture Adjustments						41
Periodontal Treatment (scaling/root planning)						42
Endodontic Treatment						43
Other, Specify:						44

<p><b>How are you paid when treating elders in long-term care facilities?</b></p> <p>1. Fee-for-Service <input type="checkbox"/></p> <p>2. Fee for Time <input type="checkbox"/></p> <p>3. Retainer fee (on call) <input type="checkbox"/></p> <p>4. Salary <input type="checkbox"/></p> <p>5. Other (specify) <input type="checkbox"/></p>	45
<p><b>Which fee guide do you use when treating patients in long-term care facilities?</b></p> <p>1. BCDA General Fee Guide <input type="checkbox"/></p> <p>2. BCDA Fee Guide for Dental Treatment Services in Long-term Care Facilities <input type="checkbox"/></p> <p>3. No fee guide <input type="checkbox"/></p> <p>4. Other, Specify <input type="checkbox"/></p>	46
<p><b>Do you charge more than the BCDA General Fee Guide when providing treatment in long-term care facilities?</b></p> <p>1. Yes <input type="checkbox"/>      2. No <input type="checkbox"/></p> <p><b>If you answered yes, please specify by what percentage?</b></p> <p>_____ % More</p>	47
<p><b>How would you prefer to be reimbursed when treating patients in long-term care?</b></p> <p>1. Fee per time <input type="checkbox"/></p> <p>2. Fee per service <input type="checkbox"/></p> <p>3. Sessional fee <input type="checkbox"/></p> <p>4. Retainer fee (on call) <input type="checkbox"/></p>	48

**Originally, why did you decide to provide dental services in long-term care facilities?**

	Strongly Agree (1)	Agree (2)	Slightly Agree (3)	Neutral (4)	Slightly Disagree (5)	Disagree (6)	Strongly Disagree (7)	
Opportunity to increase my practice								49
Social contacts with elders are rewarding								50
I want to perform a public service								51
Part of professional responsibilities								52
Part-time practice opportunities								53
Part of semi-retirement practice								54
Broadens the scope of my practice								55
I was asked to work in a long-term care facility								56
A past patient or family member was in a long-term care facility								57
Other, specify								58

**Please respond to the following statements.**

	Strongly Agree (1)	Agree (2)	Slightly Agree (3)	Neutral (4)	Slightly Disagree (5)	Disagree (6)	Strongly Disagree (7)	
<b>Dental hygienist's are important members of the clinical team in long-term care facilities</b>								59
<b>Certified dental assistant's are important members of the clinical team in long-term care facilities</b>								60
<b>Continuing education beyond dental school would be helpful to treat patients in long-term care</b>								61
<b>Additional paper work such as consent for treatment is a concern</b>								62

**THANK YOU FOR YOUR PARTICIPATION!**

**Appendix C-ii**

**Factors that Influence Dentists' Decisions to Treat the Elderly**  
**FOR DENTISTS WHO NEVER TREATED PATIENTS IN LONG-TERM CARE**

**Why have you not provided services in long-term care facilities?**

	Strongly Agree (1)	Agree (2)	Slightly Agree (3)	Neutral (4)	Slightly Disagree (5)	Disagree (6)	Strongly Disagree (7)	Not Applicable (8)	
Too busy in private practice									1
Inadequate training and experience with medically compromised patients									2
Financially costly and unrewarding									3
Elders present difficulties due to medical complications/dementia									4
Bureaucratic barriers would hinder proper treatment of patients									5
Lack of appropriate treatment facilities									6
Have not been asked by residents/administrators/family									7
It is not my responsibility									8
Other, Specify									9

**In general, how important are the following factors in your decision of not treating elder patients?**

	Very important (1)	Moderately important (2)	Neutral (3)	Minimally important (4)	Not important (5)	
Amount of private practice time						10
Amount of personal time						11
Distance to facility(ies)						12
Remuneration						13
Availability of dental operatory & equipment at facility						14
Personal satisfaction in working with elderly						15
Experience/training in treating elderly						16

**Please respond to the following statements:**

	Strongly Agree (1)	Agree (2)	Slightly Agree (3)	Neutral (4)	Slightly Disagree (5)	Disagree (6)	Strongly Disagree (7)	
Treating elders is a pleasant experience								17
Patients age does not influence my decisions to provide services								18
Elders rarely follow up with recommended treatment								19
Elders present difficulties due to medical problem/dementia								20
It's hard to improve oral health of elders								21
Treating elders is time-consuming								22
Treating elders is financially unrewarding								23



**Appendix C-iii**

**Factors that Influence Dentists' Decisions to Treat the Elderly**

**FOR DENTISTS WHO STOPPED TREATING PATIENTS IN LONG-TERM CARE**

Why did you stop treating patients in long-term care? (Please mark all that apply).

Lack of demand for services <input type="checkbox"/>	1
Administrative difficulties in patient management <input type="checkbox"/>	2
Uncomfortable work environment <input type="checkbox"/>	3
Financially unrewarding <input type="checkbox"/>	4
Loss of leisure time <input type="checkbox"/>	5
Increasing commitments to private office practice <input type="checkbox"/>	6
Professionally unsatisfying <input type="checkbox"/>	7
Not my responsibility <input type="checkbox"/>	8
Other, specify <input type="checkbox"/>	9

In general, how important are the following factors in your decision to stop treating patients in long-term care?

	Very important (1)	Moderately important (2)	Neutral (3)	Minimally important (4)	Not important (5)	
Amount of private practice time						10
Amount of personal time						11
Distance to facility(ies)						12
Remuneration						13
Availability of dental operator & equipment at facility						14
Personal satisfaction in working with elderly						15
Experience/training in treating elderly						16

Please respond to the following statements.

	Strongly Agree (1)	Agree (2)	Slightly Agree (3)	Neutral (4)	Slightly Disagree (5)	Disagree (6)	Strongly Disagree (7)	
Treating elders is a pleasant experience								17
Patients age does not influence my decisions to provide services								18
Elders rarely follow up with recommended treatment								19
It's hard to improve oral health of elders								20
Elders present difficulties due to medical problems/dementia								21
Treating elders is time-consuming								22
Treating elders is financially unrewarding								23



#### **APPENDIX E: Modifications from 1985 questionnaire:**

- a. Section 1: question 3 from the 1985 questionnaire was removed, as it was not necessary to ask about specialty practice since all known dentists working in LTC are general dentists. The revised questionnaire asked the number of years of practice. This questionnaire was mailed only to general dentists within British Columbia.
- b. Section 1: question 6 was removed from the revised questionnaire, as it was not necessary to ask about the type of practice.
- c. Section 1: question 8 was removed, as it was not necessary to ask about earnings for practice as it makes the questionnaire more personalized, rather, the revised questionnaire asked for satisfaction and preferences of reimbursements from treatment.
- d. Section 1: question 19 was removed because dentists would most likely choose to have funded equipment rather than purchasing their own portable equipment for LTC facilities.
- e. Section IIB: Removed as the questions were specific to the actual facility where dentists provided treatment. Only question 3, 4 & 7 were added to the current questionnaire. For this study, it was not necessary to denote the name and type of facility, the length of time worked in the facility, or any treatment arrangements.
- f. Section I: question 4 was modified to specify if dentists practice in a rural or urban area of British Columbia, with specifications about the city and town.
- g. Questions 19.1-19.4 were added for dentists who currently treat patients in LTC to determine which factors were important in a LTC environment.